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## **Trade Policies and Ethnic Discrimination in Mexico**

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### **Abstract**

*Given that the indigenous population in Mexico is the poorest segment of its society, this paper explores how inequality has been affected by the trade liberalization put into effect after the eruption of the debt crisis in the early eighties and the coming into force of NAFTA. The focus is on the agricultural sector for two reasons: first, the regions with the highest concentration of indigenous population are specialized in agriculture; second, agriculture has been identified as the main loser from trade liberalization. The paper presents direct and indirect evidence on discrimination at the municipal level and concludes that trade reforms contributed to a worsening of the relative position of the indigenous people, or an increase in horizontal inequality.*

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## Trade Policies and Ethnic Discrimination in Mexico

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### I. Introduction

Mexico is a multi-ethnic country in which indigenous people, accounting for around 10 million inhabitants and representing 9.5 per cent of the total population (CDI, 2006)<sup>2</sup>, are fragmented, speaking more than 60 indigenous languages.

In Mexico, *mestizaje* (roughly equivalent to people born through inter-marriage) and acculturation were intense from the time of the conquest. Therefore, the presence of indigenous people, with some degree of *mestizaje*, is palpable throughout society. But Mexico does not present a clear picture of, on the one side, white people, and on the other, the indigenous population. As early as the mid-nineteenth century, the liberal Mexican Constitution declared discrimination against indigenous people illegal. As a result, race was eliminated from all statistical surveys and censuses. Information on the social wellbeing of the indigenous population has only been collected since 1990.

Further, the official definition of “*indigenidad*” limits the identification as Indian to those households in which one of the heads of the family, or one of the head’s parents, speaks an indigenous language. This linguistic definition of ethnicity has been criticized by anthropologists on the grounds that it reduces the elements that distinguish ethnic groups to just one. This simplification has reduced the Indian community in Mexico to just a few millions and understates the extent of ethnic presence in the society and the scope of discrimination. According to the official definition, the non-Indian population represents nearly 90 per cent of the population; however, the last population census reported that only 22 municipalities, accounting for 17,000 people had no indigenous language-speaking people.

Discrimination against the Mexican indigenous population takes place in a highly unequal society in which the concentration of wealth and income goes *pari pasu* with the concentration of political power. Efforts to integrate the nation, initiated with the revolution and the welfare state, have been systematically eroded since the mid-eighties. Thus despite being promoted as a central pillar in the construction of Mexican identity, today the indigenous population belongs to the poorest part of its society. In short, ethnic discrimination is one amongst the several forms of horizontal inequality that deeply divides Mexican society, which include: inequality between workers and capital owners; between regions; and between gender, ethnic and religious social groups. Discrimination remains high despite targeted programmes to combat poverty. The indigenous people suffer particularly relentless discrimination. Discrimination varies according to the degree of *mestizaje*.

To explore the relationship between ethnicity and horizontal inequality is complex and requires a multi-disciplinary approach because “horizontal inequalities are inequalities in economic, social or political dimensions or cultural status between culturally defined groups” (Stewart, 2010). The analysis and understanding of horizontal inequalities is important since they have a negative impact on the welfare of the poorer groups and have the potential to reduce the growth potential of society. It may also put a break to the elimination of poverty because it is difficult to reach members of deprived groups effectively with programmes of assistance. Finally, horizontal inequalities could render violent group mobilization and ethnic conflicts more likely, since discriminated groups may mobilize against it.

This paper focuses on socio-economic horizontal inequalities. Social horizontal inequalities are affected particularly by changes in fiscal policy. On the other hand, international trade policies primarily affect economic horizontal inequalities, and their influence occurs mainly via changes in relative prices, economic specialization and exchange rate policies. (Langer et al, 2010).

It is not easy to explore the link between trade policies and ethnic inequality in Mexico and analyse how inequality has been affected by the trade liberalization put into effect after the eruption of the debt crisis in the early eighties. Indeed, even the relationship between trade liberalization and economic growth is unclear.

From December 1982, Mexico abandoned the import substitution model adopted in the 1940s and today, Mexico is one of the most liberal of the medium-sized economies in Latin America. The government

reformed the foreign trade regime, and opened up the country (including banks) to foreign capital flows. Import tariffs have been reduced and the movement of goods, services and capital is practically free. The reforms changed the relations between the society and the state, capital and labour and within sectors of capital.

The motto of the new economic policy paradigm was “*stabilize, privatize, liberalize*” (Commission on Growth and Development, 2008). These principles are at the core of the North American Free Trade Agreement, NAFTA, which was presented as the way to modernize the archaic structures that had prevented the full exploitation of Mexican economic potential. Peasants, small ejidatarios and indigenous peoples were identified as the most pre-modern parts of society, and free trade as the way to force them into modernity.

The reforms embedded discrimination in favour of capital and against labour. Consequently, labour-intensive productive activities were negatively affected. The most severe discrimination related to agriculture, small ejidatarios, producers of basic food such as beans and sweet corn and, in general, all those products that the United States of America (USA) exports at lower prices. It must be noted that the main economic activity of the indigenous population is subsistence agriculture, especially the production of corn, beans, coffee and cacao. Thus, while regions in which agriculture is the main activity registered slower rates of growth after reforms, amongst them, regions or communities with large indigenous populations producing food production in small plots experienced a severe economic recession. In this paper, we will illustrate how this process took place and the effects on the municipalities and regions most densely populated by indigenous communities.

To analyze the relation between trade policies and ethnic discrimination in Mexico, this paper is organized in four parts. Following this introduction, the second section discusses the two distinct phases of Mexico’s liberalisation process and describes the main features of its economic and productivity growth since the reforms, and illustrates their effects on the structure of trade, relative prices and the evolution of the tradable sectors. The third section presents evidence on discrimination at the municipal level and explores the relation between the concentration of indigenous population and horizontal inequalities (HI), and analyses some economic and social characteristics of the regions. The fourth section concludes. We devote particular attention to the agricultural sector for two reasons: first, the regions with the highest concentration of

indigenous population are specialized in agriculture; second, agriculture has been identified as the main loser from trade liberalization, although some parts of the sector have gained, notably those producing fruits and vegetables for export (De Gortner et al, 2004; De Ingo et al, 2004; Polansky, 2004, 2006; McMillan et al, 2004; Puyana and Romero, 2005 and 2008; Wise et al, 2009; Fox, et al 2010).

## II. Liberalization of the Mexican Economy and its Impacts

### II.1 Opening up the Economy to Foreign Competition

The liberalization of the Mexican economy can be divided into two stages: in the first and most radical (1985–1987), liberalization was unilateral leading to entry into the GATT; the second phase (1994–2008), covers the post-NAFTA period. By 2008, practically all Mexican external trade was fully liberalized, since 85 per cent of Mexican exports go to the USA and 3 per cent to Canada. Furthermore, around 70 per cent of its imports originate in these countries.

#### II.1.1 Joining GATT

During 1983-84, the Mexican authorities began to dismantle the protection afforded to the country's industry from the mid-1940s. In those two years, 16.5 percent of imports were excluded from import permits and the average tariff rate was reduced to 22 percent. On 24 July 1985, Mexico formalized its entry into the GATT (Table 1).

**Table 1: Structure of Trade Tariffs on Imported Goods, 1980–1991**

	1982	1986	1989	1990	1991
Average tariff	27.0	22.6	13.1	13.1	13.1
Weighted average tariff	16.4	13.1	9.7	10.5	11.1
Maximum tariff	100	100	20.0	20.0	20.0

Source: Aspe, P. (1993:158)

During this period, there was rapid liberalization of the manufacturing sector with an evident anti-labour bias. In general, “the country had relatively high tariffs on less-skill-intensive industries. These industries thus bore the brunt of adjustment to Mexico's economic opening.” (Hanson 2003 p: 26).

Mexico began reforming the agricultural and stockbreeding sector also in the 1980s with its entry into the GATT (Puyana y Romero, 2008). Initially, Mexico structured a consolidated tariff schedule<sup>3</sup> with broad protection for the sector: there was a 260% tariff for poultry meat, with an undertaking to reduce it to 234% in 2004; while for maize, the base consolidated tariff was 215% with a commitment to reduce it to 194% in 2004 (D. Ingco, 1995). With NAFTA, Mexico eliminated this protection while maintaining the Uruguay Round (UR) tariffs as the Most Favoured Nation (MFN) rate applicable to third party countries. Given that 90 per cent of Mexico's trade in agricultural and food products is with the United States, these UR tariff levels had no effect on the possibility of protecting the sector. In 1991, the average MFN tariff was 12 percent and all import licenses were abolished, except those for food staples, maize, beans, powdered milk, eggs and poultry. Along with trade reforms, Mexico radically reformed the constitution and changed the legal status of the *ejidal* property by allowing renting and/or selling of communal lands.

### II.1.2 Negotiating NAFTA

NAFTA was novel in several senses.<sup>4</sup> In particular, the two signatories were sharply asymmetrical consisting of, on the one hand, the world's economic, technological and political super power, and on the other, a developing country. Therefore, asymmetries of all types are reflected in the commitments, which required Mexico to make severe adjustments.

Ex-ante evaluations of the impact of NAFTA suggested trade creation and trade diversion effects would be minor and that Mexico would benefit the most from welfare gains. A one per cent additional annual GDP growth over 10 years was expected, with most benefits to be gained by larger industries with significant scale economies and capital-intensive technologies, while those industries that used labour and land intensively would be left behind (Székely 1994, Ros 1994).

The changes in prices and gains from specialization expected were not important since the tariff levels, from which preferences were determined, were low. At the time of signing NAFTA, the average Mexican tariff was 16%, and the US tariff was around 2.1%.

The decision of the Mexican leadership to negotiate NAFTA had a primarily political purpose. Under President Salinas, the process of structural reforms was intended to modernize the Mexican economy and society. The political and technocratic elite considered that signing a free trade agreement with the US

would make the modernization process irreversible, preventing subsequent governments from adopting conflicting measures. The government was determined to sign a free trade agreement with the US quickly, before elections took place in both countries and was willing to pay all the necessary costs.<sup>5</sup> That position allowed the US to extract concessions from Mexico.

Since the Mexican economy was more protected and regulated, Mexico had to make larger adjustments in the form of “side payments” as entry fees in the “new issues,” which were eventually included in the agreement, namely trade in services, foreign investment, and regulations and protection of intellectual property rights, and government procurement. Additionally, Mexico agreed, as early as 1990, that “Mexico would not be treated as a developing country in the negotiations, meaning that it would not receive preferential treatment in matters such as transition periods for the elimination of tariffs”.<sup>6</sup> Mexico also granted higher tariff preferences to the USA than it received from the USA. Furthermore, the USA reserved a larger proportion of its exports in the categories where liberalization was deferred. In the lists of critical products with delayed liberalisation for 10 or 15 years, the United States included 17.3 per cent of its imports from Mexico, whereas Mexico only included 12.6 per cent of its imports from the United States (Maxwell, C. and T. Brian, 2000).

Finally, in a radical change of its original negotiating position (in which it had wanted to exclude corn, beans, sugar and other basic food crops), Mexico agreed that all agricultural products should be subject to liberalization. Furthermore, in response to pressure from powerful producers such as stock-raisers and millers, from the first day of NAFTA enforcement, Mexico decided to free *all* the imports of maize and beans totally, exposing national corn and bean producers to full competition more rapidly than agreed. Like many countries, Mexico aimed to increase productivity by allowing the import of inputs at international prices, thereby forcing non-competitive producers to leave the market and encouraging them to move to activities with higher productivity. These effects were to be more intensive in agriculture in which productivity was the lowest in comparison with the USA and other developed countries. In contrast, the USA imposed tariffs and quotas and seasonal restrictions on all its imports of tomatoes, fresh fruits and other vegetables. Mexican trade policy was thus more liberal than that of the USA.

The asymmetries that characterize NAFTA are particularly great in agriculture. The productivity of Mexican agriculture was almost nine times lower than that in the United States. NAFTA was intended to reduce this gap in productivity.

The low productivity in Mexican agriculture is a consequence of multiple factors that had negatively affected the development of the sector over decades, such as the fragmentation of land property and production, which resulted in a dual model of development in the sector. Large-scale farming oriented towards the production of industrial raw materials and exports, received stimuli similar to those the import-substitution model created for manufactures: credit at negative real interest rates; overvalued exchange rates for the acquisition of capital goods and imported inputs; subsidized investments in irrigation works and energy; and privileged access to new technologies. At the same time, subsidies kept the prices of staple foods low in order to reduce the cost of urban wages. These mechanisms discriminated against small and medium producers, depressing the rates of growth of the sector. Over the decades, the Mexican agricultural and livestock sector had suffered deficient investment that limited the adoption of new technologies, the integration of the domestic market, and its insertion into external markets. Among other effects, import substitution caused the share of agriculture to fall as a proportion of GDP, while maintaining its high proportion of overall employment. The reforms did not eliminate this discrimination and agriculture's contribution to GDP continued to fall, partly due to the Dutch disease effects associated with the presence of natural resources.

