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by

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INCOME DISTRIBUTION DYNAMICS AND THE DECLINE OF INEQUALITY IN MEXICO (1989–2006)

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Abstract

This paper investigates the determinants of the income inequality in Mexico between 1989 and 2006, as well as the factors that caused the inequality decline in the 2000s. By applying a dynamic decomposition methodology, which is a variant of the micro simulation method in Almeida dos Reis and Paes de Barros (1991) and Bourguignon et al. (2001), we show that most of the forces behind the increase in the level of inequality in Mexico in the years following 1984 are now working in the opposite direction (equalizing effect). In particular, educational-related changes and the betterment in the rates of return to the rural areas and, especially, the south of the country were found to mainly explain the recent distributional improvement. Moreover, we identify an additional factor: financial assets, associated with Mexico's poor economic performance after 2000, the 2001–2002 USA recession and the sharp reduction in the national risk-free rate in the 2000s, which were responsible for about 38% of the fall in the Gini coefficient in 2000-2006. Since financial-asset changes were associated more with *temporal* rather than *permanent changes*, we argue that the declining trend in the income inequality in Mexico, which has occurred through a combination of market forces and government policy intervention, may be reversed in the short to medium run. Our findings enable us to recommend policies aiming at more drastic inequality and poverty reduction, as well as faster, equitable growth through a more equal distribution of income in Mexico.

Keywords: Inequality; poverty; decomposition; Mexico; Latin America.

JEL Classification: D31, O15, O54.

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1. INTRODUCTION

Mexico's income distribution is considered among the most unequal in the world. According to a 2005 United Nations Development Programme report, Mexico is one of the 20 countries with the highest degree of income inequality (Esquivel, 2009). In addition, Rueda-Peiro (2009) argues that Mexico's inequality level is the highest in Latin America, a classification especially worrying as this is the less equitable region in the world in terms of income and assets (World Bank, 2009).[1]

It is well known that Mexico's history of high inequality and sharp social contrasts has been a very long one, possibly going back to colonial times (from the 1520s to the early 1800s) and later on in 1910, the year of the Mexican Revolution.[2] These problems have been definitely present since the mid 20th century (Altimir (1982), Nugent and Tarawneh (1983) and Szekely (2005))[3]. More recently, as shown in Figure 1, income inequality rose sharply between 1984 and 1989,[4] the Gini coefficient increasing from 0.49 to 0.54, remained high during the 1990s, and, declining between 2000 and 2002, the Gini coefficient dropping by 3

[1] In a recent study by the World Bank (2009), related to inequality of economic opportunity among seven Latin American countries (Brazil, Colombia, Ecuador, Guatemala, Mexico, Panama and Peru), Mexico ranked the most unequal of them all either with respect to income or consumption. The inequality measures for which that conclusion was drawn are the mean log deviation for the case of income, and the mean log deviation and the Gini coefficient for the case of consumption. But, if the Gini coefficient for household per capita income were considered, then Mexico would rank second (with a Gini index of 0.587), just after Brazil (Gini of 0.60). It should be noted, however, that the databases used in the study correspond to different surveyed years for each country; therefore, comparability between countries might turn out to be deceptive.

[2] According to Scott (2009), the Independence from Spain in 1821 and the Mexican Revolution a century later were conflicts associated with extreme concentrations of wealth, land and political power, which actually shaped the construction of the modern Mexican State over the last two centuries. Likewise, de Ferranti et al. (2004) argue that the highly unequal distribution of land, education and political power that existed in the Latin American region, at least until the late 1800s, was due to the exclusionary institutions that were set up during the European conquest.

[3] Despite its relatively high standards of living, rich human and physical capital, and advanced institutions, Mexico lags far behind OECD averages. Moreover, there is a further dichotomy within the country because of the high degree of inequality across individuals and across regions (World Bank, 2007).

[4] It is argued that income inequality rose in the years following 1984, after declining continuously since the mid 1960s, due to Mexico's economic-model change and the drastic economic policies implemented as a consequence of the 1982 financial crisis. For excellent reading on this, see Lustig (1992), Szekely (1998), Hernandez-Laos and Velazquez-Roa (2003), Szekely (2005) and Rueda-Peiro (2009).

percentage points to 0.52, remained approximately constant thereafter.

The sharp increase in income inequality after 1984 is related in great part to an increase in wage inequality, which occurred in Mexico from the mid-1980s to the mid-1990s.[5] It has also been attributed to changes in the returns to education, the penalty of living in the rural areas and the southern region of the country, the deterioration in the returns to the household characteristics of those living in these areas, and the changes in the distribution of household endowments (Bouillon et al., 2003).

Although income inequality in Mexico in 1984–1994 has been studied extensively, the years since 1994 have received relatively little attention.[6] Most importantly, Esquivel (2009) and Esquivel et al. (2009)[7] analyze income inequality in Mexico during 1994–2006 and 1996–2006, respectively, by using the methodology proposed by Lerman and Yitzhaki (1985) to decompose the Gini coefficient of monetary income. They attribute the recent inequality reduction to changes in three sources of income, namely labor income, remittances and transfers. In particular, they identify a decline in the skill premium (SP) between low- and high-skilled workers, a rise in the proportion of income received from abroad, and an increase in the proportion of government transfers accruing to low-income households mainly from the Oportunidades program.[8]

[5] The rise in wage inequality during that period has been associated to factors like skill-biased technological change, trade liberalization, foreign direct investment, relative factor-price changes, and market institutions (unionization rates and minimum wages). According to Lopez-Acevedo (2006), earnings inequality is said to be responsible for almost half of income inequality in Mexico at the national level. The reader is referred to Cortez (2001), Cragg and Epelbaum (1996), Esquivel and Rodriguez-Lopez (2003), Feenstra and Hanson (1997), Hanson and Harrison (1999), and Robertson (2000, 2004) for some of the studies relating to wage inequality in Mexico during the 1980s and 1990s.

[6] This statement is only partially true as there is a rich Spanish literature related to income inequality in Mexico after the NAFTA period. For a reference, see the articles and/or books by Cortes (2000a, 2000b, 2001, 2003, 2006), Boltvinik and Hernandez-Laos (2006), Hernandez-Laos (1998, 2000a, 2000b, 2003, 2005), Hernandez-Laos and Velazquez-Roa (2003), Rueda-Peiro (2009), Szekely (2005) and Tuiran-Gutierrez (2005).

[7] According to these authors, the inequality decline in Mexico occurred right after 1994. Nevertheless, our calculations, which are based on total household per capita income and in line with those of Hernandez-Laos and Velazquez-Roa (2003), World Bank (2004), Szekely (2005) and ECLAC (2008), do not support theirs. This has to do most probably with the sensitivity of the Gini index to the definition of income chosen.

[8] An earlier study by Cortes (2003), who also analyzed the distribution of monetary income in Mexico during 1977–2000 and decomposed the Gini into its main sources of income,

The present paper intends to study further the income inequality in Mexico by applying a dynamic decomposition technique introduced in Bouillon et al. (2003)[9], who applied a variant of the micro simulation method used in Almeida dos Reis and Paes de Barros (1991) and Bourguignon et al. (2001)[10] to an estimated reduced-form household income regression model for Mexico during 1984–94.[11] By doing so, we wish to identify the microeconomic factors, along with their specific contributions, which determined the distribution of income in 1989–2006 and that were responsible for the recent reduction in income inequality in the country. Additionally, we wish to find whether the improvement along the distribution of income has been partially caused by any particular policy, structural and / or economic change.

The analysis was carried out for 1989–2006 and three different and consecutive periods in between the former, namely, 1989–1994, 1994–2000, and 2000–2006, exactly corresponding to three different presidential administrations in Mexico. However, in order to facilitate the analysis and due to space limitations, only the results regarding the periods 1989–2006 and 2000–06 are covered in here.[12]

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following Leibrandt et al. (1996), found that labor income and income from own businesses were the sources that determined (by at least 88%) the changes in the Gini coefficient in Mexico.

[9] As explained in Bourguignon et al. (2005), this parametric microeconomic approach possesses clear and important advantages over the static methodologies employed so far in the case of Mexico. First, it can shed light on the evolution of the entire distribution of income, rather than merely on the path of summary statistics. Second, by simulating counterfactual distributions, it can decompose any change in the incomes of a set of households into three fundamental sources: changes in the amounts of resources at their disposal (reflected in the population or endowments effect), changes in how the markets remunerate those resources (reflected in the price or returns effect), and changes in the distribution and/or remuneration of factors not included directly into the model but considered through the residual term (reflected in the unobservables effect). Moreover, this methodology allows uncovering the strong countervailing forces that are hidden in aggregate indices of inequality. Finally, since it analyzes the whole distribution of income, it is possible to assess how different factors affect different parts of the distribution.

[10] The micro simulation method mentioned here builds on the seminal papers by Blinder (1973) and Oaxaca (1973).

[11] There are two other methodologies that are quite similar to the simulation and decomposition technique in Bouillon et al. (2003). The first one is the semi-parametric approach proposed by DiNardo et al. (1996); the second one is a parametric approach introduced by Machado and Mata (2005), applied in the context of quantile regression analysis and the study of wage distribution in Portugal.

[12] The complete analysis corresponds to the third chapter of my PhD dissertation. It should be noted that the 1989–1994 and 1994–2000 decomposition results resemble those obtained for the period 1989–2006, either with respect to the magnitude of the impact of each microeconomic factor considered as well as the direction followed by them in each period. Decomposition results are available from the author upon request.

According to our findings, most of the forces behind the increasing and high levels of inequality after 1984 are now working in the opposite direction (equalizing effect) and, therefore, contributing to the reduction of the high income disparities that persisted through the 1990s. In particular, the determinants mainly associated to the income distributional improvement in Mexico are the changes in the levels of and rates of return to education, and the betterment in the rates of return to the rural areas and, especially, the South of the country.

However, the identification of an additional factor: financial assets (rates of return and distribution), responsible for about 38% of the fall in the Gini coefficient in 2000–06 and regarded more as a *temporal* rather than a *permanent change*, makes us quite suspicious about the relative improvement that occurred along the distribution of the total household per-capita income during the 2000s. According to our analysis, which is consistent with Cortes (2003, 2006), that change is greatly related to the Mexican and USA recessions in the early 2000s,[13] as well as the sharp decline of the national risk-free rate after 2000,[14] which may be regarded as a sign of the poor economic performance of the Mexican economy and the world financial crisis overall. Therefore, unless there are *real (permanent) changes* in the structure of the economy,[15] which shift the gains from growth towards those with lower incomes, we think that income inequality in Mexico may be reversed in the short to medium run, once the world exits the financial crisis and the Mexican economy recovers.

Given the important role that the level of inequality plays in the reduction of poverty in Mexico, as corroborated in Iniguez-Montiel (2011), and the

[13] According to Cortes (2003, 2006), there is a positive relationship between the economic cycle and income inequality in Mexico. Therefore, right after the 1980s and 1990s crises, the distribution of income in the country improved significantly, and the same occurred after 2000 during the economic recession in 2001–2003 (Cortes, 2006).

[14] While the average risk-free rate in Mexico (the CETES) was 15.24% in 2000, it declined by 8% points in 2006 to 7.19%. It is also possible to corroborate that the fall in the CETES occurred since 2001, averaging 11.31% and coinciding with the beginning of the 2001–03 economic recession in the country. Moreover, the CETES declined even further to 7.09, 6.23 and 6.82% in 2002, 2003 and 2004 respectively. This information was obtained from the INEGI's Economic Information Database at http://dgcnesyp.inegi.org.mx/bdiesi/bdie.html.

[15] Such as systematic increases in the over 30-year depreciated minimum wage, on which so many households at the lower tail of the income distribution depend for their living, or a more progressive allocation of government expenditure, which drastically redistributes income and addresses the pervasive market and government failures so characteristic of Mexico's imperfect markets.

growth-enhancing effect that is attributed to lower levels of inequality, especially, in highly unequal societies like Mexico according to the literature,[16] this study aims, first, at updating our understanding of income inequality in Mexico, continuing from Bouillon et al. (2003),[17] and, second, at informing policy making aiming at inequality and poverty reduction as well as fostering economic growth through a more equal distribution of income or policies for equitable growth.[18]

The following section discusses the data and applied methodology, and explains the household income model, along with its estimated reduced form, and the specific variables that were included in the regression exercise. Section 3 provides an income distribution analysis for the period 1984–2006. Section 4 makes an account of the 1989 and 2006 OLS regression results. Section 5 explains the main decomposition results, while section 6 interprets them, based on the relevant literature, summarizes the findings and discusses some policy implications. Finally, section 7 concludes.

2. DATA, HOUSEHOLD INCOME MODEL & METHODOLOGY

The data sets used in this study come from the National Survey of Household Income and Expenditure (ENIGH), a nationally representative survey, covering both the rural and urban populations in the 32 Mexican states, conducted by the

[16] For a reference on the positive impact of reduced inequality on poverty and economic growth, see Ravallion (1997, 2001, 2005, 2007), Deininger and Squire (1998), Aghion et al. (1999), Thorbecke & Charumilind (2002), Bourguignon (2004), Dagdeviren et al. (2004), Culpeper (2005), Lopez and Serven (2006), Perry et al. (2006), Easterly (2007), World Bank (2009) among others.

[17] Despite the similar questions the two papers ask, there are clear differences between their study and ours. First, an income-distribution analysis is provided. Second, not only has the period of analysis been extended in order to cover as many years as surveys were available, but the decomposition analysis was made for three different periods in between the main one, allowing us to account in a better way the income-inequality changes that occurred in the country in 1989–2006. Furthermore, some additional variables and sub-categories were included in the household income regression model in order to improve it. Finally, and perhaps most importantly, our study is not only limited to the identification of the microeconomic determinants that affected the distribution of income through the returns effect, but it also includes the analysis of the endowments and unobservables effects in detail so as to make it a more comprehensive study.

[18] Indeed, as suggested in the literature, the case for redistribution in favor of the poor (low-income households) seems to be particularly important for Mexico if the country is to eradicate poverty in the medium term and induce the required level of economic growth that could relocate the country out of its divergent, development path (OECD, 2009).

National Institute of Statistics, Geography and Informatics (INEGI) in 1984, 1989, and every two years since 1992 including 2005. ENIGH is based on a probabilistic sample and has been carried out applying similar questionnaires and sampling methodologies.

For the income distribution analysis, we rely on all available ENIGHs until 2006. On the other hand, for the regression, simulation and decomposition analyses, only the ENIGHs for the years 1989, 1994, 2000 and 2006 are used. Incomes are deflated by the national consumer price index in order to account for the effects of inflation across time.

It should be noted that the income definition that is been used through out the paper is the one of total household per capita income as suggested by the Technical Committee for the Measurement of Poverty (2002) in Mexico.

HOUSEHOLD INCOME SPECIFICATION [19]

Let household income be the sum of each household member's wage earnings, self employment income and other incomes:

$$Y = \sum_{i=1}^{n} L_i^w w_i + \Pi + Y_0 \qquad i = 1,..., n$$

Where Y is total household income, L_i^w is hours of work in wage employment by household member i, w_i is the wage rate received by household member i, Π is income from self employment, and Y_0 is income from other sources. In this household income equation, hourly earnings in wage employment are a function of individual characteristics (schooling and age) and geographical location. Self-employment income depends on household assets, the amount of labour devoted to the activity, the characteristics of household members involved in the self-employment activity and geographical location. The labour supply function is determined by individual characteristics and household members' characteristics (number of members with a certain level of schooling, age and gender).

[19] The following subsections draw heavily on Bouillon et al. (2003).

