

This report is presented as received by IDRC from project recipient(s). It has not been subjected to peer review or other review processes.

This work is used with the permission of University of Toronto, Centre for International Studies.

© 1995, University of Toronto, Centre for International Studies.

FOCAL/CIS DISCUSSION PAPERS

FC1995-4

WIDENING WAGE DISPERSION UNDER
STRUCTURAL ADJUSTMENT IN MEXICO¹

by

Diana Alarcón² and Terry McKinley³

Centre for International Studies
170 Bloor Street West
Suite 500
Toronto, Ontario
M5S 1T9
(416) 978-3350

Not to be reprinted without the permission of the authors.
Copyright 1995

¹ This paper is part of a research programme supported by the Ford Foundation and the Tinker Foundation.

² Department of Economics, El Colegio de la Frontera Norte, Tijuana, Mexico. Mailing address: P. O. Box "L", Chula Vista, CA 91912, U.S.A.

³ Human Development Report Office, United Nations Development Programme, 336 East 45th St., Uganda House, 6th Floor, New York, NY 10017, U.S.A.

ARCHIV
339.2(72)
A 4

**WIDENING WAGE DISPERSION UNDER STRUCTURAL ADJUSTMENT
IN MEXICO**

By Diana Alarcón and Terry McKinley

The Macroeconomic Performance of the Mexican Economy

The performance of the Mexican economy through the 1980s and 1990s has been poor. Policies of stabilization were successful in bringing inflation under control and attracting capital inflows. On all other counts, however, the economy has not done well. As reported in Table 1, average yearly growth of GNP was a modest 2.5 percent during the 1987-93 period. GNP per capita was growing at only an average 0.8 percent a year.

One of the explicit objectives of structural adjustment is to alter the composition of output by increasing the share of tradable goods. So far, however, there has not been much evidence of major resource reallocation within the Mexican economy. The share of tradable goods has remained relatively unchanged at about one third of total production.

The economic performance of sectors producing tradable goods has been varied. Mexico's agricultural sector has stagnated: its average yearly rate of growth was a mere 0.5 percent between 1987 to 1993. The manufacturing sector has had a more dynamic growth of 3.5 percent. Within manufacturing, exports of machinery and equipment were the leading sector and increased their share of total manufacturing from 17.3 percent in 1987 to 23.1 percent in 1993. Manufacturing exports as a whole increased from three-fourths of total exports in 1991 to 82 percent in 1993.

Unfortunately, the rapid growth of manufactured exports has

not led to increased employment. In fact, by March 1994 employment in manufacturing was only about two thirds of its 1980 level. Mexico is a prime example of jobless growth. Moreover, it is precisely the most dynamic exporting sectors within manufacturing that have shown the largest loss of employment. By March 1994 employment in the machinery and equipment sector, for example, was only 68 percent of its 1980 level.

Maquiladora activities have been one of the few sectors where employment has grown rapidly. By March 1994, maquiladoras employed 557,658 workers, or about 17 percent of the manufacturing labor force, with most of them concentrated in the northern border states. However, since less than 2 percent of their inputs are produced in Mexico, these enterprises have weak multiplier effects on the rest of the country. Thus, their job creation effects throughout the economy have been weak.

The rapid growth of manufacturing exports has not helped to reduce external trade deficits. In 1993 the trade deficit was 3 time larger than it was in 1990. As reported in Table 1, manufacturing itself has generated a trade deficit much larger than the overall trade deficit. That is, the foreign currency earned by other sectors in the economy (particularly oil) has been used to finance the imports of the manufacturing sector (except for 1993).

Thus, Mexico's new strategy of development has resulted in a poor macroeconomic performance. Its policies of trade liberalization within the context of generalized contraction of the economy has led to a very distorted process of economic

restructuring, with a pattern of trade specialization that does not correspond to Mexico's endowment of abundant labor. Related to this, the strategy has also occasioned growing inequality in the distribution of income.

Changes in the Distribution of Total Income and Its Components

The distribution of income in Mexico became substantially more unequal during the period 1984 to 1992. Table 2 shows that the Gini coefficient of the distribution of total per capita income rose sharply from 0.429 in 1984 to 0.469 in 1989 and then rose more slowly to 0.475 in 1992 -- overall a 10.7 percent increase¹. The clearest contributing factors to greater inequality were industrial and commercial profits and income from personal services: they not only increased their share of total income but also intensified their disequalizing impact on its distribution. The evolution of income from agriculture and livestock moved in the opposite direction: its share of total income was cut by more than half and it became more concentrated among the lower-income deciles.

