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Introduction

Following the debt crisis of the first years of the 1980s decade, there has been a worldwide trend towards economic liberalization that has resulted in a shift of development strategy from import-substitution and government expenditure-led growth to export-led growth for most middle income developing countries.

The change to a new economic model (NEM) has implied a drastic redefinition of the role of the state in the economy, and the objective of enhancing efficiency as a way to achieve sustained economic growth through trade liberalization, has become the priority. As explained by Scott (1994), other two central elements that characterize the NEM have been a commitment to macroeconomic stability, and a redefinition of the strategy to combat poverty.

Several studies[1] have analyzed and mapped out in a theoretical way, the transmission mechanisms by which economic liberalization affects the welfare level of individuals, and there seems to be agreement in that conclusions can only be driven by analyzing the specific case of each country, as the conditions under which the NEM has been implemented vary widely. However, in general terms, economic liberalization is expected to have generalized positive effects over the standard of living of the population in the long run, as it will presumably result in high growth rates and a more efficient allocation of resources in the economy.

The purpose of this study, is to analyze the impact of such policies for the case of Mexico, and in particular, to determine if the expected positive outcomes have in fact materialized.

The most common approach to evaluate the effects of economic liberalization on absolute and relative welfare, consists on simply assuming that growth is itself poverty reducing, and that controlling inflation is highly progressive. Here we intend to take a closer look at the transmission mechanisms involved in the process, and therefore, we will focus on two aspects: the effects of fiscal contractions, and the effects over the prices of factors of production.

There are several problems that complicate and restrict the analysis. Perhaps the most important one, is that it would be virtually impossible to quantify with precision the impact of every policy, as several economic variables, which some times have opposite effects, are acting at the same time on the economy. Therefore, the analysis is limited to identify only some of the clear transmission mechanisms, which reduces its scope.

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[1] For example, Demery and Addison (1987), Pastor (1987), Corden (1987), Heller, et al (1988), Woodward (1992), Stewart (1995), and Berry and Stewart (1994).

The second major problem is that so far, liberalization has resulted in short run important changes in the level of economic activity and in the degree of inequality and poverty throughout Latin America[2], but most of the policies have important long-run effects that are impossible to assess at the moment, which limits the analysis. In fact, the low pace of economic growth in recent years for Mexico may be an indicator that the long run benefits will still take some years to be observed, which makes it impossible to undertake a comprehensive analysis of the effects of the NEM at this moment.

A third problem is that there exists a counter-factual argument that claims that even if the effects are negative, inequality and poverty would have increased more if the NEM had not been implemented, but the problem is that this argument cannot be verified as the counter-factual is non-observable.

Despite these limitations, it is possible to evaluate to some extent the effects of the NEM on welfare for the case of Mexico. In order to do so, we will rely on several different poverty and inequality measurement techniques, and we will suggest some simple analytical tools that allow to identify the causes of the changes in income distribution registered.

Due to the availability of data at the household level, we will analyze the effects over poverty and inequality between 1984, 1989, and 1992. These observations constitute an adequate stand point, as since 1983 and up to 1994, the Mexican economy has passed through two stages. The first one, which encompasses the 1983-1989 period, was characterized by the efforts to control inflation and by a strong economic contraction, while the second one, starting in 1989 and continuing up to date, has consisted in the partial recovery of growth.

The work consists of six sections. In Section I, the main methodological aspects are discussed. Section II describes the timing of the implementation of the policies identified with the NEM. Section III examines the changes in poverty and inequality that have occurred in Mexico between 1984 and 1992, and explores the causes of such changes. Section IV deals with the distributionary effects of the fiscal contraction. Section V analyzes the main distributionary implications of wage controls, privatization, and trade and financial liberalization, as well as their implications for poverty. Section VI draws the conclusions.

[2] As illustrated by Psacharopoulos, et. al. (1993), and Altimir (1994).

I. Methodological Aspects

1.1 The Data

The fact that the most recent household income and expenditure surveys in Mexico were held in 1984 (with 5,272 observations), 1989 (13,550 observations), and 1992 (11,920 observations)[3], constitutes a great advantage, as it allows to separate the 1984-1989 stagnation period from the one of economic recovery (since 1989). However, the timing also imposes some limitations, as some of the most important policies (i.e. trade liberalization and privatization) were initiated right in the middle of both sub-periods, which makes the identification of their impact more difficult.

Although the surveys contain information about household incomes and expenditures, in this work we will only use the information about incomes. The main reason for doing so is that as our intention is to assess the impact of some specific policies implemented recently, incomes, which are subject to temporary fluctuations, are more likely to indicate the direction of such effects, rather than expenditures which may be smoothed by savings[4].

1.2 The Poverty Line

In the case of Mexico, one of the only reliable data sources concerning basic needs requirements and prices is Coplamar (1983), which provides the market cost of several items which may be classified as "basic needs". For the purposes of this study, two poverty lines will be used: an extreme poverty line, which only includes the necessary income to have access to a minimal food bundle[5], equal to 92,986 1992 monthly pesos (equivalent to 30$ US) and a

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[3] The surveys were held by the "Instituto Nacional de Estadística, Geografía e Informática", INEGI. The three data sets are strictly comparable, they were held under the same days of each year, they use identical sampling techniques, and utilize identical instruments for obtaining the information.

[4] The results presented in the work were obtained by processing the raw disaggregated data (every household micro-observation) of the three surveys, provided directly by INEGI, but two transformations were required. The first one consisted in inflating the incomes registered in 1984 and 1989 to convert them into 1992 prices, by using an average of the Consumer's Price Index (CPI) (in Salinas (1993)) for the six months prior to the survey, as this was the reference period for incomes. No differential indexes were used for urban and rural areas, because as indicated by Coplamar (1983), price differentials in Mexico have been found to be insignificant between these two sectors. The second transformation is concerned with the selection of an equivalence scale. Due to the lack of recent data for Mexico, and due to the fact that the family structures remained practically constant between 1984 and 1992, we will assume that each member obtains the same proportion of total income than the others, as this will not affect the results.

[5] Including 34 different items, which are equivalent to 2082 calories per day per adult.

moderate poverty line, which besides food, includes the minimum necessary income to acquire housing, health, and education, equal to 167,949 1992 pesos per month per head (equivalent to 54.28$ US)[6]. In order to translate the value of these poverty lines from 1984, to 1989, and to 1992 pesos, the average price index by item of consumption, for the prior six months, was used.

Besides separating the population between moderately and extreme poor, it would be convenient to separate the rich from the middle class individuals, as it seems that income in Mexico is highly concentrated in very few hands. For the purposes of this work, we may use the share of entrepreneurial rents in total income as an indicator of belonging to the middle class or rich, which implies setting the "rich-dividing" line at 5.5 times the value of the moderate poverty line, as by doing so those households with relatively high entrepreneurial incomes (more than 24%) are separated from the rest of the population in 1984.

1.3 Measurement and Decomposition of Inequality

Throughout the literature, a wide number of inequality measures have been suggested[7]. As different inequality indexes may lead to different conclusions when comparing two distributions, the choice is usually restricted by the specific aspects of inequality to be analyzed. The two most common applications of such measures consist on one hand, on identifying the influence of certain population characteristics in the distribution of resources, and on the other, on determining the relationship between total inequality and that observed in each of the components of income. In order to examine in a comprehensive way the changes in income distribution registered in Mexico, we will rely on both approaches.

Decomposition by Population Subgroups

Perhaps the most common application of inequality measures, consists on examining the relation between inequality of total income (I) and the inequality observed in particular subgroups or partitions of the population (usually those relevant for policy discussion, such as labor market status, age groups, regional location, etc.). As explained by Bourguignon (1979) and Shorrocks (1980), this procedure consists on expressing inequality as a weighted sum of the inequality within each sub-group (I_W) plus the inequality arising from the differences between the sub-group means (I_B).

Following Cowell and Jenkins (1994), the idea is that inequality can be defined as a function of those two components, given certain partition (π), so that:

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[6] Due to the significant appreciation (and perhaps overvaluation) of the *peso*, the value of the extreme and moderate poverty lines in US dollars for 1989, were 19$, and 34$ respectively.

[7] Atkinson (1989) and Cowell (1994) explain them in detail.

(1) $$I = f(I_W(\Pi), I_B(\Pi))$$

where 'I' is required to be additively decomposable, in order to be able to identify both components.

It has been proved by Bourguignon (1979), Cowell (1980), Shorrocks (1980), and Shorrocks (1984), that the only inequality measures that fulfill all the desirable requirements of any inequality index and are additively decomposable at the same time, belong to the family of "Generalized Entropy Indices".

For the purposes of this work, we will use the Theil index weighted by population (T) which belongs to the 'Entropy' family, as it allows to interpret each component of inequality in a satisfactory way[8]. By expressing the index as:

(2) $$T = T_W(\Pi) + T_B(\Pi)$$

it can be seen that the "within-group" component (T_W) can be interpreted as the amount of inequality that can be attributed to causes other than the partition (π), while 'T_B' could be thought of as the extent by which inequality would be reduced if the differences between the subgroups defined by (π), were eliminated.

Cowell and Jenkins (1994) argue that the 'between-group' component indicates the amount of inequality "accounted for" or "explained" by a particular population partition (π) or characteristic. In this context, they suggest a summary measure of the amount of inequality "explained", which for the case of the Theil index could be expressed as:

(3) $$R_B(\Pi) = \frac{T_B(\Pi)}{T}$$

This measure can be thought of as being analogous to the 'R^2' in regression analysis, and it may in turn include additional sub-partitions or characteristics. By including coarser partitions, the value of the 'R_B' measure, and therefore the explanatory power of the 'T_B' element, will necessarily rise (or at least not fall). Taken to an extreme, the finest partition that could be defined would lead to take each individual as a sub-group, and therefore, the 'T_B' component would necessarily equal 'T'. However, as individuals usually differ by non-observable characteristics (such as ability), the amount of inequality "explained" will be determined by the extent to which the partitions can be narrowed down, that in turn depends on the information available.

[8] As argued by Shorrocks (1984).

By applying the difference operator to equation (2), we would simply obtain:

$$\Delta T = \Delta T_W + \Delta T_B \tag{4}$$

and as one of our purposes is to explore the reasons of the changes in income distribution registered in certain period of time, from equation (4) we can straight forwardly suggest a measure of the amount of the "change in inequality explained" by certain characteristics, which can be expressed as:

$$C_B(\Pi) = \frac{T_W(\Pi)_{t+1} - T_W(\Pi)_t}{T_{t+1} - T_t} \tag{5}$$

This measure can be interpreted as the proportion of the change in inequality that can be attributed to the changes in average income among the sub-groups defined by the partition (π), while the term $1\text{-}C_B(\pi)$ would represent the proportion of the change in inequality accounted for by the rest of the characteristics of the population not included in 'π'.

Inequality Decomposition by Factor Components

Besides determining the importance of certain population characteristics in the distribution of income, it is also desirable to identify the contributions of each of the components of income to total inequality, as the procedure would allow to identify the effects of policy changes on the prices of the factors of production, and thus on income distribution. However, contrary to the case of the decomposition by population sub-groups, Shorrocks (1988) has demonstrated that decomposing inequality by factor components imposes several methodological problems, as none of the indexes that fulfill the desirable requirements of an inequality measure can generate a decomposition to which an appropriate interpretation can be attached.

Nevertheless, Shorrocks (1982) has also indicated that although there is no unique way to decompose inequality by factor components, the Squared Coefficient of Variations and the members of the Atkinson family of indices[9] are the only ones that generate interpretable results. For the purposes of this work, we will use the Coefficient of Variation (CV) index, which can be written in the following way:

[9] Both of which belong to the family of entropy measures.

(6)
$$CV = \sum_{j=1}^{k} \beta_j CV_j$$

where 'β_j' represents the income share of income source 'j', and 'CV_j' is the value of the CV index for income source 'j'. Therefore the normal interpretation attached to the term '$\beta_j CV_j/CV$' is that it indicates the share of income source 'j' in overall inequality[10].

It can be observed that inequality measured by this index could change due to two reasons: either through changes in 'β_j', or by changes in 'CV_j'. As it is also desirable to be able to identify both effects separately for our purposes, we can suggest a simple decomposition method that allows to identify the impact of a change in the income share of certain source on overall inequality, as well as the impact of changes in inequality within the source. By taking the definition of a perceptual change in 'CV', it can be verified that:

(7)
$$\Delta CV = \sum_{j=1}^{k} [\beta_j CV_j]_0 \Delta CV_j + \sum_{j=1}^{k} [\beta_j CV_j]_0 \Delta \beta_j + \sum_{j=1}^{k} [\beta_j CV_j]_0 [\Delta CV_j \ \Delta \beta_j]$$

were 'k' is the number of income sources, and 'delta' denotes a perceptual change in time. The first term on the right hand side of (7) represents the contribution of the change in inequality within each source to the overall change, the second term represents the contribution of the change in the income share of each source to the change in 'CV', and the last term is a joint effect.

Our data provides information about monetary (including wages, entrepreneurial rents, property ownership rents, production cooperatives, transfers, and other monetary incomes), and non-monetary incomes (including auto-consumption, income in kind, gifts, and imputed rent for owned-occupied housing), so we will intend to determine their specific contribution to the changes in inequality registered, by using the above method.

[10] Podder (1993) has argued convincingly that such interpretation is wrong and that the only way of determining if certain income source has a positive or negative effect over total inequality is by establishing if the inequality index of each source is larger or smaller than total inequality. In the case of the Coefficient of Variations, only those sources for which '$CV_j > CV$' would have a positive contribution and vice-versa. However, here we are more interested in the contributions to the change in inequality, and therefore, any source which registers a rise in inequality can be said to have contributed positively to the dispersion of overall incomes and vice-versa.

1.4 Measurement and Decomposition of Poverty

As explained by Blackwood and Lynch (1994), the three most common indexes used through out the literature for the measurement of poverty are the head-count ratio (H), the relative income gap (I), and the FGT(2) index[11], which belong to the family of poverty indices denoted 'P_α', where 'α' is an inequality aversion parameter. The three indices will be calculated for the obtention of our results.

Foster, Greer and Thorbecke (1984), have demonstrated that the 'P_α' family of indices are additively decomposable for any vector 'y' broken down into subgroup income vectors:

(8)
$$P_\alpha = \sum_{i=1}^{n} p_i P_{\alpha,i}$$

where 'i' is a population subgroup, and 'p_i' its population share. This allows to observe that the increase in poverty in some specific subgroup of the population, will generate a rise in total poverty at the rate given by the population share.

Despite analyzing the changes in poverty and inequality that have occurred in Mexico since 1984, it is important to examine the potential of the NEM for future poverty alleviation. The problem arises, because an economic transformation program can change the structure of the economy in such a way, that the possibilities of reducing poverty through "trickle down" effects may be modified.