This analysis estimates a reduced form of the household income model given by the previous equation. The estimated regression is:

$$y = Xr + \varepsilon$$

where *y* is the log of per capita household income adjusted for differences in inflation, X is a vector of household characteristics, r is the vector of returns to those characteristics and ε is the regression residual that captures the effect of unobservable characteristics and is assumed to be normally distributed. The equation is estimated for four points in time (1989, 1994, 2000 and 2006). The X vector of household characteristics include household demographics (number of family members in each age/gender category), male and female education (number of family members in each education/age/gender category; excluded categories: individuals with no education in each age-gender category), dummies for house ownership and household financial and real assets, dummies for urban and rural location interacted with regional dummies other than the dummy for the southern region,[20] and a southern region dummy interacted with urban and rural dummies,[21] household characteristics, male and female education, and financial and real assets.

SIMULATION AND DECOMPOSITION METHOD

The methodology applied in this study is a regression-based simulation and decomposition technique, which builds on the seminal papers by Oaxaca (1973) and Blinder (1973). By simulating the impact of changes in the returns and changes in observable and unobservable characteristics, the micro-simulation method decomposes the observed changes in the distribution of income into three main effects: the returns effect, the population or endowments effect, and the effect of unobservables.[22]

[20] North-West region includes Baja California, Baja California Norte, Sinaloa, Sonora, and Nayarit; North-East region includes Tamaulipas and Nuevo Leon; North region includes Coahuila, Chihuahua, San Luis Potosi, Zacatecas, and Durango; Centre region includes Hidalgo, Queretaro, Tlaxcala, Mexico, Morelos, and Puebla. The Federal District is included as a separate region, and the excluded category is the Centre-West region that includes Aguascalientes, Colima, Guanajuato, Jalisco, and Michoacan – for urban and rural sectors.

[21] The southern region dummy includes the South (Tabasco and Veracruz), the South-East (Chiapas, Guerrero, and Oaxaca), and the South-West (Campeche, Quintana Roo, and Yucatan).

[22] The returns effect captures the contribution of changes in the returns to each household characteristic and those related to the households geographical location; the endowments

In order to estimate these effects, once the household income regression model is estimated, we simulate the distribution of income that would have been observed in, for example, 1989 if the returns had been the same as those observed in 2006, and vice versa. Then, we calculate the contribution of changes in returns, and observed and unobserved characteristics to the overall change in the distribution of income. The exercise simulates the impact of different factors across the whole vector of household incomes and can be summarized using any inequality measure.

To measure the overall returns effect we change all coefficients simultaneously to generate a new 'simulated' vector of household per capita income. For example, say that we have estimated the vector of the log of household per capita income for 1989 as:

$$y_{89} = X_{89}\hat{r}_{89} + \hat{\varepsilon}_{89}$$

We are interested in determining the impact of the changes in the returns to household characteristics on the distribution of household per capita income. We estimate this by replacing the estimated parameters $\hat{r}_{89}$ with $\hat{r}_{06}$, and recalculate vector y. Namely,

$$y_{89}^{r_{06}} = X_{89}\hat{r}_{06} + \hat{\varepsilon}_{89}$$

The overall returns effect is decomposed into the effect of changes of specific returns, which are calculated by replacing one by one the coefficients of 1989 with those obtained for 2006 and vice versa. In other words, we repeat the procedure described above for every single coefficient in our model at a time to measure, ceteris paribus, the effect of changes in the returns of each household characteristic (demographics, education, financial and real assets, and home ownership), and regional returns on household per capita income.

The effect of unobservables is estimated by modifying the distribution of residuals, so as to match the distribution of 2006 residuals with that of the 1989

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effect that of changes in the level and distribution of household characteristics and location overall; and the 'effect of unobservables' the effect of changes in the distribution and/or remuneration of unobservable characteristics, such as entrepreneurship abilities or other human capital factors of family members.

residuals and vice versa. This is done by scaling the error terms in one year by the ratio of standard deviations, as follows:[23]

$$y_{89}^{\varepsilon_{06}} = X_{89}\hat{r}_{89} + \frac{\hat{\sigma}_{06}}{\hat{\sigma}_{89}}\hat{\varepsilon}_{89}$$

Finally, the population effect is calculated as the difference between the total change in household per capita income distribution and the simulated effects of returns and unobservable characteristics.

These simulations produce a whole set of simulated vectors of household per capita income. Each vector of household per capita income represents the incomes that the households could have received under different assumptions. With each vector, we can calculate the measures of inequality (or poverty) of interest and carry out the decomposition to estimate the contribution of the individual effects.

The decomposition exercise can be summarized as follows: let $D(r, X, \varepsilon)$ be the household per capita income distribution at time 0, where X are observable household characteristics, r returns and ε the unobservable characteristics. The decomposition exercise consists in estimating the effects on the distribution of household per capita income by changing one or more arguments of D{.}. The overall returns effect is estimated by changing all the elements of vector *r* (the estimated returns to education, experience, assets, and location in the earnings equations). The individual effect of specific returns is calculated by changing only one element of vector *r*. The effect of unobservables is calculated by modifying the distribution of residuals, as described above. Finally, the population effect is calculated as the difference between the total change in household per capita income distribution and the simulated effects of returns and unobservable characteristics. We are interested in explaining the change in household per capita income distribution (*ΔD*) between year 1 and year 0:

$$\Delta D = D(r', X', \varepsilon') - D(r, X, \varepsilon)$$

[23] This assumes the residuals are normally distributed. Juhn et al. (1993) followed a different procedure, which is equivalent to the one applied in this study, based on the actual income percentile of a household in a particular year and the average cumulative distribution over time (Bouillon et al., 2003).

This can be decomposed into the effect of changing returns, the effect of changing unobservables (after having changed prices), the effect of changing household characteristics (after having changed returns and unobservables). This can be stated as:

$$\Delta D = [D(r', X', \varepsilon') - D(r, X', \varepsilon')] + [D(r, X', \varepsilon') - D(r, X', \varepsilon)] + [D(r, X', \varepsilon) - D(r, X, \varepsilon)]$$

which, simplifying notation, can be expressed as:

$$\Delta D = D_r(X', \varepsilon') + D_\varepsilon(r, X') + D_X(r, \varepsilon)$$

where each D subscript represents the difference in the distribution from changing the subscript variable. This is an exact 'sequential' decomposition of returns, unobservables, and endowments. This decomposition does not, however, keep final conditions (in our case, 2006) constant at each step of the simulation. The 'sequential' decomposition measures the returns effect using year 1 observable household characteristics and unobservable characteristics, the effect of unobservables using year 0 returns and year 1 observable household characteristics, and the endowments effect using year 0 returns an unobservable characteristics. To keep final conditions unchanged and measure all the effects using year 1 variables; we apply a simple transformation and rearrange terms to obtain:

$$\Delta D = D_r(X', \varepsilon') + D_\varepsilon(r', X') + D_X(r, \varepsilon) + [D_\varepsilon(r, X') - D_\varepsilon(r', X')] \quad (1)$$

$$= \text{returns effect + effect of unobservables + endowments effect + remainder}$$

Or alternatively, to keep initial conditions (in our case, 1989) unchanged:

$$-\Delta D = D_r(X, \varepsilon) + D_\varepsilon(r, X) + D_X(r', \varepsilon') + [D_\varepsilon(r', X) - D_\varepsilon(r, X)] \quad (2)$$

Equations (1) and (2) say that the total change in the distribution of household per capita income can be expressed as the sum of the effect of changes in returns and changes in the distribution of unobservables – given final (initial) conditions – plus the effect of changes in population – given initial (final) conditions – plus a remainder. We assume that the results for each effect obtained from decompositions given initial conditions (1) and given final conditions (2) represent the upper and lower bounds for the estimates of the effect. Using this assumption, the analysis of the results will be based on the

average of the upper and lower bounds. The remainder terms are the interaction between different factors being simulated. In other words, the combined effect of modifying two or more factors at the same time – say returns and household characteristics – is not equal to the sum of the components: that is, the effect of changing returns keeping households characteristics and the effect of changing households characteristics keeping returns fixed.[24]

3. INCOME DISTRIBUTION ANALYSIS

This section presents an analysis of the evolution of the total per-capita income share of households in order to clearly appreciate the changes that occurred along the distribution of income in Mexico during 1984 to 2006. Additionally, we present our own calculations of the Gini coefficient, which is the inequality measure most widely used in the literature and selected in this study as our preferred index.

HOUSEHOLD PER-CAPITA INCOME DISTRIBUTION, 1984–2006

A first glance at Table 1 and Figure 1, gives us the possibility of identifying the year in which household per-capita income inequality was at its lowest point in the last 25 years, and to understand the economic reasons associated to that level. As it is possible to corroborate in Table 1, the relative income shares of households at the first nine deciles were the highest of the whole series in 1984, while the one related to the richest households (decile X) was the lowest in that same year. As a result, income inequality in 1984, according to the Gini, was 48.82%, and the ratio between the per-capita income shares of the richest versus the poorest households was only 24.5 times.[25]

[24] The same procedure is applied to decompose the overall returns effect into specific return effects. The combined effect of modifying two or more returns at the same time – say returns to household characteristics and regional effects – is not equal to the sum of the effects of modifying each return while keeping the others unchanged. Therefore, the decomposition of the overall returns effect into its components also includes a remainder term that reflects the fact that this decomposition was also not made in a 'sequential' way in order to keep the initial (final) conditions constant.

[25] As mentioned above, the 1984 level of inequality constitutes the lowest in Mexico since 1950 (Szekely 1998, 2005). According to Cortes (2003), the improvement along the distribution of household per-capita income in 1984, was the result of the 1982 crisis, which contracted the income of all households, but increased the relative income share of

Contrastingly, in 1989, income inequality increased quite sharply to 54.18%, and the deterioration was caused by a disproportionate rise in the income share of the richest 10 per cent of households, from 36.9 to 43.5%, at the expense of the remaining 9 deciles.[26] As it is possible to verify in Table 2, all households below the 90th percentile of the income distribution experienced an income-share loss, which affected the poorest 10 per cent of households the most, by 15.9%, and the rest of households by 11% on average. However, households at the top decile were the only benefited ones by changes in the distribution of income during 1984–89 by 17.7%. Furthermore, it should be noted, that while overall average income increased by 15.7% during the period, average income fell for the poorest 20 per cent, but increased quite sharply for households at the top decile by 45.3%. All of these aspects contributed to the worsening of the distribution of household per-capita income in Mexico.

On the other hand, in 1989–94, income shares remained almost constant in absolute terms. Nevertheless, the relative shares of the second to sixth deciles deteriorated, including a slight reduction in that of households at the tenth decile, accompanied by a relative income-share improvement in the rest of household deciles, which caused the inequality in the distribution of household per-capita income to increase once more to 54.30%, representing an 11.22% peak rise in the Gini coefficient since the middle 1980s. In 1994, the income-share ratio between the top and the bottom 10 per cent of households improved slightly, as compared to 1989, but the ratios between the top and the bottom 20 per cent, and the top 10 and bottom 40 per cent of households rose.

It is interesting to note, that, in 1996, there is an improvement along the distribution of income, which caused an increase in the income share of households below the 90th percentile, and a decline to that of the richest 10 per cent of households by 3.35% from 43.25 to 41.80%. It may be possible to infer that the reduction in household per-capita income inequality in 1996 was associated to the 1994–95 crisis, in a similar way to what occurred in 1984 due

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households at the first eight deciles, while reducing the ones of households above the 80th percentile. In addition, Cortes and Rubalcava (1991) explain that the inequality reduction in 1984 took place in a context of generalized impoverishment.

[26] Our results and conclusions regarding the period 1984–89 are in line with those of Szekely (1998).

to the 1982 crisis (Cortes, 2003).[27]

Moreover, it is also possible to see in Tables 1 and 2 that the relative income share of households at the first, second and seventh to ninth deciles deteriorated in 1994–2000 by 8.6, 1.8, 0.9, 0.2 and 2.6% respectively. Additionally, it should be noted that the lowest income shares of the series for households below the 20th percentile are observed in 1998 and 2000 after consecutively falling since 1984.[28] However, the income share of households at the top decile increased about 1.1% during the period, while, in 1998 and 2000, it rose to 43.74 and 43.73% respectively, contributing to the inequality rise in both years.[29] As shown in Table 2, real average income fell for households at all deciles during the period, but especially for the poorest 10 per cent by 16.9%, and this is attributed to the direct income effect of the 1994–95 crisis.[30]

After 2000, an evident and interesting change along the distribution of household per-capita income emerges from the data. It can be seen in Table 1 that the downward pattern in the income share of households at the lower and middle tail of the income distribution that followed since 1984 was reversed since 2002, contributing invariably to the income-distributional improvement that was recently observed in Mexico. As shown in Table 2, the income-share increase was most evident for the poorest households in the country (deciles 1–3), with

[27] These results and conclusions are similar to the ones shown in Cortes (2003). He also documented the improvement along the distribution of monetary income that occurred in 1996, and affirmed that it was the immediate result of the 1994–95 financial crisis.

[28] There is an important issue to be observed from the data. According to the ENIGHs, households at the lower tail of the income distribution, but in particular the ones below the 20th percentile, were only able to increase their average income level from that in 1984 until 2002. This means that almost two decades were lost for the poor in terms of economic growth and development. Due to space restrictions, the table of monthly average total income by deciles is not included; instead, two additional columns ("During 84–00") were added to Table 2 to show this point in some detail.

[29] The highest income per capita shares for the richest households in Mexico, along with the highest inequality levels of the whole series, are observed in 1998 and 2000. According to the Gini coefficient, household per-capita income inequality rose by 3.74%, from 52.72 to 54.69% in 1996–98, decreasing slightly to 54.64% in 2000. It is interesting to note, that if the income-share ratio between the richest and the poorest households is considered, no income-distributional difference seems to emerge in 1998 and 2000. Nevertheless, when the ratio between the top and the bottom 20 per cent of households is chosen, inequality is apparently higher in 1998, but, when the ratio between the richest 10% and the poorest 40% of households is selected, then inequality seems to be higher in 2000.

[30] According to Nicita (2009), also the real per capita expenditures showed a decline in the wealth of Mexican households following the financial crisis of 1995, and the purchasing power of most households was still slightly lower than that of 1989 by 2000.

positive changes during 2000–06 of about 25.6, 15.5 and 10.7% respectively. Contrastingly, only the richest households experienced a fall in their income share of about 5.4%. Furthermore, it is also possible to see in the same table that, in 2000–06, changes in the real average income were positive for households at all deciles, but households below the 90th percentile of the distribution had above-average increases in their incomes, with those below the 40th percentile rising their incomes by 42% on average.

Consequently, given the positive changes that occurred along the distribution of household per-capita income since 2002, income inequality has been declining after 2000 and reached a level of 51.96%, as measured by the Gini coefficient, in 2006. This represents an inequality reduction of about 4.1, 4.3 and 4.9% with respect to 1989, 1994 and 2000 respectively. Unfortunately, as it is possible to corroborate in Table 1 and Figure 1, the inequality level in 2006 has not yet fallen, or is even close, to the one observed in 1984, which is the lowest level recorded in the last 6 decades. Our estimates indicate that that hypothetical goal is still far from being reached.

Finally, we have included two additional columns to our calculations in Table 2, in order to be able to identify the changes in the distribution of income that occurred during 1989–2006, which is the main period of analysis of the present study. It is interesting to note in that table, that similar changes, as the ones found for the 2000–06 period, in the income per-capita shares and the real average income of households at all deciles are also observed in 1989–2006 although they are smaller in magnitude. This is definitely no coincidence, and the changes that occurred in 2000–06 had, consequently, a positive distributional impact on the long-run period.