Wage income remained the largest single component of total income during the period 1984 to 1992. Its share of total income however dropped slightly from 46.9 percent to 45.4 percent. Its distributional impact underwent a U-shaped pattern of evolution: it first became more concentrated among lower-income deciles in 1989 while the distribution of total income was becoming markedly more unequal, and then it ended up being more concentrated among higher-

¹ Coefficients should be regarded as rough approximations since they are based on ranking households by total household income and on grouping data by deciles.

income deciles in 1992 than it was in 1984².

This dramatic change in the distribution of wage income in the latter years was the major factor contributing to increased inequality in the distribution of total income. While wage income's share of total income had progressively contracted, it became more unequally distributed in 1992 than it had been in 1984. The principal objective of this paper is to attempt to explain these important changes in the distribution of wages.

Changes in Wage Dispersion among Major Groups of Workers

In order to help identify the changes in the distribution of wage income from 1984 to 1992, we divide wage earners into seven pair comparisons of groups of employees: 1) urban and rural employees; and within urban employees we divide the sample into 2) male and female workers, 3) union and nonunion workers, 4) workers in the tradable-goods sector and in the nontradable-goods sector, 5) workers in border states and nonborder states, 6) workers in poor states and in the rest of the country; and within the

² Table 2 allows us to assess the impact of each major income component on the distribution of total income by presenting each component's Pseudo-Gini coefficient or concentration ratio. While in 1984 wage income was a factor contributing to greater inequality in the distribution of total income, e.g., its Pseudo-Gini coefficient (0.444) was higher than the Gini coefficient for total income (0.429); its distribution became more skewed toward lower-income deciles in 1989, e.g., its Pseudo-Gini coefficient was 0.430 compared to the 0.469 Gini coefficient for total income; and then its distribution evolved into becoming only slightly more equal than total income in 1992, its Pseudo-Gini coefficient being only marginally lower at 0.466 than the 0.475 Gini coefficient for the total. However, its Pseudo-Gini coefficient increased by over eight percent during just the three years from 1989 to 1992 while the Gini coefficient of total income rose by only about one percent.

manufacturing sector itself we divide the sample into 7) workers in the export sector and in the nonexport sector.

Table 3 shows that in 1984 there were substantial wage differentials between these various paired groups of employees. The largest differential was between urban and rural workers: the ratio of their mean wages was only about 56 percent. Within the manufacturing sector itself there was a surprising gulf in wages between workers in the export sector and those in the nonexport sector: the mean wages of nonexport workers was only 69 percent of those of export workers. There were also substantial differences in wages between union and nonunion workers and between male and female workers.

From 1984 to 1992 the wage differentials between three paired groups of employees worsened somewhat: 1) male and female workers, 2) workers in poor states and in the rest of the country, and 3) urban and rural workers. The wage differentials between the other four pair comparisons of employee groups narrowed. The most notable cases of narrowing were between union and nonunion workers and between workers in the tradable-goods sector and workers in the nontradable-goods sector. Whereas in 1984 nonunion workers earned wages only about three-quarters the level of union workers, by 1992 that disadvantage had virtually vanished. Although in 1984 workers in the nontradable-goods sector earned wages only 86 percent of those of tradable-goods workers, by 1992 they earned wages which were 8 percent higher.

In a companion article we examine these differentials in more

detail³. Economic restructuring and trade liberalization have apparently succeeded in equalizing wages across broad sectors of the Mexican economy, as evidenced by the narrowing wage differentials between export and nonexport workers, tradable-goods and nontradable-goods workers, and union and nonunion workers. However, wage inequality within many of these groups has worsened appreciably.

The Rise of Within-Group Inequality

Our intent in this paper is to focus on changes in the distribution of wage income within these groups and the importance of changing within-group inequality relative to changes in between-group inequality.

Much of rising inequality in the distribution of wage income from 1984 to 1992 is attributable to within-group inequality rather than changing differences in mean wages between these groups. This rise in within-group inequality is apparently due to factors that are not specified in the distinctions we have made according to geography, broad economic sector, level of organization, or gender.

Table 4 provides a measure of inequality in wage income, i.e., the standard deviation of log variance, which we can directly relate to standard regression analysis of the relationship between human capital and earnings. This is our approach in a companion paper, where we utilize a Mincerian semilogarithmic regression model. The dependent variable in our regression analysis is the

³ See Diana Alarcon and Terry McKinley, "Wage Differentials in Mexico from 1984 to 1992: A Profile of Human Capital and Earnings," mimeo, August, 1994.

natural logarithm of monthly wages and so our independent variables specified for human capital characteristics of workers is used to explain the variance or "inequality" in the distribution of log monthly wages⁴.

In Table 5 we compare the results for the standard deviation of log variance with the results for Theil's population-weighted L index, the Gini coefficient, and the coefficient of variation. We can see that each measure gives a somewhat different picture of the changes in inequality among wage earners from 1984 to 1992.

i. wage inequality in 1984

Table 4 shows that, as measured by the standard deviation of log variance, inequality among employees is significant in 1984. For all wage earners, both urban and rural, the standard deviation is 1.04. For urban wage earners the standard deviation is 0.91, and for the subset of urban manufacturing workers it is only 0.77. Not surprisingly, inequality among rural workers is significantly greater than it is for urban workers: the standard deviation for the former is 1.14.