NAFTA was thus a key element in the policy of modernization of the Mexican agriculture sector. It was intended to induce changes in agricultural specialisation so as to increase the sector's productivity. With NAFTA, the government aimed to force the transfer of labour, capital and land from activities that could not compete with imports from the United States and Canada, to those able to compete in national and international markets, thereby inducing efficiency gains. The latter were to arise from changes in the production structure, with contraction of basic grains and oilseeds and the use and remuneration of factors requiring less employment but more land and investment devoted to exportable products like vegetables and fruits. Workers expected to leave agriculture were to be employed in large public works programmes to build rural infrastructure and in manufactures that NAFTA would invigorate. As we shall see, some of these effects did indeed take place. For that, employment in agriculture would have to be reduced by almost 60 per cent. However, the public works programmes never materialized and the expansion of the employment in manufactures did not take place.

### **II.1.3 Open regionalism**

After NAFTA, Mexico undertook trade agreements with a number of countries, including the Mexican-European Unión Free Trade Agreement in October 2000; the Mexican- European Free Trade Zone Trade



Pact in November 2000; and an agreement with Japan in January 2005. Mexico also has free trade accords with numerous developing countries, especially with Latin American countries. The concrete effect of these agreements was the reduction of Mexican tariff to the level of the USA external tariff, de facto adopting the American Tariff as common external tariff, without any negotiation (Puyana et al, 2004).

## II.2 Impact of Mexico's Trade Liberalization

Among the most remarkable changes in the Mexican economy is the fast growth of exports and imports and the transformation in the structure of trade.

### II.2.1 Overall trade trends

Since the mid-1980s, the Mexican economy has evolved from being a closed to an open economy, with one of the highest trade to GDP ratios in the Western Hemisphere, second only to Chile. In 2009 total foreign sales amounted to 230 billion dollars, a dramatic increase from the 19 billion registered in 1980. Imports expanded at faster rate, from 21.1 billion dollars in 1980 to 256 billion in 2009. Thus, in 2009, Mexico's external coefficient (exports plus imports over GDP) was 60.3 per cent of GDP, almost three times larger than that of the USA (WB, 2010).

**Table 2: Mexico's Exports, Imports and Trade Balance  
as Percentage of GDP, 1980-2009**

	<b>Exports</b>	<b>Imports</b>	<b>Total</b>	<b>Balance</b>
1960	8.49	11.65	20.14	-3.15
1970	7.75	9.65	17.40	-1.90
1980	10.71	12.97	23.68	-2.27
1985	15.41	10.33	25.75	5.08
1990	18.60	19.71	38.31	-1.10
1995	30.36	27.70	58.07	2.66
1999	30.74	32.36	63.09	-1.62
2000	30.94	32.93	63.87	-1.99
2001	27.56	29.77	57.33	-2.21
2002	26.82	28.64	55.46	-1.82
2003	27.35	26.82	54.17	0.54
2007	27.60	29.80	57.40	-2.20
2008	30.00	32.67	62.67	-2.67
2009	29.10	31.00	60.10	-1.90

Source: Author's calculation based on WB, WDI 2010 and CEPAL 2009b

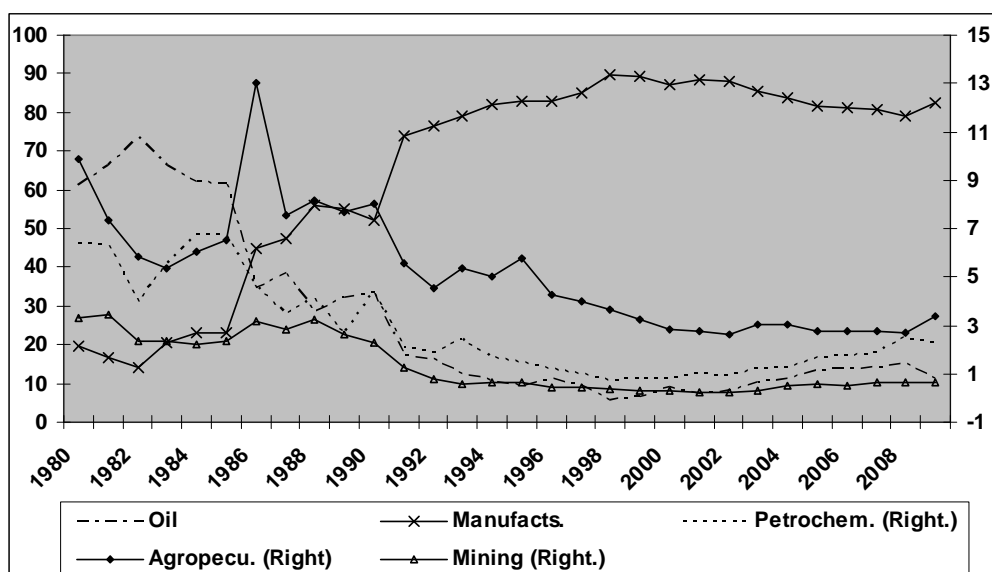
A large external coefficient might suggest higher productivity and competitiveness, since both exportable and importable goods compete with foreign production. However, it may also indicate a high dependence on imported supplies and inputs, and a high import content of production.

As seen in Table 2, Mexico's imports were continually higher than exports, and the country showed a persistent trade deficit, which fell in the aftermath of devaluations. The large import coefficient of the Mexican economy reflects a high-income elasticity of demand for imports of about 3.5. This makes it very difficult to achieve the high rates of economic growth needed to generate formal employment for all the new entrants to the labour force, while preserving a manageable current account deficit. In particular, the external coefficient of manufactures is extremely high (96% in 2008) due to the effect of the maquila activity involving an overwhelming import content of its exports. The agricultural sector is less open (external coefficient of 67% in 2008); nevertheless, it is also exposed to external competition.

### **II.2.2 Changes in the structure of external trade**

Over the same period, the composition of Mexico's foreign trade has undergone striking transformation. From exporting oil and resource-based manufactures, Mexico has become an exporter of sophisticated manufactures, originating mainly in maquila. In 1982 oil exports accounted for almost 78 per cent of all Mexican exports, while agriculture represented 6 per cent and manufacture represented around 14 per cent. But non-oil exports expanded after the massive devaluations of 1982 and 1986. Thus, by 2009, oil accounted for 13 per cent of exports, agriculture for 3 per cent and manufactures for 83 per cent (Graph 1).

From 1985 to 2007, exports of manufactures grew at an annual rate of 9.5 per cent. The structure of these exports changed significantly after the implementation of NAFTA. The largest proportion of exports was contributed by electrical and electronic equipment and vehicles, which accounted for 31 and 42 per cent of these exports respectively in 2009. The composition of exports by technological content has also been transformed, with a rise in the proportion of manufactures classified as high technology. But Mexico shows a trade deficit in most sectors, which is partially compensated for by the surplus reaped by oil and maquila. Sectoral trade balances for agriculture and agribusiness, petrochemicals, automobiles, textiles and food, are all in red.

**Graph 1: Structure of Mexican Exports, 1980-2009 (Percentage)**

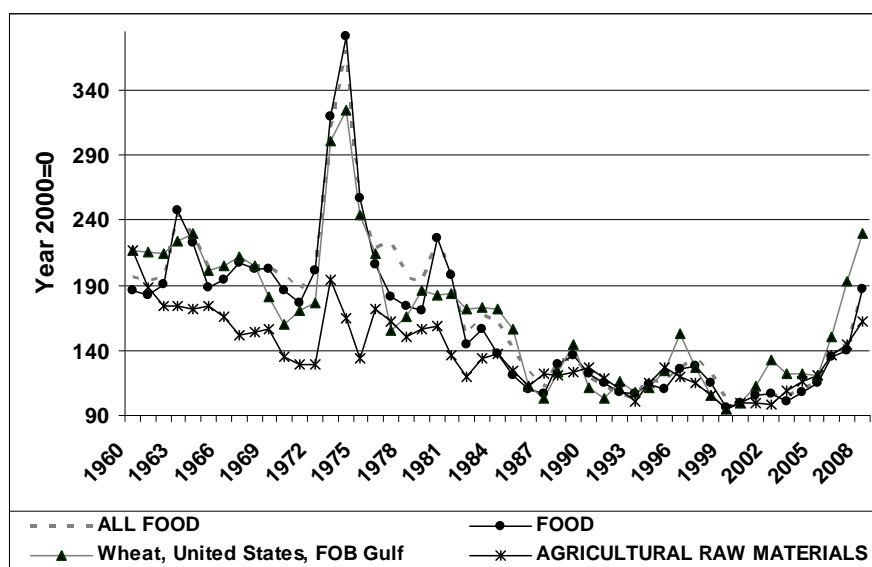
Source: Author's calculation based on INEGI Sistema Nacional de Cuentas Nacionales, several years.

The big problem facing Mexico is the low domestic content of its exports of high technology manufactures due to the overwhelming weight of subcontracting. In 2006, the contribution of the exports of manufactures to GDP bordered three per cent (Puyana and Romero, 2009).

Other indications of the transformation in the structure of the Mexican external sector are the changes in exports of agricultural, livestock and agro-industrial goods. Fruits and vegetables originating in northern states were the main winners from NAFTA, as well as beverages exports (Puyana and Romero, 2009; Vollrath and Johnston, 2001).

### II.2.3: Changes in the global market: The evolution of international prices

These changes in Mexico's trade pattern and structure have to be seen in the context of the change in the world markets. The international prices of oil, the main Mexican export commodity, have become more unstable.<sup>7</sup> Further, while commodity prices as a whole show mixed trends (Graph 2 and Table 3), prices of other Mexican export commodities have risen lesser than import prices. Compared with 1980, only oil, bananas and oranges have gained in price, while there have been price declines in other important export commodities.

**Graph 2: International Commodity Price Indices, 1960-2008**

Source: Author's calculation based on UNCTAD (2009).

The reduction of dollar prices of agricultural imports has put intense pressure on producers who cannot switch to export commodities such as fruits and other vegetables. That pressure is the most severe and difficult to overcome for small corn and beans producers who sell part of their production to buy food and manufactured goods.

**Table 3: International Price Index of Mexican Export and Import Commodities, 1960-2009 (Constant US 2000 dollars)**

Export Products (constant 2000 \$US)											
	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2009
SUGAR (cents/kg)	29	19	29	87	78	12	27	24	18	20	34
BANANA (\$/mt)	602	639	573	475	467	512	526	369	424	547	713
CRUDE PETRO (\$/bbl)	7	6	4	20	45	37	22	14	28	48	52
COFEE (cents/kg)	92	100	115	144	347	323	197	333	192	253	317
CACAO (cents/kg)	59	37	67	125	260	225	127	143	91	154	289
ORANGES \$/mt	nd	nd	nd	nd	493	537	516	441	363	794	741
Import Products (constant 2000 \$US)											
	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2009
BEEF (cents/kg)	310	355	452	255	340	290	249	158	193	238	222
WHEAT (\$/mt)	244	239	190	287	213	183	132	147	114	138	188
RICE INDIC 5% (\$/mt)	451	478	438	657	506	265	263	266	202	260	467
MAIZE (\$/mt)	182	221	202	230	154	151	106	103	89	90	139
SOYBEAN OIL (\$/mt)	941	1087	992	1084	737	771	435	519	338	495	714
SOYBEANS (\$/mt)	386	471	405	423	365	302	240	215	212	249	368
COTTON (cents/kg)	273	252	219	223	252	178	177	177	130	110	116
COPPER (\$/mt)	2844	5193	4895	2380	2690	1910	2586	2437	1813	3340	4332

Source: Author's calculation based on World Bank Commodity Price Data.

Moreover, to guard against downfalls in export revenues or speculative attacks against the peso, the government chose to maintain higher than international interest rates to attract external financial flows, accumulate reserves and to establish a band within which it allowed a controlled fluctuation of the peso. The policy led to an appreciation of the peso. At the same time, agricultural products exported by the USA received large benefits, including subsidies, which affected Mexican agriculture in various ways: (i) a reduction of producer prices; (ii) a contraction of rural incomes; (iii) reduced competitiveness in both the domestic market and in the USA and other foreign markets, and (iv) the long lasting and intensive revaluation of the peso. By making it hard to export and to compete with imports, the revaluation of the peso reduced the growth potential of tradable goods.

## **II.3 Impact of the Trade Reforms on the Mexican Economy**

### **II.3.1 From import Substitution to the export-led model: What does Mexican long-term economic growth suggest?**

In order to understand the consequences of trade reforms for distribution, including horizontal inequalities (HIs), it is important to know the long-term growth path of the GDP, the post-1980 changes in it and the impact of growth on distribution. The relationship between growth and income distribution is complex and depends on the specific characteristics of particular countries (Forbes 2000, Bridsdall 2005).

In Mexico growth might have been expected to reduce income concentration for several reasons; first, in the mid-1980s when trade liberalization took off, Mexico was a middle income country with a very high level of urbanization. The degree of industrialization was also high with an important technological component, while population growth was low. The reforms were intended to speed up growth by eliminating the inefficiencies arising from import substitution and promoting factor movement to more productive sectors. As a result, a reduction in inequality was to be expected. But if GDP growth was reduced, this would have a negative fiscal effect, reducing the possibilities of implementing, sustaining or enhancing redistributive policies. Traditionally fiscal policies have been pro-cyclical with a negative impact on the poorest groups of population during recessions, as happened during the 1982-1994 and 2009 crises (CEPAL, Panorama Social 1996 CONEVAL 2010).