In the next sections, we devote our attention to identifying the microeconomic factors that caused the improvement along the distribution of total household per-capita income that occurred after 2000 and further reaffirmed in 2006, as well as the variables that were inequality–reducing or –augmenting since 1989 in Mexico. For that purpose, we apply the micro-simulation and decomposition methodology explained in the previous section.

4. REGRESSION ANALYSIS 1989–2006

As it can be seen in Table 3, the household regressions have substantial explanatory power. The R-squared for the regression is 52.91 and 57.56% in 1989 and 2006 respectively. Additionally, as shown by the F-test statistic, the overall significance of both regressions is high at the 1% level, and almost all individual variables are highly significant as well.

Results are reported in reference to a household in the center-west region[31] that does not own a house or any real and financial assets, and whose household head is present, and between 14 and 65 years old and with no education. (These are the excluded categories for obtaining a non-singular matrix.)

Household characteristics and regional effects are found to be highly significant. Interaction terms measuring the marginal effects of returns in the south on household characteristics are significant as a group in both years, meaning that the returns to characteristics of households living in the southern region were significantly different from those of the rest of the country in 1989 and 2006.[32]

Household Characteristics

Demographics: Age and gender categories of the household are found to be very significant in explaining per capita household income. The estimated coefficients measure the marginal effect of adding a person to the household. In the case of adults (who are defined as individuals that are 14 years or older), the coefficients measure the value of adding a household member with no education. These marginal effects are found to be negative for both children and adults, meaning that an additional individual contributes less than average income to the family.

Furthermore, as we can see in Table 3, the negative effect of adding a person

[31] The center-west region includes the states of Aguascalientes, Colima, Guanajuato, Jalisco, and Michoacán, for urban and rural sectors.

[32] The gains of households in the South of Mexico are lower because of a higher reliance on income originating from sales of agricultural products and a relatively less skilled labor force. Other reasons that have limited the effect of trade liberalization in southern areas are the large share of the rural population and the pervasive subsistence economy that greatly isolates households' budgets from any price effect (Nicita, 2009).

with no education to the family increased for all variables, except for the elderly and females between 60 and 65 years old. This means that marginal additions were more costly in 2006, therefore, the cost of raising a child increased, and also that the marginal adult would bring relatively less earnings to the household in that year than in 1989. This has been caused in great part by the strong depreciation of the minimum salary,[33] which, from the year 1989 to date, has lost its value by more than 30% in real terms (ILO (2007) and Bayon (2009))[34], and the deterioration in the real incomes of the rural sector (Hernandez-Laos (2006) and World Bank (2007)). On the other hand, it is possible to say that the number of old people in the household is increasing in part because of improved life expectancy, and, therefore, these people, on average, may be healthier and more productive and/or have larger pensions than the same cohorts 18 years earlier.[35]

Education: The educational-attainment level of household members is highly significant as well in accounting for differences in household income in both years. The coefficients measure the marginal effect of replacing an adult with no education by an adult with education for each specified category. With the exception of the coefficients for males with some primary education in both years and females with some primary education in 2006 only, the rest of the returns to education are positive and significant. They tend to increase with educational level, and the increase is monotonic at least with respect to 'completed' levels of education.

It should be noted that the large differences between the returns to lower and higher education that were present in the year 1989 are disappearing. In the case of males, rates of return are much smaller for all educational completed

[33] Perhaps, the Mexican government let the minimum wage deteriorate – by simply leaving its nominal value unchanged in the face of inflation – for fear that this might impede readjustment in the face of macroeconomic shocks, or because of increasing pressure towards inequality in market wages (Bosch and Manacorda, 2008).

[34] Between 1980 and 2000, the minimum wage lost 70% of its purchasing power, while industrial wages fell by 35% in real terms (Bayon, 2009). Unlike most Latin American countries, where average weighted real minimum wages at the end of 2007 were 76% higher than in 1990, Mexico is one of the few countries of the region where minimum wages have barely recovered the purchasing power they commanded 17 years ago (ILO, 2007).

[35] The results and conclusions regarding the rates of return to demographics are similar to those found in Bouillon et al. (2003) for Mexico during 1984–94. In addition, the increase in the number of elderly people from 1989 to 2006 was corroborated with the data; however, due to space limitations the corresponding table is not included.

levels in the year 2006, and particularly so for postgraduate education. This means that there was actually a narrowing income gap between skilled and unskilled workers that, as we will see in the decomposition analysis, constituted one of the main factors contributing to the reduction of inequality in Mexico.

On the other hand, in the case of females, a similar situation to that of males was found at all educational levels, except for the case of some-college education, where the rate of return was definitely higher in the year 2006. This increase could be the result of a natural correction to the parameter coefficient estimated for the year 1989, which shows an underestimated rate of return at that level of education for females,[36] or to the presence of female-work discrimination in that year.

As we will corroborate in the decomposition analysis, the changes in the returns to education for females worked out in the opposite direction to those for males. Therefore, this factor was, though to a small degree, an unequalizing determinant of the distribution of income in Mexico during 1989–2006.

Physical and Financial Assets: Real and financial assets and home ownership contributed positively to household income in both years as expected. It should be noted that, between 1989 and 2006, the returns to house ownership declined, while those for real and financial assets increased. The latter was partly caused by an increase in the number of households that declared having financial assets at the top seven deciles of the income distribution, while the proportion of those at the bottom three deciles declined. Additionally, it is important to note that the highest increase in financial assets was achieved by households at the top deciles (8 to 10), whose assets in this category increased on average by 142%, and the increase was especially higher for those families above the 90th percentile of the income distribution (see Table 4).

On the other hand, the increase in the returns to real assets is related to the decline in the number of households possessing that type of assets at the bottom 9 deciles of the income distribution, accompanied by the increase in the number of households who declared having real assets above the 90th percentile

[36] This can be corroborated by the higher rates of return to secondary and college education observed in that year (see Table 3).

at all income levels. Therefore, we can infer that real and financial assets are strongly correlated with higher levels of income in Mexico.

Finally, the reduction in the rate of return to house ownership is due to the fact that the percentage of households that owned a house in 1989, 74.33%, declined to 69.36% in 2006, a 6.7% change. Moreover, as it is possible to corroborate in Table 4, even though the home-ownership decline experienced in Mexico during the period was a generalized phenomenon for households at all income levels, except for families at the 8th decile of the income distribution, it should also be noted that the smaller reductions in the ownership of the middle- and higher-income households, but especially the ones of the wealthiest families (deciles 8 to 10), prevented the returns to this covariate to fall even further in 2006.

Regional Effects: Relative to the center-west region (the region of reference), fixed effects, in the year 2006, were positive for urban areas in all regions except for the south, and negative in rural areas in all regions, but the strongest effect was observed in the southern part of the country. As for the year 1989, the situation in the regions was a bit different. In urban and rural areas, fixed effects were negative for three regions: the north, the center and the south. However, the strongest negative effect was also felt in the southern region.[37]

As for the ranking, urban areas in the north-west and the capital fare the best in both years, and there is a substantial improvement in the relative position of all regions in the year 2006. For rural areas in 1989, the regions that fare the worst were the south and the center, followed by the north. However, there was a considerable improvement in the relative position of the center and northern regions in the year 2006, which, as we will see in the decomposition analysis, was one of the factors that contributed to the reduction of inequality in Mexico during the analyzed period.

[37] There is a regional per-capita output divergence in Mexico originated after 1985 that was not reversed with the enactment of NAFTA (Chiquiar, 2005). Apparently, regional income dispersion is mainly the result of physical and human capital differences between Mexican states as well as location-related externalities. Therefore, according to Chiquiar (2005), southern states, whose labor force is more concentrated in traditional agriculture and which have the greatest deficiencies in human capital and basic infrastructure, seem to be the losers from trade liberalization as opposed to, especially, the states in the border region with the U.S. market.

5. DECOMPOSITION RESULTS

I. Decomposition 1989–2006

As shown in Table 5, the two effects that contributed the most to the reduction of inequality in Mexico from 1989 to the year 2006 are the effect of unobservables and the endowments effect, which contributed almost in the same proportion to reducing income inequality in the country, by 92.17 and 107.96% respectively as measured by the Gini coefficient. On the other hand, the returns effect contributed negatively to the inequality reduction in Mexico by 96.75%, which means that the rates of return to household characteristics and geographical location, considered as a whole, were an unequalizing factor in the income distribution process. Nevertheless, as we will see later in the analysis, some particular returns had an equalizing effect, and played an important role in the reduction of inequality in Mexico during the last two decades.

For a better understanding of the effects mentioned in the previous paragraph, kernel density estimations were performed in order to provide a visual representation of how the distribution of income in Mexico changed from 1989 to 2006 due to the endowments, unobservables and returns effects (see Figure 2).[38] The merit of the kernel-density estimation is that we can confirm the change in the shape of the distribution without sacrificing any information (Kambayashi et al., 2008).

By looking at the first graph in Figure 2, it is possible to verify that the combined effect of endowments and unobservables was equalizing and contributed to the reduction of the household per-capita income variation in 2006, which was evidently higher in 1989. These two effects caused a compression effect to occur along the distribution of income in Mexico without doubt, which could have been caused in part by the higher average level of education attained in the country (see Table 6) and/or the more equal distribution of education that was observed in Mexico (see Table 7). Additionally, it is because of the combined effect of these two forces that the middle-income classes increased in number in 2006 as

[38] Figure 2 reports the actual income distributions in 1989 and 2006, and two different counterfactual income distributions for 2006, assuming that the rates of return remained at their 1989 levels, and 1989, assuming that the returns were the same as those observed in 2006.

can be corroborated by the deviation between the actual and counterfactual distributions, which is so marked at the top half of the income distribution.

On the other hand, graph 2 in Figure 2 shows a rather different picture of the changes that happened along the distribution of income in Mexico. By comparing the actual income distribution in 1989 with its counterfactual, which uses the 2006 rates of return, it is possible to verify the overall inequality-augmenting impact of the returns on the distribution of household per-capita income during the period of analysis. As we can see in that picture, the returns effect caused a higher income dispersion to occur in the country by rising income disparities between lower- and higher-income households the most as well as considerably reducing the number of middle-income families.

The combination of the effects described above caused a better distribution of income to occur in the country as shown by the actual 2006 distribution in Figure 2 and the improvement of the inequality index in Table 5. Let us continue analyzing the changes in the per-capita income distribution and the factors that were mainly responsible for the reduction of inequality in Mexico.

Returns to Household Characteristics & Geographical Location

Among the different returns to household characteristics, the ones with the highest negative contribution to the reduction of inequality are the returns to assets, followed by the returns to demographics. These two factors are the ones that continuously prevented inequality to decline further in the last 18 years.[39] In the case of returns to demographics, its negative impact (61.12%) was relatively high compared to the main positive effects. As it was explained in the previous section, this negative impact was the result of a loss in the real value of the minimum salary, which has consequently caused the absolute fall in real incomes and has its stronger effects at the lower tail of the income and educational distributions.

[39] When the decomposition analysis is carried out for the three periods in between 1989–2006 (1989–1994, 1994–2000, and 2000–2006), there is an invariable negative contribution of the rates of return to demographics and assets to income inequality in Mexico, with the exception of the period 2000–06 where the returns to assets were an important equalizing factor contributing to the reduction of inequality during that period. This is explained in detail later in this section.

Rates of return to assets contributed negatively to income inequality reduction by 79.18%. From that number, as shown in Table 5, 31.53 and 49.27% correspond to the negative contribution of the returns to real and financial assets respectively. This is something not surprising as the estimated returns to those assets both increased from 1989 to 2006 by 320 and 51% respectively,[40] benefiting higher income classes the most, which are the ones that possess the majority of financial assets, and the ones that also hold real assets in a higher proportion as compared to lower and middle-income groups (see Table 4).

Furthermore, rates of return to education were one of the main factors contributing to the reduction of inequality in Mexico. Considered as a whole, they are able to explain 54% of the reduction in the inequality measure.[41] However, in particular, it is the reduction in the skill premium (SP) between low and high-skilled male workers the factor responsible for 60.52% of the change in the Gini. It was actually this narrowing income gap, associated with male skills, one of the most equalizing forces behind the inequality situation in Mexico during the analyzed period.[42]

On the other hand, returns to geographical location also contributed negatively to income-inequality reduction in Mexico during the last decades. However, the overall impact of that effect (regional effects), which is the result of equalizing and unequalizing forces, is relatively small (9.02%). Among the regional-equalizing factors, it was possible to identify the positive contribution of rural-fixed effects in regions other than the south. These effects contributed to 20.30% to the decline in the inequality index, and are just second in importance among the rates of return, preceded only by returns to education.[43] This constitutes another important finding of this study, which contrasts with the

[40] See Table 3. According to Jensen & Rosas (2007), the increase in the returns to financial assets could be attributed in part to the liberalization of the financial sector that took place during the 1990s.

[41] Changes in the relative earnings among educational groups are always the leading force behind changes in inequality in Mexico (Lopez-Acevedo, 2006).

[42] This finding is in line with those in Acosta and Montes-Rojas (2008), Campos-Vazquez (2008), Esquivel (2009), Esquivel and Rodriguez-Lopez (2003), Montes-Rojas (2006) and Robertson (2004).

[43] Apart from the returns to the rural areas in regions other than the south, the rest of the regional effects in 1989–2006 were unequalizing. Most notably, we could mention the negative contribution (19.6%) of the urban fixed effects in regions other than the south, which almost offset the inequality-reducing effects of the returns to living in the rural areas mentioned here (see Table 5).

results in Bouillon et al. (2003) for Mexico during 1984–94, and that suggests that conditions in rural areas, except for the south, are improving and contributing to reduce the high-income disparities that prevail across regions and between rural and urban areas in the country.[44]

Endowments

The change in the distribution of endowments (education, home ownership, real and financial assets, families' demographic composition, among others), or population effect, was, certainly, the factor that contributed the most to income-inequality reduction in Mexico, with an overall equalizing impact of 107.96% on the decline in the Gini coefficient.

As explained in the methodological section, the endowments effect is calculated in this study as a residual and it is not decomposed in its explicative factors. For that reason, a descriptive-statistics analysis of all the model's household characteristics was carried out in order to understand and make inferences about the changes in the distribution of endowments that took place within the last two decades in Mexico. However, because of space limitations, only the analysis of the main equalizing endowments is presented below.

- ***Education***

The most important contribution to the reduction of inequality during the last two decades is definitely that of education. As it can be seen in Table 6, the overall change in the average educational level of households in Mexico increased by 42% in 1989–2006. However, it was the rural sector and the low-income classes the ones whose levels of education increased the most, in relative terms, in the last two decades by 60%, or more as it was the case of the bottom 5 percentile of the income distribution. But, if the increase in the absolute level of education is considered, it is possible to see that the extra number of years that the adult population achieved in the last 18 years, at all levels of income and different locations in the country, was actually similar, about 2.5 years on average, with the exception of the bottom 1 and 5 percentiles whose educational increment

[44] This statement applies only to the long-run period. In fact, rates of return to the Southern region were identified as an equalizing factor during 2000–06, implying that conditions in the south of Mexico are also improving (see subsection II: "Decomposition 2000–2006").

was much smaller by 1.7 and 0.9 years respectively.[45] Moreover, it is important to note that it was the wealthiest families the ones who were able to increase their average education level the most in absolute terms by 2.7 years, or more as it was the case of households at the top 5 percentile of the income distribution.[46]

Although the wealthiest households in Mexico attained a higher level of educational improvement in absolute terms, it is the majority of the population (those below the 90th percentile of the income distribution or around 22 million households) the ones who benefited the most by the changes in the educational distribution that occurred during 1989–2006 as it can be corroborated in Table 7. In there, it is possible to see that the percentage of adults with a level of education equal or lower than elementary school decreased considerably, while the percentage of adults with higher levels of education, especially those with some high school, some college and some postgraduate education, invariably increased.[47]

The changes in the percentage of adults with higher levels of educational attainment, but, in particular, the ones that occurred from high-school level, and the sharp decreases in the proportion of adults with zero formal education and some elementary education, along with the changes in the returns to tertiary education, are important to understand the improvement in the distribution of household per-capita income during the last decades for, at least, three reasons.