A significant proportion of this inequality is explained by variations in human capital among wage earners. For all wage earners, both urban and rural, the proportion is 42 percent, as indicated by R^2 . For urban employees, it is somewhat smaller, i.e., 39 percent; and for manufacturing workers it is smaller

⁴ The main drawback of such a measure is that it compresses the wages of higher-paid workers relative to the wages of lower-paid workers, and thus understates inequality among workers in the upper range of the distribution.

still, i.e., 33 percent. Yet among manufacturing workers in the export sector, the percentage of variation in wages which is explained by human capital is the highest of any group, i.e., 46 percent. Among union workers the opposite is the case: only 26 percent of wage variation is explained by human capital.

In examining particular groups of workers, we find that there is unusual equality among union workers: the standard deviation for this group is only 0.47, considerably lower than that for any other group. This finding is not unexpected since it is common for unions to compress the range of wage income among their members. It is interesting to note that inequality among female workers is significantly greater than among male workers: the standard deviation for the former is 1.01 whereas for the latter it is 0.85. Inequality among workers producing nontradables is also significantly greater (as indicated by a standard deviation of 0.87) than it is for workers producing tradables (as indicated by a standard deviation of 0.78).

ii. wage inequality in 1989

According to the standard deviation measure, inequality among all wage earners appeared to decline in 1989. As indicated in the first section of this paper, it was during this same period that wage income as a whole became more concentrated among the lower-income deciles of the population. The standard deviation for all employees dropped to 0.98; for urban employees it decreased to 0.84 and for rural employees it declined to 1.02. However, as shown in Table 5, our various measures of inequality give conflicting

pictures of what happened from 1984 to 1989. Theil's population-weighted L index changes little during this period. The normalized Theil index, which is the L index divided by the logarithm of mean monthly wages, indicates that there was a decline in inequality⁵. However, both the Gini coefficient and the coefficient of variation of monthly wages register an increase in inequality for all wage earners and for urban employees. Both these latter measures avoid the weakness of the standard deviation of log variance in understating the degree of dispersion among higher-wage employees. All measures of inequality concur that inequality declined among rural wage earners.

There were interesting tendencies that began to unequivocally emerge among certain groups of workers during this period. According to the standard deviation measure, inequality among manufacturing workers as a whole increased -- as well as among both subgroups of manufacturing workers in the export and nonexport sectors, as reported in Table 4. The standard deviation of log variance in fact registers the most significant increase in inequality among manufacturing employees of any of our measures of inequality, as indicated in Table 5. Likewise wage variation among workers in the tradable-goods sector rose, and it even slightly surpassed the inequality among workers in the nontradable-goods sector, which fell. Wage variation among border workers remained

⁵ The Theil population-weighted L index varies from 0 to the log of the arithmetic mean. In order to normalize it for intertemporal comparisons, we divide each Theil index by the log of the arithmetic mean of monthly wages of each group for each year.

roughly the same despite declining inequality among wage earners in the rest of the country. The variance in wages among union workers also began to intensify during this period.

The proportion of variance in wages that is explained by human capital also fell from 1984 to 1989. For all wage earners the percentage dropped from 42 percent to 36 percent; for urban workers it dropped in a similar manner to 32 percent. For manufacturing workers the percentage declined only slightly; but for workers in the export sector the percentage plummeted from 46 percent to 29 percent as their within-group inequality increased. Among workers in border states human capital also explained a very low percentage of their wage variation, i.e., 26 percent. The percentage for union workers also stayed low at 26 percent. It is among these groups of workers that we can already see in the 1989 the signs of incipient divergence between human capital and earnings, as the latter soon began to become markedly more dispersed.

iii. wage inequality in 1992

The short period from 1989 to 1992 witnessed an extraordinary leap in inequality among all wage earners and across all subgroups of wage earners. All our measures of inequality show the same striking change. During this same period the Pseudo-Gini coefficient for wages indicates that they became much more concentrated among higher-income deciles and their distribution began to converge towards the increasingly unequal distribution of total income. The standard deviation of log variance for all wage earners jumped from 0.98 to 1.30. Most noteworthy is that

inequality among urban employees now surpassed that among rural employees, reversing the situation which had prevailed in 1984 and 1989. The principal source of rising inequality among all wage earners was now inequality among urban workers. According to the results generated by Theil indices, which we report later, within-group variance among urban workers in 1992 alone accounted for over three-quarters of all inequality -- both within-group and between-group -- among urban and rural wage earners combined.