By 2009, the predicted dynamic effects of trade liberalisation on the growth of GDP, productivity and productive capacity should have become apparent, through increases in the endowment of physical as well as human capital, and rises in employment and salaries. The productive structure should have become more diversified and tradable sectors should have had expanded their share both in GDP and employment.

However, it is observed is that Mexico's economic growth did not speed up in the liberalization era. Between 1981 and 2009, total GDP as well as per worker and per capita GDP registered the lowest rates of growth since 1950. On average, GDP growth during 1981-2009 was only 34.6 per cent of the rate registered during 1950-1980 (Puyana, 2010). A similar trajectory was shown by per capita and per worker GDP, although the reduction was less. During 1981-2009, GDP expansion resulted from increases in the rate of participation of labour rather than from improvements in its productivity.

### **II.3.2 Changes in the structure of the gross domestic product and employment**

Contrary to what was expected with reforms, including those under NAFTA, tradable sectors have not gained importance in the structure of the Mexican economy. The contribution of tradables to GDP fell from 28 to 25 per cent with a proportionate increase in non-tradable activities. The contribution to GDP of tradable sectors, agriculture and livestock (6 percent of GDP) and manufacturing (23 percent of GDP), shows that Mexico suffers from "Dutch disease" which afflicts economies rich in natural resources, or those experiencing a large (and unstable) flow of external financial resources including remittances from workers abroad.<sup>8</sup>

The decline of agriculture, which began in the 1940s with the import substitution model, was not reversed by the reforms. The reason for this are, amongst others:

- ◆ the speed of liberalization;
- ◆ the urban bias of the macroeconomic policies;
- ◆ the chronic deficit in public and private investments;
- ◆ the long periods of overvaluation of the peso and the distortion of agricultural prices arising from developed countries' policies.

Manufactures fared somewhat better, but it declined too. The manufacturing sector suffered from the impact of subcontracting, which reduced the domestic value added content of output. The share of construction and electricity in GDP contracted due to the fall in construction, which negatively affected all the manufacturing sector branches producing inputs for it, such as cement, glass or steel.

While the tradable sectors contracted, there was a rapid expansion of services. In 2009, these accounted for 56 per cent of GDP, a large increase compared with 1980, when they amounted to almost 47 per cent. The most remarkable increase was experienced by transport, coinciding with the entry into force of NAFTA. Finance gained as well, especially after 2000, when the Mexican monetary authorities increased interest rates to attract external flows and accumulate foreign reserves.

Sectoral change in employment confirms the decline of tradable sectors and the other structural changes following trade liberalization. During 1980-2008, the share of employment in agriculture and livestock fell from almost 30 percent of the total to 18 percent, and the share of manufacturing in employment shrank from 13 percent to 9.6 percent. There was acceleration in the decline of agricultural and manufacturing employment after NAFTA was implemented.

The services sector contains segments of high productivity such as the banking system, which is fully privatized and foreign controlled. Some important foreign investments have been made in domestic commerce, which has increased its capital intensity and reduced employment. In domestic trade, in particular, small, traditional family grocery shops have been replaced by a dense network of capital intensive, modern *Seven Eleven* type shops. Nevertheless, there still survives a large low productivity and low income sector, which absorbs the bulk of the precarious employment.

The growth path of the economy and the changes in the structure of GDP and employment led to an ever growing informal economy, which in 2009 reached 63 per cent of total employment.<sup>9</sup> Due to the lack of unemployment insurance and low savings, Mexican unemployed have to find work of some kind, mainly in the informal sector. Thus the rate of open unemployment in Mexico is small, bordering 2.8 percent, which does not signal a healthy economy or a full employment situation. During the various crises Mexico had suffered (1982-83, 1986, 1994-95 and 2009), open unemployment grew but never reached the high levels of Argentina, Chile or Colombia. In 2009, for example, with a fall in GDP of 7 per cent, unemployment

escalated to 6.2 per cent, still well below the 10 per cent in Chile and Colombia where per capita GDP fell by much less.

Total labour productivity showed a negative trend. In 2009, productivity per worker was lower than in 1981. Although the trend is negative, there was a clear recovery after 1996 and during 2004–2007, to fall again in 2008 and 2009. However, in none of the tradable sectors did productivity per worker grow during 1982–2008. In 2006, productivity in the manufacturing and agricultural sectors was still lower than in the late 1970s and early 1980s. Further, there was a continuous fall in productivity in the non-tradable sectors. In 2008, productivity in services and construction was one third of the peak level registered in 1968–69 (Puyana and Romero, 2009: 139).

### **II.3.3 The trajectory of the liberalized manufacturing sector**

At the outbreak of the debt crisis in 1982, Mexican manufactures presented a structure typical of a medium sized developing country: the largest share was the production of food, beverages and tobacco, accounting for 25 per cent of GDP. Textiles, apparel and leather products accounted for another 22 per cent. From 1993 onwards, following liberalisation, there was continuous decline in some labour-intensive industries: textiles, apparel and leather and shoes, and wood products contracted to 11.5 per cent of GDP, from 18 per cent in 1980. Another casualty was paper and printing products. The winners were chemicals, oil products, plastics and machinery, especially the automobiles industry. Higher average growth rates were experienced by electrical machinery and computing and electronic equipment. China's higher productivity growth and lower unit cost of production led to a severe crisis of Mexican maquila exports when many maquila companies installed in the Mexican-USA border in the electronic, auto parts and textiles and apparel industries moved to China (Arndt 2002; Puyana, 2007).

The rising external coefficient of Mexican manufacturing sector (from 24 per cent of sectoral GDP in 1970 to 36 per cent in 1990, and to 92 per cent in 2009) reveals the intensity of the *apertura*, the switch towards assembly activities and its growing import content. Manufactures did register some gains in productivity, mainly due to a drastic reduction in employment. However, productivity gains were not accompanied by increments in the quantity of output. The sector experienced a big expansion during 1995–1999, stimulated by the massive devaluation of the peso in December 1994 and the USA demand



for Mexican maquilas. When these factors faded, the sector retreated to its relative low contribution to GDP, while its contribution to employment continued to fall. In contrast, its share of total exports reached 85 per cent in 2008.

From 1990 onwards, the sectors with the highest rates of productivity growth were those that increased their shares of GDP: the most successful manufacturing activities were basic metal products and the automobile industry. The contribution to manufacturing GDP of the automobile sector jumped from 3.7 per cent in 1980 to 8.9 per cent in 1999 and to 14.8 per cent in 2007 (INEGI, 2010).

The ever-increasing Mexican specialization in assembly activities (*maquila* and the twin programme *Programa de Importación Temporal para las Exportaciones* together accounting for 85 per cent of all manufactured exports) helps to explain the weak impact of exports of manufacturers on the expansion of sectoral GDP, productivity and employment. By 2004, the *maquila* sector accounted for 30 per cent of all employment in manufacturing, 50 per cent in the automobile industry and over 60 per cent in the electronics and textiles sectors, but the value added of the total *maquila* segment represented only 7 per cent of the sectoral value added. The stimuli granted to *maquila* in Mexico (tax exemption for imports and several other tax incentives) and in the United States (free imports of the US content in *maquila* while imposing tax on the Mexican value added) limited the value added in Mexico and the margin for increasing productivity.

The *maquilas* were established (in the late 1960s) in the northern states as an employment programme for unskilled workers. Various provisions prevented maquilas from competing with industrial enterprises in the rest of the country. The objective of *maquila* was to increase total employment in manufactures by absorbing parts of informal employment into export activities (Gambrill, 2007), in a kind of a “vent of surplus” effect (Lewis, 1954). It did not happen that way. Rather the sector absorbed part of the labour made redundant by the manufacturing crises of the late 1970s, early 1980s and 1990s, and by the adjustment of manufactures to the reform of foreign trade and NAFTA (Puyana and Romero, 2009 Chap IV).

Further, *maquila* production was highly concentrated. Just ten border municipalities accounted for 55 per cent of total *maquila* employment in 1974. In 2004, around 85 per cent of all *maquila* employment and a similar proportion of establishments were concentrated in the seven northern states in which the sector was

first established.<sup>10</sup> Other states<sup>11</sup> accounted for another 7 per cent. None of the states with more than 15 per cent of indigenous population (Oaxaca, Chiapas, Quintana Ro, Tabasco and San Luis Potosí) has maquila production (INEGI 1981; 1992; 2010a; 2010b). In 2004, INEGI did not register maquila production in any of the 662 municipalities with more than 40 per cent of indigenous population also (INEGI, 2010 b).

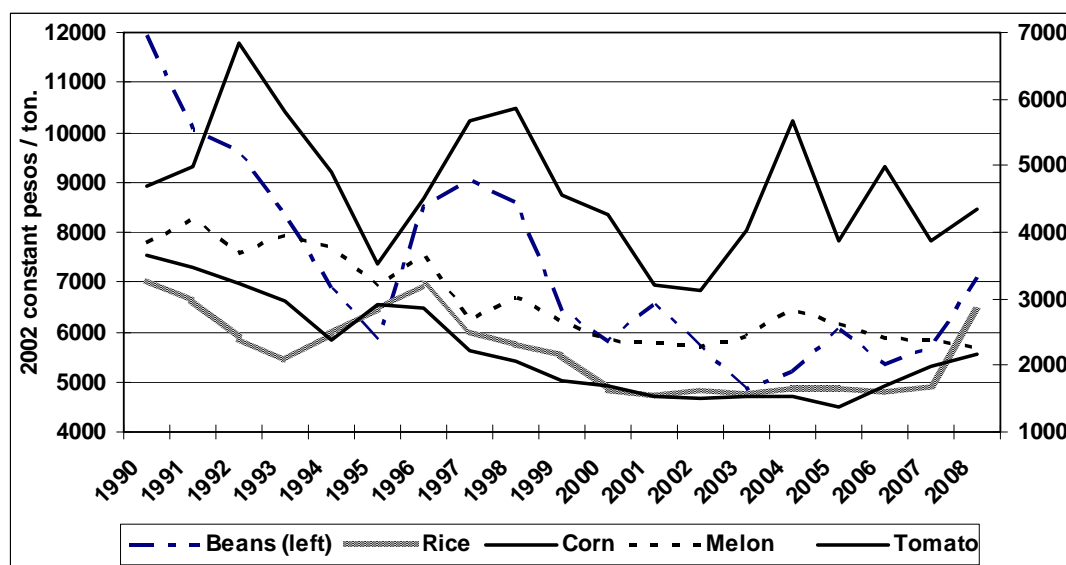
Meanwhile, the labour-intensive Mexican maquila and electronics assembly firms have been confronting fierce competition from China and countries in Central America and Asia and during the last 10 years; many factories have moved to China (Horbath, 2007).

### **II.3.4 The trajectory of the agriculture sector**

We analyse the post-reforms evolution of Mexican agriculture in more detail here. As previously noted, agriculture fell as a proportion of GDP and employment with little, if any, gains in productivity. Here we present the evolution of prices and the structure, volume and value of production of the most significant products.

Liberalization did link domestic and international prices more closely, inducing a decline in the domestic producer prices of major products such as grains, beans, fruits and vegetables (Lederman et al, 2003; Puyana and Romero, 2008 and 2009 b; Yúnez, 2002; Yúnez-Naude and Barceinas Paredes, 2002; Oxfam 2003). Both exportable and importable products experienced a decline in prices (Graph 2). The movement of international prices and the revaluation of the peso explain about 70 per cent of the long term trajectory of the domestic prices of corn (Castillo et al 2009; Yúnez-Naude 2007; Puyana et al 2008). Revaluation of the peso magnified the effects of tariff reductions and international price changes and constitutes the main factor behind the increase in imports of US agricultural products (Puyana et al 2006; US ITC, 2003). The changes in tariffs are less important. The decline in the internal producer prices of the main exportable goods such as tomatoes, vegetables and fruits – in which Mexico has a comparative advantage and is a world exporter – is puzzling. Those prices were supposed to rise closer to the international standards and benefit producers and exporters. It did not happen that way.

**Graph 3: Evolution of the Internal Prices of Mexico's Important Agricultural Products, 1980–2008**



Source: SAGARPA, Sistema de Información Agroalimentaria - SIACON.

From 1980 to 2005, both domestic and external prices fell (Puyana et al, 2008). The decline in producer prices was the most severe from the implementation of NAFTA to 2005-06. In general, the poorer states in the south of the country, more densely inhabited by indigenous people and specialized in the production of corn, beans, cacao and coffee (Oaxaca, Chiapas, Yucatán, Veracruz, Quintana Ro), were more affected than the northern states (Sonora, Coahuila, Sinaloa) that were the beneficiaries of state investments in irrigation and support programmes and specialize in exporting fruits and other vegetables. Small growers of corn and beans were amongst the main losers of the liberalization process. They suffered a sharper decline in prices than producers of any other commodity (Puyana and Romero, 2008: 130; McMillan et al 2005, Fox et al 2010). The most important reaction to the fall in prices was to improve cultivation techniques, in order to increase yields and volume of production.