[45] It should be noted that it was just until the year 2006 that the poorest households were able to obtain an average education level equivalent to that of elementary school. This level of education gives them no chance to compete at all with the other higher-income level households in the labour market, and forces them to stay poor for an indefinite number of years or, as it is most likely, for generations. According to Mayer-Foulkes (2008), there is a low human-capital development trap in Mexico; the poverty trap exists if a high enough proportion of the population suffers strong enough barriers to its access to human capital (education, health, nutrition among others).

[46] According to the World Bank (2007), the high level of education inequality that exists in the country contributes to the high level of income inequality and limits the pool of skilled workers, ultimately limiting the potential of Mexico to compete with other knowledge-driven economies. Additionally, the same World Bank report mentions that educational inequality in Mexico is the highest in the OECD.

[47] This finding is consistent with Scott (2009). According to the author, the schooling concentration coefficient in Mexico, remained broadly flat between 1984 and 1994, but declined rapidly thereafter from 0.347 to 0.276 in 1994 and 2006 respectively. This decline is mostly explained by the rapid educational expansion, demographic dynamics and the truncated nature of the indicator, as increasingly educated cohorts enter the adult population, while the older, least educated cohorts exit it (Scott, 2009).

First, the 2 percentage point increase (30.7% change) in the number of adults with tertiary education or composition effect, shown in Table 7, means that there were less unskilled workers in 2006 than in 1989, and, therefore, that an additional number of adults were able to earn, on average, higher incomes for that level of education. Second, the reduction in the number of adults with less than some middle education, and the rise in the number of adults at all levels of secondary school and some college education but, in particular, the changes that occurred above some high-school education, imply that the number of semi-skilled workers increased in the country (from 12.8 to 18.1% in 1989 and 2006 respectively), giving them a chance to increase their level of income consequently. [48] Finally, because the changes in the distribution of educational-attainment were accompanied by decreasing returns to tertiary education as well, there was a corresponding reduction in the level of inequality in Mexico due to a considerable decline in the incomes of the highly-skilled population in the year 2006.[49]

Therefore, in the case of Mexico, changes in the stock of education, along with the reductions in the SP that were identified, contributed in an equalizing manner and to a rather high degree to improving per-capita household income inequality in the last two decades.

- ***Household Demographic Composition***

[48] According to INEGI and other authors (Jensen & Rosas (2007), Lopez-Acevedo et al. (2005) among others), around 10% of the population, or less, is estimated to be high-skilled workers. The other 90% of Mexicans are considered either unskilled (people with no education, some or completed elementary school, some or completed junior-high school, or some high-school education) or semi-skilled workers (people with a technical degree, besides junior-high school education, completed high-school, or some college education). These two groups form the low-skilled population in Mexico. In Table 7, it is actually possible to corroborate this information, and, according to the data, up to 50% of the adult population did not have more than some-middle school education (with the vast majority of that group of people (46%) with an educational level equal or lower than primary school), 23% no more than some high-school education, 18% no more than some-college education (semi-skilled population group), and only 8.6% of adults held a university degree in 2006.

[49] According to Esquivel (2009), the most important factor contributing to the reduction in the SP from 1994 to 2006 in Mexico was the reduction in the number of unskilled workers, or workers with less than lower secondary education, which, in 1989, represented almost 55% of the workforce population as opposed to only 35% in 2006, a 20 percentage-point fall in the supply of this group of workers. Additionally, the author also supports the findings in Campos-Vazquez (2008) and Robertson (2007), which relate the decline in the skill premium to the increase in the supply of skilled workers and the increase in the demand for unskilled workers respectively.

According to the data, there was a 60.9% increase in the proportion of elderly people in households at the lower tail of the income distribution, which constitutes an equalizing factor. There are at least two reasons for this to be the case. First, as it was discussed in the previous section, the negative rates of return for the elderly were smaller for males and females in 2006 than in 1989. This is attributed to elderly people being healthier and more productive and / or having larger pensions than the same cohorts 18 years earlier.[50] Additionally, in support of that finding, since January 2006, there has been a direct cash transfer provided to the elderly (70 years or older) in extremely poor households (those below the 25th percentile of the income distribution) by the Mexican government through the Oportunidades program. Therefore, the increase in the number of old people in the household has contributed positively to the reduction of inequality in Mexico during the last decades.

Unobservables

As explained above, the effect of unobservables was the second most important factor in explaining the reduction in the degree of inequality in Mexico. It contributed to 92.17% to the change in the inequality index during 1989–2006. In this section, we discuss briefly some of the variables that could be responsible for this equalizing effect.[51]

- ***The Oportunidades Program***

An important factor that is highly related to the reduction of poverty in Mexico in the last decade is the Oportunidades program.[52] Oportunidades consists of three main components that operate simultaneously to exploit their complementarity: (1) education, (2) health, and (3) food-nutrition. (Levy and

[50] According to the National Institute of Statistics, Geography, and Informatics in Mexico (INEGI), life expectancy increased from 70.6 to 74.8 years in the period 1990 to 2006.

[51] Due to space limitations, only the most representative unobservable factors are covered in here. However, the complete analysis includes, besides the variables mentioned below, social security, government redistributive expenditure, and physical household characteristics as well.

[52] Oportunidades is a conditional cash and in-kind transfer program of the federal government that aims at the reduction and alleviation of extreme poverty, through the development of the human capital of poor households. It was launched in the year 1997 with a total beneficiary population of 300,000 households. Since the year 2004, the program benefits up to 5 million families in Mexico.

Rodriguez, 2004). It should be noted that the elements of the program that are associated with the effect of unobservables, which are analyzed in this section, are health, nutrition and the government-income transfer itself. The former two components are explained further in the following subsections. As for the Oportunidades income transfer, it should be mentioned that it is able to reduce poverty and inequality in the short run, and this effect is much more significant in the rural areas.[53] In 2006, poverty decreased from 28.4 to 24.5% in rural areas, representing 1.7 million people out of extreme poverty, due to the Oportunidades cash transfer (CONEVAL, 2008).

- ***Human-Capital Development***

Health

It should be noted that the health of the poorest households in Mexico has improved in the last 12 years, and most probably at a higher rate than the national average, due to the Oportunidades program, which focuses on preventive-health care and regular check-ups in order to increase the health condition of all household-beneficiary members.[54] Additionally, in 2001, the federal government introduced the *Seguro Popular* or Popular Health Insurance (PHI) as a pilot program, eventually becoming part of the Mexican health-system legislation in 2003. The PHI offers access to publicly subsidized health insurance to all households that are currently not part of any existing social-security program. In 2006, there were around 3 million beneficiary households in the PHI program, and almost all those families belonged to the bottom of the income distribution (Lustig, 2006).[55]

Without doubt, health plays a crucial role in the income-distribution and

[53] According to CONEVAL (2008), Oportunidades does not have an important effect on poverty reduction in urban areas in the short run. However, in the rural areas, the program has contributed substantially to the reduction of poverty since 2002.

[54] The Oportunidades program has shown to be very effective in improving the health and nutrition of children and mothers of beneficiary households (Lustig, 2006). For a good review of studies related with health and Oportunidades up to the year 2006, the reader is referred to Levy (2006).

[55] The government's goal is to achieve universal coverage by 2010 to all households not covered by any social-security program in Mexico. By the time the program reaches full coverage, Mexico's health system will move from 144th (out of 191 countries included in the study done by the World Health Organization) to 44th place in terms of fairness in financing of health care (Lustig, 2006).

development process, and will continue to be an important equalizing factor as long as the health inequities among all Mexicans become smaller,[56] the quality and coverage of the health services provided mainly by the government to the majority of the population increase evenly across all regions, and social security in Mexico becomes universal rather than being a luxury commodity.[57]

Nutrition & Food Consumption

Nutrition is another human-capital factor that, along with health, has had a positive impact on the reduction of poverty and inequality in the country. According to CONEVAL (2008), nutritional indicators showed important improvements in 2006 as compared to 1988 and 1999. In particular, the prevalence of low weight, low height, and emaciation in children 5 years old or younger has decreased by 64.79, 45.18 and 73.33% respectively in 1988–2006. Moreover, according to the same Council, while per-capita food consumption has declined by 1.45% for the country as a whole, it has increased by 16.62% in real terms for the poorest 20% of the population in 1992–2006. In addition, the percentage of the population that could not afford a minimum food basket, even if spending their total income on it, decreased during the same period from 21.4 to 13.8%.[58]

- ***Migration & Remittances***

Migration and remittances are two interrelated variables considered as unobservables in this study.[59] Several studies point towards the positive effects

[56] Health indicators in Mexico are very unequal with poorer socioeconomic groups and municipalities showing health levels similar to those found in some sub-Saharan African and South Asian countries (Lustig, 2006).
[57] According to CONEVAL (2008), around 50% of all households in Mexico were not covered by any social-security program in 2006.
[58] It should be noted that these important and positive changes in nutrition and food consumption for the whole population, but, in particular, for the poorest households in Mexico, are related in great part to the direct impact of the Oportunidades program since beneficiary households receive a nutritional supplement every month for vulnerable members and a monthly food stipend to increase the dietary intake of the family.
[59] Labour migration can be analyzed as an exchange of labour force for remittances. Although migration can have other benefits and costs, a country loses a certain amount of population, while it (through migrants' families) receives remittances in exchange. Mexico is among the top three remittance-receiving countries in the world (Escobar-Latapi, 2009).

of these two factors on inequality, poverty and development.[60] Given the high and increasing migration rates from Mexico to the United States,[61] and the considerable amount of resources that are transferred to Mexico in the form of remittances,[62] both factors must play an important role in the distribution of income in the country.

According to Mckenzie and Rapoport (2007), there is indeed a negative relationship between migration and inequality in Mexico, especially at high levels of migration prevalence. On the other hand, there is an important contribution of remittances to the reduction of poverty, particularly in rural areas, and it has increased along time (CONEVAL, 2008).[63] According to the estimations made by CONEVAL (2008), extreme poverty in rural areas would have increased from 13.8 to 15.9%, which represents a poverty reduction of about 2.3 million people in 2006, had it not been for the remittances received by poor households in that sector.

II. Decomposition 2000–2006

Between the period 2000 to 2006, income inequality decreased by 4.9% from 54.64 to 51.96%, an absolute reduction in the Gini coefficient of 2.68 percentage points. This is a considerable fall in the inequality index, given the fact that income inequality remained pretty stable (around 0.54) from the late 1980s to 2000 and, actually, had a tendency to increase since 1989 after rising quite sharply in the mid 1980s.[64] This important income-inequality reduction could be

[60] See for example, Adams and Page (2005), Escobar-Latapi (2009), Escobar-Latapi and Janssen (2006), Mckenzie and Rapoport (2007), Mishra (2007), Stark et al. (1986) and Taylor and Wyatt (1996).

[61] Mishra (2007) estimated that around 16% of the Mexican labor force were emigrants to the United States in 2000, whereas they constituted 11 and 3% in 1990 and 1970 respectively.

[62] Remittances accounted for over 3.5% of Mexico's GDP by 2005, reaching 23.74 and 23.97 billion dollars in 2006 and 2007 respectively (Bank of Mexico, 2008), more than foreign direct investment (FDI) and equivalent to one-eight of all exports. In social terms, remittances were roughly 7 times the largest government cash-transfer program (Oportunidades) to aid the poor (Escobar-Latapi, 2009).

[63] According to CONEVAL, remittances increased by 405.5% among extremely poor households living in rural areas in Mexico from 1992 to 2006. In this case, the definition of extreme poverty refers to the one of food poverty.

[64] According to the World Bank (2004), the Gini coefficients for Mexico for the years 1992, 1994, 1996, 1998 and 2000 are 0.53, 0.54, 0.52, 0.54 and 0.54 respectively. These estimates were calculated by using the methodology for the calculation of the per-capita

attributed to a particular policy, structural and/or economic change, which may be possible to identify in the decomposition analysis, or by making further investigation on the issue.

By looking at the decomposition results in Table 8, it is possible to see that the returns effect was no longer an unequalizing factor in the distribution of income in Mexico from 2000 to 2006, as it was the case of that effect in the long-run period or any of the previous analyzed periods (1989–94 and 1994–2000). Moreover, it should be noted that the returns effect was the most important contributor to the reduction of inequality in Mexico, with a positive impact of 57.82% on the change in the Gini coefficient, which is an interesting finding that greatly differs from the previous decompositions. The contribution of the other two effects (unobservables and endowments) did not change as compared to the period 1994–2000. Therefore, the former effect was unequalizing but rather small (9.73%), and the endowments effect was equalizing, with a positive impact of 51.16% on the distribution of income in Mexico.

Now, let us have a closer look at the factors that were behind the sudden directional change in the returns effect in this period. First, it can be immediately seen that the returns to household characteristics and regional effects are both equalizing, with a positive impact of 40.24 and 17.72% respectively, something that again differs from any other analyzed period. Furthermore, it is important to note that there were only two unequalizing factors among the rates of return. One is the returns to demographics with a small, negative contribution of just 3.17%, and the other one is the returns to urban areas in regions other than the south with a negative impact on inequality of about 15%. The rest of the returns contributed positively to the reduction of inequality during the period, which is one of the most important reasons behind the positive change along the distribution of income in Mexico in 2006.

As for the equalizing rates of return, it is possible to identify that the returns to

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income variable that was approved by the Technical Committee for the Measurement of Poverty (2002) in Mexico. It should be noted that it is only in 1996 that inequality in Mexico decreased to a similar level to that of 2006. However, the inequality decline in 1996 was the reflection of the 1994–95 financial crisis in the country (Cortes, 2003). Apparently, the circumstances, under which the reduction in the level of inequality took place in 2006, were quite different from those in 1996. Let us find out the answer to this below.

education, considered as a whole, continued to have a positive and strong impact (23.65%), which makes it the most important contributor to the reduction of income inequality in Mexico during the period and in the longer one as well. However, as shown in Table 8, only the returns to education for males had a positive effect on the distribution of household per-capita income, while the returns for females were slightly unequalizing.

Moreover, there were important changes in the returns to assets that contributed an estimated 20% to the reduction in the Gini coefficient. This is something that contrasts with the findings in previous decompositions, where rates of return to assets were highly unequalizing in either 1989–94 or 1994–2000. As it can be seen in Table 8, the factor that was responsible for this positive, overall change was the returns to financial assets, which contributed to an estimated 28% to the decline in the inequality index from 2000 to 2006. This factor is also one of the most important forces in explaining the income-distributional improvement that took place during the latter period.

As mentioned above, the returns to geographical location also contributed positively to the reduction of inequality in Mexico. From those returns, it is the contribution of the south the one with the highest impact, which accounts to 19.41% of the change in the inequality index. Furthermore, it is possible to identify that, from that effect, 16.12% corresponds to the positive impact of the bettering returns to household characteristics relative to returns in other regions, and the rest of the effect (3.29%) is related to fixed effects in urban and rural areas in the region.