Astonishingly, the standard deviation among union workers, who comprised 27 percent of all urban employees, exploded to 1.53, the highest among any subgroup of urban wage earners. Refer to Table 4. Thus, their within-group inequality alone accounted for well over a third of all inequality among urban employees. Inequality among border workers also surged, the standard deviation of their wage income reaching 1.46. Inequality among employees in export manufacturing rose to the same high level.

The above findings indicate that the increasing outward orientation of the Mexican economy during the late 1980s and early 1990s tended to be associated with rising, not declining, inequality among those groups of workers, such as in the border and the export sector, which were tied most closely to the process of integration.

Inequality rose dramatically due to factors apparently unrelated to variations in human capital. Labor markets were channeling higher rewards to significant groups of workers according to criteria other than productivity. Some groups of

employees were being rewarded more than proportionately for higher levels of education; others were being rewarded for reasons unconnected to education. In other words, beginning in the 1980s and becoming clearly manifest in the 1990s, economic restructuring and trade liberalization were causing the functioning of labor markets to have a disequalizing impact on the distribution of wage income and also on the distribution of total income.

The Decomposition of Wage Inequality by Theil Indices

In order to decompose total inequality into the respective contributions of inequality within each of our paired groups of employees and inequality between the two groups, we utilize Theil's population-weighted L index. The between-group inequality is in effect the percentage of total inequality which is explained by the factor used to divide our sample, such as gender to divide employees into male and female. The within-group inequality among both male and female employees is then the proportion of inequality unexplained by gender⁶.

Table 6 lists the contribution of between-group inequality for pair comparisons of groups of workers for which we know that wage differentials were substantial in 1984. For our present purposes we focus our attention on a number of four-way decompositions that are reported in Table 6.

⁶ It is important to note that "between-group" inequality is a "relative" measure, namely, it varies relative to the degree of inequality within the groups in question. If the variance of a particular group increased substantially for reasons unrelated to education while its mean stayed relatively the same, as did the mean of the other group, the reported "between-group" inequality would likely decline.

i. decomposition by economic sector

We found that differentiations between urban employees based on whether they are in sectors with a tradable versus nontradable orientation or export versus nonexport orientation by themselves do not explain much of total inequality. As a first step, we undertook a four-way decomposition (not reported in Table 6) of the Theil index into 1) workers in the nontradable-goods sector, 2) workers in export manufacturing, 3) workers in nonexport manufacturing, and 4) workers in mining (which includes the all-important petroleum export sector). This four-way distinction explains only 2.9 percent of all inequality among urban wage earners in 1984 and only 1 percent in 1989⁷. For 1992 this percentage dropped to a mere 0.5 percent. This illustrates a general point that economic restructuring and trade liberalization have apparently brought about a great deal of homogenization of wage and salary payments across broad sectors of the Mexican economy.

ii. decomposition by geographical location

Geographical distinctions also do not appear to explain much of the inequality among urban wage earners. This is illustrated by the results of a four-way decomposition, reported in Table 6, into 1) workers in poor states, 2) workers in border states 3) workers

⁷ For an interesting recent use of income-weighted Theil indices to decompose inequality in Latin America see Ariel Fiszbein and George Psacharopoulos, "Income Inequality Trends in Latin America in the Eighties: A Decomposition Analysis," paper presented at the Brookings Institution Conference Confronting the Challenge of Poverty and Income Distribution in Latin America, Washington, D.C., July 15-17, 1992.

in the large established industrial centers in the Federal District and Nuevo Leon, and 4) the rest of the country. The explanatory power of this distinction declined from 1984 to 1992: the percentage of total inequality that it explains dropped from 2.4 percent in 1984 to a mere 0.9 percent in 1992. It is worth noting that inequality among urban wage earners in Mexico's two largest industrial areas, i.e., the Federal District and Nuevo Leon, increased substantially. Their share of total inequality increased from about 19 percent in 1984 to 27 percent in 1992.

iii. decomposition by level of organization

The explanatory power of distinctions based on level of organization significantly exceeds that for differentiations based on either broad geographical groups or economic sectors. For purposes of analysis we distinguish urban wage earners into 1) those with a union, 2) those without a union but having a labor contract of indeterminate duration, 3) those without a union but having a labor contract of determinate duration, and 4) those without either union or nonunion labor contract.

Table 7 illustrates that workers without any organization had the lowest wages in 1984. Those with at least a contract of limited duration had wages which were 43 percent higher. Those with a labor contract of indeterminate duration had the highest wages of any group, e.g., 124 percent higher than those for workers without any organization. Workers with unions actually had wages which were lower than those for workers with nonunion labor contracts of indeterminate duration, namely, only 100 percent

higher than those for unorganized workers.

As reported in Table 6, the between-group inequality based on these differences in means explains a very high 18.8 percent of all inequality among urban wage earners in 1984. This is much higher than the percentage explained by the union-nonunion distinction alone.