The rain-fed grain producers have most consistently increased their production, while the production of the large, market-oriented producers in irrigated areas has been more volatile and increased at a lower pace (Puyana et al 2009, Fox et al 2010). The latter have more possibilities of shifting to other products when prices are unfavourable. They have financial support that the small producers are unable to find.

Rain-fed corn production survived against all predictions.<sup>12</sup> Poor peasants apply diverse strategies to increase productivity and production and maintain income, since corn is one of the ways to finance their basic expenditures. Even subsistence peasants, who are net buyers of food, are exposed to international prices and have to respond by increasing their production when prices fall (Ingco and Nash, 2004: 151–168; Wise, 2010). Another strategy is to engage in non-agricultural rural activities (Cortés, et al 2008). And, finally, peasants migrate, heading north, as will be seen later in this study. The fall in corn prices should be imputed in large measure to NAFTA: "...Based on this evidence, we conclude that the change in farmers' income from corn farming is directly tied to the changes in the price of corn at least partially brought on by NAFTA". (McMillan et al, 2005:28; Wise, 2010). But, the same authors also suggest that no less than 60 percent of the poorest corn growers participate in the market and have been negatively hit by the fall in world prices, which the authors link to the US Farm Bill and other interventions of the US government.

The US programmes to support agriculture constitute dumping. Wise (2009) calculated that "... dumping margins rose significantly for all crops after 1996, with averages for 1997-2003 ranging from 12% for soy to nearly 50% for cotton and 20% for corn" Wise (2009: 10). The same author added: "Corn showed the highest losses. Average dumping margins of 19% contributed to a 413% increase in U.S. exports and a 66% decline in real producer prices in Mexico from the early 1990s to 2005. The estimated cost to Mexican producers of dumping-level corn prices was \$6.6 billion over the nine-year period, an average of \$99 per hectare per year, \$38 per ton" Wise (2009: 3).

As expected, the structure of production was modified in favour of more profitable exportable products, which won the ground lost by some crops such as rice, beans and soy. Other products such as feed staples, cotton and barley, grew at a lower rate than population (Puyana 2010, Wise 2009). Small changes in land use and employment generation took place. This is shown in the slowdown in the growth of production and per capita consumption of wheat, barley, rice, cotton and other goods, and a greater dependence on imported food. The growth in the production of beans and maize is explained by the survival strategies of peasants, as noted above. The increased volume of output did not however entirely compensate for falling prices (Puyana and Romero 2009). Despite their efforts, maize producers and other grain producers have therefore been losers in the liberalization process. Not even the substantial increase in international and local prices registered in the period 2005-2008 compensated for the value of losses in production.

The reforms aimed to induce changes in land allocation towards products able to compete at home and abroad. While production of fruits and vegetables increased, the proportion of land used for these crops remained stable (Puyana and Romero, 2009:150). There are high initial costs that make it difficult to extend these crops to new areas, such as the investments needed in the case of fruit trees, which require a long period between planting and the first marketable harvests. Lack of investment in irrigation limits the potential for cultivating vegetables, as does the inadequacy of transport networks for enabling perishable products to reach points of sale. Not the least of the problems is the poor functioning of the markets (goods, capital and technology). Only rich farmers from northern states increased production and exports of fruits and vegetables.

Lower international and domestic producer prices did not fully benefit consumers. Domestic markets of agricultural products are dominated by oligopolic and monopsonic structures, which replaced CONASUPO, the state trading agency. Four agents control the maize market<sup>13</sup> and are the main beneficiaries of state support programmes (Urzua, 2009; Wise, 2010, Castillo et al 2009). Only one company controls the production of maize flour for tortilla (Urzua, 2009). In other grains, concentration is similar and reduces the proportion of the final price that producers receive to less than 30 percent of the wholesale price. The same is true for the fruit and vegetable sector. The concentration of market power generates heavy losses that affect the poorest section of society disproportionately. The losses of the bottom quintile of the urban population induced by the concentration of the market are 20 per cent more than the losses of the top quintile. In rural areas the gap is even larger. The states most affected were Chiapas, Oaxaca Yucatan, while Baja California and Nuevo León experienced only minor losses or no losses at all (Urzua 2009).

Public policy towards agriculture treats efficiency and equity as two distinct and opposing elements: *Alianza para el Campo*, *Apoyos y Servicios a la Comercialización Agropecuaria* are designed to stimulate production, productivity and exports and *Programa de Apoyos Directos al Campo* (PROCAMPO) to alleviate poverty. From 1994 to 2008, budget for these programmes shrank from 49 to 40 billion constant 2003 peso. Total public investments remained lower than those required to stimulate sectoral expansion (Schiff et al, 1995) and, for the last decades, never reached 1 percent of total investment (Puyana and Romero 2009b). Furthermore, the programmes do not cover the entire sector. In 2004, only 200,000 producers out of 3.5 million were beneficiaries of PROCAMPO (Puyana and Romero, 2005:72), although this had increased to 2.1 million by 2009 (SAGARPA 2009). The number of producers included in other

programmes is even smaller. These programmes have been criticised because of lack of transparency, duality and above all corruption (Fox et al 2010). PROCAMO and other programmes are regressive, intensifying rural income concentration. The richest decile receives between 42 and 85 per cent of all fiscal stimuli (Scoot 2010). Transnational and national oligopolies are the biggest PROCAMPO beneficiaries (Fox et al 2010:35). *OPORTUNIDADES* helps to reduce poverty, although less than remittances.

## **II.4 The Evolution of the Labour Market, Changing Patterns of Income Concentration and the Rural-Urban Divide**

### **II.4.1 An equilibrated labour market?**

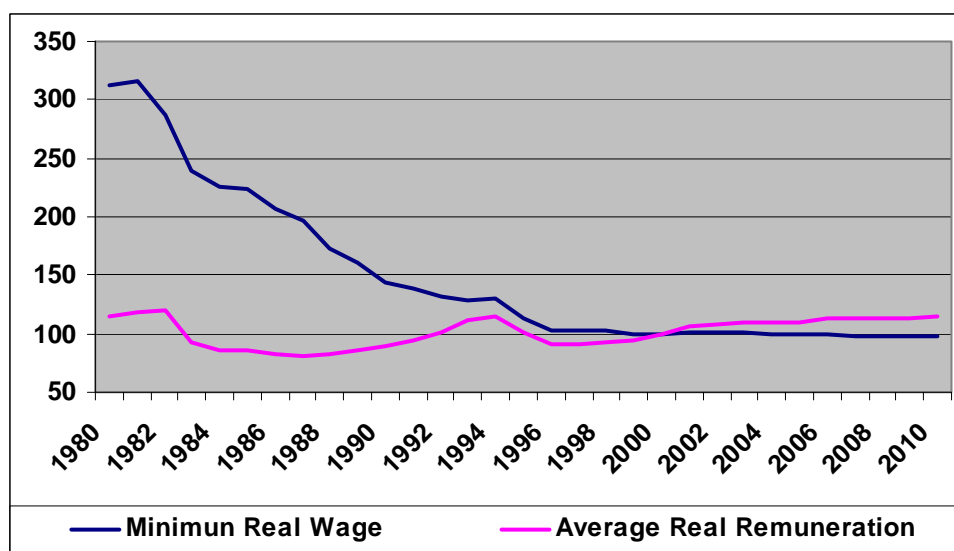
Labour market adjustments have taken the form of reduced wages and increasing informality, rather than unemployment. Important changes in the labour market occurred: there was an increase in the labour market participation rate, especially of females, and higher unemployment rates among young people. There were also increases in the “rate of partial or out-of-work employment”, with 7.4 per cent of the occupied labour force working less than 15 hours a week. Additionally, another 15.7 per cent of the occupied labour force worked more than 35 hours per week and earned less than the minimum wage. New entrants to the labour market are concentrated in precarious low-income employment. The share of such employment grew from 15 per cent to 18 per cent between 1990 and 2003 (Berg, Ernst and Peter, 2006).

The increase in the rate of labour market participation explains the growth of GDP in the absence of significant productivity growth. Male participation grew moderately, by 3 percentage points in the 16 years from 1989 to 2006. While the participation rate of female labour grew by 14 percentage points, the level of female participation remained lower than that of males. In 2010, female participation was 37 per cent while the participation rate for males approached 63 per cent.

Since 1980, Mexico has experienced a sharp decline in real minimum wages (RMW) and stagnation in the average real wage (ARW). ARW fell during the periods of “structural readjustment” (1980-1988) and “macroeconomic stabilization” (1983-1988), and recovered – with fluctuations – during 1988-2009, although

not sufficiently to return to the level of 1981. The RMW index plummeted from 312 in 1980 to 95 in 2009 (2000=100) (Graph 4).

**Graph 4: Average Real Wages and Minimum Real Wages, 1980-2010**  
(Index 2000 = 100)



Source: For average real wages, Author's calculation based on ECLAC, <http://websie.eclac.cl/infestat/ajax/cepalstat.asp>. For minimum wages, 1980-1990 based on ECLAC op cit.; 1990-2010, author's calculation based on Comision de Salarios Míimos. [http://www.conasami.gob.mx/pdf/salario\\_minimo/sal\\_min\\_real.pdf](http://www.conasami.gob.mx/pdf/salario_minimo/sal_min_real.pdf).

The trend in wages cannot be attributed only to trade liberalization; monetary and exchange rate policies, the contraction of fiscal expenditure, reforms to the social security system and the increase of informal employment all contributed. From 1990 to 2009, wages in the manufacturing sector fell 12 percent from their record level of 1993 and wages in commerce followed a similar path. The fall in wages affected both the informal and the formal sectors. The largest losses were in business and personal services (with a cumulative fall of 17% during 1994-2009), followed by agriculture and livestock (cumulative loss of 12.1%).

#### **II.4.2 Have inequality and poverty decreased?**

After continuous improvement during 1960-1984, inequality, measured by the Gini coefficient, increased to 0.57 in 1998 from 0.50 in 1980. In 2008, the Gini coefficient was 51% above the level of 1980. The improvement in equality registered during 1998-2005 has been attributed to the reduction in the rate of

demographic growth and lower dependency rate, remittances from abroad and conditional cash transfers. GDP and productivity growth played a minor role, if any (Ros, 2010; CEPAL).

During the NAFTA period (1994-2009), annual national monetary income per household decreased by 25.8 per cent. In rural areas, total household income decreased by 16.2 per cent. The most acute deterioration of income was registered amongst the most impoverished rural households belonging to the bottom first, second and third deciles, whose incomes fell by 46, 31 and 28 per cent respectively. Even though the 2004 and 2006 Households Surveys showed a reduction in national inequality, the 2008 Households survey showed a reversal of this, as the last three lines in Table 5 illustrate.

Urbanization (more than 80 per cent of Mexican population lives in urban areas) and the decline in agriculture as a source of GDP changed the distribution of total income: while rural income represented 20 per cent of the total income in 1980, it was less than 13 per cent in 2010. During 1994-2008, the two bottom deciles and the top decile lost shares in total national income. These changes were caused mainly by the sharp decreases in rural incomes, where only the top two deciles increased their share of income (Table 4). This result agrees with that reached by Ingco and Nash (2004), Polasky (2004 and 2006) and Wise et al (2010), who identified the lower four deciles of rural population as the major losers from the liberalization of foreign agricultural trade. The World Bank came to a similar conclusion, suggesting that Mexican agriculture was a net loser from liberalization with losses near US\$ 300 million (Anderson, Martin and van der Mensbrugghe, 2006, Table 2.14), partially offsetting eventual gains from liberalization in manufacturing (Polaski, 2006:29; CONEVAL, 2009). The deterioration of income from agriculture has forced peasants to diversify. An increasing proportion of the income of the poorest rural population comes from rural non-agricultural activities, remittances from abroad and transfers from programmes such as PROCAMPO and *Oportunidades* (Cortés, 2008; Scott, 2010).



**Table 4: Share of Income by Deciles, 1989–2008** (Percentages of total income)

Decile	Total National				Urban				Rural			
	1994	2004	2008	growth 94/08 %	1994	2004	2008	growth 94/08 %	1994	2004	2008	growth 94/08 %
I	1.59	1.64	1.34	-15.93	0.62	0.62	0.66	6.00	9.46	8.56	7.50	-20.80
II	2.76	2.91	2.63	-4.82	1.63	1.79	1.72	5.66	11.95	10.53	10.85	-9.22
III	3.67	3.90	3.67	0.15	2.67	3.03	2.91	9.09	11.78	9.81	10.59	-10.13
IV	4.64	4.92	4.72	1.90	3.90	4.39	4.17	7.10	10.63	8.54	9.72	-8.64
V	5.68	6.12	5.88	3.61	5.15	5.63	5.47	6.22	9.94	9.42	9.59	-3.48
VI	7.06	7.43	7.30	3.41	6.48	7.24	7.04	8.62	11.76	8.74	9.67	-17.75
VII	8.74	9.25	9.17	4.97	8.75	9.48	9.11	4.09	8.61	7.67	9.72	12.90
VIII	11.34	11.86	11.75	3.55	11.44	12.37	11.94	4.35	10.52	8.38	9.97	-5.24
IX	16.11	16.42	16.28	1.04	16.99	17.74	17.02	0.19	8.97	7.41	9.51	6.10
X	38.42	35.56	37.26	-3.01	42.37	37.70	39.96	-5.70	6.38	20.94	12.89	101.97

Source: Author's calculation based on ENIGH, third quarters 1989 to 2008.