To analyze the latter aspect, it can be said that poverty can change either by income redistributions or by economic growth. Kakwani (1993) suggests two formulas to determine the poverty reducing impact of either inequality reductions or increases in average income for the family of 'P_α' indices. According to this method, the elasticity of a 'P_α' index with respect to changes in mean income (denoted 'μ'), can be expressed as:

(9)
$$\eta_{P_\alpha} = \frac{\partial P_\alpha}{\partial \mu} \frac{\mu}{P_\alpha} = - \frac{\alpha [P_{\alpha-1} - P_\alpha]}{P_\alpha}$$

while the elasticity with respect to a 1% increase in the Gini inequality index 'G' is given by:

[11] Named after Foster, Greer and Thorbecke (1984).

(10) $$\epsilon_{P_\alpha} = \eta_{P_\alpha} + \frac{\alpha \mu P_{\alpha-1}}{z P_\alpha}$$

where 'z' is the value of the poverty line. Therefore, the overall change in poverty could be expressed as:

(11) $$\Delta P_\alpha = \eta_{P_\alpha} \Delta \mu + \epsilon_{P_\alpha} \Delta G$$

II. A Macroeconomic Overview of the NEM in Mexico

Since the early 1950s, Mexico followed an inward oriented economic model which consisted in creating an industrial sector through protectionism in a context of low inflation and high growth rates. Through the 1970s, this strategy was supported by high oil revenues, which resulted in a very active role of the state in the economy as well as significant increases in GDP per capita. However, by 1982 the drastic decline in international oil prices made such strategy unsustainable, as the country entered a deep economic crisis.

According to Aspe (1993), in general terms the Mexican strategy to face the crisis has consisted on a strong fiscal contraction, the privatization and liquidation of state owned firms, a trade and financial liberalization, a tax reform, the introduction of measures of economic deregulation, the renegotiation of public debt, and the redefinition of the strategy to combat poverty, which are all in line with the NEM. The timing of these policies is described below.

1.1 The 1983-1989 Stabilization Period

Figure 1 shows the main aggregate indicators of the Mexican economy since 1975. First of all, it can be seen that the international environment has not been specially favorable to the country, as the terms of trade declined sharply between 1980 and 1985, and suffered a major deterioration in 1986 which has not shown signs of recovery.

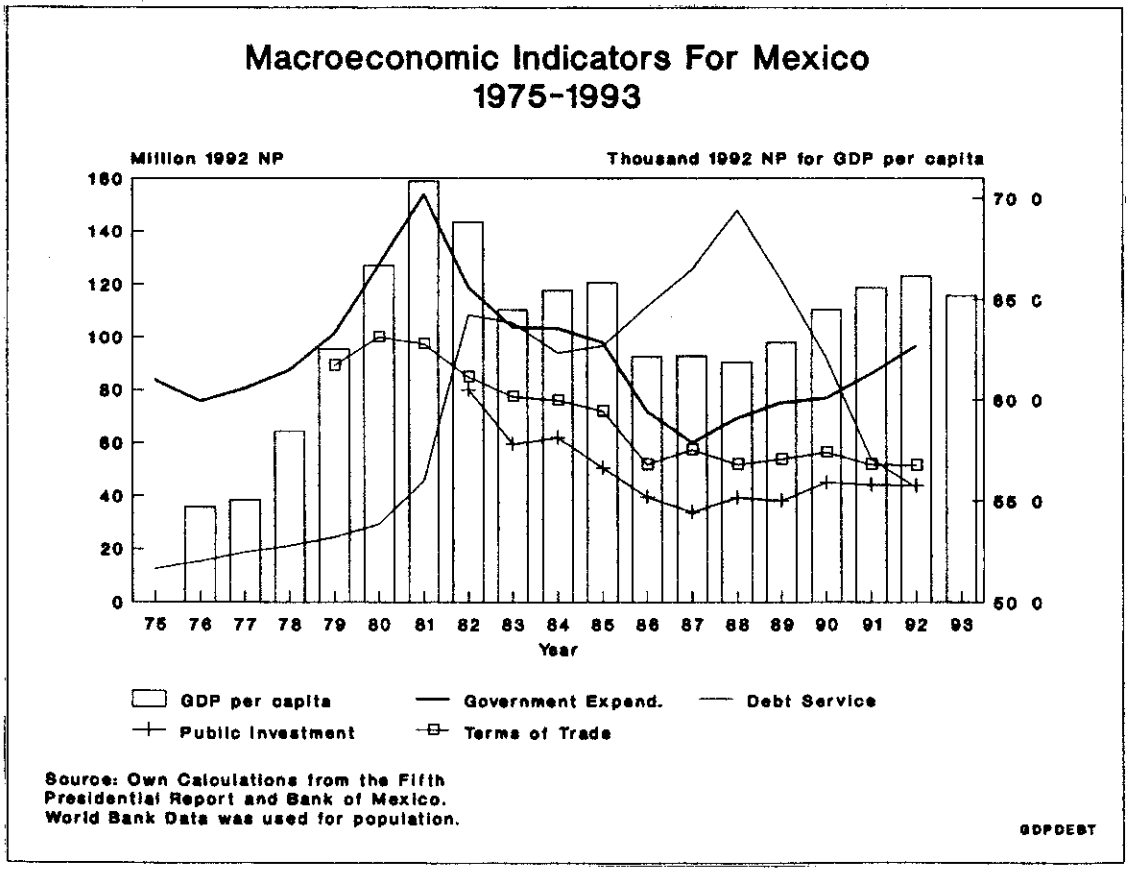
The first component of the NEM observed in Mexico can be traced up to 1983, when the government's response to the sharp rise in inflation to almost 100% in the prior year, was dealt with by reducing government expenditures, by a monetary contraction, by increasing the prices paid for publicly provided goods and services, by devaluating the currency, and by the liquidation and disincorporation of 200 out of 1155 state owned firms. This marked the initial stages of the redefinition of the role of the state in the economy simultaneously with the first stabilization

attempts, and they indicate a clear shift away from the public expenditure-led growth model.

The short run effects of those policies contributed to the sharp decline in GDP per capita since 1983, but they also resulted in a momentary control of inflation, which decreased from 99% in 1982, to 64% in 1985.

1986 marks an important year due to two events. First, the second major shift towards the NEM was observed, as Mexico strengthened its unilateral trade liberalization policies initiated in 1985, by joining the GATT[12]. This unilateral measure marks the first step towards a clear export-oriented strategy.

Figure 1



The second event was given by an important decline in international oil prices, which marks the beginning of a period of economic stagnation that lasted up to 1989. After this shock,

[12] As explained by Szymczak (1992), the trade barriers were phased out in stages since 1983 with the shift from import-licensing requirements into a tariffs scheme in 1985. Between 1985 and 1989 the maximum tariff level declined from around 100% to 20%, average tariffs and the proportion of import fractions under control decreased from 24% to 13%, and from 83% to 18% respectively, and the proportion of non-controlled imports rised from 65% to 82%.

inflation rates continued to rise sharply (reaching a maximum of 159% in 1987), and the Mexican peso devaluated by almost 50%. This time, the government's strategy to combat inflation was the creation of the "Pact for Economic Solidarity" in 1987, a negotiation process between labor, peasants, business, and the government, through which the freezing of prices and wages were agreed, and the exchange rate was set as the nominal anchor of the system (exchange rate policy changed into one of a preannounced schedule of devaluations against the U.S. dollar). Similar agreements have followed the initial "Pact", and they have continued to be the instrument through which wages, exchange rate, tariffs, and public sector pricing policies are defined.

Since 1987, the restrictive fiscal policy, the trade liberalization, the sharp rise in international debt service, the further disincorporation of state owned firms, and the devaluation, contributed to a further demand contraction. Although devaluation lead to increases in exports, trade liberalization resulted in a larger rise in imports.

On the revenue side, there were 3 main policies since 1987 that contributed to ease the pressure on public finances: the renegotiation of the external debt, the initiation of a tax reform, and the further disincorporation of state owned firms.

The positive outcome of the policies was given by a reduction in inflation to 52% in 1988, and a to 20% in 1989, and in fact, trade liberalization carried important short run benefits in this respect. García Rocha (1990b), Corden (1987), and Mussa (1986) explain that one of the first consequences of lifting barriers to imports is a reduction in the general price level in the economy by the introduction of a regulatory effect over the price of domestically produced goods, which rises the welfare level of all consumers given by increased access to a wider span of goods at lower prices. Aspe (1993) argues, that in the case of Mexico, trade liberalization acted as a price regulatory force during the period for over 50% of domestic production.

1.2 The Partial Recovery of Growth Since 1989

The first year of the Salinas administration, 1989, marked three major changes in the Mexican economy. On one hand, positive GDP per capita growth rates started to be observed, on the other, some important policies which are identified with the NEM were introduced, and additionally, some measures such as privatization were reinforced.

The first of the new measures consisted on liberalizing the financial system. According to Coorey (1992), the main reforms constituted the freeing of interest rates, the elimination of direct controls on credit, and the reduction in the high reserve requirements to commercial banks. Quantitative restrictions on credit allocation were also lifted, and several different financial instruments were allowed to operate.

One implication of the financial liberalization was a rise in interest rates, which tends to hinder investment through increases in the costs of production and intensifies pressures over the

fiscal deficit as the domestic debt burden increases, but on the other hand, credit availability to the private sector expanded significantly, which perhaps contributed to the recovery of growth to some extent. This effect was reinforced by the introduction of a capital repatriation scheme, which incentives the deposit of foreign resources by mexicans into domestic banks, by charging only a 1% tax rate, which resulted in a repatriation of around 10$ US billion.

The consolidation of the financial liberalization was achieved in the 1991-1993 period, in which 18 commercial banks were privatized. According to Aspe (1993), these measures also included a redefinition of the role of development banks, as direct subsidies to credit were reduced substantially, the conditions for credit allocation were tightened to finance only profitable ventures, the amount of resources available for credit increased, and the administrative procedures were modernized.

The second crucial measure of the shift towards the NEM during this period, is the creation of the National Solidarity Program (Pronasol), in 1989. This constituted a redefinition of the poverty alleviation strategy followed by the government in previous years, as a single mechanism that incorporated the main social policy tools, substituted several government agencies which were difficult to monitor, and which sometimes had diffusive objectives.

A third policy consisted on deregulating foreign direct investment (FDI). As explained by Kalter (1992), although the efforts of attracting FDI started since the promotion of projects with foreign capital in 1983, regulations started to be eliminated in 1989, in which the authorization procedures were simplified, the limits of foreign ownership of firms redefined (from a maximum of 49% up to 100% in some cases), and foreign capitals were authorized into the stock market.

Cardoso and Dornbusch (1989) explain that the deregulation of FDI usually has positive short run effects on growth and on controlling inflation, as it enhances the credibility on the government's capacity to stabilize the economy, it reduces borrowing requirements, rises taxable income, and it helps to close the foreign exchange and investment gaps by enlarging the stock of capital available in the economy. In the case of Mexico, it seems that this measure has had positive effects on growth, as it has incentived massive flows of more than 19$ US billion since 1989, as well as a similar amount of "speculative" investment registered in the stock market.

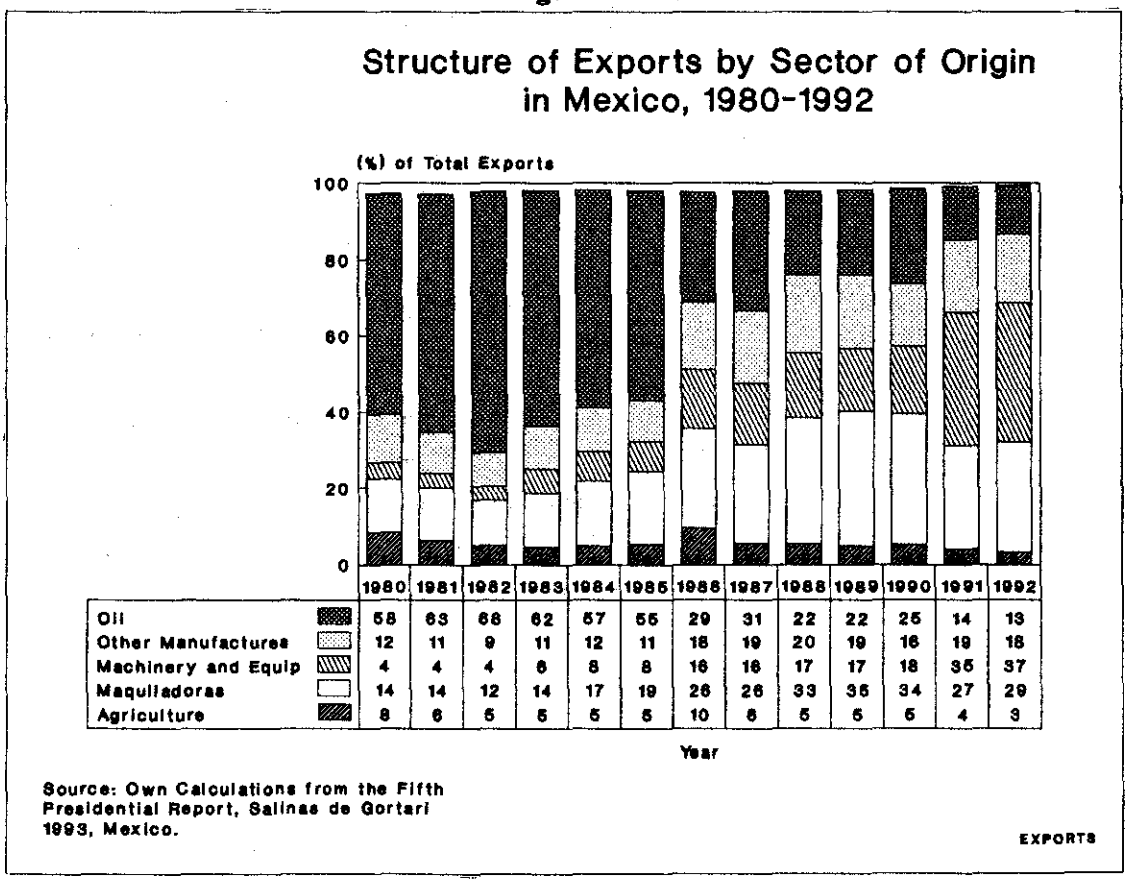
One of the most important measures to be reinforced during this period, was trade liberalization. Since 1989 barriers to imports continued to drop, the proportion of non-controlled items grew to almost 90%, and the average tariff decreased. This contributed to the rise in the trade balance deficit from 883$ US million in 1990 to 15,934$ US million in 1992, which reverted the positive balance trend observed between 1983 and 1989.

In contrast, the importance of total exports in GDP declined from 17% in 1989, to 14% in 1992, while imports kept on rising by around 20% each year (representing 17% of GDP in 1989, and 19% in 1992). It is interesting to note that while in 1986, when trade liberalization initiated, imports of capital goods represented 24% of the total, their importance declined

consistently up to 1992, while the imports of intermediate goods have maintained their importance. In contrast, there has been a significant rise in the share of consumption goods in total imports (from 7% in 1986, to 13% in 1992).