Table 7 allows us to chart in a relatively simple manner the change in relative wages of our four groups over the 1984-1992 period. Utilizing the wages of workers without organization as the base, we can see that the wages of the top three groups fell relative to the wages of the bottom group from 1984 to 1989. The wages of both union workers and workers with indeterminate contracts fell by roughly one-fifth relative to the wages of unorganized workers. It is understandable why by 1989, as reported in Table 6, the between-group inequality among our four groups explained only 8.5 percent of all inequality among wage earners -- less than half of what it explained in 1984.

From 1989 to 1992 employees with nonunion labor contracts, either of determinate or indeterminate duration, widened their advantage over unorganized workers. At the same time, however, union workers saw their advantage continue to decline. In 1984 their average monthly wages exceeded those of unorganized workers by 100 percent; by 1992 that advantage had been cut roughly in half and their wages were higher by only 51 percent. As a consequence mainly of the decline in union wages as well as increased variance of wages among union members, between-group inequality explained by

our four-way organizational distinction fell to 5.4 percent. Astonishingly, the share of total inequality accounted for by wage variance among union members themselves increased from 9 percent in 1984 to 32 percent by 1992, as reported earlier.

iv. decomposition by level of education

Distinctions among urban wage earners based on level of education have considerable explanatory power, more than any of the distinctions previously discussed -- with the exception of level of organization for 1984. As human-capital regressions on the log of wages usually demonstrate, education is a very significant determinant of earnings. For the purposes of analysis we divide employees into four groups: 1) those without education, 2) those with some primary schooling, 3) those with some secondary schooling, and 4) those with some tertiary schooling. This four-way distinction explains 16.7 percent of all inequality among urban wage earners in 1984 and 16.2 percent in 1989. However, this proportion dropped significantly to 12.1 percent by 1992.

Table 7 shows that the relative wages of our four groups of workers distinguished by level of education did not change appreciably from 1984 to 1989. Utilizing the mean wages of workers without education as the base, we can see that the relative wages of employees with primary schooling rose only marginally and those of employees with tertiary education dropped only marginally. The relative wages of workers with secondary education declined however by about 11 percent, i.e., from an index of 186 in 1984 to 165 in 1989. Recession and economic restructuring during the 1980s were

not significantly altering the relative positions of workers according to their level of schooling. But by 1992 the relative wages of employees with tertiary education rose markedly relative to employees with no education, while the relative position of workers with the other two education levels changed little. Taking the period from 1984 to 1992 as a whole, the mean wages of employees with tertiary education increased from being 218 percent higher to 280 percent higher than the wages of uneducated employees. Interestingly enough, we can see from Table 6 that while wage variance was greatest among uneducated workers in 1984, it was greatest among workers with higher education in 1992. The contribution to total inequality of the wage variance of employees with tertiary education increased from 14.6 percent in 1984 to 18.3 percent in 1992, while their percentage of all employees, as indicated by Table 8, dropped from 18.5 percent to 15.5 percent.

This raises the possibility that to some degree the demand for their skills may have been outstripping their supply of labor. Table 8 shows that, taken together, the percentage of employees with either secondary or tertiary education dropped from 72 percent to 62 percent during this period. This condition, combined with greater demand for their labor, could help to explain why there were such sharply increasing returns to educational level in 1992 and also why the variance of their wages increased substantially. Years of cutbacks of real educational expenditures were taking their toll on the skill levels of the Mexican labor force and

serving to worsen wage inequality among Mexican workers⁸.

v. decomposition by type of occupation

For our final distinction, we examine the proportion of inequality among employees which can be attributed to their type of occupation. We find that a four-way differentiation based on broad occupation groupings explains more inequality among urban employees than any of our other distinctions. Our four-way distinction is as follows: 1) elite employees, which comprise professionals, public officials, and administrators, managers and supervisors in the private sector; 2) employees with technical or specialized training, which comprise technicians, teachers, and equipment operators; 3) ordinary workers, which comprise direct operators, workers, and artisans in industry, office workers, workers in commerce, and workers in personal services, 4) poor employees, which comprise domestic workers, helpers and unskilled laborers in industry, and employed street vendors or urban agricultural workers.

This four-way distinction explains a very high 24.5 percent of all inequality among urban wage earners in 1984 and 17.7 percent in 1989, exceeding the percentages explained by either education or organization.

In Table 7 we can see why the percentage of inequality explained by type of occupation dropped from 1984 to 1989.

⁸ Part of the explanation for declining shares of higher-educated workers in wage employment may well be that significant numbers of people with such skills have moved out of wage employment and into other economic activities such as business or professional services.

Utilizing the wages of poor employees as the base, we find that the relative wages of the other three higher-paid groups of workers dropped from 1984 to 1989. The percentage drop in the wages of elite employees was the largest, but their average wages still exceeded those of poor employees by 258 percent.