Finally, it should be noted that the effect of returns to rural areas in regions other than the south was also considerably significant in the equalizing process, with an overall contribution of about 13% to the reduction in the Gini. These last two findings point towards an improvement in the distribution of income that is taking place in the rural areas and the South of the country at last due to positive changes in the rates of return in Mexico from 2000 to 2006.

As for the endowments effect, there were primarily three factors whose distributional changes during the period yielded a remarkable inequality-reducing impact on the income distribution, namely financial and real

assets and education. As shown in Table 9, real and financial assets were no longer unequalizing factors in the distribution of income in Mexico during 2000–06. It is particularly notable the positive contribution of the changes in the distribution of financial assets to the reduction of inequality. Perhaps, this is one of the most important determinants of the equalization process that occurred in the country.[65] In addition, regarding the stock of real assets, the proportion of households holding this type of assets increased for households at all income levels and areas in the country, rising by 29.7% for low-income families, a better than average change for this group during the period.

With respect to the changes in the stock of education, it is possible to see in Table 10 that the average educational attainment level of households increased by 13.32% during 2000–06. However, the rise was much higher, in relative and absolute terms, for households at the lower tail of the income distribution (below the 50th percentile) than for the middle- and higher-income families, and this also applies to households in rural areas and the South of the country with respect to the urban sector.

Moreover, as shown in Table 11, important changes took place regarding the decline in the proportion of adults with a level of education equal or lower than elementary school. By comparing Tables 7 and 11, it can be corroborated that the greatest reductions in the percentage of adults with those levels of education occurred in 2000–06. Additionally, it is also possible to see that the highest increase in the proportion of adults with some college education was definitely achieved during 2000–06. Therefore, changes in the stock of education were also an important inequality-decreasing factor during this period.

[65] According to the data, the proportion of households with financial assets rose slightly by 1.1% on average during the period. However, there was around a 50% increase in the proportion of households with financial assets below the 90th percentile of the income distribution, but especially for those at the lower- and middle-part of it. Contrastingly, the proportion of households holding financial assets at the top 10, 5 and 1 percentile of the income distribution fell by 5, 8 and 20% respectively. It is important to mention that the sudden change (improvement) in the distribution of financial assets occurred since 2002 due in great part to the 2001–03 economic recession in the Mexico. However, it was possible to corroborate that the improvement along the distribution of financial assets remained in 2004 and 2006 in the absence of any crisis or recession in the country. We believe that this was possible because of the sharp decline of the national risk-free rate after 2000, which had an important equalizing impact at the upper tail of the financial-asset distribution.

Finally, as mentioned above, the effect of unobservables was fairly small, and, therefore, did not play such an important role in the determination of household per-capita income inequality during the period. Although the overall impact of this effect was a negative one, there must have been several equalizing forces or unobservable factors that greatly counteracted the unequalizing ones as it should be the case, especially, of the Oportunidades program, the PHI program, and migration and remittances in 2000–06.

6. Interpretation of Results & Policy Recommendations

In this section, we interpret the findings from the decomposition analysis, compare our conclusions to those already drawn in the earlier literature, and make some policy recommendations, with the intention of addressing the chronic problems of inequality and poverty in Mexico.

As shown in Figure 1 (Section 3), income inequality in Mexico increased quite sharply after 1984, reaching a level (Gini) of 54.18 (%) since 1989, and remained high during the 1990s. The data shows that the reduction in household per capita income inequality took place after 2000, more specifically around 2002, declining to 52.03 and remaining approximately constant thereafter.

Important equalizing forces were responsible for the fall in the level of inequality. In the long run, the decomposition results show that only the endowments effect and the effect of unobservables contributed to the reduction of income inequality in Mexico. The returns effect, considered as a whole, was found to be unequalizing. Nevertheless, our analysis also indicates that both changes in the levels of and returns to education were both the most important determinants in explaining the reduction of income inequality in Mexico during 1989–2006. Our estimation is that education was responsible for more than 50% of the improvement in the distribution of household per capita income, caused mainly by the educational policy change, documented in Lopez-Acevedo (2006), Scott (2009) and World Bank (2007), that induced the important structural change in the distribution of schooling, identified in our analysis, which affected the composition of the labor force in such a way as to cause the decline in the SP between low- and high-skilled workers after 1994 (Esquivel and

Rodriguez-Lopez (2003), Robertson (2004), Lopez-Acevedo (2006), Montes-Rojas (2006), Acosta and Montes-Rojas (2008), Esquivel (2009)).

With respect to the decomposition results for the three periods in between 1989 and 2006, it should be mentioned that the only factor that was continuously unequalizing during the three analyzed periods was the returns to demographic characteristics. As explained in Section 4, this inequality-increasing factor is related in great part to the depreciation of the minimum salary, which, from 1980 to 2006, lost its real value by around 70% (ILO, 2007) and by 30% in 1990–2006 (Bayon, 2009). This strong unequalizing factor, which is indeed captured in our decomposition exercises, is the direct result of the adjustment process that followed the 1982 crisis (additionally complemented with the high-inflationary period that characterized the 1980s) and which severely affected total real incomes and their distribution between wages and profits (Lustig, 1992).[66] Therefore, in the long run, we consider that the strong and induced depreciation of the minimum salary that took place since the early 1980s, along with the drastic adjustment policies implemented in Mexico, was one of the main factors responsible for the high levels of household per capita income inequality that are observed,[67] and the second most unequalizing force after the rates of return to assets during 1989–2006. After 2000, however, changes in the real value of the minimum salary were only a minor, but still unequalizing, determinant of the level of inequality in the country.[68]

[66] If adjustment policies (switching and expenditure-reduction mechanisms) have a contractionary effect on the economy, as they did in Mexico, their impact on real incomes will be more pronounced (Lustig, 1992). Moreover, according to the same author, the costs of the adjustment process in Mexico were borne by households at the low- and middle-income ranges, leaving the country with a relatively impoverished middle class, an increasing number of poor households, and the poor worse off than before.

[67] This is consistent with Bosch and Manacorda (2008), who show that the decline in the real value of the minimum wage in Mexico was able to explain most, if not all, of the rise in urban inequality at the bottom of the earnings distribution that was observed between the late 1980s and the late 1990s. In addition, Szekely's (2005) findings, regarding the positive and close association between inequality and the level of inflation in Mexico, are clearly supportive of the great unequalizing impact of the systematically depreciated minimum salary on the distribution of income that is found in this study.

[68] Another important issue to be considered, besides the declining value of the minimum salary, that strongly determines the level of inequality in Mexico is the number of people that is paid less or a bit more than the minimum wage. According to Cortes (2000a) and Rueda-Peiro (2009), more than half of the labor force earn between half and two minimum salaries in the country. This situation is further accentuated in the states that have the highest degrees of marginalization (Chiapas, Guerrero and Oaxaca) where the proportion of the labor force with that income level represents 77, 66 and 72% respectively (Rueda-Peiro,

On the other hand, it should be noted that a completely different picture emerges from the 2000–06 decomposition results. First, it is possible to corroborate that the returns effect was no longer unequalizing; rather, it constituted the main inequality-reducing force, accounting for 53% of the inequality decline. Therefore, it can be concluded that the recent improvement that occurred along the distribution of income in Mexico was due to the important contribution of the price effect overall. Moreover, it is also possible to see that the rest of the equalizing change was the result of the positive impact of the endowments effect with a 47% contribution, and the effect of unobservables, although inequality-increasing, was fairly small during the period.

To be more specific, our analysis shows that the recent improvement that took place along the distribution of total household per-capita income, after more than 15 years of high and increasing inequality in Mexico, was greatly associated with three factors: education (returns and distribution), financial assets (returns and distribution), and the improvement in the rates of return to the rural areas and, in particular, the South of the country. Our estimation is that they contributed to about 33, 38 and 19%, respectively, of the reduction in inequality during 2000–06.

The 1990s educational expansion and the corresponding decline in the SP between low- and high-skilled workers have been both advanced in the literature as the main reasons of the contribution of education to the equalization process in Mexico. Additionally, the reduction in the rural-urban income gap was mentioned in Esquivel (2009) as one of the factors explaining the new income distributional dynamics in Mexico. However, no suggestion has been put forward regarding the impact of financial assets or the bettering returns to living in and to household endowments in the southern region as possible explanations of the recent decline in inequality in the country.

With respect to the latter of these factors and in sharp contrast with the findings in Bouillon et al. (2003) for the period 1984–94, it is possible to say that conditions and income opportunities in the South of Mexico may be finally improving and starting to converge to those found in the rest of the country. The main reasons for this to be the case should be related mostly to the educational

2009).

inequality decline and the SP reduction previously mentioned, as well as the overall effect that has been brought about by the Oportunidades (Progresa) program since 1997.

As for the returns to and the distribution of financial assets, which, according to our analysis, were the most important determinants, together with education, of the income-distributional betterment in Mexico in the latter period, we believe that these *temporal economic changes* were the result of the economic recessions in Mexico and the USA in 2001–2003 and the sharp decline of the national risk-free rate in the 2000s, which has definitely contributed to the financial-asset and income equalization in the country. As it was possible to corroborate in this study, the financial-asset changes negatively affected the relative income share of the richest classes in Mexico but, in particular, the one of households at the top decile of the income distribution.

This latter finding is consistent with Cortes (2003, 2006), who explains that there is a positive relationship between the economic cycle and income inequality in Mexico. Therefore, right after the 1980s and 1990s crises, the distribution of income in the country improved significantly, and the same occurred after 2000 during the economic recession in 2001–2003 (Cortes, 2006).[69] Therefore, it may be possible to say that one of the channels by which crises or recessions yield an equalizing impact on the distribution of income in Mexico is through lower inequality in the distribution of financial-asset holdings. However, this inequality-reducing effect persisted through 2004–2006 even though the economy was not in recession during that period. We assume that this was possible because of the sharp reduction in the national risk-free rate after 2000, which may be regarded as a sign of the poor economic performance of the Mexican economy and the adverse financial environment in the world.

Thus, we believe that the declining trend in the income inequality in Mexico may be reversed, in the same manner that occurred in the previous decades, once the Mexican economy recovers and the world exits the financial crisis, unless there are *real (permanent) changes* in the structure of the economy that make

[69] Cortes (2006) affirms that this economic regularity is given by a reduction in the relative income share of households above the 90th percentile of the income distribution, but that this situation is later reversed once economic growth is attained, affecting positively the income share of the richest households in Mexico.

the distributional gains from growth more pro-poor (DFID (2004), Ravallion & Chen (2003)).

Even though it might be possible to say that the required structural change in the Mexican economy has partially occurred through the educational sphere, it should be noted that its initial effects on inequality are relatively low yet and will take many more years, most probably decades, to be felt in full among the entire population and yield a stronger equalizing impact than the one achieved so far. Moreover, as implied by the unequalizing effect of unobservables in 2000–06, there were particular factors that negatively affected the distribution of income and impeded its further improvement. Perhaps, one of the most important inequality-increasing unobserved factors in Mexico is still its own economic and fiscal policy as suggested in the literature (Szekely (1998), World Bank (2001, 2007), Hernandez-Laos and Velazquez-Roa (2003), Goni et al. (2008), Rueda-Peiro (2009), Iniguez-Montiel (2010) among others) and the net regressive effect of redistributive spending that was found in Scott (2009) during 1992–2006, and further extended in his 2006–08 analysis.[70] It turns, therefore, indispensable that increased and truthfully committed policy intervention on the part of the Mexican government is undertaken in order to address the issues of high and persistent inequality and poverty that have prevailed in the country for decades (Szekely (1998, 2005), Cortes (2000a), Hernandez-Laos and Velazquez-Roa (2003), Rueda-Peiro (2009)) and other severe economic and social problems that affect the Mexican economy and its distribution of income under the current development model.[71]

Furthermore, derived from our main results and conclusions, and in line with

[70] As explained in Scott (2009), given the share of fiscal resources that are allocated to regressive programs, the latter effectively cancel out the pro-poor impact of the progressive ones, producing a slightly regressive global distribution of public spending.

[71] One of the most worrisome indications of Mexico's development issues, highly determining the level of inequality in the country, is the one of its huge and increasing informal sector. Due to the sluggish performance of the Mexican economy since the 1980s, there was a substantial increase of the urban informal sector, from 30 to 38 and then to 45% in 1980, 1995 and 2006 respectively (Hernandez-Laos and Velazquez-Roa (2003) and Bayon (2009)), which impeded the population transfer to the modern sector of the economy, and that has had unfavorable effects on the distribution of income (Hernandez-Laos and Velazquez-Roa, 2003). Moreover, according to Samaniego (2005), informal employment represented 40% of the Mexican labor force by 2003 and is constituted by individuals in the non-agricultural sector that form two large types of groups: the "precarious employment" and the "workers without any fringe benefit".

those found in Bosch and Manacorda (2008), Hernandez-Laos and Velazquez-Roa (2003) and Rueda-Peiro (2009), it is imperative that a completely different emphasis is placed on incomes policy in order to revert, as much as possible, the highly unequalizing impact of the low minimum salary on the income and wage distributions; to induce the required increase in productivity, the competitiveness of the Mexican labor force and the expansion of Mexico's hardly-depressed domestic market; and, consequently, to rise the living standards of the majority of the population to those necessary to at least overcome poverty, which should be considered, by developing and developed countries alike, as one of the most important development goals (United Nations, 2000).

We cannot deny that considerable progress has been achieved in the last two decades through government policy intervention, as documented in this study, especially on three fronts: education, health and poverty alleviation. However, we believe that if lower levels of inequality and poverty are to be achieved, policies that increase aggregate investment (Deininger and Squire, 1998), foster the accumulation of assets (physical and human) by the poor (Ravallion, 2005),[72] and establish a more progressive allocation of spending (World Bank, 2007) must be implemented in Mexico in order to reduce the high inequalities that persist in all human-capital dimensions (World Bank (2007), Mayer-Foulkes (2008), Bayon (2009)). Then, it will be possible, as suggested by human capital theory (Becker, 1964, 1993, 2008) and the findings of this study, that the income inequality and poverty traps so deeply rooted in the country (Guerrero et al. (2006) and Mayer-Foulkes (2008)) get eliminated once and for all, and all Mexicans can fairly climb the income ladder by means of effort and work while participating in and contributing to the economic process.

7. CONCLUSIONS

In this study, we have analyzed the distribution of household per capita income in Mexico from 1989 to 2006. By applying a dynamic decomposition methodology, which is a variant of the micro simulation method in Almeida dos

[72] These types of policies are regarded as doubly beneficial for growth and poverty reduction (Deininger and Squire, 1998).

Reis and Paes de Barros (1991) and Bourguignon et al. (2001), we identify the main forces, along with their specific contributions, which determined the distribution of income in the long run and that were behind the recent inequality decline in the country.

Among the determinants associated with the decline, it is possible to mention the important equalizing impact of education, financial assets, and the bettering of the returns to living in and to household endowments in the rural areas and, in particular, the South of Mexico. Without doubt, educational-related changes, which were caused by the decline of educational inequality as well as the narrowing skill-premium gap between low- and high-skilled workers, accounted for the bulk of the inequality decrease in the long run. Furthermore, our analysis also indicates that the important equalizing effect of unobservables identified in 1989–2006 is related, in particular, with the Oportunidades program (considering its health, nutrition and income-transfer components), the PHI program, and migration and remittances.

However, in the years following 2000, the income inequality reduction was primarily caused by changes in the distribution of and the rates of return to financial assets. We explain that these temporal changes are related in great part to Mexico's poor economic performance after 2000, the 2001–2002 USA recession and the sharp decline of the national risk-free rate in the 2000s, affecting negatively households at the top decile of the income distribution the most. Therefore, the improvement in the distribution of financial assets in Mexico in 2000–2006 seems to be partly the result of the 2001–2003 economic recession in the country, which is consistent with Cortes (2003, 2006), and probably of rational decisions on the part of the richest families to allocate their capital on higher-return investments (like real estate) than the ones available through the financial market since the early 2000s.