Compared to imports, total exports have increased modestly since 1986, but the main characteristic of exports, has been a drastic change in their composition. Figure 2 shows that in 1985, oil exports accounted for around 55% of the total, but their importance has declined consistently since then, and up to 1992, they accounted for only 13%. The main growing export-oriented sectors have been the "maquiladora" assembling industry, and specially, the Machinery and Equipment manufacturing sub-sector (that includes the automobile and electronics industries), which by 1992 accounted for two thirds of the total manufactured exports.

Figure 2



The export patterns and the behaviour of intermediate good imports in recent years indicate that the country has been following an intra-industry and intra-firm export pattern, which according to trade theory[13] requires medium-skilled labor and capital in a relatively intensive proportion. This trade pattern coincides with the large investments in some specific sub-sectors such as auto parts, that have flourished in recent years, permitted by the deregulation of FDI.

By early 1994, the trade liberalization measures were consolidated by the initiation of the North American Free Trade Agreement (NAFTA), which constitutes the start-point of a process of multilateral reductions of barriers to trade, which is expected to have positive effects on exports in the short run due to the preferential access provided to Mexican firms.

Regarding public revenues, the reinforcement of the privatization measures has also permitted to ease pressures over the public deficit and over the international reserves needed to finance the trade deficit. The total revenues from the sale of state owned firms have amounted more than 23$ US billion since 1988[14], and this is one of the elements that have contributed to a reversal in the debt payment-public expenditure relation since 1990, when for the first time since 1985, debt service was lower than public expenditure. However, it is interesting to see in figure 1, that real public investment has continued to decline.

Since 1989, the implementation and reinforcement of the above measures and the transformation that had been taking place since 1987, have resulted in declines in inflation rates from 20% in 1989 to 8.5% in 1993, while GDP per capita grew by around by 2.7% in 1990, by 1.6% in 1991, by .8% in 1992, but declined in 1.4% in 1993, since when the economy has again shown signs of stagnation.

Some of the explanations to the delayed full recovery of the economy, are on one hand that the exchange rate has appreciated by almost 40% in real terms since 1987[15], hindering growth and export performance as well as generating massive flows of imported consumption goods, and on the other, that the flows of FDI have not yet resulted in considerable production and employment increases due to the longer maturation period required.

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[13] Greenaway and Milner (1987), and Stewart (1988) explain this in more detail.

[14] The two major operations were registered through the sale of the commercial banks (12.3$ billion), and of the national telephone company Telmex (in 6.2$ billion).

[15] This is explained in detail by Dornbusch (1994).

II. Changes in Poverty and Inequality in Mexico During Economic Liberalization

Most of the authors that have analyzed the economic transformation program in Mexico have concluded that the fact that inflation has been controlled and that the economy has shown positive growth rates since 1989, are indicators of success[16]. The purpose of this section is to determine how poverty and inequality changed during the 1984-1992 period of economic liberalization by using the information in the household income and expenditure surveys by INEGI, for 1984, 1989 and 1992, with the intention of throwing some further evidence about the welfare implications of the macroeconomic program.

2.1 Inequality in Mexico Between 1984 and 1992

Inequality in Mexico has historically been very high compared to other countries in the world, although it declined during the 1969-1984 period[17]. Here we analyze the developments between 1984 and 1992.

Table 1 shows the value of three different inequality indexes calculated for per capita incomes. It can be seen that income distribution deteriorated significantly during the stagnation period, and remained practically stable during the recovery process[18]. It should be noted that the second sub-period covers a shorter time span and therefore, we would expect to observe larger changes between 1984 and 1989 anyway.

Table 1

Index	Value of the Index			Proportional Change (%)		
	1984	1989	1992	1984-89	1989-92	1984-92
Gini	.4618	.5129	.5155	11.07	0.51	11.63
CV	.9701	1.1560	1.1486	19.16	-0.64	18.40
Theil	.3937	.5056	.5019	28.42	-0.73	27.48

Source: Own Calculations from the Household income and expenditure surveys, INEGI, 1984, 1989, and 1992, Mexico.

[16] The works by Aspe (1993), Kalter (1992), and Lustig (1992) are good examples of this.

[17] van Ginneken (1985) presents estimates of the Gini index applied to household data since 1950.

[18] It is interesting to see that the Gini index indicates a slight rise in inequality between 1989 and 1992, while the other two indexes show a slight decline. The reason is that, as explained by Atkinson (1970), the Gini index gives more weight to transfers made in the center of the distribution.

Table A1 in the appendix shows that the deterioration in the first sub-period was caused by a disproportionate rise in the income share of the richest 10% of the population, from 36.1 to 42.5%, at the expense of the remaining 9 deciles. The main losses were registered in the poorest 4 deciles, but particularly among the 1st decile, which reduced its already precarious income share in 19%. Between 1989 and 1992, the shares by decile remained practically constant, although the 1st, 7th, 8th and 9th improved their position slightly.

Our calculations in table A1 in the annex also show, that between 1984 and 1989, average income raised by 16.9% in real terms, and between 1989 and 1992, by 15.55%, resulting in an aggregate rise of 35.04% for the whole period. These results do not coincide with the sharp decline in percapita GDP shown in the previous section, neither with the modest recovery from 1989 to 1992. There are some explanations to this discrepancy. One of them is that GDP does not include neither informal activities nor non-monetary incomes, which are both captured by the household surveys. Another explanation is that the degree of under-reporting may differ from one survey to another, but this argument would be impossible to verify. By taking a closer look at the changes in the real value of each income source, our calculations allow to observe that the main discrepancies are registered in entrepreneurial incomes and imputed rents, which appear to have increased disproportionately, as compared to those registered in the National Accounts. However, it is not possible to determine if the discrepancy is due to inaccuracies in the National Accounts or in the Income and Expenditure surveys.

Apart from increasing its income share by 16.4% in 8 years, the 10th decile registers an increase in real average income of 57% during the 1984-1992 period, most of which was achieved between 1984 and 1989. In contrast, the incomes of the individuals in the first and second decile only rose by 9.9% and 10.1% respectively, as during the 1980s, they experienced a decline in 5.6% and 2.4% in real terms, while the incomes of the 3rd to 9th deciles increased in average by 5%. It is interesting to see that despite the deterioration in income distribution, the 1st decile registers a higher rise in real income between 1989 and 1992 than most of the other deciles, but this was not enough to revert the strong regressive redistributions that occurred in the previous years.

2.2 Inflation and Inequality

As mentioned before, one of the approaches to establish the relationship between income distribution and economic liberalization and stabilization policies, is by simply arguing that inflation is highly regressive, as the poorer the individual, the scarcer the alternative financial instruments available for protecting against price fluctuations. From this, it follows that controlling inflation is usually highly progressive. Therefore, it does not seem surprising to find that the sharp rise in inequality was registered during the high inflation years of the Mexican

economy, while income distribution did not deteriorate furtherly since inflation was set under control. At first sight this would seem to coincide with the argument that controlling inflation is a highly progressive policy.

However, strictly speaking, in order to verify the incidence of inflation over each income, it would be necessary to inflate the values registered in the 1984 and 1989 surveys by a specific price index dependant on the consumption patterns of each individual, and not by a general Consumer Price Index (as in the case of the results shown in table A1), as by this means we would be able to measure rigorously the extent to which inflation affects the real income of each individual. Additionally, it would be necessary to determine to what extent do the resources obtained by each household deteriorate when holding liquid monetary assets for consumption, or to what extent do they deteriorate or gain value when invested in specific financial instruments.

Although these kind of comparisons cannot be made with the information available at the moment, we can investigate the relationship between inflation and inequality furtherly in some detail. It can be argued that although it is usually true that the poorer the individual the scarcer the opportunities of "escaping" from price fluctuations, it is also true that individuals in the rural sector may mitigate the incidence of inflation in a relatively easier way than urban ones, given the possibilities of acquiring non-monetary incomes such as payments in kind and autoconsumption.

Table 2

Decile	(%) of Monetary Income Received by Each Decile			(%) of Individuals Dependant on Agricultural Occupations (Average 1984-1992)
	1984	1989	1992	
Total	78.8	77.4	73.9	26.6
I	69.3	69.4	61.2	67.1
II	72.2	74.2	68.1	50.7
III	75.9	76.2	71.0	39.0
IV	78.2	77.6	73.3	30.9
V	78.1	77.3	70.9	19.7
VI	79.6	77.7	73.4	19.2
VII	78.6	79.4	72.0	13.6
VIII	79.8	77.1	72.4	9.8
IX	77.0	77.7	73.0	7.1
X	80.9	77.6	77.0	8.6

Source: Own calculations from the Household income and Expenditure surveys, INEGI, 1984, 1989, and 1992, Mexico.

Table 2 shows that the argument seems to be relevant for the case of Mexico, as the lower the decile to which an individual belongs, the lower the proportion of income that can be affected by inflation (in 1984, the poorest individuals obtained about 69% of their incomes from monetary sources while the richest 10% received almost 81%), and the lower the decile, the larger the proportion of individuals depending on rural occupations.

Two conclusions can be derived from these results. On one hand, it can be observed that individuals located between the 4th and 9th deciles obtain similar proportions of their incomes from monetary sources in the three years, and these proportions are clearly higher than for those located in the first three deciles, and lower than for the ones in the richest decile (except for 1989). This would lead to think that in the case of Mexico, the bulk of the impact of inflation is registered among the middle deciles, as the poorest 30% obtain a lower amount of monetary incomes, while those in the 10th register higher proportions, but presumably have access to the highest yielding financial instruments only available for large capital stocks, that compensate for their monetary holdings.

A second conclusion, is that it seems that there was an important shift away from monetary incomes between 1989 and 1992, and therefore, the incidence of inflation must have fallen not only due to the decline in inflation rates, but also due to the fact that a lower proportion of the incomes were subject to fluctuations in the monetary system. The largest shift is registered in the poorest decile, where in average, individuals received around 39% of their incomes from non-monetary sources in 1992 (compared to 30% in 1984), while the smallest shift is registered precisely among the richest 10% of the population, who continued to receive practically the same proportion from monetary sources as compared to the previous year.

Therefore, even though the negative impact of price fluctuations on incomes, which affects the poorer the most, was ameliorated, it seems that the proportion of incomes which were vulnerable to these fluctuations declined, specially at the lowest income levels, which makes it difficult to determine if controlling inflation in Mexico has in fact been highly progressive.

2.3 Some Explanations to the Change in Inequality

In order to identify the main determinants of the large deterioration in income distribution observed between 1984 and 1992, we can decompose the Theil index into within and between-group inequality components according to various characteristics of the population, as explained in the first section of this work. In the case of Mexico, the surveys provide information about the sex, age, education level, occupation, region, sector of activity, and position in the occupation of the household head. Table 3 indicates how much inequality do these characteristics explain, and how much of the change in inequality can be attributed to them.

It can be seen that the Mexican economy experienced substantial changes during the 1984-

1992 period in this respect, as initially, the differences between education levels were the main determinant of inequality, but through the liberalization process the differences between occupations became more important[19].

Table 3

Inequality Between	(%) of Inequality Explained			Contribution to the Change in Inequality	
	1984	1989	1992	1984-89	1984-92
Joint Contribution of all the Variables	55.4	58.4	63.9	69.1	95.0
Education Level	20.5	26.4	32.0	47.3	73.3
Occupations	22.7	24.6	34.6	31.1	77.7
Regions	7.4	9.6	10.0	17.4	19.5
Sector of Activity	9.5	15.1	16.0	35.0	39.5
Position in Occupation	3.6	5.7	8.8	12.8	27.9

Source: Own calculations from the Household income and Expenditure surveys, INEGI, 1984, 1989, and 1992, Mexico.

As expected, the joint contribution of the five variables is larger than any single contribution. Following Cowell and Jenkins (1994), we could argue that by classifying the population according to education levels, occupations, regions, sector of activity, and position in the occupation jointly, the differences between the average incomes of each sub-group explain almost 64% of total inequality in 1992. In other words, only 36% of inequality remains unexplained.

As indicated by the individual contributions, the largest reductions in inequality could be achieved if the differences between occupations and education levels were eliminated, as they accounted in 1992 for almost one third of total inequality respectively. The differences among sectors of activity are also important, but the power of income redistributions that tend to ameliorate the differences between regions or position in the occupation, seems rather limited.

It is interesting to observe, that the two most important explanatory variables are strongly linked with each other, because education is usually a requirement to access certain occupations.

[19] We have not included in the table the results for the decomposition by age and sex of the household head, as their explanatory power is less than 1% in both cases. The reason is that as the unit of analysis is the household and not the individual, these variables loose most of their significance.

Therefore, it could be thought that reducing the differences in education would not only have a positive effect over income distribution through reducing the disparities by education level, but that it would also have some impact over the distribution among occupations, as better educated individuals would gain access to higher remunerated activities.

The two last columns of the table show that the main identifiable cause of the expansion of the gap between the incomes of the rich and those of the poor in the first sub-period, were the changes in the distance between educational levels, which account for almost one half of the change in inequality. The explanatory power of the changes between occupations and the sectoral differences in income are also highly significant, and it is interesting to observe that almost 70% of the change in inequality can be attributed to the expansion of the gap between the incomes of the five characteristics jointly. This means that only 30% of the change in inequality between 1984 and 1989 remains unexplained.

With respect to the 1984-1992 period, the results indicate that more than 77% of the change in inequality is explained by the widening of the distance between the average incomes of occupational sub-groups, and given its relationship with education, it is not surprising to find that educational differences account for 73.3%. It can also be seen that almost 40% of the change can be explained by the inequality between sectors of activity.

Perhaps the most important result, is that the five characteristics jointly explain 95% of the change in inequality. In other words, if the gap between the average incomes of the sub-groups classified by education, occupation, region, sector, and position in the occupation had not widened, 95% of the deterioration in income distribution would have been avoided.

Inequality Between Occupation Sub-groups

Taking a closer look at the changes in inequality between occupations, table 4 shows that those occupations which in 1984 paid the highest remunerations register the largest rises in average income between 1984 and 1992, while for the lowest paid ones (with the exception of street vendors and domestic servants), average income increased only slightly.

Generally speaking, occupations have certain barriers to entry, including education, social background, physical capital ownership, personal ability, etc., and those who have access to the better remunerating ones are usually better endowed with physical and human capital. Following the argument, it seems that in the case of Mexico, those who were better endowed since the initiation of the liberalization process, had larger possibilities of benefiting from the opportunities that the economy generated.

Table 4

Occupation Sub-group	Average Income in 1984 (Monthly USDls)	(%) Change in Real Average Income 1984-1992
Total Population	53.8	35.0
High Level Officials-Directors	186.6	68.6
Professionals and Technicians	88.3	75.7
Middle and Low Level Office and Sales Workers	66.8	43.4
Drivers-Armed Force Workers	51.1	17.6
Workers in Industrial Activity	47.8	14.0
Street Vendors-Dom. Servants	37.9	44.8
Agricultural Sector Workers	34.6	-4.5

Source: Own calculations from the Household income and Expenditure surveys, INEGI, 1984, 1989, and 1992, Mexico.