From 1989 to 1992 there was a partial reversal in the 1980s' trends. The average wages of elite employees rose relative to poor employees and now were over 4 times the level of poor employees. The average wages of technicians and other specialized workers rose slightly in relative terms. However, the decline in wages of ordinary workers continued and they were now only 44 percent higher than those of poor employees in 1992. If this trend continues the wage gap between elite employees on the one hand and both ordinary workers and poor employees on the other hand will widen. Workers as a whole have been clear losers in relative terms throughout the period of structural adjustment and liberalization.

In 1992 13.5 percent of total inequality among urban wage earners was explained by inequality between occupation types. Although representing a decline from 1989, this still represented the distinction with the greatest explanatory power. One reason between-group inequality declined relative to within-group inequality is that the variance of wages rose markedly among both elite employees and technical workers from 1984 to 1992. The most dramatic increase was among elite employees, for whom the Theil index rose to 0.793 in 1992, far outstripping the index for the other three groups. Refer to Table 6. The proportion of total

inequality explained by wage variance among these two groups practically doubled from 1984 to 1992, rising from 13.5 percent to 26.6 percent.

Pseudo-Gini Coefficients by Education and Occupation

In order to explore further the relationship between both education and occupation on the one hand and earnings on the other, we calculate Pseudo-Gini coefficients for the distribution of the proportion of wage income accruing to employees in each education level and in each occupation category. We look exclusively at urban wage earners, who have been the focus of our paper. We rank all urban wage earners by their total wage income. With this ranking, we then examine the distribution of wages, but wages split into the proportions earned by each category of workers. We first divide workers into our four education categories, i.e., no education, primary education, secondary education, and tertiary education. Each of these categories of workers earns a certain percentage of total wages; the summation of the wages of each category over all four categories equals total wages. We follow the same procedure when we group employees into seven occupation types: 1) professionals, 2) technicians, 3) teachers, 4) managers, 5) supervisors, 6) workers, and 7) sales employees⁹. Table 9

⁹ We eliminate income-earners with agricultural or unspecified occupations from this sample. The category of technicians includes technicians and employees with specialized skills; managers include top-level functionaries and directors in public administration and in the private sector; supervisors include supervisory personnel in industrial production; workers include direct workers in industrial production, helpers and laborers in industry, office workers, and service workers in public or personal services; sales employees include workers in commerce

presents our results.

We examine first the distribution of wage income among urban employees according to category of educational attainment. In 1984 urban wage income, separately considered, was relatively equally distributed: its Gini coefficient was 0.384. However, there were stark differences in the distribution of wage income when workers were differentiated by level of education. The Pseudo-Gini coefficient for the wage income of uneducated urban workers was a negative 0.202¹⁰. Over 66 percent of their wage income was found among the bottom 50 percent of urban wage earners. At the other extreme, the Pseudo-Gini coefficient of the wage income of employees with a tertiary education was 0.765. Their wage income was very unequally distributed relative to the distribution of total urban wage income: two-thirds of it was concentrated among the top 10 percent of urban wage earners.

From 1984 to 1989 there was some degree of convergence: the wage income of urban employees with no education or with primary education became more unequally distributed while the wage income of urban employees with secondary or tertiary education became more equally distributed. The average educational level of the total urban labor force declined during this period. Table 8 shows that the percentage of urban employees with primary schooling rose from _____ whether in a fixed establishment or in street vending.

¹⁰ Since the ranking of each group of workers is by total urban wages and not by their wage income alone, the Pseudo-Gini coefficient estimating the distribution of their wage income can vary from -1 to +1.

21.7 percent to 33.8 percent, while the percentages of employees with either secondary or tertiary education declined. Total urban wage income became somewhat more unequally distributed during this period because of both the changes in the distribution of each wage component, defined by educational category, and the shifting percentages of total wage income among the four categories of workers.

From 1989 to 1992 the distribution of urban wage income became dramatically more unequal. Its Gini coefficient rose abruptly to 0.514. Total wage income was becoming markedly more concentrated among higher-paid workers, and this was true across all four categories of workers defined by educational level. The wage income of employees with either no education or primary education continued to become more unequally distributed, while the distribution of the wage income of employees with either secondary or tertiary education was sharply reversed and became much more unequal. The Pseudo-Gini coefficient for the distribution of the wage income of employees with tertiary education jumped to 0.814 -- almost three-quarters of their wage income was now found among the richest decile of urban workers.

Table 8 shows that during the whole period from 1984 to 1992 the percentage of all urban employees with tertiary education fell from 18.5 percent to 15.5 percent. The same trend was also characteristic of employees with secondary education. Hence, a partial explanation for the rising wages of workers with higher education during this period may be found in supply-and-demand

analysis: there was a relative shortage of such workers relative to the demand for their labor. An alternative explanation is that the wages of primary-educated ordinary workers were pushed down relative to those of higher-educated employees.