Two additional comments deserve special attention. First, the rather important contribution of the endowments effect, either in the long run or the two latter, intermediate periods, suggest that the distribution of income in Mexico could be greatly improved through policies that redistribute assets (like land, health and education) to low-income households so that their earnings potential is increased. Second, given the net unequalizing impact of the effect of

unobservables that was identified for the period 1994–2006 and considering, in particular, the regressive effect of redistributive spending that was found in Scott (2009) for the period 1992–2008, we suggest increasing and truthfully committed government-policy intervention in order to achieve considerable progress in the reduction of the high and persistent income disparities, which have prevailed in the country for centuries. In this respect, our findings indicate that the most important policies for reducing income inequality, as well as poverty, in Mexico are definitely those related to the development of the human capital of the low-income households; the promotion of a competitive financial system that benefits all members of a society and not only the economic elite; the encouragement of a highly progressive redistributive system that counteracts the existing market and government failures; and the systematic increase in the over 30-year depreciated minimum wage, which has adversely affected households at the lower tail of the income distribution.

As suggested in the literature (Ravallion (1997, 2005, 2007), Addison and Cornia (2001), Bourguignon (2004), Dagdeviren et al. (2004), Lopez and Serven (2006), Perry et al. (2006), World Bank (2009)), equity should be seen as an important policy objective for developing countries, especially high-inequality ones, in order to be able to escape absolute poverty. Moreover, given the growth-enhancing impact of an improved distribution of income (lower inequality level) that is identified in the literature (Aghion et al. (1999), Thorbecke and Charumilind (2002), Dagdeviren et al. (2004) and Culpeper (2005)), which overturns the conventional wisdom that there is a trade-off between equity and efficiency, the implementation of policies to redistribute income and assets in favor of the poor (low-income households) should be strongly encouraged (Oxfam (2000), Cornia et al. (2004), Cullity (2004), Dagdeviren et al. (2004), Culpeper (2005), van der Hoeven (2008)). These important hypotheses are particularly relevant for the case of Mexico, considering that its highly unequal distribution of income could be partly blamed for the poor economic performance of the economy during the last decades, and additionally, as corroborated in the previous Chapter, for the rather high levels of poverty that continue to prevail in the country. Indeed, it seems that a more equitable development path (World Bank, 2007) is the answer to Mexico's most pressing, underdevelopment problems and, therefore, that a moderate- to low-income inequality level should be placed at the forefront of the country's political agenda, so that the overriding

policy objectives of poverty reduction (United Nations, 2000) and rapid, equitable (broad-based) growth (World Bank, 1993) can be successfully materialized in the foreseeable future.

References

Addison, T. and G. A. Cornia (2001) "Income distribution policies for faster poverty reduction", UNU-WIDER Discussion Paper 2001/93. Helsinki: UNU-WIDER.

Altimir, O. (1982) "La Distribucion del Ingreso en Mexico: 1950–1977", Chapter I in Distribucion del Ingreso en Mexico, Ensayos, Analisis Estructural, Cuaderno 2, Tomo I, Banco de Mexico: Mexico City.

Acosta, P. and G. Montes-Rojas (2008) "Trade Reform and Inequality: The Case of Mexico and Argentina in the 1990s", *The World Economy*, 31 (6): 763-80.

Adams, R. H. and J. Page (2005) "Do International Migration and Remittances Reduce Poverty in Developing Countries?", *World Development*, 33 (10): 1645-1669.

Aghion, P., E. Caroli and C. Garcia-Penalosa (1999) "Inequality and Economic Growth: The Perspective of the New Growth Theories", *Journal of Economic Literature*, 37 (4): 1615–1660.

Airola, J. and C. Juhn (2005) "Wage Inequality in Post Reform Mexico", IZA Discussion Paper No. 1525 (March), Institute for the Study of Labor (IZA).

Alesina, A. and P. Giuliano (2009) "Preferences for redistribution: The crisis, reduced inequality, and soak-the-rich populism", VoxEU.org: http://www.voxeu.org/index.php?q=node/3488 [accessed 16 June 2010].

Almeida dos Reis, J. and R. Paes de Barros (1991) "Wage Inequality and the Distribution of Education: A Study of the Evolution of Regional Differences in Inequality in Metropolitan Brazil", *Journal of Development Economics*, 36: 117-43.

Bank of Mexico (2008) “Remesas Familiares” http://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?accion=consultarCuadroAnalitico&idCuadro=CA11&sector=1&locale=es [accessed 16 June 2010].

Bayon, M. C. (2009) “Persistence of an Exclusionary Model: Inequality and Segmentation in Mexican Society”, *International Labour Review*, 148 (3): 301-315.

Becker, G. (1964, 1993) *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*, 3rd. edition, Chicago: University of Chicago Press.

___ (2008) “Human Capital”, *The Concise Encyclopedia of Economics*. Library of Economics and Liberty: http://www.econlib.org/library/Enc/HumanCapital.html [accessed 16 June 2010].

Blinder, A. (1973) “Wage Discrimination: Reduced Form and Structural Estimates”, *Journal of Human Resources*, 8: 436-55.

Boltvinik, J. and E. Hernandez-Laos (2006) *Pobreza y Distribucion del Ingreso en Mexico*, 4th edition, Siglo XXI: Mexico City.

Bosch, M. and M. Manacorda (2008) “Minimum Wages and Earnings Inequality in Urban Mexico: Revisiting the Evidence”, Centre for Economic Performance, Discussion Paper 880.

Boston Consulting Group (2009) *Delivering on the Client Promise. Global Wealth 2009*, Boston: BCG.

Bouillon, C., A. Legovini and N. Lustig (2003) “Rising Inequality in Mexico: Household Characteristics and Regional Effects”, *Journal of Development Studies* 39 (4): 112-33.

Bourguignon, F. (2004), “The Poverty-Growth-Inequality Triangle”, mimeo, The World Bank.

___, F. Ferreira and N. Lustig, (2005) *The Microeconomics of Income Distribution Dynamics in East Asia and Latin America*, Washington D.C.: World Bank/Oxford University Press.

___, M. Fournier and M. Gurgand (2001) “Development with Stable Income Distribution: Taiwan, 1979–1994”, *Review of Income and Wealth*, 47: 139-63.

Campos-Vazquez, R. (2008) “Why did Wage Inequality Decrease in Mexico after NAFTA?”, mimeo, University of California-Berkeley (October).

Chiquiar, D. (2005) “Why Mexico’s regional income convergence broke down”, *Journal of Development Economics*, 77 (1): 257-275.

CONEVAL (2008) *Informe de Evaluacion de la Politica de Desarrollo Social en Mexico*, Mexico City. Available at: http://issuu.com/coneval/docs/eval_pol_soc_2008?mode=embed&documentId=080311154822-183d3d8334a544518a0d5e324f2543d4&layout=http://www.toolssoluciones.com/issuu/CONEVAL_skin/layout.xml [accessed 16 June 2010].

Cortes, F. (2000a) *Procesos Sociales y Desigualdad Economica en Mexico*. Siglo Veintiuno Editors: Mexico City.

___ (2000b) *La Distribucion del Ingreso en Mexico en Epocas de Estabilizacion y Reforma Economica*. CIESAS/Miguel Angel Porrua: Mexico City.

___ (2001) “Sector informal y distribucion del ingreso en Mexico”, mimeo, El Colegio de Mexico.

___ (2003) “El ingreso y la desigualdad en su distribucion. Mexico: 1977–2000”, *Papeles de Poblacion*, 35 (January-March): 137-53.

___ (2006) “La incidencia de la pobreza y la concentracion del ingreso en Mexico” in E. de la Garza, C. Salas (eds), *La Situacion del Trabajo en Mexico*, Plaza y Valdes: Mexico City.

___ and R. M. Rubalcava (1991) *Autoexplotacion Forzada y Equidad por*

Empobrecimiento. El Colegio de Mexico, Centro de Estudios Sociologicos: Mexico City.

Cortez, W. (2001) “What is Behind Increasing Wage Inequality in Mexico?”, *World Development*, 29 (11): 1905-22.

Cragg, M. and M. Epelbaum (1996) “Why has Wage Dispersion Grown in Mexico? Is it the Incidence of Reforms or the Growing Demands for Skills?”, *Journal of Development Economics*, 51 (1): 99-116.

de Ferranti, D., G. Perry, F. Ferreira and M. Walton (2004) *Inequality in Latin America and the Caribbean: Breaking with History?*, Washington DC: The World Bank.

Deininger, K. and L. Squire (1998) “New ways of looking at old issues: inequality and growth”, *Journal of Development Economics*, 57: 259-87.

DFID (2004) “What is pro-poor growth and why do we need to know?”, Pro-Poor Growth Briefing Note 1. London: Department for International Development.

DiNardo, J., N. Fortin and T. Lemieux (1996) “Labor Market Institutions and the Distribution of Wages, 1973–1992: A Semi Parametric Approach”, *Econometrica*, 64: 1001–1044.

Easterly, W. (2007), “Inequality does cause underdevelopment: Insights from a new instrument”, *Journal of Development Economics*, 84: 755–776.

ECLAC (2008) *Social Panorama of Latin America 2007*, United Nations: Santiago, Chile.

Escobar-Latapi, A. (2009) “Can Migration Foster Development in Mexico? The Case of Poverty and Inequality”, *International Migration*, 47 (5): 75-113.

Escobar-Latapi, A. and E. Janssen (2006) “Migration, the diaspora and development: the case of Mexico”, IILS (ILO) *Discussion Paper 167*, ILO, Geneva.

Esquivel, G. 2009 “The Dynamics of Income Inequality in Mexico since NAFTA”, Research for Public Policy, Inclusive Development, ID-02-2009, RBLAC-UNDP, New York.

___, N. Lustig and J. Scott (2009) “A Decade of Falling Inequality in Mexico: Market Forces or State Action?”, In *The New Dynamics of Inequality in Latin America*, chapter 6, eds. L. Lopez-Calva and N. Lustig, submitted to the Brookings Institution in August 2009.

___, and J. Rodriguez-Lopez (2003) “Technology, Trade and Wage Inequality in Mexico before and after NAFTA”, *Journal of Development Economics,* 72 (2): 543-65.

Feenstra, R. and G. Hanson (1997) “Foreign Direct Investment and Relative Wages: Evidence from Mexico’s Maquiladoras”, *Journal of International Economics*, 42: 371-93.

Goni, E., H. Lopez and L. Serven (2008) “Fiscal Redistribution and Income Inequality in Latin America”, Policy Research Working Paper Series 4487, The World Bank.

Guerrero, I., L. Lopez-Calva and M. Walton (2006) “The Inequality Trap and its Links to Low Growth in Mexico”, Paper presented at the conference on Equity and Growth of the World Bank at the Harvard Rockefeller Center in Mexico, Mexico City.

Hanson, G. and A. Harrison (1999) “Trade Liberalization and Wage Inequality in Mexico”, *Industrial and Labor Relations Review*, 52 (2): 271-88.

Hernandez-Laos, E. (1998) “Evolucion de la distribucion del ingreso de los hogares en Mexico”, *Comercio Exterior*, 48 (6).

___ (2000a) “Crecimiento economico, distribucion del ingreso y pobreza en Mexico”, *Comercio Exterior*, 50 (10): 863-73.

___ (2000b) “Politicas de estabilizacion y ajuste y distribucion functional del

ingreso en Mexico", *Comercio Exterior*, 50 (2).

___ (2003) "Distribucion del ingreso y pobreza" in E. de la Garza, C. Salas (eds), *La Situacion del Trabajo en Mexico*, Plaza y Valdes: Mexico City.

___ (2006) "Condicionantes Macroeconomicos de la Evolucion de la Pobreza en Mexico", Chapter 3 in J. Boltvinik and E. Hernandez-Laos, eds., *Pobreza y Distribucion del Ingreso en Mexico*, 4th edition, Siglo XXI: Mexico City.

Hernandez-Laos, E. and J. Velazquez-Roa (2003) *Globalizacion, desigualdad y pobreza: Lecciones de la experiencia mexicana*. Universidad Autonoma Metropolitana, Plaza y Valdez Editors: Mexico City.

ILO (2007) *2007 Labour Overview: Latin America and the Caribbean*, International Labour Organization, Regional Office for Latin America and the Caribbean: Lima, Peru.

Iniguez-Montiel, Alberto J. (2010) "Government Expenditure and National Income in Mexico: Keynes versus Wagner", *Applied Economics Letters*, 17 (9): 887-893.

_____ (2011), "Growth with Equity for the Development of Mexico: Poverty, Inequality, and Economic Growth (1992–2008)", mimeo, University of Tsukuba: Japan.

Jensen, N. and G. Rosas (2007) "Foreign Direct Investment and Income Inequality in Mexico, 1990-2000", *International Organization*, 61 (Summer): 467-87.

Juhn, C., K. Murphy and B. Pierce (1993) Wage Inequality and the Rise in Returns to Skill, *Journal of Political Economy*, 3 (3): 410-48.

Kambayashi, R., D. Kawaguchi and I. Yokoyama (2008) "Wage Distribution in Japan, 1989-2003", *Canadian Journal of Economics*, 41 (4): 1329-1350.

Leibbrandt, M.V., C. Woolard and I. Woolard (1996) "The Contribution of Income

Components to Income Inequality in South Africa: A Decomposable Gini Analysis", LSMS Papers 125a, The World Bank.

Lerman, R. and S. Yitzhaki (1985) "Income Inequality Effects by Income Source: A New Approach and Application to the USA", *Review of Economics and Statistics*, 67 (1): 151-56.

Levy, S. (2006) *Progress against Poverty. Sustaining Mexico's Progresa-Oportunidades Program*. Brooking Institution Press.

___ and E. Rodriguez (2004) *Economic Crisis, Political Transition and Poverty Policy Reform. Mexico's Progresa-Oportunidades Program.* Policy Dialogue Series, Inter-American Development Bank: Regional Operations Department II.

Lopez-Acevedo, G. (2006) "Mexico: Two Decades of the Evolution of Education and Inequality", Working Paper No. 3919, The World Bank.

___, M. Tinajero and M. Rubio (2005) Mexico: Human Capital Effects on Wages and Productivity. Policy Research Working Paper 3791. Washington, D.C.: World Bank.

Lopez, H. and L. Serven (2006), "A Normal Relationship?: Poverty, Growth, and Inequality", mimeo, The World Bank.

Lustig, N. (1992) *Mexico: The Remaking of an Economy*. Brookings Institution: Washington DC.

___ (2006) "Investing in Health for Economic Development: The Case of Mexico", Research Paper 2006/30, Helsinki: UNU-WIDER.

Mckenzie, D. and H. Rapoport (2007) "Network effects and the dynamics of migration and inequality: Theory and evidence from Mexico", *Journal of Development Economics*, 84: 1–24.

Machado, J. and Mata, J. (2005) "Counterfactual Decomposition of Changes in Wage Distribution using Quantile Regression", *Journal of Applied Econometrics*,

20: 445–465.

Mayer-Foulkes, D. (2008) “The Human Development Trap in Mexico”, *World Development*, 36 (5): 775-796.

Mishra, P. (2007) “Emigration and wages in source countries: Evidence from Mexico”, *Journal of Development Economics*, 82: 180-199.

Montes-Rojas, G. (2006) “Skill Premia in Mexico: Demand and Supply Factors”, *Applied Economics Letters*, 13: 917-24.