The results make it evident that further analysis at a less aggregate level is necessary to assess the impact of the NEM over income distribution. The rest of this work intends to provide some evidence in this respect (and future reference to table 3 will be made), but first, we proceed with the analysis of the changes in poverty in Mexico during the period.

2.4 Poverty in Mexico Between 1984 and 1992

By dividing the population into 4 socioeconomic groups (extremely poor, moderately poor, middle class, and rich, as defined previously), we can get a clearer picture about the welfare changes registered in Mexico. Table 5 shows the results.

The increase in the proportion of extremely poor individuals between 1984 and 1989 is in line with the expected outcomes of the contractionary policies implemented in the first sub-period under study. It is interesting to see that the adverse short-run effects of trade liberalization, devaluation, and fiscal contraction seem to have had a larger negative impact over the incomes of the moderately and extremely poor, no effect over the incomes of the middle class, but a substantial improvement for the rich.

The increase in the proportion of extremely poor individuals during the 1989-1992 period is a surprising result (although the rise is insignificant), as this period was characterized by positive GDP per capita growth rates, lower inflation, and a rise in the real value of public expenditures. However, it should be noted that real incomes for the extremely poor increased more than for the rest of the population.

Table 5

Subgroup	Population Share (%)			(%) Change in Real Income		
	1984	1989	1992	84-89	89-92	84-92
Total	100	100	100	16.9	15.6	35.0
Extreme Poor	10.3	10.7	10.8	-4.0	15.9	11.4
Moderate Poor	19.5	17.6	17.1	-2.0	12.3	9.9
Middle Class	62.1	61.9	60.7	.7	12.0	12.7
Rich	8.1	9.9	11.5	26.71	5.5	33.7

Source: Own calculations from the household income and Expenditure surveys, INEGI, 1984, 1989, and 1992.

In order to throw further light over the changes in poverty, we can compute the value of the three common poverty indices mentioned in section I. The results are presented in Table 6[20].

First of all, it can be said that regardless of the index used, extreme poverty increased between 1984 and 1989, as the proportion of extremely poor individuals raised, the poverty gap (the average distance to the poverty line) widened, and inequality within the poor raised. However, in the case of moderate poverty the conclusion would depend strictly on the poverty index used, as the headcount ratio declined, but the poverty gap and the FGT(2) index augmented. This means that although the proportion of moderately poor diminished, those who continued to be moderately poor were poorer in 1989 than in 1984.

According to our results, the 1989-1992 period constitutes one of recovery in macroeconomic terms, as well as one of improvement in the relative position of the extremely poor with respect to the rest of the population, which constitutes a considerable reversal as compared to the stagnation period. Table 6 shows that the proportion of extremely poor remained practically constant, but the poverty gap and the FGT(2) index declined, which means that in average, the extremely poor were better off in 1992 than in 1989. Regarding moderate poverty, there is an unambiguous decline in the proportion of poor, in the average distance of their incomes to the poverty line, and in the inequality level within their incomes. These results may

[20] Until this moment, only INEGI-CEPAL (1993) had calculated the extent of poverty for the same 3 years using the same data bases. They conclude that extreme poverty changed from 15.4% in 1984, to 18.8% in 1989, and to 16.1% in 1992, which does not coincide with our results. Also, they find that moderate plus extreme poverty increased from 27.1% in 1984, to 28.9% in 1989 (which does not coincide with our results), and from 28.9% in 1989 to 27.9% in 1992 (which almost coincide with our calculations). The origin of the discrepancy lies in that INEGI-CEPAL applies a "correction" factor to the incomes in the surveys, arguing that this makes them compatible with the National Accounts, and that they use different poverty lines that ours.

be indicating that the social costs of stabilization are in fact materializing.

Table 6

Poverty Line	Poverty Index	Year		
		1984	1989	1992
Extreme Poverty	H	10.33	10.7	10.8
	HI	3.04	3.5	3.19
	FGT(2)	1.38	1.73	1.37
Moderate Poverty	H	29.85	28.3	27.8
	HI	10.3	10.6	10.2
	FGT(2)	5.10	5.53	5.16

Source: Own calculations from the household income and expenditure surveys, INEGI, 1984, 1989, and 1992.

Despite the improvement during the second sub-period, the losses suffered by the poor between 1984 and 1989 were strong enough to result in a deterioration in their relative position throughout the overall period under study. It is interesting to note that between 1984 and 1992, the proportion of individuals in extreme poverty augmented by 5% in a context of a rise in the real average income reported in the surveys of more than 35%. As between those years the total population expanded by around 15%, this has resulted in an increase in the number of individuals who do not have enough incomes to acquire the minimal food bundle, from 7,839,444 to 9,033,473, which implies an absolute increase of 1,194,029 individuals in extreme poverty.

Recalling the results concerning the changes in inequality during the period, it is obvious that economic growth does not guarantee poverty reduction, as its benefits do not necessarily reach every economic agent. In the case of Mexico, simultaneously with the increases in extreme poverty registered during the 1984-1992 period, the standard of living of the richest 70% of the population increased, and as we argued before, the main gains were registered at the highest income levels.

2.5 The Possibilities for Future Poverty Alleviation

It has been shown above, that during the 1989-1992 period inequality did not rise significantly, and that this had poverty reducing effects in a context of economic growth. INEGI-CEPAL (1993) argues, that this shows that during the 1990s, the inequality and poverty increasing trend has been reverted, and that sustainable growth in the next few years will continue to have poverty reducing effects. In order to verify this argument, we would need to

determine if the structure of the Mexican economy has remained unchanged in such a way so as to make this result likely. To analyze this aspect, we can use the formulas suggested by Kakwani (1993) (explained before), which allow to analyze in a theoretical way, to what extent does the value of a poverty index rise when income distribution deteriorates, or to what extent does it decline when average income increases.

The idea behind the definition of the formulas, is that rises in average income will tend to have positive "trickle-down" effects over the whole population when income distribution does not deteriorate simultaneously, while a redistribution of income from the poor to the rich would increase poverty if average income remains unchanged. Table 7 shows the results of computing the elasticities of the FGT(2) index with respect to changes in mean income and to changes in inequality for each year and for a range of poverty lines, and throws some light over the existence of structural changes in the economy.

Table 7

Poverty Line (1992 Pesos)	Elasticity With Respect to Mean Income Changes			Elasticity With Respect to Changes in Inequality		
	1984	1989	1992	1984	1989	1992
58,500	-2.42	-2.15	-2.75	17.49	19.76	23.58
87,700	-2.41	-2.06	-2.66	16.32	18.18	21.70
92,986*	**-2.24**	**-2.04**	**-2.31**	**12.08**	**13.98**	**15.61**
117,000	-2.11	-1.93	-2.04	9.00	10.52	11.38
146,300	-2.04	-1.83	-1.93	7.47	8.75	9.46
167,949+	**-2.01**	**-1.82**	**-1.89**	**7.02**	**8.27**	**8.90**
175,556	-1.89	-1.72	-1.76	5.61	6.70	7.17
204,815	-1.75	-1.63	-1.67	4.58	5.56	5.95

Source: Own calculations from the household income and expenditure surveys, INEGI, 1984, 1989, and 1992.
* Extreme poverty line.
+ Moderate poverty line.

The results mean that for example if we take the extreme poverty line in 1984, a 1% positive growth rate would have reduced extreme poverty in 2.2% (given by the negative sign), while a 1% improvement in income distribution (a 1% decline in the Gini index given by income transfers from the rich to the poor) would have reduced extreme poverty by 12.1% (given by the positive sign).

Two main conclusions can be derived from the calculations. The first one, is that the lower the poverty line, the higher the difference between the two elasticities for each year. This means that for the extremely poor and in general, the poorer the individual, improvements in the distribution of income have a much larger effect than the "spill-over" effects from growth for

reducing poverty. For all the poverty lines considered, the difference in elasticities declines at higher incomes, but the potential of redistributions for poverty alleviation remains to be greater than that of economic growth.

The second important conclusion, is that between the three years, the elasticities have changed considerably. Between 1984 and 1989, the elasticity with respect to economic growth declined (as the rise in the poverty gap made it more difficult to "pull" individuals over the poverty line), while that with respect to inequality became higher. By 1992, both elasticities, but specially that with respect to inequality, increased again. These results indicate that the changes experienced between 1984 and 1992 make it less likely that the spill-over effects from economic growth will have any significant effects on poverty alleviation, compared to the potential of inequality reductions. It should be noted that by comparing the results for 1984 and 1992, it appears that the potential of rising average income at low poverty lines increased, which reflects the fact that the distance of the incomes of the poor towards the poverty line declined. Nevertheless, even in this case, improving income distribution would have a much larger effect on poverty.

This constitutes an important structural transformation in the economy from the point of view of the NEM, due to the fact that the redefinition of the role of the state has as consequence a reduction in the number of redistributive mechanisms. One of the main characteristics of the NEM, is the shift towards market orientation, which can lead to important efficiency gains; nevertheless, it is not evident that market forces will necessarily distribute resources in such a way that the less favored individuals in society have access to relatively greater opportunities than the rest of the population.

IV. The Effects of Fiscal Adjustment Over Inequality and Poverty

One of the most straight forward effects of the NEM on poverty and inequality, is that the redefinition of the role of the state and the efforts to stabilize the economy, lead to changes in the composition of government expenditures. Several authors[21] have explained that in general terms, if a fiscal contraction is translated into expenditure reductions on services, such as health, housing, education, potable water, electricity, and subsidies to consumption and production, poverty and inequality will tend to rise if the poor are the main beneficiaries from them.

[21] For example Cornia and Stewart (1990), Stewart (1993), Demery and Addison (1987), Heller et. al. (1988), Adelman and Robinson (1989), and Woodward (1992).

This section attempts to take a closer look at the fiscal contraction, and its relation to the changes in poverty and inequality observed during the 1984-1992 period. The main problem is that a comprehensive evaluation would require a detailed analysis of the impact of the main social policies at a microeconomic level, which is out of the scope of this work, but we can identify broadly some of the connections between the main social-oriented expenditures and absolute and relative welfare.

4.1 Public Expenditures at an Aggregate Level

Aspe (1993) has argued that although there has been a generalized fiscal contraction in Mexico since 1982, particular emphasis has been paid to protect those social expenditures that affect the poor directly, and moreover, that the increase in public revenues registered since 1988 has been directed towards social policies.

Figure 3

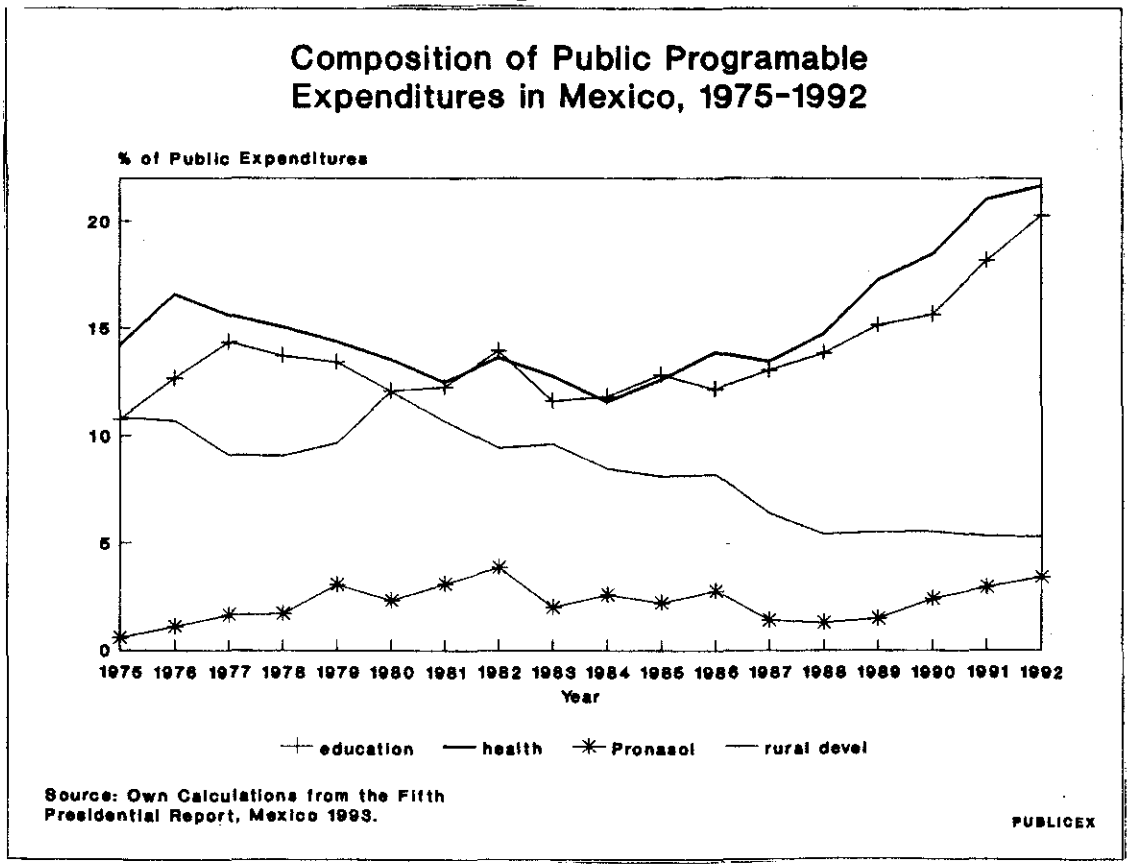


Figure 3, shows the importance of the main social components of total programmable expenditures. It can be seen that public education, public health, rural development, and Pronasol (which before 1988 included the budget for regional development), accounted for around 40% of the total in 1983, and more than 52% in 1992. Therefore, in aggregate terms it seems that the main social policies have in fact been protected throughout the transformation process.

Nevertheless, the importance of the expenditures in rural development have decreased consistently through out the 1982-1992 period, as at the beginning of the crisis they represented around 10% of total programmable expenditures, but by 1992 their share had been reduced to only 5%. Rural development expenditures include subsidies to agricultural production, rural credit, and rural infrastructure, and it can be said that the economic crisis and the initial stages of the implementation of the NEM in Mexico have had negative consequences for those policies.

The four social programs mentioned above can be though of in aggregate terms, as having poverty and inequality reducing effects. Therefore, we would expect that the improvement in the relative position of the public education, public health, and Pronasol programs would be favorable for relatively disadvantaged individuals, and in particular, that they contributed to avoid larger welfare losses up to 1992. The next following sections take a closer look at the case of public education and Pronasol.

4.2 Public Education

The effects of a change in the amount of resources allocated to public education are difficult to evaluate first of all, because there is controversy around the identification of the impact of education on incomes, and particularly if education rises productivity, if it is a mere screening device, or if it is a means of acquiring credentials that indicate other characteristics.

Secondly, throughout the literature[22] there have been attempts to isolate the effects of education from other personal characteristics such as ability, family background, etc,. that influence the degree to which individuals can benefit from the service. Thirdly, the benefits from education are usually observed long after the individual acquires it, which makes it is difficult to determine to what extent a change in public expenditures in education has a direct impact on the incomes received . Despite these problems, some of the effects can be analyzed under the realistic assumption that higher levels of education are identified with greater incomes.