Poverty and inequality in Mexico are protracted problems which have proved difficult to overcome. At the national level, 34.8 percent of all households were in moderate poverty in 2008, an incidence similar to the level registered in 1970. Extreme poverty followed a similar trend (Table 5). Extreme poverty affected 20 percent of the rural and only 6.4 percent of the urban population. The Household Survey published in 2009 shows that poverty increased during 2005-2008, eliminating the gains in 2004-2006. In absolute numbers, total poverty increased by 6.2 million people and extreme poverty by 5.1 million persons CONEVAL (2009). 44.6 percent of the rural population lives in conditions of moderate poverty, as against 29 percent in the urban sector.

**Table 5: Households under Moderate and Extreme Poverty, 1970–2008** (Percentages)

	Poverty			Extreme Poverty		
	Total	Urban	Rural	Total	Urban	Rural
1970	34.0	20	49	12	6	18
1984	24	28	45	11	7	20
1989	47.7	42.1	56.7	18.7	13.1	27.9
1994	45.1	36.8	56.5	16.8	9	27.5
1996	52.9	46.1	62.8	22	14.3	33
1998	46.9	38.9	58.5	18.5	9.7	31.1
2000	41.1	32.3	54.7	15.2	6.6	28.5
2002	39.4	32.2	51.2	12.6	6.9	21.9
2004	37	32.6	44.1	11.7	7	19.3
2005	35.5	28.5	47.5	11.7	5.8	21.7
2006	31.7	26.8	40.1	8.7	4.4	16.1
2008	34.8	29.2	44.6	11.2	6.4	19.8

Source: Author's calculation based on ENIGH, third quarters 1989, 1992, 1994, 1996, 1998, 2000 and 2008 and ECLAC, Panorama Social 2009.

Considering all of the above, it is little wonder that migration has increased. During 1996-2007, net Mexican migration to the USA grew from 294,000 to 324,000 persons, although it declined by 25 per cent in 2009 as a result of the measures taken by the USA government to control the border and the impact of the financial crisis on employment in the USA (Passel (2009: 3).

Remittances to Mexico, which started to increase after 1980, accelerated sharply after 1996 (Puyana, A. 2010a). Remittances increased from US\$ 4 billion in 1995 to US\$ 25 billion in 2007. In 2009, remittances represented 8.8 percent of total exports, surpassing oil exports and expanding the availability of foreign exchange, helping to finance the policy of controlling inflation by over-valuing the peso and generating a Dutch Disease effect.

Remittances helped to reduce the incidence and level of poverty and contributed slightly to reduce the concentration of income. Extreme poverty incidence was reduced by 1.3 per cent and poverty by one per cent as a result. Only 5.7 percent of total households receive remittances, the majority of whom are in rural areas.

### **III. Ethnicity, Economic Horizontal Inequalities and the Characteristics of Indigenous Regions**

#### **III.1 Ethnicity and Economic Horizontal Inequalities**

As noted in the second section, the international prices of the agricultural products produced by indigenous people showed a declining trend affecting domestic prices. Liberalization affected labour-intensive activities the most, especially small producers, traditional peasant agriculture and poor urban and rural consumers. Urban consumers benefited mainly from reduced prices of imports of (relatively) luxury goods and of processed meat and poultry, which are not part of the basic diet of the indigenous population or the poor urban population (Wise 2010, Cortés, 2009). These effects were magnified by the considerable and long-drawn-out appreciation, which discriminated against labour-intensive activities. This also decreased the value of remittances, which constitute an important component of the income of poor rural households.

This section will focus on ethnicity or indigeneity as a major source of horizontal inequalities. We compare different categories of municipalities based on the ratio of indigenous population to total population. Within

the municipalities it is not possible to contrast the occupation and labour income of indigenous and non-indigenous populations before the structural and trade reforms,<sup>14</sup> since there are no statistics on indigenous people before 1990. While the 1990 and the 2000 census included questions about ethnicity, they used different definitions, which makes them not altogether comparable.

The analysis will concentrate on social and economic horizontal inequalities across ethnic and regional categories, and will consider the multiple dimensions through which inequality is manifested and recreated: these dimensions are education, access to health services, infant mortality rate, capability poverty, the proportion of the labour force working in agriculture, income and other assets. Poor outcomes on these dimensions are both symptoms of poverty and discrimination and causes, forming a vicious circle of poverty, or a poverty trap (Stewart 1992). We compare measures of such social and economic variables across 5 groups of municipalities classified according to the concentration of indigenous people, and across municipalities classified by the degree of social backwardness.

### **III.1.1 Poverty and ethnicity**

Mexican poverty is concentrated in rural areas where the largest proportion of indigenous people lives. About 76 per cent of the indigenous population lives in rural areas and in districts with less than 15000 inhabitants, which in Mexican Population Censuses are considered as rural communities. In those municipalities with a large concentration of the population speaking an indigenous language, there is higher income poverty and higher levels of social backwardness (CONEVAL, 2008). About a quarter of the indigenous population is illiterate, while only six per cent of non-indigenous people are. Nearly 73 per cent of the indigenous labour force works in the agriculture sector, compared with 22 per cent of the non-indigenous workers.

#### ***Type of municipality (Indigenous and Non-indigenous)***

To classify municipalities by ethnicity, the Comisión Nacional para el Desarrollo de los Pueblos Indígenas (CDI) starts by classifying households. A household is indigenous if the head, spouse, father or mother of the head, or father or mother of the spouse speaks an indigenous language. The 2454 Mexican municipalities were classified into six types (CDI-UNDP, 2006):

- A) More than 70% of indigenous population;
- B) 40 to 69% of indigenous population;
- C) Municipalities with less than 40% of indigenous population and more than 5,000 indigenous people in absolute numbers;
- D) Municipalities with less than 40% of indigenous population and presence of speakers of languages with fewer than 5,000 speakers, including 3 municipalities with variants of Nahuatl speakers in Michoacán and Morelos;
- E) Dispersed indigenous population; and
- F) No indigenous population.

Type A municipalities are indeed indigenous. They account for 43 per cent of the total national indigenous population, and nearly 88 per cent of their total inhabitants are indigenous (Table 6). The share of indigenous population in type B and C municipalities is much smaller, and it is very small in municipalities of type D and E. Municipalities comprising type A to C are concentrated in 15 states. In all of them, indigenous population is the majority, fluctuating between 72 and 92 per cent. These states therefore can be considered as indigenous.

### ***Degree of social backwardness***

The Social Backwardness Index (SBI) (Índice de Rezago Social) is a gap estimator constructed by CONEVAL (2007) using the statistical technique of principal components, incorporating education, access to health services, basic services, quality and housing space, and domestic assets, with data from the *II Conteo de Población y Vivienda 2005*.<sup>15</sup> The municipalities were grouped in five categories according to the SBI, so that each category is as homogeneous as possible and the difference between categories is the largest. The categorical variable resulting from the stratification is the *Degree of Social Backwardness*.

**Table 6: Type of Municipalities by Concentration of Indigenous Population, 2005**

Type of Municipality	No. of Municipalities	Population	Persons	% of Total National IP	IP % of Total State Population
With 70 % or more of Indigenous Population	485	Indg.Population	4262506	49.27	87.8
	485	Total State Population	4855040	4.70	
Between 40 and 69% of Indigenous Population	177	Indg.Population	1890753	19.19	50.5
	177	Total State Population	3741311	3.62	
Less than 40% Indigenous Population	221	Indg.Population	2915812	29.59	5.4
	221	Total State Population	53602614	51.91	
Dispersed Indigenous Population	1550	Indg.Population	785230	7.97	1.9
	1550	Total State Population	41046593	39.75	
With No Indigenous Population	21	Indg.Population	0	0.00	
	21	Total State Population	17830	0.02	0.00
TOTAL	2454	Total National Indig. Population	9854301	9.54	9.5
	2454	Total National Population	103263388	100.00	

Source: [http://www.cdi.gob.mx/cedulas/sintesis\\_resultados\\_2005.pdf](http://www.cdi.gob.mx/cedulas/sintesis_resultados_2005.pdf)

### *Municipalities by degree of social backwardness*

To confirm the association between ethnicity and poverty, we present the cross-tabulations and their percentages, and to test whether they are independent or not, the association between ethnicity and poverty was calculated. These results only consider municipalities with indigenous population (IP), excluding the very few municipalities without indigenous population.<sup>16</sup>

As observed in Table 7, 82 (or about 17%) of the 485 type A municipalities had “Very high” degree of social backwardness (SBI) and 242 municipalities (or nearly 50%) fell into the “High” SBI category. While only ten municipalities (6%) of the 177 municipalities of type B had “Very high” SBI, 77 municipalities (44%) had a “High” SBI. The municipalities that are predominantly indigenous differ greatly from other categories. Out of the municipalities with “More than 70% of IP”, 66.8% are classified as having either

“Very high” SBI or “High” SBI. In the case of municipalities with “40 to 69% of IP”, the cumulative percentage with “Very high” or “High” degree of social backwardness amounted to almost half.

**Table 7: Type of Municipality by Degree of Social Backwardness, 2005**

(Percentages)

Type of Municipality	Degree of Social Backwardness					Total
	Very high	High	Medium	Low	Very low	
<b>A) More than 70% of IP</b>						
Observed	82	242	116	42	3	485
% of Type of Municipality	16.9	49.9	23.9	8.7	0.6	100.0
<b>B) 40 to 69% of IP</b>						
Observed	10	77	53	30	7	177
% of Type of Municipality	5.6	43.5	29.9	16.9	4.0	100.0
<b>C) With less than 40% of IP</b>						
Observed	2	29	41	33	116	221
% of Type of Municipality	0.9	13.1	18.6	14.9	52.5	100.0
<b>D) Dispersed indigenous population</b>						
Observed	12	181	342	451	564	1550
% of Type of Municipality	0.8	11.7	22.1	29.1	36.4	100.0
<b>Total</b>						
Observed	106	529	552	556	690	2433
% of Type of Municipality	4.4	21.7	22.7	22.9	28.4	100.0

IP= Indigenous Population

Source: [http://www.cdi.gob.mx/cedulas/sintesis\\_resultados\\_2005.pdf](http://www.cdi.gob.mx/cedulas/sintesis_resultados_2005.pdf)

It is striking to observe that 77.4% of the 106 municipalities classified as having “Very high” SBI were municipalities with more than 70% of indigenous population (Table 8). These municipalities plus the 9.4% of municipalities with “40 to 69% of IP” accounted for 86.8% of all the municipalities with the highest degree of social backwardness.

To establish whether poverty and ethnicity are associated, we compare the observed and the expected frequencies (Pearson chi-squared statistic) and find a significant association between the two variables.<sup>17</sup> The value of the Pearson Chi-square test was found to be equal to 856.6 with 12 degrees of freedom and a p value < 0.00001. The likelihood-ratio Chi-square test was also highly significant. The Spearman correlation coefficient showed a value of zero.<sup>18</sup>

Table 8: Municipalities by Degree of Social Backwardness 2005 (Column percentages)

Type of Municipality	Degree of Social Backwardness					Total
	Very high	High	Medium	Low	Very low	
<b>A) More than 70% of IP</b>						
Observed	82	242	116	42	3	485
<i>% of Degree of Backwardness</i>	<i>77.4</i>	<i>45.7</i>	<i>21.0</i>	<i>7.6</i>	<i>0.4</i>	<i>19.9</i>
<b>B) 40 to 69% of IP</b>						
Observed	10	77	53	30	7	177
<i>% of Degree of Backwardness</i>	<i>9.4</i>	<i>14.6</i>	<i>9.6</i>	<i>5.4</i>	<i>1.0</i>	<i>7.3</i>
<b>C) With less than 40% of IP</b>						
Observed	2	29	41	33	116	221
<i>% of Degree of Backwardness</i>	<i>1.9</i>	<i>5.5</i>	<i>7.4</i>	<i>5.9</i>	<i>16.8</i>	<i>9.1</i>
<b>D) Dispersed indigenous population</b>						
Observed	12	181	342	451	564	1550
<i>% of Degree of Backwardness</i>	<i>11.3</i>	<i>34.2</i>	<i>62.0</i>	<i>81.1</i>	<i>81.7</i>	<i>63.7</i>
<b>Total</b>						
Observed	106	529	552	556	690	2433
<i>% of Degree of Backwardness</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

IP = Indigenous Population

Source: Author's calculation based on CDI, 2005, consulted in April 21 2010 at:

[http://www.cdi.gob.mx/cedulas/sintesis\\_resultados\\_2005.pdf](http://www.cdi.gob.mx/cedulas/sintesis_resultados_2005.pdf)

For additional information on the nature of this association, we calculate the standardized or adjusted residuals. The adjusted residual is defined as the difference between the observed and the expected frequencies in each cell. The denominator is an estimate of its standard error. The resulting standardized residual is expressed in standard deviation units above or below the mean. According to Agresti and Finlay (1997), a value of the adjusted residual exceeding -3 or +3 is a strong evidence of association. The most extreme values of the residuals appear shaded in Table 9.