Nicita, A. (2009) “The price effect of tariff liberalization: Measuring the impact on household welfare”, *Journal of Development Economics*, 89: 19-27.

Nugent, J. and F. Tarawneh (1983) “The Anatomy of Changes in Income Distribution and Poverty among Mexico’s Economically Active Population between 1950 and 1970”, *The Journal of Developing Areas*, 17 (2): 197-226.

Oaxaca, R. (1973) “Male–Female Wage Differentials in Urban Labour Markets”, *International Economic Review*, 14: 673-709.

Perry, G., O. Arias, H. Lopez, W. Maloney and L. Serven (2006) *Poverty reduction and growth: virtuous and vicious circles*, Washington DC: The World Bank.

Ravallion, M. (1997), “Can High-Inequality Developing Countries Escape Absolute Poverty”, *Economic Letters*, 56: 51–57.

___ (2001), “Growth, Inequality and Poverty: Looking Beyond Averages”, *World Development*, 29 (11): 1803–1815.

___ (2005), “Inequality is Bad for the Poor”, mimeo, The World Bank.

___ (2007), “Economic Growth and Poverty Reduction: Do Poor Countries Need to Worry about Inequality?”, 2020 Focus Brief on the World’s Poor and Hungry People, Washington, DC: IFPRI.

Ravallion, M. and S. Chen (2003) “Measuring pro-poor growth”, *Economics Letters*, 78, 93–99.

Robertson, R. (2000) “Trade Liberalization and Wage Inequality: Lessons from the Mexican Experience”, pp. 827-49, Oxford: Blackwell Publishers.

___ (2004) “Relative Prices and Wage Inequality: Evidence from Mexico”, Journal of International Economics, 64 (2): 387-409.

___ (2007) “Trade and Wages: Two Puzzles from Mexico”, *The World Economy*, 30 (9): 1378-98.

Rueda-Peiro, I. (2009) *La Creciente Desigualdad en Mexico*, 1st edition, Universidad Nacional Autonoma de Mexico, Instituto de Investigaciones Economicas: Mexico City.

Samaniego, N. (2005) ”El mundo del trabajo. Una estructura en terrenos movedizos”, *Economia UNAM*, 2 (4): January.

Scott, J. (2009) “Redistributive Constraints under High Inequality: The Case of Mexico”, Research for Public Policy, Inclusive Development, ID-07-2009, RBLAC-UNDP, New York.

Stark, O., E. Taylor and S. Yitzhaki (1986) “Remittances and Inequality”, *Economic Journal*, 96 (September): 722-40.

Szekely, M. (1998) *The Economics of Poverty, Inequality and Wealth Accumulation in Mexico*. MacMillan: London.

___ (2005) “Pobreza y desigualdad en Mexico entre 1950 y el 2004”, *Serie: Documentos de Investigacion* (July), SEDESOL: Mexico City.

Taylor, J. E. and T. J. Wyatt (1996) “The shadow value of migrant remittances, income and inequality in a household-farm economy”, *Journal of Development Studies*, 32 (6): 899-912.

Technical Committee for the Measurement of Poverty (2002) “Medicion de la Pobreza: Variantes Metodologicas y Estimacion Preliminar”, *Serie: Documentos de Investigacion* (July), SEDESOL: Mexico City.

Tuiran-Gutierrez, A. (2005) *La desigualdad en la distribucion del ingreso monetario en Mexico*, CONAPO: Mexico City.

United Nations (2000) *Millennium Declaration*. Available at: http://www.un.org/millennium/declaration/ares552e.htm [accessed 16 June 2010].

World Bank (2001) *Mexico: fiscal sustainability*. Volume I: Executive Summary, Report No. 20236-ME, Mexico Country Management Unit, pp. 1-7.

___ (2004) *Poverty in Mexico: An Assessment of Conditions, Trends, and Government Strategy*. Report No. 28612-ME, Poverty Reduction and Economic Management (PREM) Division, Latin America and the Caribbean (LAC) Region.

___ (2005) *Income Generation and Social Protection for the Poor*. Report No. 36853-MX, The World Bank.

___ (2007) *Mexico 2006–2012: Creating the Foundations for Equitable Growth*. Report No. 39993-MX, PREM Unit, LAC Region.

___ (2009) *Measuring Inequality of Opportunities in Latin America and the Caribbean.* The World Bank and Palgrave Macmillan.

TABLE 1

Total Per Capita Income Distribution across Households, 1984-2006

Deciles	1984	1989	1992	1994	1996	1998	2000	2002	2004	2005	2006
I	1.51%	1.27%	1.25%	1.28%	1.34%	1.17%	1.17%	1.42%	1.40%	1.33%	1.47%
II	2.62%	2.32%	2.29%	2.24%	2.41%	2.17%	2.20%	2.43%	2.47%	2.43%	2.54%
III	3.49%	3.17%	3.17%	3.04%	3.26%	3.14%	3.08%	3.32%	3.35%	3.30%	3.41%
IV	4.57%	4.08%	4.00%	3.97%	4.19%	4.06%	4.01%	4.25%	4.22%	4.24%	4.27%
V	5.77%	5.10%	5.12%	5.02%	5.26%	5.09%	5.10%	5.32%	5.27%	5.30%	5.32%
VI	7.26%	6.42%	6.50%	6.36%	6.56%	6.38%	6.37%	6.60%	6.53%	6.58%	6.58%
VII	9.32%	8.07%	8.30%	8.09%	8.27%	8.06%	8.02%	8.35%	8.19%	8.27%	8.27%
VIII	11.87%	10.55%	10.95%	10.77%	10.86%	10.63%	10.75%	11.12%	10.76%	10.84%	10.94%
IX	16.67%	15.56%	16.26%	15.99%	16.04%	15.57%	15.57%	16.22%	15.58%	15.53%	15.84%
X	36.93%	43.47%	42.14%	43.25%	41.80%	43.74%	43.73%	40.98%	42.25%	42.19%	41.36%
Gini	0.4882	0.5418	0.5354	0.5430	0.5272	0.5469	0.5464	0.5203	0.5279	0.5282	0.5196
Top 10%/Bottom 10%	24.5	34.2	33.7	33.8	31.2	37.4	37.4	28.9	30.2	31.7	28.1
Top 20%/Bottom 20%	13.0	16.4	16.5	16.8	15.4	17.8	17.6	14.9	14.9	15.4	14.3
Top 10%/Bottom 40%	3.0	4.0	3.9	4.1	3.7	4.1	4.2	3.6	3.7	3.7	3.5

Source: Own calculations based on the ENIGHs.

TABLE 2

Income Distribution Changes by Decile (1984-2006)

	Income Share (%)					Change in Income Share (%)						Change in Real Average Income (%)					
Decile	**1984**	**1989**	**1994**	**2000**	**2006**	**During 84-89**	**During 89-94**	**During 94-00**	**During 84-00**	**During 00-06**	**During 89-06**	**During 84-89**	**During 89-94**	**During 94-00**	**During 84-00**	**During 00-06**	**During 89-06**
I	1.51	1.27	1.28	1.17	1.47	-15.9	0.8	-8.6	-22.5	25.6	15.7	-4.3	8.7	-16.9	-13.46	44.0	30.1
II	2.62	2.32	2.24	2.20	2.54	-11.5	-3.4	-1.8	-16.0	15.5	9.5	-2.7	0.5	-13.1	-15.06	40.7	22.8
III	3.49	3.17	3.04	3.08	3.41	-9.2	-4.1	1.3	-11.7	10.7	7.6	1.1	0.1	-12.4	-11.39	42.0	24.5
IV	4.57	4.08	3.97	4.01	4.27	-10.7	-2.7	1.0	-12.3	6.5	4.7	2.0	0.5	-11.8	-9.54	41.0	25.0
V	5.77	5.10	5.02	5.10	5.32	-11.6	-1.6	1.6	-11.6	4.3	4.3	0.9	-3.3	-5.6	-7.89	36.2	24.3
VI	7.26	6.42	6.36	6.37	6.58	-11.6	-0.9	0.2	-12.3	3.3	2.5	4.8	-0.4	-10.6	-6.66	34.9	20.1
VII	9.32	8.07	8.09	8.02	8.27	-13.4	0.2	-0.9	-13.9	3.1	2.5	2.4	0.6	-11.1	-8.43	37.0	22.5
VIII	11.87	10.55	10.77	10.75	10.94	-11.1	2.1	-0.2	-9.4	1.8	3.7	6.5	4.2	-9.6	0.36	26.3	19.0
IX	16.67	15.56	15.99	15.57	15.84	-6.7	2.8	-2.6	-6.6	1.7	1.8	10.3	0.1	-13.3	-3.39	37.9	20.8
X	36.93	43.47	43.25	43.73	41.36	17.7	-0.5	1.1	18.4	-5.4	-4.9	45.3	7.5	-14.0	34.25	22.4	13.2
Total	100	100	100	100	100							15.7	14.1	-13.1	-4.1	24.6	23.5

Source: Own calculations based on the ENIGHs.

TABLE 3

REGRESSION RESULTS

(with per capita household income as dependent variable)

	1989	2006
Number of observations	11530	20872
F test	162.74***	159.18***
R-squared	0.5291	0.5756
Root MSE	0.6553	0.5943

	1989		2006	
	Coefficient	**t statistic**	**Coefficient**	**t statistic**
Age and Gender				
Number of children 2 years old or younger	-0.2091***	-10.98	-0.2399***	-14.44
Number of children between 3 and 5 years old	-0.2213***	-11.23	-0.2456***	-14.53
Number of children between 6 and 10 years old	-0.1901***	-14.49	-0.2347***	-21.42
Number of children between 11 and 13 years old	-0.2061***	-12.71	-0.2378***	-18.31
Number of male between 14 and 20 years old	-0.2191***	-7.34	-0.2552***	-9.10
Number of female between 14 and 20 years old	-0.3496***	-12.28	-0.3505***	-11.86
Number of male between 21 and 59 years old	-0.2058***	-6.92	-0.2202***	-7.72
Number of female between 21 and 59 years old	-0.3129***	-11.18	-0.3309***	-11.12
Number of male between 60 and 65 years old	-0.2006***	-4.84	-0.2486***	-6.11
Number of female between 60 and 65 years old	-0.2789***	-6.38	-0.2251***	-5.15
Number of male between 66 and 100 years old	-0.2341***	-6.52	-0.1655***	-5.55
Number of female between 66 and 100 years old	-0.2561***	-6.96	-0.1608***	-5.82
Education				
Number of male household members between 14 and 65 years old				
with some primary	0.0500	1.58	0.0381	1.21
with primary	0.1490***	4.87	0.0783**	2.55
with some junior-high	0.0889***	2.74	0.0890***	3.60
with junior-high	0.1764***	5.78	0.1473***	5.17
with some high school	0.1724***	4.39	0.1380***	4.33
with secondary education	0.2640***	7.43	0.2132***	7.01
with some college	0.3948***	8.38	0.3338***	10.18
with college	0.6234***	13.90	0.4942***	13.95
with postgraduate	1.1345***	6.38	0.6641***	11.97
Number of female household members between 14 and 65 years old				
with some primary	0.1110***	3.79	0.0156	0.46
with primary	0.1676***	5.98	0.0949***	3.07
with some junior-high	0.1932***	4.48	0.1209***	4.48
with junior-high	0.2599***	8.88	0.1552***	5.29
with some high school	0.2816***	6.01	0.2285***	7.23
with secondary education	0.3786***	11.34	0.3103***	10.09
with some college	0.3472***	6.18	0.3728***	11.42
with college	0.7003***	13.05	0.5018***	14.06
with postgraduate	1.1779***	2.96	0.7654***	10.05
Assets				
Dummy for house ownership	0.2320***	9.43	0.1913***	11.81
Dummy for real assets	0.0751**	2.01	0.3157***	11.86
Dummy for financial assets	0.4920***	7.86	0.7429***	20.49
Regional Fixed Effects				
Urban				
North West region	0.2797***	6.45	0.2164***	9.40
North East region	0.1303***	2.94	0.2011***	7.46
North region	-0.0414	-0.91	0.0295	1.31
Center region	-0.0571	-1.53	0.0476**	2.15
South region	-0.1809**	-2.10	-0.1056**	-2.27
Mexico City	0.1685***	4.40	0.2706***	10.48
Rural				
North West region	0.0029	0.05	-0.1601***	-4.28
North East region	0.0438	0.56	-0.1742***	-3.81
North region	-0.3929***	-9.05	-0.2571***	-7.40
Center region	-0.4987***	-12.04	-0.2575***	-7.85
South region	-0.5841***	-6.99	-0.5939***	-11.10

Note : *** Significance at the 1% level, and ** Significance at the 5% level.

TABLE 4
Change in Household Characteristics 1989-2006 (Assets)

	% of Households who own their House					% of Households with Real Assets					% of Households with Financial Assets				
	1989	1994	2000	2006	% Change (1989-2006)	1989	1994	2000	2006	% Change (1989-2006)	1989	1994	2000	2006	% Change (1989-2006)
Total	74.33	75.62	74.62	69.36	-6.7%	11.31	5.99	6.29	7.86	-30.5%	2.60	4.07	5.40	5.46	110.0%
Location															
Urban	67.11	71.47	69.81	64.19	-4.4%	12.88	6.53	6.71	9.07	-29.6%	3.13	5.24	6.66	6.80	117.3%
Rural	87.43	82.72	83.11	79.22	-9.4%	8.51	5.07	5.55	5.58	-34.4%	1.62	2.07	3.16	2.91	79.6%
South	83.55	75.17	77.81	73.04	-12.6%	8.45	6.55	7.55	8.04	-4.9%	2.61	2.64	3.52	3.73	42.9%
South-Urban	72.19	63.98	67.65	65.39	-9.4%	11.42	8.80	10.48	10.65	-6.7%	4.15	3.49	5.90	5.78	39.3%
South-Rural	91.22	82.92	84.98	79.25	-13.1%	6.62	4.99	5.48	5.93	-10.4%	1.56	2.05	1.84	2.06	32.1%
Deciles															
"1-3	77.13	79.98	79.64	66.79	-13.4%	7.76	2.68	2.46	3.19	-58.9%	0.60	0.51	0.36	0.53	-11.7%
"4-7	73.41	72.66	72.32	68.81	-6.3%	10.47	3.96	5.12	5.95	-43.2%	1.70	1.06	1.24	1.94	14.1%
"8-10	72.69	75.81	73.28	72.24	-0.6%	16.09	10.54	10.62	14.30	-11.1%	5.87	9.87	14.03	14.23	142.4%
Decile 8	70.08	74.21	71.26	72.43	3.4%	15.52	7.35	7.64	9.13	-41.2%	4.09	2.82	3.70	5.32	30.1%
Decile 9	74.61	74.22	74.09	73.34	-1.7%	13.73	7.52	9.72	11.99	-12.7%	4.17	6.15	6.34	9.57	129.5%
Decile 10	73.42	78.63	74.27	71.02	-3.3%	18.62	14.77	13.76	21.39	14.9%	8.93	19.00	28.63	27.13	203.8%
Top 5 Percentile	73.94	81.75	73.69	72.56	-1.9%	15.36	17.01	12.65	26.28	71.1%	11.75	25.08	39.61	36.46	210.3%
Top 1 Percentile	81.14	82.76	80.49	78.51	-3.2%	18.37	20.68	15.60	36.57	99.1%	22.98	51.76	67.15	53.15	131.3%

Source : Own calculations based on the ENIGHs.