For our purposes, it is particularly important to identify the benefits individuals receive from different types of education, because as explained by Schultz (1988), different educational levels generate different private and social returns. In particular, the social component is higher at lower levels, but as the number of years of schooling rises, private returns are more important,

[22] Behrman (1990) provides a summary of studies.

to the extent that only a small component of social return and a large private benefit can be observed at post-graduate levels.

Table 8

Decile	Average Number of Years of Education of Household Head
Average	5.09
I	2.09
II	2.83
III	3.48
IV	3.61
V	4.50
VI	4.70
VII	5.68
VIII	6.22
IX	7.66
X	10.13

Source: Own calculations from the household income and expenditure surveys, INEGI, 1984, 1989 and 1992, Mexico.

Moreover, as explained by Polachek and Siebert (1993), one of the main distinctive characteristic of the educational process is that in order to acquire the highest private benefits, it is necessary to "climb" through the system, which implies incurring in the payment of direct monetary and non-monetary costs for receiving formal education. Usually, poor individuals have low levels of education because they have scarce means for financing the private costs involved (specially the opportunity cost of not earning incomes while receiving education). For this reason poor individuals usually only benefit from the initial educational levels (if at all), and rarely are able to obtain the benefits from higher education.

In the case of Mexico, this argument seems to apply, as according to our calculations from INEGI (1984, 1989, and 1992), the poorest households spend around 74% of their incomes in food, clothing, housing and health (compared to 53% by the richest households), which indicates that the amount of resources left for non prioritary goods and services with a short run return is low, and that longer term investments such as formal education are usually not affordable.

Table 8 shows that in Mexico, the lower the income level of the individual, the fewer the years of schooling received, which seems to result in a very unequal distribution of education

among the population[23]: the heads of the poorest households in average do not even receive full primary education, while the average among the richest is 1.5 years of high school. Besides, as at low income levels private returns are lower, the positive correlation between income and education is not only given by the difference in the number of years of schooling, but by the fact that the education received by the poor is less fruitful in terms of income, than that received by the rich.

Figure 4

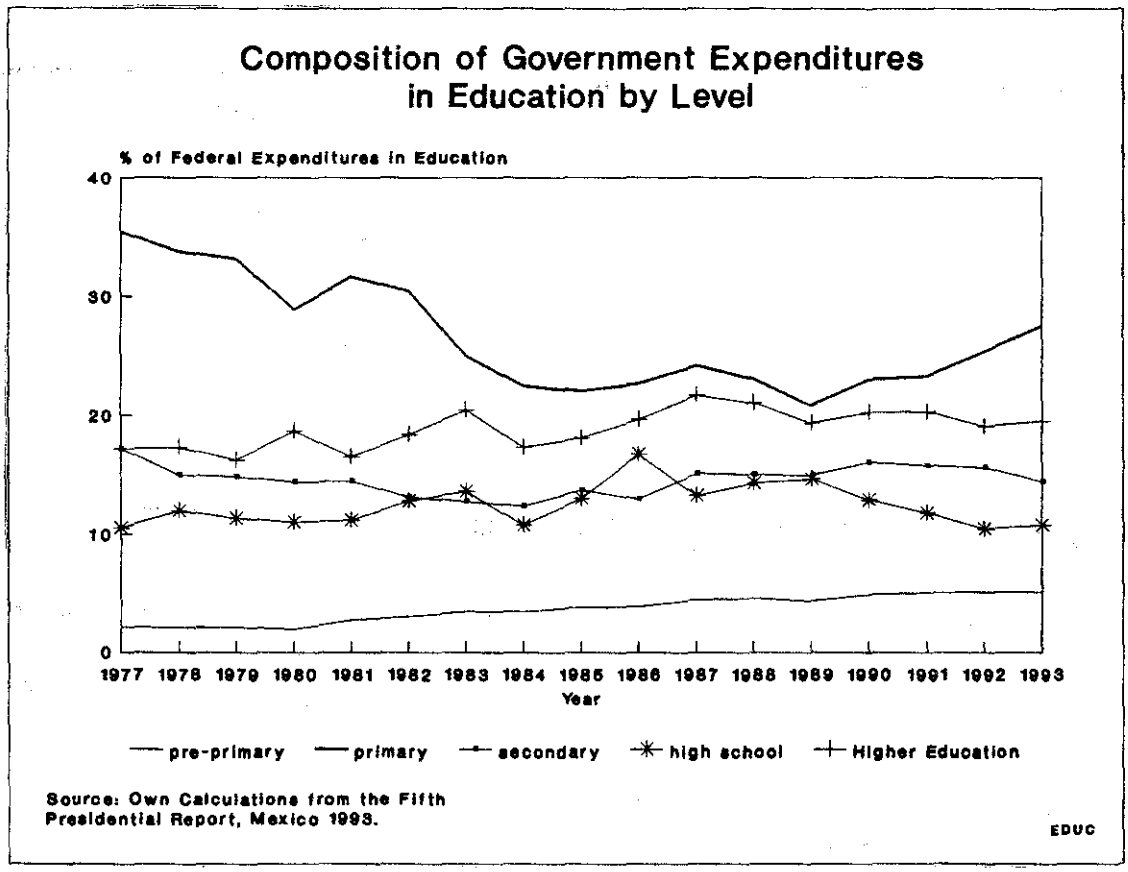


Figure 4 shows that since 1982, Pre-primary education (which covers more than 2.5 million students) has improved its relative position in the education budget, while the primary education system reduced its importance from around 30% in 1982, to 22% in 1990, and to 26% in 1993 (although its coverage expanded to almost 15% of the population of the country). In

[23] In table 3 in section II, it was shown that inequality between education groups explained almost one third of the total inequality in 1992.

contrast, higher education levels which benefit only around 1% of the total population improved slightly their relative position through out the period (reaching around 20% of the public education budget), the secondary education system also accounted for a larger share of the expenditures, and high school education remained at similar levels.

One way of determining the implications of the changes in expenditure shares over the demand for education, is by dividing the budget assigned to each level, by the number of students enrolled, as a proxy to the subsidy acquired when having access to the system. Table 9 shows the results.

Table 9

Education Level	Proportion of Subsidy Received by Enrolling in the System (averages)		
	1977-1984	1985-1989	1990-1992
Pre-Primary	4.65	4.02	5.23
Primary	3.67	3.68	4.85
Secondary	9.31	7.97	10.43
High School	47.76	46.12	42.29
University	34.60	38.21	37.20
Total	100.00	100.00	100.00

Source: Own calculations from the Fifth presidential report, Salinas de Gortari, 1993.

It can be seen that those individuals that between 1977 and 1984 only acquired pre-primary and primary education, had access to 8.3% of the subsidies to the whole system, while those who scaled up to university, benefitted from 34.6%. It can also be seen that the 1985-1990 fiscal contraction period carried negative consequences for basic education, as the subsidy to the system concentrated even more at the highest level: those individuals who could only enroll into the first few years received only 7.7% of the benefits. The effects over the incomes of the population in following years, are thus likely to be regressive.

The 1990-1992 period constitutes an improvement for those individuals that only enrolled into primary and pre-primary levels, as by doing so, they had access to 10% of the subsidy. Those who reached secondary benefitted from an additional 10%, compared with the adjustment period in which this level only accounted for 8%. Nevertheless, the benefits from public education continued to be highly concentrated in high school, but specially at the university level, which continued to account for 37.2% of the subsidy as compared to 34.61% up to 1984.

Although the data does not allow to identify completely the causality between public expenditures and individual welfare, some conclusions can be obtained: if a lower proportion of

the subsidy per capita to certain education level means a deterioration in their quality relative to others, and if in fact poor and low-middle class individuals benefitted more from pre-primary to high school public education, while the upper middle class and the rich benefit relatively more from public universities, it can be said that between 1984 and 1992 the change in the composition of public expenditures in education in Mexico has been regressive. Therefore, the progressivity implied by the protection to the overall education budget seems to have been counterbalanced by the regressivity in the distribution by education level.

Despite these conclusions, some important effects of the NEM on public education are yet to be observed, as the system has been going through a transformation process since 1992 that decentralizes the budget from the federal to state governments. If the state and municipal governments manage to allocate the resources in a more egalitarian way, we would expect to observe progressive effects over income distribution, and poverty reducing outcomes.

4.3 The National Solidarity Program

One of the main distinctive characteristics of the implementation of the NEM in Mexico, has been the creation of the National Solidarity Program (Pronasol), which redefined significantly the strategy to combat poverty. The program has several distinctive characteristics compared to prior policies. The first one, is that it includes a wide span of mechanisms which were previously isolated, which sometimes duplicated functions, and which were difficult to evaluate due to the variety of objectives they pursued besides poverty alleviation[24]. This in itself constitutes an improvement in policy design for planning purposes, as it allows to monitor the effects of government programs on poverty in an easier way.

Secondly, Pronasol distributes its resources among state governments and municipalities who are in charge of transferring the benefit to the population, which substitutes the central allocation of resources observed previously. Thirdly, it incorporates the beneficiaries of the program into its financing and operation procedures, which constitutes a major shift away from state-provided benefits. This is intended to improve targeting by incorporating the beneficiaries in the resource allocation process, and it also enhances efficiency by encouraging the recipients' participation through monetary and non-monetary contributions (payments in kind, labor, etc.), which increases the amount of resources available and improves monitoring.

Additionally, the creation of Pronasol has marked a clear shift away from traditional poverty alleviation mechanisms such as subsidies to credit, the definition of guarantee prices for

[24] Some examples of this is that Pronasol has acquired most of the functions of the rural credit bank Banrural, of the subsidies to input prices for agricultural production, of the subsidies to consumption traditionally managed by Conasupo and Liconsa, and of the provision of electricity, potable water, and drainage to poor areas.

beans and maize production, and subsidies to consumption. These programs have been substituted by the creation of credit funds managed by the own beneficiary communities, by cash handouts to increase the incomes of maize and beans producers directly, and by the provision of consumption good bundles and food vouchers to the target population.

In the case of subsidies to agricultural production inputs, most of the benefits were previously provided by state owned firms that produced and sold them at low prices (usually even lower than production costs), but now the scheme has been replaced in most cases by the provision of vouchers to be traded in the market. Additionally, regional targeting has become one of the most used resource allocation devices, compared with the prior criteria.

Pronasol has three main strategies to combat poverty, which consist of *welfare benefits* (including the distribution of food bundles, vouchers, subsidies to consumption, health and education infrastructure improvements, and the provision of electricity, drainage, urbanization, housing and potable water), *production benefits* (mainly rural credit, and loans for the acquisition of productive infrastructure and irrigation projects), and *regional development* programs (which include the construction and repair of roads and highways, as well as municipal funds), all of which have a large range of sub-programs and variations.

Due to the nature of the benefits involved, it is extremely difficult to evaluate their impact on poverty and inequality in the short run, and moreover to compare them with the impact of prior policies. Most of the critics of Pronasol argue that the shift to cash handouts, voucher provisions, and regional targeting, have been used to guarantee electoral success, more than for enhancing the operation and efficiency for poverty alleviation. In particular, it has been argued that the allocation of funds to municipalities responds directly to political interests: either to "punish" those who have not elected the candidates from the ruling party (the PRI[25]), or to reward those who have.

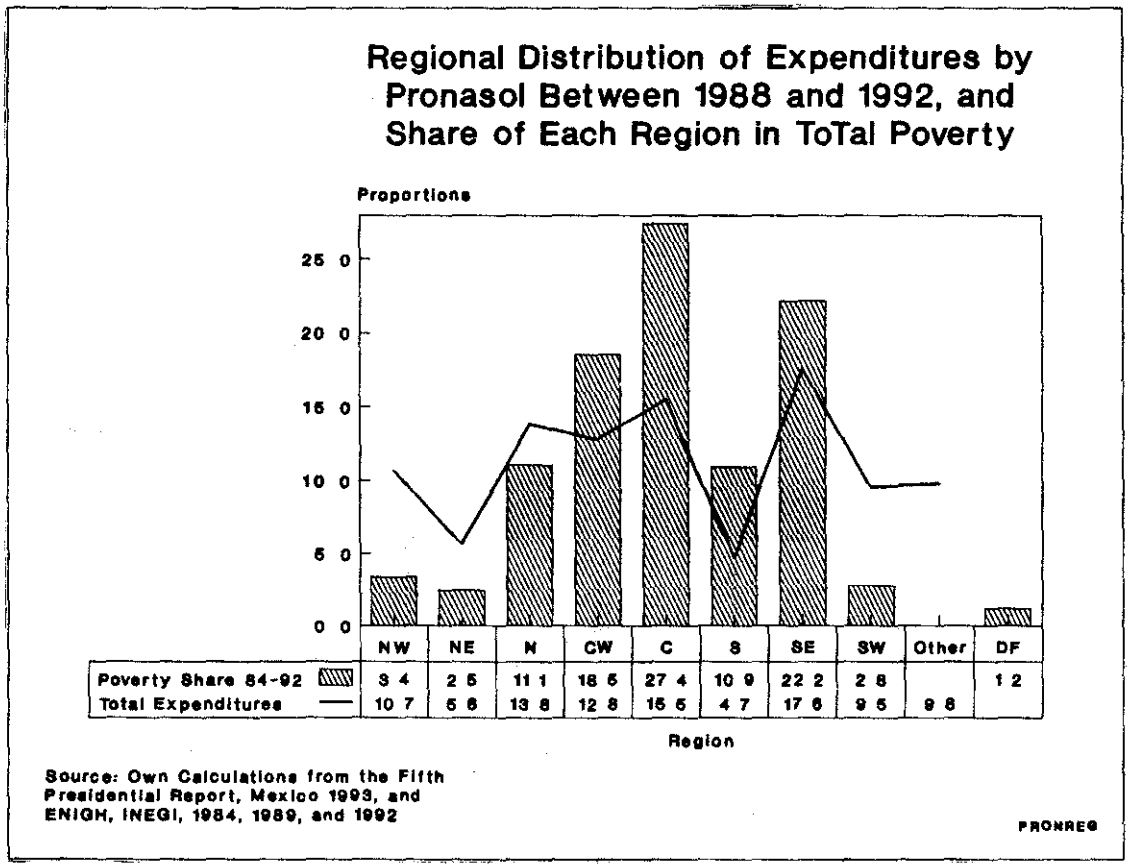
Regarding the evaluation of the program in economic terms, there are mainly two works available at the moment, one by El Colegio de Mexico (1993), and another by Levy (1994), which coincide in that the resources distributed by Pronasol have not been allocated to the poorest regions neither to alleviate the most urgent needs of the poorest among the poor, although it cannot be said that the objectives of the program have not been accomplished at all. These studies illustrate that to make a comprehensive evaluation of the program, it would be necessary to determine the magnitude of the benefit received by each individual compared to each individual's needs, which is out of the scope of this work. However, it is possible to take a first step towards evaluation, by analyzing the distribution of the program's budget at a regional level.