The trends in the changing distribution of urban wage income differentiated by our seven occupation categories are broadly consistent with the trends found for educational categories. By 1992 the wage income of professionals and of managers were the most concentrated among the upper deciles of the distribution: 81.3 percent and 89.6 percent respectively of the wage income of each was concentrated among the richest decile of urban employees. From 1984 to 1989 the distribution of both became somewhat more equal, but this trend was reversed from 1989 to 1992. During the whole period from 1984 to 1992 the distribution of wage income among technicians and teachers became continuously more unequal, following the pattern of the distribution of total urban wage income. This was true as well for ordinary workers and salespeople, although the wage income of both remained the most equally distributed among urban employees and remained much more equally distributed than total urban wages.

Conclusion

During the period from 1984 to 1992 economic restructuring and trade liberalization have been relatively successful in achieving an equalization of wages across broad economic sectors, such as between the tradable-goods sector and the nontradable-goods sector and between export manufacturing and nonexport manufacturing. In

the process the level of monthly union wages has become indistinguishable from that of nonunion wages. For urban wage earners there are not significant geographical differences in wage structures, such as between workers in border states and nonborder states and between workers in poor states and nonpoor states.

Yet during the period of restructuring of the Mexican economy wage income has become tremendously more dispersed, especially since 1989, and has served to intensify inequality in the distribution of total income. This is in apparent contradiction to the trend of equalization of wages across sectors. Part of the explanation is that there is significant variance of wages across workers according to educational level and occupation.

Most strikingly, there remains large unexplained variances of wages among urban employees in 1992. Inequality among urban employees far exceeds inequality among rural employees. Within border states and within export manufacturing and also among union members, there is great inequality of wage income.

Those groups of workers most closely associated with the increasing export orientation of the Mexican economy are precisely those among whom wage differentiation has been most intense. Yet this differentiation is not positively correlated with differing productivity levels among workers, at least insofar as differences in endowments of human capital are concerned. Structural adjustment and trade liberalization have had an increasingly arbitrary impact on the dispersion of wages among urban employees in Mexico.

TABLE 1
MACROECONOMIC INDICATORS

	YEAR	1980	1987	1988	1989	1990	1991	1992	1993	1994 (2)	1987-1993
GNP AT 1990 PRICES (GROWTH RATES)		9.2	1.9	1.3	3.3	4.5	3.6	2.8	0.4	2.5	2.5
GNP PER CAPITA (GROWTH RATES)		5.4	-0.1	-0.6	1.5	2.7	1.9	1.2	-1.0	1.0	0.8
MANUFACTURING EXPORTS TO TOTAL EXPORTS (PERCENT) (1)		23.0	51.2	60.0	57.7	56.4	75.7	78.3	81.9	81.5	
MANUFACTURING EXPORTS TO NON-OIL EXPORTS (PERCENT)		70.5	88.5	89.1	88.1	90.5	94.2	95.8	93.8	87.4	
MANUFACTURING IMPORTS TO TOTAL IMPORTS (PERCENT)		87.2	89.1	89.6	89.8	91.0	92.9	92.6	94.2	94.1	
TRADE DEFICIT (MILLIONS OF DOLLARS)		-3,058	8,433	1,667	-645	-4,433	-11,063	-15,933	-13,480	-4,297	
MANUFACTURING DEFICIT (MILLIONS OF DOLLARS)		-13,278	-1,355	-5,787	-9,640	-13,385	-14,464	-21,927	-10,088	NA	
SHARE OF TRADEABLES IN TOTAL OUTPUT		NA	33.6	33.6	33.8	34.2	34.0	33.6	33.1	31.7	
SHARE OF MANUFACTURING IN TOTAL OUTPUT		NA	21.3	21.7	22.5	22.8	22.9	22.8	22.3	22.7	

TRADEABLES INCLUDE THE VALUE OF AGRICULTURE, MINING, & MANUFACTURING PRODUCTION

(1) SINCE 1991 MANUFACTURING EXPORTS INCLUDE EXPORTS FROM MAQUILADORAS.

(2) TO APRIL 1994

NA: NOT AVAILABLE

SOURCE: CIVIL CONSTRUCTION BASED ON BANCO DE MEXICO (1980-1993), CUADERNO DE INFORMACION OPORTUNA, INEGI, 1994.