TABLE 5

Decomposition of the Sources of Decreasing Household Income Inequality on Per Capita Income (1989-2006)

(% change in the Gini)

	Base Year 1989	Base Year 2006	Average 1989-2006
GINI	**54.18**	**51.96**	
TOTAL (I + II + III + IV)	**100**	**100**	**100**
I. Returns Effect $D_r(X,\varepsilon)$	**-131.93**	**-61.57**	**-96.75**
a. Household Characteristics	**-115.33**	**-61.31**	**-88.32**
Demographics	-67.17	-55.06	**-61.12**
Education	20.51	87.02	**53.77**
Male	42.07	78.98	60.52
Female	-18.77	1.82	-8.47
Assets	-60.86	-97.50	**-79.18**
House Ownership	0.41	2.49	1.45
Real Assets	-25.66	-37.40	-31.53
Financial Assets	-33.79	-64.74	-49.27
Remainder *	-7.81	4.24	**-1.79**
b. Regional Effects	**-22.82**	**4.78**	**-9.02**
Regions other than the South	-10.93	12.41	**0.74**
Urban	-25.23	-13.97	-19.60
Rural	14.32	26.27	20.30
South	-13.18	-6.76	**-9.97**
Fixed effects	-2.15	-1.29	-1.72
Urban	-0.83	-0.11	-0.47
Rural	-1.32	-1.18	-1.25
Household Characteristics	-10.60	-5.62	-8.11
Remainder *	1.29	-0.87	**0.21**
c. Remainder (a-b) *	**6.22**	**-5.05**	**0.59**
II. Effect of Unobservables $D_\varepsilon(r,X)$	**97.27**	**87.08**	**92.17**
III. Endowments Effect ** $D_X(r',\varepsilon')$	**135.02**	**80.90**	**107.96**
IV. Remainder $D_\varepsilon(r',X) - D_\varepsilon(r,X)$	**-0.36**	**-6.41**	**-3.38**

Notes: * Calculated as a difference between different factors.

** Calculated as a difference between total change and other components (I, II and IV).

TABLE 6

YEARS OF SCHOOLING OF ADULTS, TOTAL, BY LOCATION AND BY LEVEL OF HOUSEHOLD INCOME 1989-2006

	Total			Males			Females		
	1989	2006	% Change	1989	2006	% Change	1989	2006	% Change
Total	5.86	8.34	42.32	6.58	8.79	33.59	5.22	7.96	52.49
Urban	7.17	9.61	34.03	8.05	10.05	24.84	6.36	9.22	44.97
Rural	3.46	5.82	68.21	3.90	6.26	60.51	3.10	5.50	77.42
South	4.63	7.15	54.43	5.30	7.76	46.42	4.02	6.66	65.67
South-Urban	6.56	9.07	38.26	7.33	9.68	32.06	5.79	8.60	48.53
South-Rural	3.29	5.54	68.39	3.91	6.16	57.54	2.74	5.06	84.67
Bottom 1 Percentile	2.15	3.00	39.53	2.59	3.57	37.84	1.70	2.62	54.12
Bottom 5 Percentile	2.02	3.61	78.71	2.30	3.95	71.74	1.67	3.26	95.21
Deciles 1-3	3.18	5.38	69.18	3.62	5.84	61.33	2.76	5.08	84.06
Deciles 1-5	3.85	6.10	58.44	4.38	6.51	48.63	3.38	5.84	72.78
Deciles 1-9	5.27	7.70	46.11	5.92	8.14	37.50	4.70	7.40	57.45
Deciles 4-7	5.57	7.81	40.22	6.27	8.21	30.94	5.03	7.60	51.09
Deciles 6-9	7.15	9.53	33.29	8.05	10.07	25.09	6.52	9.27	42.18
Deciles 8-10	9.13	11.66	27.71	10.45	12.38	18.47	8.31	11.32	36.22
Deciles 10	11.03	13.84	25.48	12.58	14.64	16.38	10.06	13.49	34.10
Top 5 Percentile	11.91	14.87	24.85	13.28	15.68	18.07	10.91	14.33	31.35
Top 1 Percentile	12.96	15.64	20.68	14.18	16.09	13.47	12.28	15.01	22.23

Source: Own calculations based on the Household Income and Expenditure Surveys by INEGI.

TABLE 7

PERCENTAGE OF ADULTS BY EDUCATIONAL LEVEL

	Total			Males			Females		
	1989	**2006**	**% Change**	**1989**	**2006**	**% Change**	**1989**	**2006**	**% Change**
No Education	16.29	8.73	-46.4%	13.75	7.03	-48.9%	18.57	10.19	-45.1%
Some Elementary	28.59	18.32	-35.9%	28.04	17.77	-36.6%	29.09	18.79	-35.4%
Elementary School	20.77	19.20	-7.6%	20.38	18.94	-7.1%	21.13	19.42	-8.1%
Some Junior-High	3.13	4.11	31.3%	4.00	4.53	13.3%	2.34	3.75	60.3%
Junior-High School	10.33	18.39	78.0%	9.80	18.76	91.4%	10.80	18.08	67.4%
Some High School	1.50	4.62	208.5%	2.12	4.56	115.1%	0.93	4.68	401.5%
High School	9.15	11.06	20.9%	7.52	10.39	38.2%	10.62	11.64	9.6%
Some College	3.69	6.99	89.4%	5.23	7.69	47.0%	2.30	6.39	177.8%
Tertiary Education	6.56	8.57	30.7%	9.15	10.33	12.9%	4.22	7.06	67.3%
College Education	6.25	7.07	13.1%	8.64	8.41	-2.7%	4.10	5.92	44.4%
Postgraduate	0.31	1.50	390.3%	0.51	1.92	274.6%	0.12	1.14	850.2%

Source: Own calculations based on the Household Income and Expenditure Surveys by INEGI.

TABLE 8

Decomposition of the Sources of Decreasing Household Income Inequality on Per Capita Income (2000-2006)

(% change in the Gini)

	Base Year 2000	Base Year 2006	Average 2000-2006
GINI	**54.64**	**51.96**	
TOTAL (I + II + III + IV)	**100**	**100**	**100**
I. Returns Effect $D_r(X, \varepsilon)$	**64.45**	**51.19**	**57.82**
a. Household Characteristics	**48.65**	**31.82**	**40.24**
Demographics	-3.91	-2.42	**-3.17**
Education	26.80	20.49	**23.65**
Male	33.86	28.03	30.94
Female	-6.24	-9.48	-7.86
Assets	24.16	15.89	**20.03**
House Ownership	-3.03	-2.56	-2.80
Real Assets	-3.62	-7.24	-5.43
Financial Assets	30.53	25.96	28.25
Remainder *	1.60	-2.14	**-0.27**
b. Regional Effects	**15.23**	**20.21**	**17.72**
Regions other than the South	-6.06	2.74	**-1.66**
Urban	-18.31	-12.03	-15.17
Rural	12.05	14.93	13.49
South	20.37	18.44	**19.41**
Fixed effects	3.97	2.66	3.32
Urban	1.32	0.04	0.68
Rural	2.65	2.63	2.64
Household Characteristics	17.19	15.05	16.12
Remainder *	0.92	-0.97	**-0.03**
c. Remainder (a-b) *	**0.57**	**-0.84**	**-0.14**
II. Effect of Unobservables $D_\varepsilon(r, X)$	**-9.12**	**-10.34**	**-9.73**
III. Endowments Effect ** $D_X(r', \varepsilon')$	**43.97**	**58.35**	**51.16**
IV. Remainder $D_\varepsilon(r', X) - D_\varepsilon(r, X)$	**0.70**	**0.81**	**0.75**

Notes: * Calculated as a difference between different factors.

** Calculated as a difference between total change and other components (I, II and IV).

TABLE 9
Change in Household Characteristics 2000-2006 (Assets)

	% of Households who own their House			% of Households with Real Assets			% of Households with Financial Assets		
	2000	2006	% Change	2000	2006	% Change	2000	2006	% Change
Total	74.62	69.36	-7.0%	6.29	7.86	25.0%	5.40	5.46	1.1%
Location									
Urban	69.81	64.19	-8.1%	6.71	9.07	35.2%	6.66	6.80	2.1%
Rural	83.11	79.22	-4.7%	5.55	5.58	0.5%	3.16	2.91	-7.9%
South	77.81	73.04	-6.1%	7.55	8.04	6.5%	3.52	3.73	6.0%
South-Urban	67.65	65.39	-3.3%	10.48	10.65	1.6%	5.90	5.78	-2.0%
South-Rural	84.98	79.25	-6.7%	5.48	5.93	8.2%	1.84	2.06	12.0%
Deciles									
"1-3	79.64	66.79	-16.1%	2.46	3.19	29.7%	0.36	0.53	47.2%
"4-7	72.32	68.81	-4.9%	5.12	5.95	16.2%	1.24	1.94	56.5%
"8-10	73.28	72.24	-1.4%	10.62	14.30	34.7%	14.03	14.23	1.4%
Decile 8	71.26	72.43	1.6%	7.64	9.13	19.5%	3.70	5.32	43.8%
Decile 9	74.09	73.34	-1.0%	9.72	11.99	23.4%	6.34	9.57	50.9%
Decile 10	74.27	71.02	-4.4%	13.76	21.39	55.5%	28.63	27.13	-5.2%
Top 5 Percentile	73.69	72.56	-1.5%	12.65	26.28	107.7%	39.61	36.46	-8.0%
Top 1 Percentile	80.49	78.51	-2.5%	15.60	36.57	134.4%	67.15	53.15	-20.8%

Source: Own calculations based on the Household Income and Expenditure Surveys by INEGI.

TABLE 10

YEARS OF SCHOOLING OF ADULTS, TOTAL, BY LOCATION AND BY LEVEL OF HOUSEHOLD INCOME (2000-2006)

	Total			Males			Females		
	2000	2006	% Change	2000	2006	% Change	2000	2006	% Change
Total	7.36	8.34	13.32	7.95	8.79	10.57	6.87	7.96	15.87
Urban	8.69	9.61	10.59	9.30	10.05	8.06	8.12	9.22	13.55
Rural	4.99	5.82	16.63	5.50	6.26	13.82	4.63	5.50	18.79
South	5.87	7.15	21.81	6.53	7.76	18.84	5.31	6.66	25.42
South-Urban	8.25	9.07	9.94	9.15	9.68	5.79	7.62	8.60	12.86
South-Rural	4.17	5.54	32.85	4.72	6.16	30.51	3.71	5.06	36.39
Bottom 1 Percentile	2.53	3.00	18.58	2.78	3.57	28.42	2.26	2.62	15.93
Bottom 5 Percentile	2.56	3.61	41.02	2.83	3.95	39.58	2.34	3.26	39.32
Deciles 1-3	4.12	5.38	30.58	4.50	5.84	29.78	3.85	5.08	31.95
Deciles 1-5	5.03	6.10	21.27	5.45	6.51	19.45	4.73	5.84	23.47
Deciles 1-9	6.54	7.70	17.74	7.06	8.14	15.30	6.15	7.40	20.33
Deciles 4-7	6.85	7.81	14.01	7.49	8.21	9.61	6.47	7.60	17.47
Deciles 6-9	8.29	9.53	14.96	9.03	10.07	11.52	7.84	9.27	18.24
Deciles 8-10	10.61	11.66	9.90	11.41	12.38	8.50	10.04	11.32	12.75
Deciles 10	12.85	13.84	7.70	13.84	14.64	5.78	12.07	13.49	11.76
Top 5 Percentile	14.02	14.87	6.06	15.00	15.68	4.53	13.28	14.33	7.91
Top 1 Percentile	14.59	15.64	7.20	15.63	16.09	2.94	13.39	15.01	12.10

Source: Own calculations based on the Household Income and Expenditure Surveys by INEGI.

TABLE 11

PERCENTAGE OF ADULTS BY EDUCATIONAL LEVEL (2000-2006)

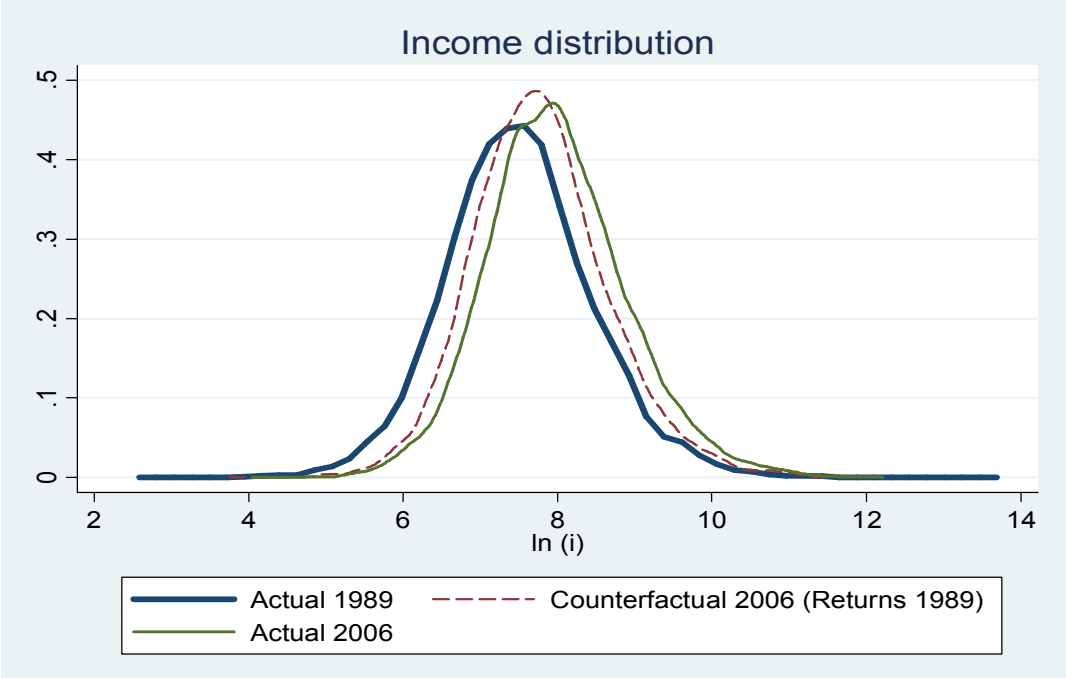
	Total			Males			Females		
	2000	**2006**	**% Change**	**2000**	**2006**	**% Change**	**2000**	**2006**	**% Change**
No Education	11.26	8.73	-22.5%	9.59	7.03	-26.7%	12.73	10.19	-20.0%
Some Elementary	23.63	18.32	-22.5%	22.88	17.77	-22.3%	24.28	18.79	-22.6%
Elementary School	20.91	19.20	-8.2%	19.94	18.94	-5.0%	21.76	19.42	-10.8%
Some Junior-High	3.69	4.11	11.4%	4.36	4.53	3.9%	3.10	3.75	21.0%
Junior-High School	15.35	18.39	19.8%	15.47	18.76	21.3%	15.24	18.08	18.6%
Some High School	2.06	4.62	124.3%	2.84	4.56	60.6%	1.36	4.68	244.1%
High School	10.71	11.06	3.3%	9.52	10.39	9.1%	11.76	11.64	-1.0%
Some College	3.88	6.99	80.2%	4.92	7.69	56.3%	2.96	6.39	115.9%
Tertiary Education	8.53	8.57	0.5%	10.47	10.33	-1.3%	6.82	7.06	3.6%
College Education	7.76	7.07	-8.9%	9.32	8.41	-9.8%	6.39	5.92	-7.4%
Postgraduate	0.77	1.50	95.4%	1.15	1.92	67.1%	0.43	1.14	166.3%

Source: Own calculations based on the Household Income and Expenditure Surveys by INEGI.

Source: Own calculations based on the Household Income and Expenditure Surveys by INEGI.

FIGURE 2

GRAPH 1



GRAPH 2