Figure 5 shows the share of each region in total poverty obtained by multiplying the value

[25] The "Partido Revolucionario Institucional", which has ruled the country for the past 65 years.

of the FGT(2) index, by the average population share in 1984, 1989 and 1992[26]. It can be observed, that the Program allocates 32% of its resources (the largest shares) to the two regions that account for almost 50% of the poverty of the country (the Central and South East), and that it also gives considerable importance to the Central West region, in which 18.5% of poverty is concentrated. At the other extreme, it does not allocate resources to the Federal District (who's share in poverty is only 1.2%), and it also assigns relatively low proportions to the North West and North East regions, which account for only 5.9% of total poverty. The two cases in which the poverty shares do not correspond to the distribution of Pronasol expenditures, are the South, which receives a relatively low proportion for its poverty level, and the South West, which receives a disproportionate share as it only accounts for 2.8% of total poverty.

Figure 5

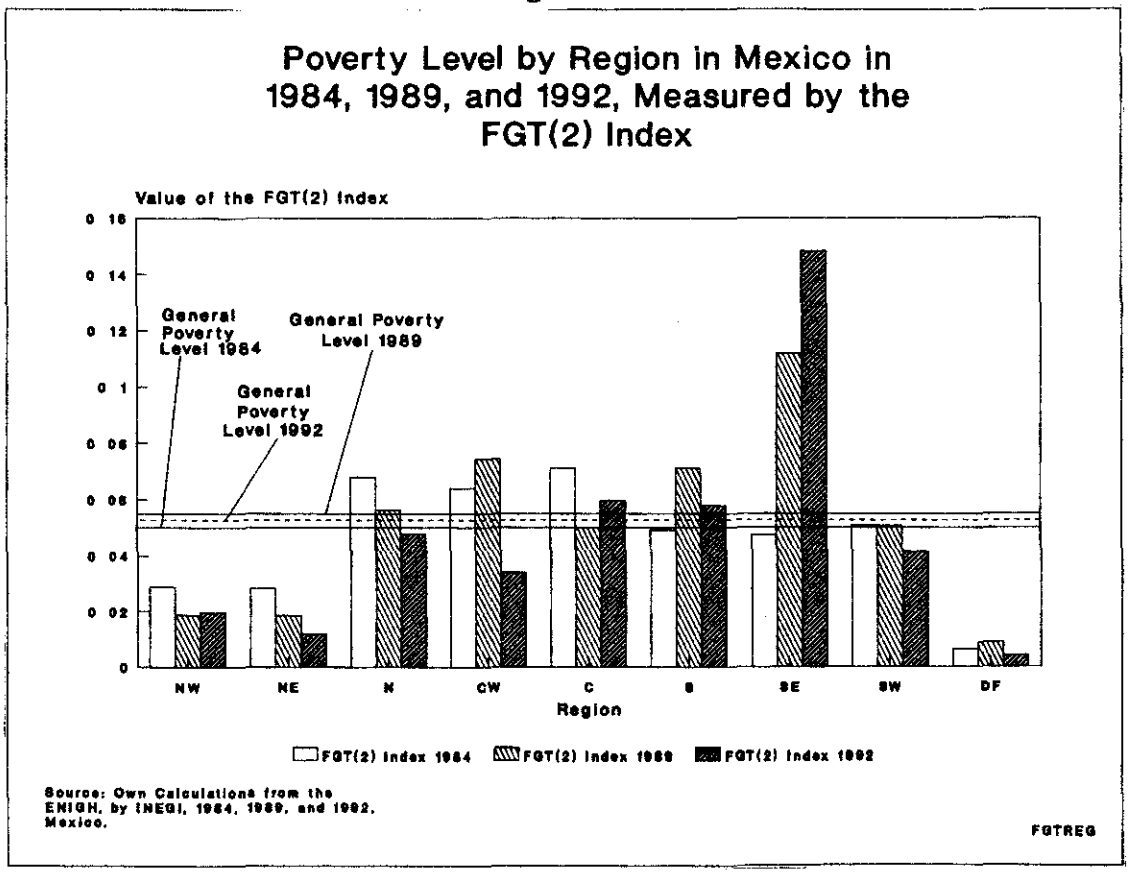


[26] Table A2 in the appendix indicates the states that are included in each region.

Therefore at the aggregate level it seems that the program is allocating the largest and lowest proportions of expenditures respectively to those regions that need them relatively more and less, which seems to be appropriate.

The figure also allows to observe, that the differences regarding the distribution of poverty are striking. Specially, it is surprising to observe that the Central West, Central, and South East Regions, which include 50% of the population, account for 68% of the poverty of the country, while the North West, North East and South West, which include 17.6% of the population, account for only 8.7%. This indicates the enormous regional disparities that exist in Mexico which, as indicated before, have been expanding since 1984. Up to 1992, the differences among regions explained 10% of total inequality (see table 3 in section II).

Figure 6



In order to take a second step towards evaluating the effectiveness of the expenditures by Pronasol, we can also analyze the changes in poverty by region between 1989 and 1992[27]. Figure 6 shows that besides the disparities mentioned above, poverty by regions has also changed by completely different magnitudes during the period under study. The first strong conclusion is that although Pronasol has favored the South East region (which includes the states of Oaxaca, Guerrero and Chiapas, which are among the poorest states in the country) more than any other, this is the region in which the most dramatic rise in poverty is observed. Although the counter-factual explanation would state that perhaps without Pronasol poverty would have increased much more, it seems more reasonable to interpret the result as evidence about the limitations of the program in the short run for poverty alleviation.

The latter argument is supported by the fact that despite attracting very low shares of the Pronasol budget, poverty reductions were registered in the North East, South, and the Federal District between 1989 and 1992, while despite being the second most important destination of resources, the Central region registered a rise in poverty.

The only cases in which Pronasol expenditures seem to coincide with the changes in poverty is in the case of the North and Central West regions, in which the considerable declines in poverty between 1989 and 1992 were accompanied by large proportions of the resources of the Program. However, this seems to be an exception and not the rule.

The results are also interesting in line with the overall changes in poverty registered during the 1984-1992 period analyzed in the prior section. In this respect, it is surprising to observe, that although between 1984 and 1989 and between 1989 and 1992 the 'H', 'HI', and 'FGT(2)' indexes experienced changes, the changes in poverty differ considerably between regions. First of all, poverty measured by the FGT(2) index for the moderate poverty line (which is used for the regional calculations), increased between 1984 and 1989 by 8.43%. However, it can be seen that this change was given despite considerable reductions in poverty in the North West, North East, North, and Central regions. This allows to observe that poverty increased because of the deterioration in the standard of living of the poor in the Central West, South, the Federal District, and specially, in the South East.

Between 1989 and 1992 the disparities were also significant. The value of the overall poverty index for moderate poverty between these two years decreased by 6.69%, although poverty increased sharply in the Central region, but specially in the South East, where the value of the FGT(2) index raised by 35%.

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[27] According to INEGI (1992), although the 3 surveys are strictly comparable, their representativity at the regional level may differ because the size of the sample in each region has varied from year to year, which implies that the variance of the observations (and therefore their reliability) may also differ from one region to the other. However, the comparison made in this work is valid, as we are more interested in the trend that poverty has shown, rather than its exact magnitude.

The main conclusions we can obtain from these results, is that although the distribution of resources by Pronasol in most cases coincides with the distribution of poverty, the impact of Pronasol during its first 4 years of operation is likely to have been relatively low or practically imperceptible in some cases. However, the point of reference for evaluating the effects of the NEM in this aspect, would require to compare the impact of prior policies with that of Pronasol. Although this is not possible at this stage, it can be argued that as the program is structured and designed, it is likely that it will result in higher efficiency and a more adequate allocation of resources in the future.

V. The Effects Over the Payments to The Factors of Production

Another crucial aspect needed to evaluate the implications of the NEM on income distribution and poverty, is to examine the effects over the prices of factors of production including wages, interest rates, profits, and the prices received by rural producers for their goods. This section deals with this approach by decomposing inequality by income sources and by decomposing poverty by occupational subgroups.

5.1 Inequality Decomposition by Income Source

In order to analyze the distributive consequences over the prices of the factors of production, we can decompose inequality by income source according to the procedure explained in section I of this work. Table 10 shows the result of this procedure and the identification of the contribution to the changes registered.

Recalling some of the results presented before, inequality in Mexico measured with the Coefficient of Variations increased by 19% between 1984 and 1989, remained practically constant between 1989 and 1992, and increased by 18% between 1984 and 1992. It can be seen in table 10, that during the first sub-period, the sharp rise in inequality was given by the deterioration in income distribution on entrepreneurial rents (specially from industrial businesses, commercial businesses and services) and imputed rents, while wages had an equalizing effect. During the second sub-period, although overall inequality hardly changed, there were major shifts, specially due to the strong equalizing effect of property ownership rents and the strong disperssive effect of wages.

Table A3 in the appendix throws some further light on the causes of this changes, by decomposing them into income share, inequality, and joint effects. It can be seen that between 1984 and 1989, the change in inequality was almost totally due to the changes in inequality within

each source, and not by households changing their sources of income, which perhaps is an indicator of the incapacity to react in the short run. However, in the second sub-period, the changes in the type of income sources by households had a much larger effect, and canceled out a large proportion of the sharp rises in inequality registered within the sources, which could be interpreted as a sign of higher dynamism in the economy.

Table 10

Income Source	Value of the Coefficient of Variations			Contribution to the Change in Inequality (%)	
	1984	1989	1992	1984-89	1989-92
TOTAL INCOME	.8860	1.0350	1.043	100	100
WAGES	.8578	.8230	.937	-13.9	549.3
ENTREPRENEURIAL RENTS	.9463	1.3747	1.462	58.1	12.8
Industrial Busin.	.7790	2.1341	1.839	33.0	-164.9
Commercial Busin.	1.0119	1.5561	1.410	38.2	-407.9
Services	.8763	1.5142	1.652	37.4	321.5
Raw Mat. Process.	1.2864	1.1532	.777	- 0.2	- 10.8
Agricultural Buss.	.7420	.3646	.736	-22.1	49.8
Livestock Business	1.3281	.9029	1.415	-29.0	226.1
PROPERTY RENTS	1.6682	2.2518	1.250	10.9	-597.9
PRODUCTION COOPERAT.	1.1543	1.0809	.878	0.5	- 23.9
TRANSFERS	.7474	.8779	.778	2.8	- 95.4
OTHER MONETARY INCOME	2.2750	2.4277	2.213	3.5	152.4
NON-MON. AUTOCONSUMP.	.3312	.1558	.313	- 3.6	28.9
NON-MON. IN KIND	.9113	1.2032	1.127	4.8	41.5
NON-MON. GIFTS	.6736	1.0106	.696	2.5	- 27.4
NON-MON. IMPUTED RENT	.9669	1.1028	1.008	34.3	59.7

Source: Own calculations from the household income and expenditure surveys, by INEGI, 1984, 1989, and 1992.

For the purposes of our analysis, we will concentrate on the effects over wages, entrepreneurial rents, and property ownership rents, as they have a clearer link with the policies included in the NEM.

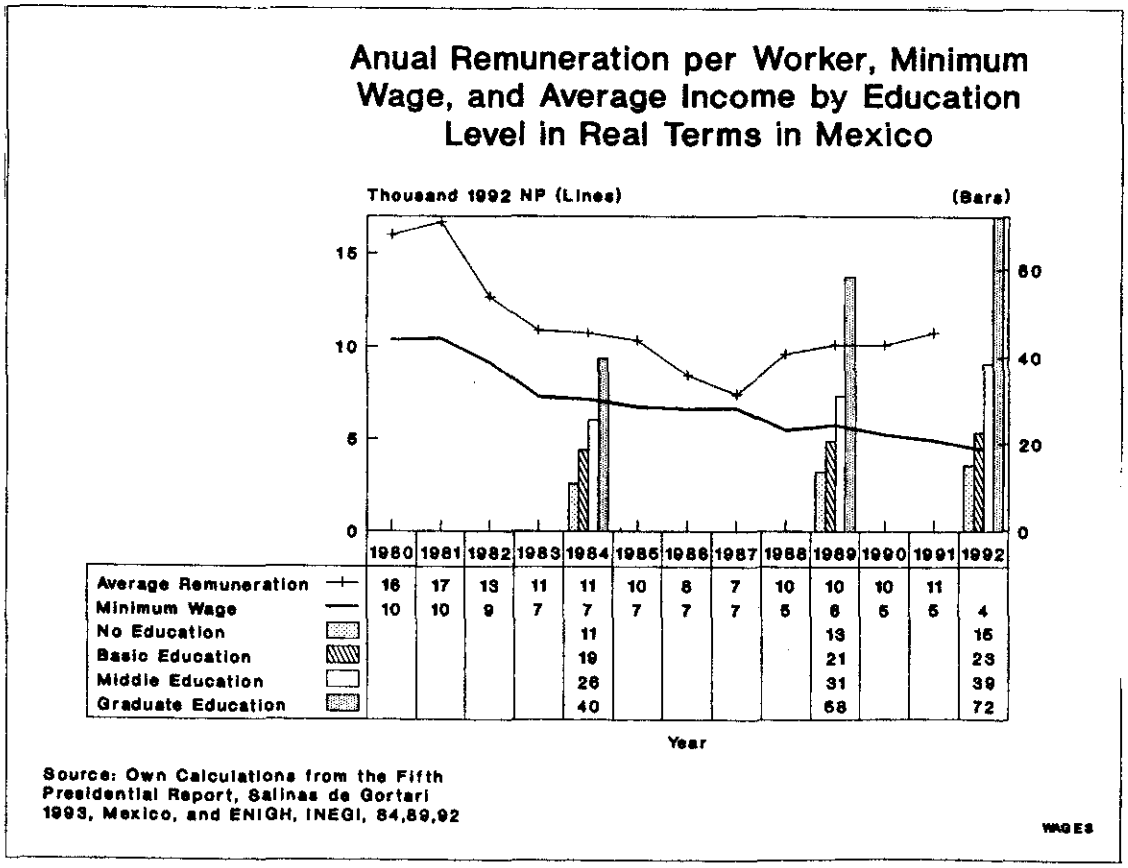
The Effects Over Wages

The effects over wage inequality are particularly interesting, for two reasons. The first one is that during the stabilization of the Mexican economy there has been a tight control over

wages as a way to control inflation, and secondly because trade liberalizations has major implications for the prices paid for certain kinds of labor. As indicated by the Stolper Samuelson theorem, we would expect that at some stage in the long run, the reduction of trade barriers would tend to equalize the prices of labor in Mexico with those in the U.S., which is the country's main trade partner. As the U.S. has much higher salary levels, this would presumably drive Mexican wages up.

Theoretically speaking, if a country is characterized by following an intra-firm of intra-industry trade pattern, the demand for skilled labor and capital will rise when tariffs decline, as the price of imported inputs, needed for their production decreases. According to Woodward (1992), the consequences of a rise in the demand for capital and high skills in a country which is neither capital nor high skill abundant, is that there will be a redistribution of income from plentiful labor and land, to scarce physical and human capital. If the demand for unskilled labor declines, wages decline, and the lower the productivity of the individual, the greater the adverse effect.