**Table 9: Observed Frequencies, Expected frequencies and Adjusted Residuals**

Type of Municipality	Degree of Social Backwardness					Total
	Very high	High	Medium	Low	Very low	
<b>A) More than 70% of IP</b>						
Observed	82	242	116	42	3	485
<i>Expected</i>	21.1	105.5	110.0	110.8	137.5	
<i>Adjusted residual</i>	15.1	16.8	0.7	-8.3	-15.1	
<b>B) 40 to 69% of IP</b>						
Observed	10	77	53	30	7	177
<i>Expected</i>	7.7	38.5	40.2	40.4	50.2	
<i>Adjusted residual</i>	0.9	7.3	2.4	-1.9	-7.5	
<b>C) With less than 40% of IP</b>						
Observed	2	29	41	33	116	221
<i>Expected</i>	9.6	48.1	50.1	50.5	62.7	
<i>Adjusted residual</i>	-2.6	-3.3	-1.5	-2.9	8.3	
<b>D) Dispersed indigenous population</b>						
Observed	12	181	342	451	564	1550
<i>Expected</i>	67.5	337.0	351.7	354.2	439.6	
<i>Adjusted residual</i>	-11.5	-15.9	-1.0	9.7	11.6	
<b>Total</b>						
Observed	106	529	552	556	690	2433

IP = Indigenous Population

Source: as in Table 8.

The residual has a positive sign when the observed frequencies are higher than the expected ones, and the signs are negative when the latter are higher than the former. As shown in Table 9, the most extreme positive residuals are for municipalities with “70% or more of IP” with “Very high” and “High” SBI. In other words, there is an “excess” of indigenous municipalities with high levels of “backwardness”. In a sharp contrast, the negative values of the adjusted residuals show a “deficit” of municipalities with “70% or more of IP” amongst the municipalities with “Low” and “Very low” SBI. Similar results obtain for municipalities with “40 to 69% of IP”.

In sum, cells with large adjusted residual values (positive or negative) provide evidence of a strong association proving that municipalities with the highest concentration of indigenous people are associated with very high and high levels of poverty.



### III.1.2 Classification and measurement of horizontal inequalities

We divide horizontal inequality dimensions into two categories: “Economic” and “Social access and situation”. Following Stewart, Brown and Mancini (2005), we first estimate ratios of average performance of different groups; and then the coefficient of variation (CV) weighted by the size of population of each group.

#### *Ratios*

We estimated ratios of performance of the major groups to each other on important dimensions.<sup>19</sup> First, we compare municipalities with “70% or more of IP” to municipalities with “less than 40% of IP” (Table 10). This last group includes municipalities with less than 40% of indigenous population, municipalities with dispersed indigenous population and municipalities with no indigenous population. The ratios in Table 10 show that municipalities with the highest concentration of indigenous population are the most deprived in all dimensions.

**Table 10: Municipalities by Concentration of Indigenous Population and Variables of Differentiation**

	Factors of Discrimination	Type of Municipality			
		A	B	C	D
1	Incidence of moderate poverty	63.3	53.1	16.7	28.9
	Ratio	1.00	1.19	3.79	2.19
1	Pop. > 15 years with incomplete basic education	73.0	65.3	37.4	52.8
	Ratio	1.00	1.12	1.95	1.38
1	Pop. without health services	76.1	71.1	43.2	53.3
	Ratio	1.00	1.07	1.76	1.43
1	Child mortality	37.83	34.33	26.04	28.33
	Ratio	1.00	1.10	1.45	1.34
2	PEA in agriculture %	59.2	40.5	6.1	23.2
	Ratio	1.00	1.46	9.73	2.56
2	Workers earning less than 2 minimum wages	80.4	69.8	37.0	49.5
	Ratio	1.00	1.15	2.17	1.63
2	Annual average per capita income in US\$ 1990 PPP	2121	3148	6904	5019
	Ratio	1.00	0.67	0.31	0.42
3	Households without running water	31.6	30.8	7.0	13.0
	Ratio	1.00	1.03	4.53	2.43
3	Households without drainage	54.1	40.5	5.6	13.4
	Ratio	1.00	1.33	9.71	4.03
3	Persons per room	1.8	1.6	1.3	1.3
	Ratio	1.00	1.10	1.41	1.39

Note: 1= Social variables; 2= Economic variables; 3= Asset variables; PEA= Economically Active Population, EAP  
Sources: Author’s calculation based on: (1) CONEVAL, 2005; (2) CDI, 2000-2005; 3) INEGI. Censo General de Población y Vivienda 2000; (4) CONAPO, 2006; (5) CONAPO, 2001

These inequalities reflect the conditions of social backwardness and poverty in which these indigenous communities live and in which the main economic activity is agriculture. Incidence of moderate poverty in type A municipalities is 3.79 times higher than that in type C municipalities, while the proportion of labour force in agriculture is 9.7 times larger in the former municipalities than in the later.

Similar results are shown when comparing the two types of predominantly indigenous municipalities: type A and type B. Again it is seen in Table 10 that the more indigenous municipalities are more deprived in all dimensions than the less indigenous. The greatest difference is shown for the ratios of the percent of labour force working in agriculture (1.46), which indicates the existence of an ethnic division of labour and that agriculture activities are by far the main economic activity in municipalities with “70% or more of IP”. In these municipalities, agriculture accounts for 59.2% of total employment.

### *Weighted means and coefficients of variation*

Estimating coefficient of variation (CV) in the performance across municipalities weighted by population size within each category shows the worst average deprivation and the lowest CV for the most indigenous category (Table 11).

Looking at the calculated values of the means in Table 11, we can conclude that municipalities with “70% or more of IP” are the most deprived both socially and economically, and they have the highest share of the labour force working in agriculture. The smaller values of the CV show that municipalities with “70% or more of IP” are more homogenous than the other two types of municipalities. In other words, poverty conditions are more equally distributed in municipalities with “70% or more of IP”. The least indigenous municipalities have the lowest average deprivation, but the largest variation among the municipalities.

**Table 11: Inequality among Municipalities: Means and Coefficients of Variation  
between Three Types of Municipalities - “70% or more of IP”,  
“40 to 69% of IP” and “less than 40% of IP”**

<i>Percent of population of 15 years or more that lacks basic education (x)</i>	<b>Weighted</b>	
	<b>Mean.x</b>	<b>CV</b>
Municipalities with 70% or more of IP	73.0	0.158
Municipalities with 69 to 40% of IP	65.3	0.187
Municipalities with less than 40% of IP	44.0	0.330
<i>Percent of population not entitled to receive medical services (x)</i>	<b>Weighted</b>	
	<b>Mean.x</b>	<b>CV</b>
Municipalities with 70% or more of IP	76.1	0.262
Municipalities with 69 to 40% of IP	71.1	0.239
Municipalities with less than 40% of IP	47.6	0.370
<i>Percent of population under capability poverty (x)</i>	<b>Weighted</b>	
	<b>Mean.x</b>	<b>CV</b>
Municipalities with 70% or more of IP	63.4	0.267
Municipalities with 69 to 40% of IP	53.1	0.349
Municipalities with less than 40% of IP	22.0	0.689
<i>Percent of labor force working in agriculture sector (x)</i>	<b>Weighted</b>	
	<b>Mean.x</b>	<b>CV</b>
Municipalities with 70% or more of IP	59.2	0.389
Municipalities with 69 to 40% of IP	40.5	0.564
Municipalities with less than 40% of IP	12.9	1.381
<i>Percent of labor force with less than 2 sal. min. of income (x)</i>	<b>Weighted</b>	
	<b>Mean.x</b>	<b>CV</b>
Municipalities with 70% or more of IP	80.4	0.118
Municipalities with 69 to 40% of IP	69.8	0.203
Municipalities with less than 40% of IP	42.0	0.766
<i>Percent of household dwellings that lack running water (x)</i>	<b>Weighted</b>	
	<b>Mean.x</b>	<b>CV</b>
Municipalities with 70% or more of IP	31.6	0.758
Municipalities with 69 to 40% of IP	30.8	0.691
Municipalities with less than 40% of IP	9.6	1.334
<i>Percent of household dwellings that lack drainage (x)</i>	<b>Weighted</b>	
	<b>Mean.x</b>	<b>CV</b>
Municipalities with 70% or more of IP	54.1	0.452
Municipalities with 69 to 40% of IP	40.5	0.546
Municipalities with less than 40% of IP	8.9	1.439

IP = Indigenous Population

Sources: Author’s calculation based on: (1) CONEVAL, 2005; (2) CDI, 2000-2005; 3) INEGI. Censo General de Población y Vivienda 2000; (4) CONAPO, 2006; (5) CONAPO, 2001

## **III.2 Characteristics of Regions with the Highest Density of Indigenous People**

To analyze whether trade policy reforms have affected horizontal inequality between indigenous and non-indigenous people, we first present the characteristics of regions with the highest density of indigenous people at the municipal level and indicate how these characteristics have changed since the reforms. Second, we show the evolution of per capita GDP, the structure of GDP and other economic variables of the states with the highest concentration of horizontal inequality.

### **III.2.1 Some characteristics of the municipalities with the highest density of indigenous people**

The position of the municipalities with the highest density of indigenous population relative to those with the lowest levels deteriorated in the case of all variables except illiteracy (Table 12). Panel A of Table 12 presents the percentage of indigenous population according to the variables of discrimination. For instance, while in type A municipalities, 39 per cent of the indigenous population older than 15 years was illiterate, only 15.3 per cent was so in type E. In Panel B, we present the ratios of type A municipalities to all the others. It can be seen that the ratios grow larger when we move to municipalities of type B to E, and in many variables the ratios in 2002 were larger than in 1990.

An idea of the evolution of inequality during 1990-2000 can also be appreciated by the trajectory of the Index of Social Backwardness illustrated in Table 12. The value of the index was higher and increasing significantly in type A and B municipalities. While the municipalities comprising type C to E have better levels of wellbeing, they show a slight movement towards the average. As in other variables, the ratios worsened in 2000 compared with 1990.

**Table 12: Evolution of Some Social and Economic Characteristics of Municipalities by Concentration of IP, 1990-2000**

	PANEL A						PANEL B					
	Municipality by % of Indigenous Population						Ratios of Municipalities					
Percentage of population	A	B	C	D	E	Tot. Nat.	A/A	A/B	A/C	A/D	A/E	A/Tot. Nat.
Indigenous, 1990	93.1	56.6	14.9	4.1	0.6	26.3	1.0	1.6	6.2	22.9	163.7	3.5
Indigenous, 2000	92.8	54.2	14.3	4.1	1.0	26.1	1.0	1.7	6.5	22.6	93.1	3.6
Illiteracy (fifteen years and older), 1990	39.3	30.2	15.5	17.7	15.3	22.7	1.0	1.3	2.5	2.2	2.6	1.7
Illiteracy (fifteen years and older), 2000	32.3	25.0	12.2	14.3	13.9	18.4	1.0	1.3	2.7	2.3	2.3	1.8
Without sewage, 1990	60.0	50.9	27.2	37.1	31.9	41.7	1.0	1.2	2.2	1.6	1.9	1.4
Without sewage, 2000	27.5	25.0	14.1	17.2	12.6	19.5	1.0	1.1	2.0	1.6	2.2	1.4
Without electricity, 1990	37.1	30.1	17.9	19.3	16.2	23.4	1.0	1.2	2.1	1.9	2.3	1.6
Without electricity, 2000	17.7	14.9	7.9	7.4	6.3	10.0	1.0	1.2	2.2	2.4	2.8	1.8
Without running water, 1990	46.0	46.0	27.8	29.9	19.5	33.9	1.0	1.0	1.7	1.5	2.4	1.4
Without running water, 2000	25.9	28.7	17.0	16.0	8.0	18.9	1.0	0.9	1.5	1.6	3.2	1.4
In overcrowding conditions, 1990	74.9	70.1	61.3	63.0	52.7	65.6	1.0	1.1	1.2	1.2	1.4	1.1
In overcrowding conditions, 2000	68.4	64.5	51.5	52.3	40.1	56.2	1.0	1.1	1.3	1.3	1.7	1.2
With income lower than 2 minimum wages, 1990	86.6	80.3	66.4	73.5	75.7	75.9	1.0	1.1	1.3	1.2	1.1	1.1
With income lower than 2 minimum wages, 2000	88.1	81.0	59.5	69.3	73.9	73.0	1.0	1.1	1.5	1.3	1.2	1.2
Average Backwardness Index, 1990	1.0	0.6	-0.7	-0.3	-0.5	0.0	1.0	1.7	-1.4	-3.7	-2.2	0.0
Average Backwardness Index, 2000	1.5	0.6	-0.7	-0.4	-0.4	0.0	1.0	2.5	-2.3	-3.9	-4.1	0.0

Source: Author's calculation based on INEGI, Censos de Población, 1990-2000

At the municipal level, it is clear that the denser the indigenous population, the larger is the share of the employment in agriculture. During 1990-2000, employment in the primary sector did decrease in type A and B municipalities, but it remained above the level registered in type C municipalities and above the national average presented in section II. The ratio of employment in agriculture in type A municipalities to type C municipalities increased from 7.9 in 1990 to 9.7 in 2000. The share of employment in manufactures follows the opposite path. It rises as we move from municipalities of type C to B and to type A (Table 13). The ratio also increased from one year to the next, indicating that the gap grew larger.