Figure 7



On the other hand, trade liberalization also generates demand for the highest and relatively scarcer skills which are not necessarily used directly in the production process, as certain services in the opening economy (i.e. financial services) are indispensable for exporting and importing goods. Therefore, redistributions of income towards these skills are also likely.

For the case of Mexico, figure 7 shows that between 1982 and 1984, the average remuneration per worker in the economy decreased by 15% in real terms, and the gap with respect to the minimum wage widened. The deterioration continued up to 1987, when wages were compressed downwards, but since the stabilization measures were reinforced at the end of 1987, the average remuneration has recovered some of its real value, but the minimum wage, which is established through the "Pact", has continued to deteriorate by around 35% in real terms. This has resulted in a considerable widening of the gap between the lowest and the average remunerations in the economy.

Simultaneously with these changes, open unemployment in Mexico declined from 5.7% in 1984, to 3% in 1989 and to 2.8% in 1992, while underemployment decreased from 23.3% in 1987 to 21.6% in 1992[28] (but both measures increased again between 1992 and 1993, when the economy stagnated). This would lead to think, that unemployment and underemployment have not increased dramatically in Mexico during the 1984-1992 recession period precisely because the "Pact" has allowed for great (downwards) wage flexibility, which could therefore be interpreted as one of the causes of the rise in extreme poverty illustrated before.

The impact of wage deterioration tends to be greater at lower income levels and the lower the skills, as it makes it relatively more costly to shift from wage-earning activities to others. The information in Table A3 in the appendix seems to corroborate this, as it shows that the fact that between 1984 and 1989 wages had an equalizing effect, and that during the 1989-1992 period they had a very strong dispersive effect, was caused mainly by the changes within wage inequality and not by households shifting away or towards this income source.

The differences in the possibilities of escaping wage deterioration can be thought of as being directly related with the skill level of an individual. For instance, during the 1984-1989 period of economic contraction, the downwards wage flexibility and low changes in unemployment indicate either that individuals were willing to perform the same jobs at lower salaries, or that individuals with relatively higher skills would accept jobs that did not remunerate such skills. Both effects tend to have adverse consequences for the lower-skilled workers. This argument explains some of the results in figure 7, where it can be seen that the distance among the wages of non educated workers and those with basic and middle education decreased between the two years, but that the distance with individuals with graduate level education increased considerably. This resulted in a rise in inequality between levels, from 20.5% in 1984, to 26.4%

[28] According to the information in the Fifth Presidential Report, Salinas de Gortari, 1993.

in 1989, which contributed by around 47% to the overall change in inequality (see table 3 in section II).

This would lead to the conclusion that the "Pact" was an effective mechanism of wage control that contributed to reduce inflation, but that the effects were very unequally distributed among the population due to the low mobility of labor during these years. The equalizing effect of wages during the stabilization period was caused due to the compression of the middle and low wages, while the distance with the highest ones increased.

During the first stages of economic recovery since 1989, the gap between the average remuneration and the minimum wage has continued to widen. Figure 7 also shows that the gap between the average wage of workers with no education and with basic level education narrowed, while the distance towards the wages earned by those with middle level education, but specially by those with graduate level education, increased substantially. This resulted in an increase in inequality between education levels, which by 1992 accounted for almost one third of total inequality, and this change explained around 73% of the change in inequality between 1984 and 1992 (see table 3).

Therefore it seems that the higher the skills of the individual, the higher the possibilities of adapting to a new economic environment and benefitting from the opportunities generated in a recovering economy. The fact that Mexico has increased its trade flows with the U.S. in goods which require medium-skilled labor intensively, indicates that the lowest incomes have been lagged with respect to the factor price equalization effect expected.

Effects over Entrepreneurial Rents

Another source of income that can be directly related to the effects of trade liberalization, is entrepreneurial rents. During the 1984-1989 period, the sharp rise in overall inequality was given mainly by the spread precisely of entrepreneurial incomes, which accounted for almost 60% of the shift (see table A3 in the annex). Although between 1989 and 1992 the contribution to the change was rather discrete, there were considerable positive and negative effects within these activities which canceled out: incomes from industrial and commercial businesses had a very strong equalizing effect, which was totally counterbalanced by the strong expansive effect of inequality in the provision of services, livestock businesses, and agricultural businesses.

One of the explanations for the rises in inequality in entrepreneurial rents, is given by the connection between wages and entrepreneurial incomes: wage contractions lead to higher profits, which will be greater, the larger the number of workers employed. Therefore, the fact that minimum wages deteriorated consistently from 1984 to 1992 would tend to expand the gap between small scale entrepreneurs (which are normally poorer), and larger ones (which are presumably the richest). Another important argument, is that relatively small businesses have

lower possibilities of escaping from the adverse economic environment. In particular, the access to credit is crucial, as it allows larger firms to compensate for demand contractions by shifting into lower quality good production, and to benefit from the high inflation rates, while small firms normally do not have access to formal credit.

Regarding the different types of entrepreneurial activity the case of agriculture in Mexico is one of the most interesting, as the sector concentrates most of the poverty of the country. Between 1984 and 1989, the guarantee prices for maize and beans production declined by 20% and 50% respectively, and the real yield per hectare of maize production also fell 25%. As the poorest of the rural are precisely maize and beans producers, it seems that these forces contributed to expand the gap between the incomes of the households in the first and 10th deciles, and to compress the incomes of poor rural producers downwards.

The fact that this source had an expansive effect over inequality between 1989 and 1992, can be attributed to some extent to the sharp rise in exports registered in fruits (by around 250%) and vegetables (by almost 150%) during the period, as these kinds of products require of relatively larger investments as compared to those undertaken by small rural producers. In contrast, the guarantee price of maize dropped by around 10% since 1989, and the price of beans declined by 30%, which leads to conclude that the benefits of trade liberalization have not yet reached the poorest rural producers.

Another interesting case is that of commercial businesses, which are expected to benefit from the reduction of barriers to imports. This source had a strong dispersive effect between 1984 and 1989, which was caused by a large shift of the richest households towards these incomes, which spread the distribution. Households from the 2nd to the 6th deciles also relied more on these type of incomes during the crisis years, but part of the increase in inequality can be attributed to the fact that most low income individuals engaging in these activities are located in the informal sector.

Between 1989 and 1992, the shift away from commercial business incomes registered in the 2nd to the 9th decile determined the decline in inequality in this income source, which in fact generated a considerable equalizing effect on overall income distribution. This could perhaps be an indicator about other sectors of the economy generating better opportunities, or by the saturation of these kind of activities which lowered their rentability.

In the case of industrial businesses, the sharp rise in inequality during the 1984-1989 period can be attributed mainly to the shift of the richest households towards this income source (see table A3), which dispersed the distribution. This would apparently not be in line with a trade liberalization which is supposed to generate the largest impact precisely on the priory protected industrial sector, but the result may reflect the fact that during periods of economic contraction new markets for lower priced (and lower quality) goods emerge, but they tend to disappear with the effects of competition. The shift of households away from these kind of incomes since 1989

may in fact be the response to this effect.

Another important income source for households, has been the provision of services. Through out the 1984-1992 period the distribution of these kind of incomes have registered high regressive effects over inequality. Between 1984 and 1989, the changes were mainly caused by the increase in inequality within these kind of incomes, but in the second sub-period, the effects of the shifts of households from the 7th to the 10th decile towards them were the major cause of the dispersions. The reason may be that as services are a non-tradeable good, and were not affected negatively by the trade liberalization directly, they have constituted an escape valve for some individuals.

The sharp rises in inequality within this income source can be related to the change in the payments to skills by education level, as there is a wide span of services which require different types of knowledge and ability. The increase in the gap between these incomes is due to the relative abundance of low skills, which depresses the incomes of relatively poor individuals, and by the relative scarcity of high skills, which increases the incomes of the richest.

The Effect on Property Ownership Rents

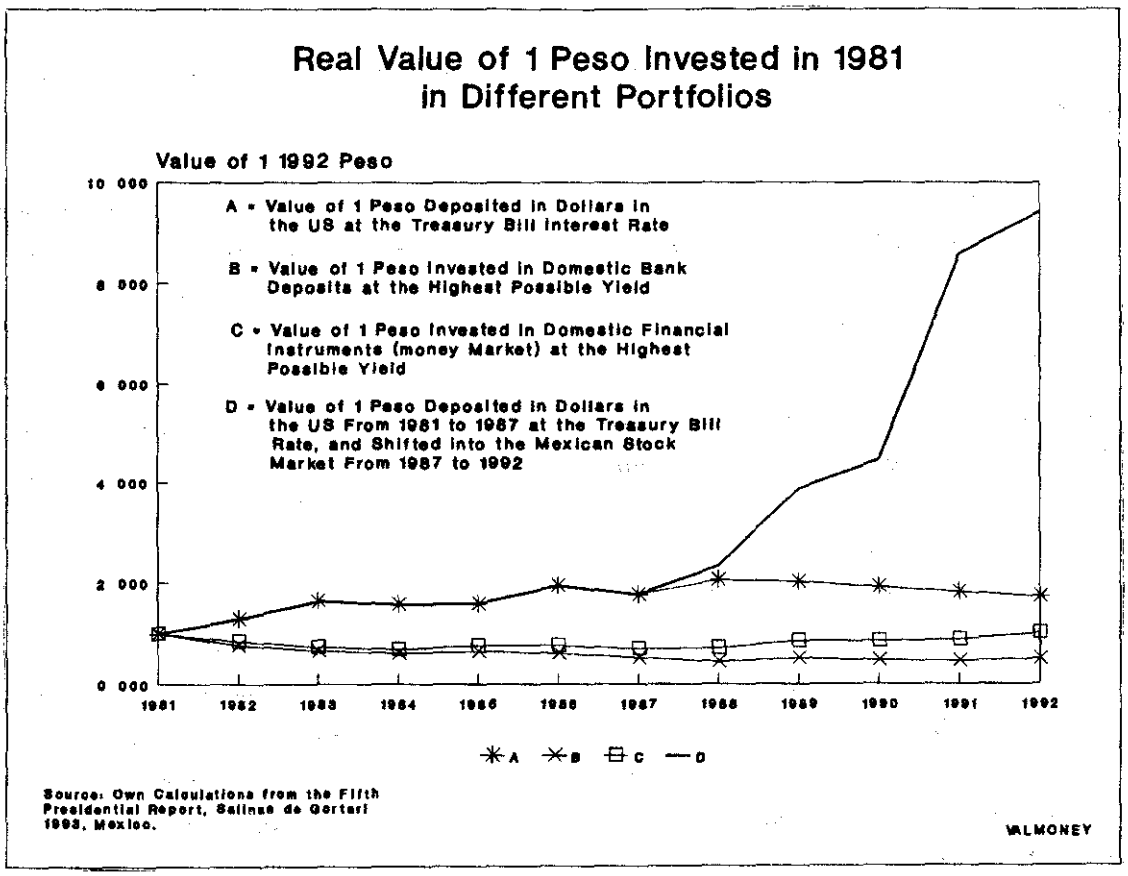
Although between 1984 and 1989 property ownership rents had a relatively low contribution to the change in inequality compared to other sources of income, between 1989 and 1992 it registered the largest equalizing contribution. As the main component within the source are the interests from financial investments, there is a strong relationship with the effects of financial liberalization, which we will explore here.

As explained by Reyes Heroles (1988), financial liberalizations usually have important effects on interest rate incomes, as if new investment instruments are created and if the initial capital stock among households in the economy is unequal, there will be different interest rates which pay different yields according to the amount of capital, which tends to shift the distribution towards the largest savers. Additionally, Gersovitz (1989) argues that as at higher incomes there are higher propensities to save, differential interest will benefit the rich more, not only because they have access to better instruments, but because a larger part of their income benefits from higher interest rates.

In order to test the above argument, we can track down the potential yield of 1 mexican *peso* invested in different financial instruments with different accessibility, since 1981. Figure 8 shows that if this amount was invested in 1981 in bank deposits (denoted 'B' in the figure) (available to the whole public with a very low minimum capital requirement) or the money market ('C' in the figure) (available for larger capitals only), it would have lost around 38% and 30% of its real value respectively, up to 1984. Additionally, if the same peso had been deposited in the US ('A' in the figure) (only available to those who can finance the large transaction costs

involved) before the 1982 devaluation, it would have gained 58%, which reflects the fact that devaluations generate capital gains for those who are able to protect against them.

Figure 8



Although the gap between the yield of each financial instrument was already wide up to that year, it expanded during the 1984-1989 period: those who were able to maintain their deposits in foreign currency, avoided the 1987 devaluation and register a 28% gain, those who only had access to bank deposits observed a 17% loss, those who were able to invest in the money market gained 23%, while those who maintained their deposits in foreign currency between 1984 and 1987 but then shifted into the stock market up to 1989 (denoted 'D' in the graph), obtained a 145% yield. These differentials provide a satisfactory explanation to the rise in inequality we observe in property ownership rents during the stagnation period (see table A3 in the annex).

During the 1989-1991 period, the gap between the yield generated by each financial instrument widened still more, specially due to the high yields offered by the stock market. It can

be seen in figure 8 that those who kept their capitals in US bank deposits lost 9.8% between 1989 and 1991, due to the appreciation of the Mexican *peso*, while those who invested in the money market gained 3% and those who only had access to bank deposits lost 8.4%. On the other hand, those who had access to stock market investments during this period, register a 121.4% capital gain. By analyzing these results, we would expect an even further deterioration in the distribution of property ownership rents between 1989 and 1992, given by the large differentials between the yields of those financial instruments to which only the smallest and largest capital stocks respectively have access.

Therefore, it is surprising to observe in table A3 in the annex that there was a sharp decline in inequality in the distribution of these type of incomes which even cancelled out the dispersive effect of wages, and that most of the decrease can be attributed to a shift of the richest households away from them.

It is interesting to note that during the 1984-1989 period, the total public internal debt represented in average around 23% of GDP (of which the government paid approximately 15% of GDP in interests each year), while between 1989 and 1992 it decreased significantly to around 15% (in 1992 it represented only 8.4%), which implied a reduction in the total amount of interests paid by the government to 8% of GDP. The reduction of the internal debt would therefore help to understand the reasons of the decline in property ownership rents in a satisfactory way, as investments from financial instruments, of which government bonds represent a considerable proportion, account for the largest part of this income source. Following the argument, one plausible explanation for the simultaneous expansion of the gap in the yield by financial instruments and the sharp decrease in inequality in this source between 1989 and 1992, is that the richest households shifted from financial assets to other kind of non-financial domestic investments at some stage between those two years[29]. In this respect, it is interesting to note that the only identifiable policy change that has to do with the shift from financial assets to other investments is privatization. Therefore, it could be argued that at least part of the shift could respond to the new opportunities that privatization offers (it should be remembered that privatization was intensified precisely between 1989 and 1992), as some of the richest households could have used their financial investments to participate in the acquisition of state owned firms.

In order to investigate furtherly this possibility, we could hypothetically track the same *peso* invested in 1981, up to 1991, to illustrate that financial liberalization and privatization may in fact be linked. For instance, if a relatively rich individual managed to deposit resources in a U.S. bank before the 1982 devaluation, and repatriated the capitals to the Mexican stock market in 1989 under the new tax scheme which exempts all tax payments but a 1% contribution, he

[29] We could in principle rule out the possibility of capital flight as a destination of the financial assets of the richest households, as in fact, significant capital repatriations were registered in Mexico since 1989.

would have obtained a 221% real yield by 1991, while a relatively poorer individual who invested in bank deposits throughout the same period, would have experienced a 53% real loss. This would imply large redistributions of income from tax payers, low scale savers, and as indicated by Woodward (1992), from those who cannot protect against devaluations, towards the richest individuals.

The above changes would not be captured by the information in the surveys if in fact a considerable proportion of such resources were used by the richest households for investment in a privatized firm before 1992, but it seems obvious that the richest individuals that obtained the largest yields for their capitals would be in a much more favorable position to benefit from the opportunities provided by privatization, as similarly to the procedures in most countries in the world, privatization in Mexico was implemented through an auction system.

Strictly speaking, if the selling price of a public firm equals the expected value of the future profit flows, there would be no further distributive implications from the transaction. However, this depends on the discount rate used to evaluate the profitability of the business (the cost of money for sellers and buyers) and if the private sector attaches a different value to the firm than the public sector, given for example by the possibilities of exploiting economies of scale. As indicated by van de Walle (1989) and Vickers and Yarrow (1988), inequality may increase with privatization when the government redistributes resources to the buyers through compensations such as subsidy privileges or tax exemptions. Similarly, Woodward (1992) explains that if privatization is granted in a monopolized sector, the negative consequences for distribution will be considerable.

In the case of Mexico it seems that the simultaneous effect of financial liberalization, capital flights, the preferential capital repatriation schemes, and the protection granted to the largest privatized firms[30], may have strong implications for income distribution in the long run, while the short-run progressive effects observed, may in fact be a mere illusion. This would lead to the conclusion that although financial liberalizations, tax reform, and privatization (all of which are key elements of the NEM) have had positive effects on growth, in the case of Mexico they may have contributed to concentrate the resources of the economy in fewer hands.

The main conclusion derived from the results obtained in this section, is that the policies identified with the NEM have had strong positive and negative effects over income distribution between 1984 and 1992, and that although most of them have canceled out, which resulted in an insignificant change in inequality during the 1989-1992 period, it seems that the Mexican economy is experiencing important structural transformations that may have strong implications for absolute and relative welfare in the future.

[30] Such as the banking system and the telephone monopoly.

4.2 Some Implications for the Changes in Poverty

The above results can also be related to the changes in poverty by identifying certain sectors of the population with certain income sources.

Table 11

Occupation	Share of Total Poverty (FGT(2) index)*		
	1984	1989	1992
Professionals and Technicians	0.25	1.00	0.67
High level officials and directors	0.18	1.84	0.21
Workers in Agriculture	64.77	62.37	72.91
Industrial Workers	12.98	15.88	17.58
Middle level officials and salesmen	5.45	3.54	3.24
Street vendors & domestic servants	3.57	3.05	2.90
Drivers and armed force workers	1.62	2.58	2.49

Source: Own calculations from the household income and expenditure surveys, INEGI, 1984, 1989, and 1992.
* In 1984 and 1989 total poverty does not add to 100%, as there are some individuals classified as belonging to unspecified occupations, but this category was not included for the 1992 survey.

Table 11 shows the results of decomposing poverty by occupation of the household head for 1984, 1989 and 1992. It is interesting to note that between 1984 and 1989, the share of agricultural workers in total poverty reduced, although the economic situation for the poorest of the rural deteriorated. Table A4 in the annex allows to see that there was a sharp rise in poverty levels within rural worker occupations during that period (the proportion of poor increased by 11.8%), and that the proportion of rural workers in the total population decreased by 21.4%. Therefore, the result illustrates that some rural workers managed to shift away from the sector in order to avoid the deterioration, but that the poorest individuals who remained in it experienced sharp welfare losses.

It can be seen in table A4 in the annex that between 1989 and 1992, poverty decreased for all the occupation groups, except for the rural workers. It is interesting to note that the population share of this occupation also increased despite the rise in poverty, which may be an indicator of the lack of alternative economic opportunities in the rest of the economy for the rural poor. Therefore, the rural poor do not seem to have been able to protect against the negative effects of economic contraction neither to obtain some of the gains from the recovery of growth.

The share of industrial workers in poverty has also increased consistently since 1984. The population share of this occupation declined between 1984 and 1989 perhaps due to the minimum wage deterioration experienced in that period, but it can be seen in table A4 that the proportion of poor industrial workers also declined by 7.55%, although the poverty gap and the FGT(2)

index increased. This means that there were some industrial workers who managed to enroll into alternative activities, or that there were substantial labor lay-offs during the period, but that those who remained in the sector were in average poorer, as the distance between their incomes and the poverty line widened.

During the 1989-1992 period, industrial wage-earning activities attracted a larger share of the population perhaps as a response to the positive effects of trade liberalization on some manufactures and the "maquiladora" industry, and it can also be seen in table A4 that these occupations register a reduction of poverty (the proportion of poor decreased by 1.47%), but that their share in total poverty increased up to 17.58% (see table 11). The explanation is that poverty in the other occupations (excluding agriculture) decreased by a larger margin.

The fact that the proportion of street vendors and domestic servants increased more than any other occupation (except drivers and armed forces workers) during the 1984-1992 period, and that the share in total poverty and poverty within these occupations have decreased consistently, indicates that these informal sector activities have constituted an escape valve for some sectors of the population, namely the rural poor who managed to leave the sector, and some of the industrial workers.

Similarly, armed force workers and drivers have increased their share in the population since 1984 (according to our calculations they accounted for 10.27% of the occupied household heads in 1992), which shows that both types of occupations have also received part of the displaced labor.

Perhaps the main conclusion we can derive from these results, is that the rural poor and the industrial workers have been considerably affected by the economic contraction of the 1984-1989 period, and it seems that they have been excluded from the initiation of the recovery of the economy since 1989.

VII. Conclusions

The central objective of this study, has been to take some steps towards assessing the impact of the NEM over poverty and inequality in Mexico by processing the information from three household surveys for 1984, 1989, and 1992, for which we have suggested some simple analytical tools that allow to identify some of the causes of the changes.

First of all, it should be said that most of the policies identified with the NEM have in fact been implemented in Mexico since 1983, and although there are several identifiable

implications for absolute and relative welfare, the analysis has only been able to consider some of the short-run visible effects, which leaves the longer-run implications for future consideration.

In macroeconomic terms, it can be said that the adverse international environment plus the implementation of the fiscal restraint, privatization, trade and financial liberalizations, tax reform, deregulation, and the redefinition of the strategy to combat poverty, had both positive and negative effects, but it seems that the negative effects were stronger in microeconomic terms, as the result has been a sharp deterioration in income distribution during the 1984-1992 period, which generated a rise in extreme poverty in a context of real average income increases of more than 35%. This resulted in a rise in the number of individuals who do not have access to a minimal food bundle, by 1.2 million.

Even though economic liberalization is expected to generate welfare gains for the whole population in the long run, it seems that in the case of Mexico, the reforms have contributed to the deterioration in income distribution by providing greater opportunities to those individuals who had a better relative initial position, given by their ownership of greater human and physical capital assets. Moreover, it seems that some measures such as privatization and financial liberalization have contributed to concentrate the ownership of resources in fewer hands, which has implications for the distribution of income in the long-run.

Regarding the changes in poverty, the rural poor and the lowest paid industrial workers have been excluded from the benefits of growth. One of the reasons is that the main policy mechanism which explicitly addresses the problem of reducing extreme poverty (Pronasol), has had a discrete impact on the incomes of the poorest of the poor.

Perhaps the main conclusion, is that there has been a structural shift in the economy which has long-term negative consequences. Our results indicate that even though the possibilities of alleviating poverty through "trickle down" effects seemed already limited in 1984 as compared to the power of income redistributions, the differences between these two forces have expanded. This means that even though the structure of the economy has been changed in such a way that it is now more difficult to alleviate poverty exclusively through growth, the number of redistributive mechanisms have been reduced in line with the redefinition of the role of the state in the economy. Therefore, the possibilities of making export-led growth compatible with poverty alleviation in the future, seem to be rather limited at the moment.

TABLE A1

Income Distribution by Deciles using Percapita Incomes

Decile	Share in Total Income by Decile			Change in Decile Income Shares			Change in Decile Real Average Income		
	1984	1989	1992	Between '84 and '89	Between '89 and '92	Between 84 and '92	Between '84 and '89	Between '89 and '92	Between 84 and '92
Total	100	100	100				16.9	15.55	35.04
I	1.60	1.29	1.30	-19.1	1.0	-18.3	-5.6	16.34	9.86
II	2.89	2.41	2.35	-16.7	-2.6	-18.8	-2.4	12.81	10.12
III	3.78	3.30	3.20	-12.7	-3.1	-15.4	1.6	12.78	14.63
IV	4.72	4.22	4.16	-10.6	-1.4	-11.9	4.2	13.14	17.95
V	5.91	5.26	5.14	-11.1	-2.3	-13.1	3.7	12.96	17.19
VI	7.32	6.57	6.42	-10.3	-2.2	-12.2	5.3	13.80	19.82
VII	9.18	8.26	8.33	-10.0	0.8	-9.3	5.5	15.74	22.08
VIII	11.94	10.67	10.94	-10.7	2.5	-8.4	4.3	18.90	24.03
IX	16.52	15.51	16.10	-6.1	3.8	-2.6	9.8	19.63	31.35
X	36.13	42.50	42.06	17.7	-1.1	16.4	37.5	14.14	56.96

Source: Own calculations from the Household income and Expenditure surveys by INEGI, 1984, 1989, and 1992, by using Per capita income

TABLE A2

Mexican States Classified by Region

1. North West (NW)	2. North East (NE)	3. North (N)	4. Central West (CW)	9. Distrito Federal (DF)
Baja California	Tamaulipas	Coahuila	Aguascalientes	
Baja California Sur	Nuevo León	Chihuahua	Colima	
Sinaloa		San Luis Potosí	Guanajuato	
Sonora		Zacatecas	Jalisco	
Nayarit		Durango	Michoacan	
5. Central (C)	6. South (S)	7. South East (SE)	8. South West (SW)	
Hidalgo	Tabasco	Chiapas	Campeche	
Querétaro	Veracruz	Guerrero	Quintana Roo	
Tabxcala		Oaxaca	Yucatan	
México				
Morelos				
Puebla				

TABLE A3

Decomposition of the Change in Inequality into Shifts in Income Source, and Change in Inequality Within Sources, Measured by the CV Index

(Percentages)

INCOME SOURCE	1984-1989 period				1989-1992 period			
	Inequality Effect	Income Share Effect	Joint Effect	Total Effect	Inequality Effect	Income Share Effect	Joint Effect	Total Effect
TOTAL	93.4	8.2	-1.6	100.0	140.4	-112.9	72.5	100.0
WAGES	-11.0	-3.1	0.1	-13.9	659.2	-96.4	-13.4	549.3
ENTREPRENEURIAL RENTS	63.8	-3.9	-1.8	58.1	233.7	-207.7	-13.2	12.8
Industrial Businesses	11.5	7.9	13.7	33.0	-101.4	-73.7	10.2	-164.9
Commercial Businesses	21.2	11.1	6.0	38.2	-135.2	-300.9	28.3	-407.9
Services	19.3	10.5	7.6	37.4	107.4	196.3	17.8	321.5
Raw Material Processing	-0.2	-0.1	0.0	-0.2	-7.7	-4.6	1.5	-10.8
Agricultural Businesses	-15.1	-14.2	7.2	-22.1	144.1	-46.7	-47.6	49.8
Livestock Businesses	-12.7	-23.9	7.6	-29.0	113.9	71.6	40.6	226.1
PROPIERTY OWNERSHIP RENTS	10.8	0.1	0.0	10.9	-344.9	-455.7	202.7	-597.9
PRODUCTION COOPERATIVES	-0.1	0.6	-0.0	0.5	-6.7	-21.3	4.0	-23.9
TRANSFERS	5.7	-2.5	-0.4	2.8	-74.9	-23.2	2.7	-95.4
OTHER MONETARY SOURCES	0.3	3.0	0.2	3.5	-13.2	181.7	-16.1	152.4
AUTOCONSUMPT. (NON MONETARY	-3.0	-1.1	0.6	-3.6	40.6	-5.8	-5.9	28.9
IN KIND (NON MONETARY)	3.8	0.8	0.2	4.8	-19.5	65.1	-4.1	41.5
GIFTS (NON MONETARY)	13.2	-7.1	-3.6	2.5	-166.5	201.9	-62.8	-27.4
IMPUTED RENTS	9.9	21.4	3.0	34.3	-167.5	248.7	-21.4	59.7

Source: Own calculations from the Household income and expenditure surveys by INEGI, 1984, 1989, and 1992 by Using Household Incomes.

TABLE A4

Changes in Poverty in Mexico Classified by Occupation of the Household Head for 1984, 1989, and 1992

Occupation	(%) Change Between 1984 and 1989				(%) Change Between 1989 and 1992				(%) Change Between 1984 and 1992			
	Population Share	H Index	HI Index	FGT(2) Index	Population Share	H Index	HI Index	FGT(2) Index	Population Share	H Index	HI Index	FGT(2) Index
Total		-5.36	2.29	8.35		-1.59	-3.80	-6.61		-6.86	-1.60	1.19
2	30.03	-5.43	83.05	232.12	-2.01	-39.37	-41.57	-35.08	27.42	-42.66	6.95	115.60
3	101.06	250.51	293.40	432.80	-29.22	-91.04	-87.55	-84.61	42.32	-68.60	-51.04	-18.00
4	-21.43	11.83	24.25	31.47	6.17	2.21	2.83	3.75	-16.59	14.30	27.76	36.41
5	-0.68	-7.55	13.33	32.17	33.48	-1.47	-10.26	-21.84	32.58	-8.91	1.70	3.31
6	7.66	-9.85	-21.11	-35.22	6.53	-20.73	-20.14	-19.04	14.69	-28.54	-37.00	-47.55
7	24.74	-34.79	-37.26	-26.34	29.42	-12.77	-19.79	-30.92	61.44	-43.12	-49.68	-49.12
8	19.26	94.25	66.72	43.38	42.29	-11.10	-28.80	-36.21	69.70	72.68	18.71	-8.54

Source; Own calculations from the "Income and Expenditure of the Household National Surveys", INEGI, 1984, 1989, 1992, Mexico.

Group	Occupation
1	Non Specified Occupation
2	Proffesionals, Technitians, etc.
3	High level officials and directors
4	Workers in Agricultural Activities
5	Workers in Industrial Activities
6	Middle and low level office and sales workers
7	Street vendors and domestic servants
8	Drivers, and Armed Forces workers

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