**Table 13: Structure of Employment of Municipalities by Concentration of Indigenous Population**

Type of Municipality	Primary		Manufactures		Tertiary	
	1990	2000	1990	2000	1990	2000
<b>Share in percentages</b>						
A) More than 70 % of IP	69.6	59.6	7.6	10.4	15.6	22.2
B) From 40 to 69% of IP	55.1	40.9	10.1	13.0	24.6	34.9
C) Less than 40% of IP	8.8	6.2	22.4	20.0	56.8	62.1
D) Dispersed IP	35.0	23.4	16.6	19.0	35.8	45.1
<b>Ratios of Type A to others</b>						
A) More than 70 % of IP	1.0	1.0	1.0	1.0	1.0	1.0
C) Less than 40% of IP	7.9	9.7	0.3	0.5	0.3	0.4
D) Dispersed IP	2.0	2.5	0.5	0.5	0.4	0.5

Source: Author's calculation based on INEGI, 1990 and 2000 census.

Within the different categories, it is likely that the type of manufactures is quite different: domestic-oriented mini and small artisan production units in the former, and modern higher capital intensive in the latter. In 2000, around 91 per cent of total maquila establishments were concentrated in 35 municipalities, the majority of which were located in the north of the country (INEGI, 2001)<sup>20</sup>. Amongst these municipalities we did not find any of the localities with more than 40 per cent of indigenous population. We can conclude therefore that those regions with the highest levels of indigenous population have not benefited from higher employment growth in the maquilas or exports of manufactures.

We do not have comparable statistics at the municipal level to evaluate the evolution of horizontal inequality for later years. But the available data for 2005 gives an idea of the high inequality still existing after so many years of liberalization and targeted anti poverty programmes among which, some like OPORTUNIDADES, have a clear rural bias. As suggested by Fox (2010), Scott (2010) and Esquivel et al (2010), anti-poverty programmes, remittances and the relative reduction in the wages of more educated workers almost totally account for the reduction in inequality registered in the 2000s. Other economic variables such as growth in output, exports and employment have been of little significance, if not negative. We can assume that what is true for the entire country is valid for particular social groups as well. It is therefore likely that had it not been for those programmes and the remittances, the horizontal inequality levels presented in Table 14 could be even worse. The ratio of the incidence in food poverty (equivalent to extreme poverty), in municipalities of type A to C was 2.7, while capability poverty (or moderate poverty) was 2.2.

**Table 14: Poverty at Municipal Level by Concentration of Indigenous Population, 2005**

Type of Municipality	Median			Ratios		
	Food poverty*	Capability poverty**	Resources Poverty***	Food poverty*	Capability poverty**	Resources Poverty***
A) More than 70 % of IP	53.5	63.1	82.8	1.0	1.0	1.0
B) From 40 to 69% of IP	45.2	55.2	74.9	1.2	1.1	1.1
C) Less than 40% of IP	20.0	28.4	55.8	2.7	2.2	1.5
D) Dispersed IP	25.3	34.2	58.7	2.1	1.8	1.4
E) Without IP	14.7	23.4	50.0	3.6	2.7	1.7

Source: Author's calculation based on CONEVAL, 2005

### III.2.2 Some characteristics of the states with the highest density of indigenous people

#### *The diverging GDP per capita*

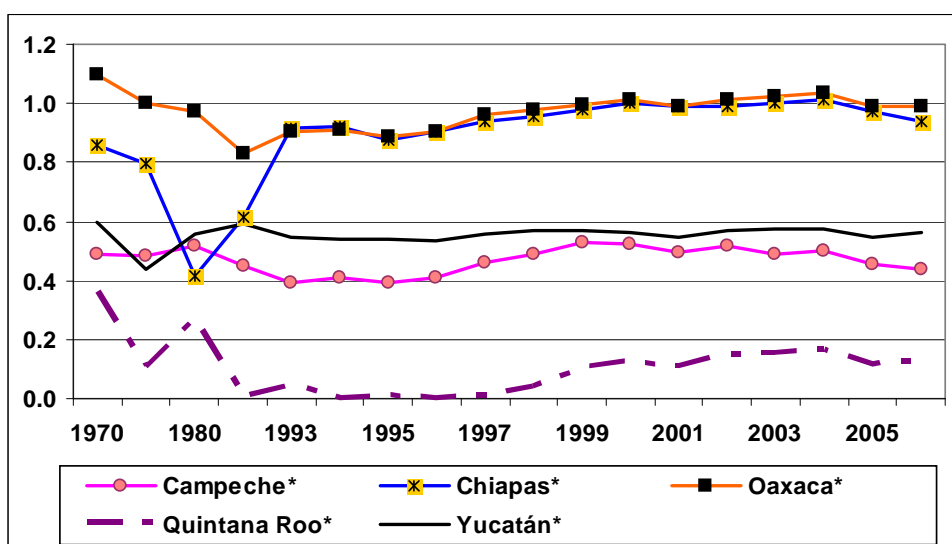
To illustrate how trade policies have affected horizontal inequality, we analysed the state-level data and compared the states with the highest concentration of indigenous population with the national average and also with the states with the highest values of per capita GDP.

All municipalities with more than 70 per cent of indigenous peoples are located in 9 states (Oaxaca, Chiapas, Guerrero, Veracruz, Puebla, Hidalgo, Yucatán, Campeche y San Luis Potosí), which accounted for 77 per cent of the total national indigenous population. In these municipalities, the main economic activities are subsistence agriculture, hunting and fishery. The regions with the highest concentration of indigenous population are located in Oaxaca, where the municipalities with the highest inequalities in monetary income are to be found. Chiapas, Puebla and Veracruz are the second, third and fourth states with a large number of type A and B municipalities and also higher inequality (CDI-PNUD, 2006).<sup>21</sup>

For the analysis we will consider only these states with a high concentration of indigenous population, such as Oaxaca, Chiapas, Veracruz and San Luis Potosí, amongst others. In Quintana Ro and Yucatan, the oil industry, and in Campeche, tourism, neither subject to trade reforms, explain the relatively good performance. The states with higher levels of indigenous population had lower per capita GDP, while the highest per capita GDP states were Nuevo León and Mexico City, both with a low concentration of indigenous population. From the 1970s to 2006, divergence, rather than convergence, occurred between states

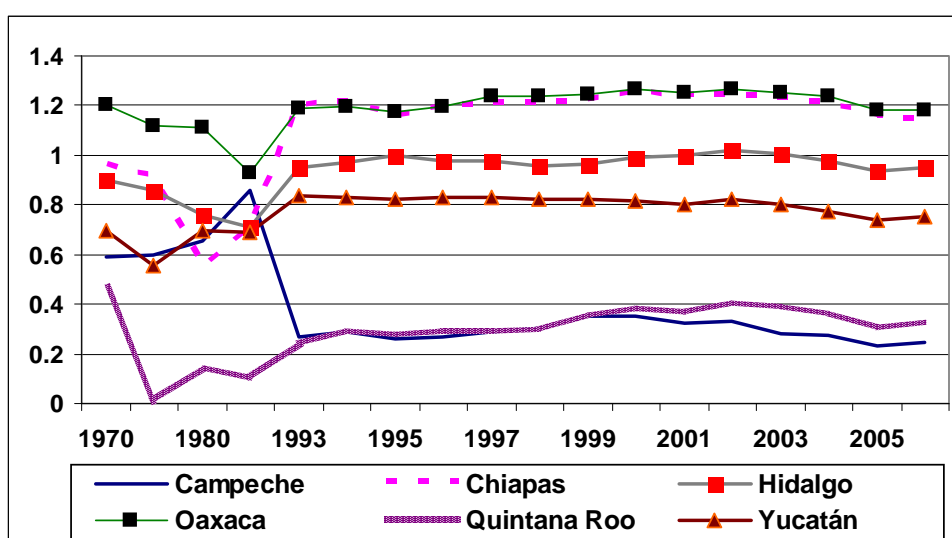
(Graphs 5 and 6). We measured convergence as the standard deviation of the logarithms of the per capita GDP of each state to the highest values (Nuevo León and Mexico City) during 1970-2006.

**Graph 5: Convergence of the Per Capita GDP of States with the Highest Density of Indigenous Population towards Nuevo León's Per Capita GDP, 1970-2005**



Source: Author's calculation based on INEGI, Sistema Nacional de Cuentas Nacionales, several Years.

**Graph 6: Convergence of the Per Capita GDP of States with the Highest Density of Indigenous Population towards Mexico City's Per Capita GDP, 1970-2005**



Source: Author's calculation based on INEGI, Sistema Nacional de Cuentas Nacionales, several years.



In the first period, 1970-1980, we found convergence between the per capita GDP of the states with the highest density of indigenous population and the GDP per capita of Nuevo Leon and Mexico City. On the other hand, during the second period, 1993-2006, divergence emerged, with a moderate recovery in 2005-06.

To explore whether convergence is related to the process of liberalization of the national economy, we present graphs showing the Standard deviation of Oaxaca's and Chiapas' per capita GDP from the per capita GDP of Nuevo Leon and Mexico City together with imports, exports and total external coefficients at the national level as measures of liberalisation. In the case of Chiapas, a direct relation between the three coefficients and standard deviation emerged suggesting that the larger the external coefficients the higher the divergence. The value of the  $R^2$  indicates that external trade may have an important, although not a decisive effect on the convergence path.<sup>22</sup> The strongest values were obtained for the import coefficient (ratio of imports to GDP). The same exercise for Oaxaca also gave a positive relation for the three coefficients, but with different explanatory values. In this case we obtained a very low  $R^2$  (well below 1%) between each of the three coefficients and convergence, indicating that other variables are more important than trade.

### *The evolution of the structure of state GDP*

The differences in the sectoral structure of GDP between regions with a high and low presence of indigenous population were not as large as at the municipal level. In all states, the fall in the share of the agricultural sector (which includes fishery and forestry) was as severe as it was at the national level. It was particularly intensive in Chiapas and Oaxaca, especially after 1980 when the reforms were undertaken. As the concentration of indigenous population declines, the importance of manufactures rises.

Agricultural production in the states with higher proportion of indigenous population is concentrated in four tradable goods: first in the production of corn and beans, which are importable goods; and secondly, they are large producers of coffee and cacao which are exportable products. Corn and beans were totally liberalized from the first day of the enforcement of NAFTA and compete with subsidized imports from the USA, which affected their production. From 1980 onwards, imports of corn, wheat, rice, and beans, among other products, grew continually and at higher rates than national production and domestic consumption. And there was an increase in the import content of domestic consumption.

### *Structure of labour income*

As a result of the differing characteristics of the states, we found important differences in labour incomes between the indigenous and total population. First, it is clear that in the states with a lower concentration of indigenous population (Aguas Calientes, Distrito Federal, Nuevo León, Sinaloa and Sonora), the proportion of working population that does not receive any income is lower than in Oaxaca and the other states with a higher concentration of indigenous population (Table 15), while the proportion of people receiving less than the minimum wage is also higher. In 2000, the situation improved in the sense that a lower proportion of people did not receive any salary or earned less than the minimum wage. We have to consider that the improvement may not be so important due to the deterioration of real wages.

**Table 15: Structure of Working Population by Wages, 1990-2000**

	1990						2000					
	Without payment		Less than 1 Min wage		Between 1 and 2 Min. wage		Without payment		Less than 1 Min. wage		Between 1 and 2 Min. wage	
	Total P.	Ind. P.	Total P.	Ind. P.	Total P.	Ind. P.	Total P.	Ind. P.	Total P.	Ind. P.	Total P.	Ind. P.
Aguascalts.	4.2	5.0	30.7	47.6	27.8	34.0	4.7	5.9	39.5	36.4	41.1	38.6
Chiapas*	6.9	7.8	60.6	51.9	28.5	34.0	6.6	8.8	34.0	36.3	26.7	24.0
Mexico City	1.1	1.1	61.3	77.9	27.2	16.4	2.3	1.9	43.0	66.7	35.4	23.1
Nuevo León	2.2	1.0	58.7	71.6	27.9	20.7	2.5	0.8	28.0	47.2	50.4	44.2
Guerrero*	15.7	33.7	56.7	56.7	22.8	7.7	21.0	46.8	48.6	41.8	24.4	10.0
Hidalgo*	9.4	13.5	67.9	76.8	18.4	8.1	13.4	26.0	55.1	61.0	24.0	10.7
Oaxaca*	25.9	34.9	56.3	55.4	14.5	7.9	29.6	41.7	45.8	46.1	19.3	10.2
Puebla*	13.1	23.0	62.2	68.5	19.1	6.7	14.9	26.5	52.1	61.1	24.8	10.8
Sinaloa	4.8	6.0	54.0	82.1	32.2	13.2	4.7	1.4	46.4	83.8	36.9	12.4
Sonora	1.9	2.5	55.4	79.7	32.5	14.5	2.4	3.6	40.8	70.1	42.3	20.9
Veracruz*	10.6	22.7	64.2	68.2	20.3	7.3	13.3	31.4	58.5	59.1	20.1	7.5
Yucatán*	6.2	10.8	69.6	74.9	19.4	12.4	9.6	18.1	60.6	67.8	20.5	11.4

\* States with larger concentration of indigenous population

Source: Author's calculation based on Population Census, 1990 and 2000.

In Table 16, we present the ratios of the incomes of the indigenous population to that of the non-indigenous population. Results indicate first, that the ratio is greater than one indicating that more indigenous population earns less than the minimum wages or no wages at all. Second, in all the states with high density of

indigenous population, the ratios are larger than in Mexico City or Nuevo León, indicating a larger discrimination. And third, the ratios grew larger in 2000, but in Mexico City and Nuevo León, the regions with the highest per capita GDP and low intensity of indigenous population, suggesting perhaps that general better economic conditions do help indigenous population as well. In the case of Mexico City, the leftist governments in power since 1996 have introduced several social programmes to support the population under extreme poverty and a universal financial support for the elderly.

**Table 16: Ratios of the Structure of Working Population by Wages, 1990-2000**

Ratio of Indigenous Population's Incomes/ Incomes of Total Population						
	Without payment		Less than 1 Min. wage		Between 1 and 2 Min. wage	
	1990	2000	1990	2000	1990	2000
Aguascalts.	1.21	1.26	1.55	0.92	1.22	0.94
Chiapas*	1.13	1.33	0.86	1.07	1.19	0.90
Mexico City	0.98	0.83	1.27	1.55	0.60	0.65
Nuevo León	0.43	0.33	1.22	1.69	0.74	0.88
Guerrero*	2.15	2.23	1.00	0.86	0.34	0.41
Hidalgo*	1.44	1.95	1.13	1.11	0.44	0.44
Oaxaca*	1.35	1.41	0.98	1.01	0.54	0.53
Puebla*	1.75	1.77	1.10	1.17	0.35	0.44
Sinaloa	1.26	0.30	1.52	1.81	0.41	0.34
Sonora	1.31	1.53	1.44	1.72	0.45	0.49
Veracruz*	2.13	2.36	1.06	1.01	0.36	0.37
Yucatán*	1.75	1.89	1.08	1.12	0.64	0.55

Source: Author's calculation based on data from Table 15

As far as the evolution of poverty is concerned, we find that all the states with a higher poverty incidence than the national average were those with the larger concentration of indigenous population. As noted, poverty has decreased at the national level and in all states, but the differences separating the income of indigenous states continue, as indicated by the evolution of the ratios in Tables 12 to 16.

#### **IV. Conclusion and Assessment of the Impact of Trade Policies on Horizontal Inequality**

We can conclude that with trade liberalization and other structural reforms the economy did not perform better than before. Productivity growth was not strong enough to allow for significant improvements in

salaries and wages. Amongst the variables explaining Mexican economic growth, the external coefficient has a negative sign, but with little explanatory power.

While it is difficult to measure the impact of trade policies on economic growth, it is even more complex to evaluate the impact on horizontal inequality. The entire battery of macroeconomic policies implemented in conjunction with the liberalization of the trade regime contributed to the outcomes presented in the previous sections. The thrust of economic policy since the 1980s has been the implementation of structural reforms, including massive trade liberalization, and the achievement of macroeconomic, monetary and exchange stability, guided by the principal objective of controlling inflation. There was no sectoral policy. The allocation of resources was left to tariffs and trade agreements with some programmes aimed at increasing productivity oriented towards the small and medium companies, without any sectoral content.

Restrictive monetary policy and overvaluation of the peso led to an appreciation of the real exchange rate and a massive inflow of imports. The effect was the substitution of domestic production, domestic value added and employment, by imports.

In parallel, the government drastically reduced its investments to about 2 percent of GDP, negatively affecting the growth of the economy. Low public investments may be one of the reasons for the stagnating capital per worker and the low growth in productivity especially in agriculture, which has significantly affected the states with high concentrations of indigenous population that are specialized in the production of corn and beans.

These policies contributed to the weak growth of the economy, discriminated against labour-intensive activities and depressed the rewards of labour in national income. The main losers from the process were the wage earners since the bulk of the adjustment was made primarily by contracting employment in the formal tradable sectors, especially in agriculture and in the non-*maquila* manufacturers. Real minimum and average wages fell.

The effects of the trade reforms were particularly severe for the agricultural sector, especially for small and medium producers of the most traditional products. Small subsistence producers of corn and beans were the main losers of the new macroeconomic policies, the trade reforms and the lack of sectoral development

policies. Domestic producer prices of the majority of Mexico's main agricultural products decreased under the pressure of imports and fall in international prices. The main losers were the small self-sufficient producers that sell part of their production and are net buyers of food. The three lower income deciles of rural population lost about one quarter of their income. Since almost the only economic activity of indigenous population is traditional agriculture – mainly the production of maize and beans – their incomes were affected more than the rest of the population. The income of indigenous population put them in the two lower deciles of income, deciles whose income was reduced by nearly 20 per cent.

We have demonstrated, at the municipal level, the existence of strong correlation between the presence of indigenous population and poverty and the different variables included in the construction of the index of "Social Backwardness". Over the main reform years, 1990-2000, the inequalities between the more and the less indigenous municipalities increased in most dimensions, including access to water and electricity as well as in the proportion of the population whose income is less than the minimum wage.

Because of the lack of statistics on international trade and the structure of production at the municipal level, we assessed the impact of trade and trade promotion policies on poverty and discrimination at state level. The participation of the ten states that account for 78 per cent of the total indigenous population in total GDP and foreign trade was considerably lower than their participation in total population.

We found that the municipalities and the states with higher concentrations of indigenous population have relatively lower monetary income than the rest of the country. At the state level, we did not find any convergence over time between the low income states and the richest. Moreover, convergence is negatively related to the liberalization of the national economy: the larger the value of the external coefficient of GDP, the higher the divergence between the richest and the poorest states. From direct and indirect evidence presented in this paper, we can conclude that trade reforms in Mexico contributed to a worsening of the relative position of the indigenous people in the country, or an increase in horizontal inequality.

## Notes

- <sup>1</sup> Dr. Sandra Murillo provided assistance in elaborating Section III. The author thanks an anonymous reviewer for his insightful comments that helped to improve and clarify the arguments. The errors and omissions are the author's sole responsibility.
- <sup>2</sup> According to the Comisión Nacional para el Desarrollo de los Pueblos Indígenas (CDI), the indigenous population amounted to 10,103,571 people in 2005.
- <sup>3</sup> The consolidated tariff schedule, CTS, contains all the tariff and other concessions made by a member country and involves the commitment not to raise the applied duty above the level of the bound duty. The CTS also provides all the updates in tariff concessions (WTO Integrated Database, consulted Sept, 16/2011 at: [http://www.wto.org/english/tratop\\_e/tariffs\\_e/tariff\\_data\\_e.htm](http://www.wto.org/english/tratop_e/tariffs_e/tariff_data_e.htm))
- <sup>4</sup> This section is based on Puyana (2002).
- <sup>5</sup> Bhagwati expressed a more abrasive opinion about the reasons and the urgency of the Mexican negotiators to reach the agreement: Mexican architects of NAFTA have a point of view that encouraged them to look at problems from the prism north of Rio Bravo. They were impressed by the US and wanted to emulate it. They said, "The US has done well. If we join with North America, all our problems will be over" (Authors' translation), Bhagwati, Jagdish N., *El Financiero*, 22 de noviembre de 1999, p. 24.
- <sup>6</sup> Maxwell (2000). According to historical archives of the negotiations, during the negotiation round in Houston in 1990, Mexican negotiators gave up any preferential treatment considering the country's lower level of development. See Vega, Gustavo (1993) *El TLC día a día*, Miguel Ángel Porrúa, México. Longer liberalization periods for strategic goods were agreed in favour of the three countries.
- <sup>7</sup> The impact of this instability on Mexican economy derives mainly from the importance of oil as a source of fiscal income, not so much as a source of employment or foreign currency, because of the high capital intensity of oil production and the relatively small weight of oil in total exports. Depending on international prices and the volume of oil exported, oil represents between 35 and 40 per cent of total fiscal revenue. The oil rent is a politically cost free tax, which allows high fiscal expenditure to be accompanied by low taxation.
- <sup>8</sup> Income from international aid, illegal traffic of drugs or arms can also induce similar effects.
- <sup>9</sup> In 1960 almost 80 per cent of employees were informal. From 1940 to 1982, an intensive decline in informalisation took place, coinciding with the creation of the private and public social security institutions and the fast growth of manufactures. In 2008, about 91 per cent of establishments in manufactures and services having less than 10 employees accounted for 30 per cent of the occupied labour force and 14 per cent of total production.
- <sup>10</sup> There are: Baja California Sur, Baja California, Coahuila, Chihuahua, Sonora, Nuevo León Tijuana.
- <sup>11</sup> Puebla, Guerrero, Estado de México, Hidalgo, Campeche, Veracruz and Campeche.
- <sup>12</sup> "They were supposed to go", exclaimed a high ranking expert of the *Secretaría de Agricultura* (responsible for keeping an eye on the implementation of the NAFTA agreements) when Puyana and Romero presented the results of their study evaluating the first decade of NAFTA and its effects on the Mexican agricultural sector (Puyana and Romero, 2005).
- <sup>13</sup> These companies control nearly 95 per cent of corn imports and domestic trade: Cargill, Archer Daniels Midland, Maseca, Minsa, Castillo et al (2009), page 109.
- <sup>14</sup> The author had a detailed interview with Dr. Negrette, Deputy Director of INEGI, on how to measure the impact of trade policies on indigenous population. According to him, it would require a specially designed survey.
- <sup>15</sup> The indicators are: a) percent of illiterate population of 15 years or more; b) percent of the population of 6 through 14 years that does not attend school; c) percent of population of 15 years or more with incomplete basic education; d) percent of households with members of 15 through 29 years with at least one of them having less than 9 years of education; e) percent of people without access to social security health services; f) percent of

household dwellings with dirt floor; g) mean of the ratio of members per room; h) percent of household dwellings that lack piped water; i) percent of household dwellings that lack drainage (De Gortner et al, 2004; De Ingo et al, 2004; Polansky, 2004, 2006; McMillan et al, 2004; Puyana and Romero, 2005 and 2008; Wise et al, 2009; Fox, et al 2010); j) percent of household dwellings that lack electric power; k) percent of household dwellings that lack toilet; l) percent of households that lack washing machine; and m) percent of household dwellings that lack refrigerator.

<sup>16</sup> Only 21 municipalities do not have indigenous population. To test the hypothesis of independence, these were omitted to meet the assumption that “no cells in the table has an expected value less than 1 and no more than 20% of cells have expected values less than 5”.

<sup>17</sup> The values are the observed number for each cell that results from cross-tabulating the two variables. By definition, two table variables are independent if the probability that a case falls in a specific cell is a product of its marginal probabilities. This probability multiplied by the total number of valid cases is used to compute the expected number of cases (under the hypothesis of independence) in each cell.

The null hypothesis for the Pearson chi-square test is that the row and column variables are independent of each other. The Pearson chi-square statistic compares the observed with the expected number of cases for each cell; the difference is squared and divided by the expected count. For an overall Pearson chi-square statistic, these quantities are summed across all cells. The likelihood-ratio chi square is an alternative to the Pearson chi square for large samples.

<sup>18</sup> The sign of the Spearman correlation coefficient indicates the direction of the relationship, and its absolute value indicates the strength of it. Larger absolute values indicate stronger relationships. Possible values vary from -1 to 1. The T statistic is used to test that the measure is zero.

<sup>19</sup> Means and percents of the variables considered in each category of Table 4 were estimated for the groups of municipalities to be compared and are incorporated in Annex 4.

<sup>20</sup> Around 95 per cent of the total exports of manufactures is concentrated in 0.12 per cent of the total industrial enterprises registered in the country and in four sectors: car, steel, chemicals and food products.

<sup>21</sup> In Oaxaca live the zapotecos, mixtecos, cuicatecos, mixes y mazatecos communities. In Chiapas live, the tzotziles, tzeltales, and zoques y tojolabales; in Puebla, the náhuatl y totonacas; and in Veracruz, the maya.

<sup>22</sup> For Chiapas, the values of the correlation between the total external coefficient and convergence were:  $y = 0.0061x + 0.5999$   $R^2 = 0.4631$ .

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