EMPLOYMENT AND WAGE INDICATORS

	YEAR	1980	1987	1988	1989	1990	1991	1992	1993	1994(1)
MANUFACTURING EMPLOYMENT (1980 = 100)		100.0	NA	NA	88.7	89.5	87.5	84.1	78.0	74.4
EMPLOYMENT IN MACH & EQUIPMENT (1980 = 100)		100.0	NA	NA	NA	NA	82.8	79.1	71.8	68.0
MEAN INCOME IN MANUFACTURING		100.0	NA	NA	NA	NA	NA	89.4	93.3	92.4
a). TOTAL		100.0	NA	NA	NA	NA	NA	68.7	70.4	68.1
b). BLUE COLLAR WORKERS		4.9	12.6	16.0	17.5	NA	NA	NA	16.8	NA
SHARE OF MAQUILADORA EMPLOYMENT IN MANUFACTURING EMPLOYMENT		40.6	32.1	30.6	29.5	28.1	29.0	30.6	NA	NA
SHARE OF WAGES IN PERSONAL DISPOSABLE INCOME		40.6	32.1	30.6	29.5	28.1	29.0	30.6	NA	NA

NA: NOT AVAILABLE

(1) TO MARCH 1994

SOURCE: Cuaderno de Informacion oportuna, INEGI, 1994

TABLE 2

GINI AND PSEUDO-GINI COEFFICIENTS ON TOTAL CURRENT INCOME						
	1984		1989		1992	
INCOME COMPONENTS	SHARE OF TOTAL INCOME	GINI & PSEUDO-GINI COEFFIC.	SHARE OF TOTAL INCOME	GINI & PSEUDO-GINI COEFF.	SHARE OF TOTAL INCOME	GINI & PSEUDO-GINI COEFFC.
TOTAL	100	0.4293	100	0.4693	100	0.4749
WAGES	46.9	0.4435	46.4	0.4298	45.4	0.4657
PROFITS	7.1	0.4684	10.2	0.6336	8.4	0.6133
INDUSTRIAL	1.3	0.3732	2.8	0.7254	2.5	0.6563
COMMERCIAL	5.8	0.4891	7.4	0.5994	5.9	0.5951
SERVICES	4.7	0.427	6.5	0.6233	7.3	0.6347
PERSONAL	4.5	0.4291	6.3	0.6279	7.5	0.6439
INPUT PROCESS	0.2	0.3732	0.2	0.4456	0.1	0.1255
AGRIC & LIVST	10.4	0.3949	4.9	0.2567	4.5	0.3283
AGRICULTURE	5.9	0.2873	3.1	0.172	2.1	0.2037
CATTLE	4.5	0.5385	1.8	0.4044	2.4	0.4355
RENT	2.8	0.6715	2.8	0.7578	1.1	0.5658
COOPERATIVES	0.2	0.445	0.3	0.4324	0.1	0.4073
TRANSFERS	6.5	0.3503	6.0	0.3973	5.8	0.3828
OTHER	0.3	0.8232	0.5	0.8162	1.1	0.7943
NON-MONETARY	21.2	0.3895	22.6	0.4549	26.1	0.4294
SELF CONSUMPT	2.6	0.0796	2.1	0.0158	1.8	0.0692
PAYMNT IN KIN	1.9	0.4918	2.1	0.5764	2.5	0.5452
GIFTS	5.8	0.3538	4.3	0.457	5.9	0.377
HOUSING	10.9	0.4643	14.2	0.5012	16.0	0.4707
CALCULATIONS ARE BASED ON GROUPED DATA.						
HOUSEHOLDS ARE RANKED BY TOTAL HOUSEHOLD INCOME.						

SOURCE: OWN CALCULATIONS BASED ON INEGI-ENIGH 1984, 1989 AND 1992.

TABLE 3

WAGE DIFFERENTIALS AMONG GROUPS OF WORKERS
(PERCENT RATIO)

PAIR COMPARISON	1984	1989	1992
FEMALE / MALE	76.7	71.6	74.7
NONTRADE / TRADE	85.8	97.3	107.7
NONEXPORT / EXPORT	69.1	83.3	82.7
NONUNION / UNION	75.1	86.1	96.8
POOR / NONPOOR	91.8	82.2	86.5
NONBORDER / BORDER	93.6	79.1	95.2
RURAL / URBAN	55.6	45.6	55.1

Notes:

All pair comparisons except for urban and rural workers are calculated for urban wage earners only.

The tradable-goods sector includes mining and manufacturing activities, while the nontradable-goods sector includes utilities, construction, commerce, transportation and communication, financial services, and social and community services.

Exporting and nonexporting sectors include manufacturing activities only. Exporting sectors are those which export an above-average percentage of their total production. They include Chemicals, Basic Metals, Metallic Products, Machinery and Equipment.

Poor states are the states of Oaxaca, Guerrero, Chiapas and Hidalgo.

Border states include the five states along the U.S. border: Baja California Norte, Sonora, Chihuahua, Coahuila, and Tamaulipas.

SOURCE: OWN CALCULATIONS BASED ON INEGI-ENIGH 1984, 1989 AND 1992.

TABLE 4

STANDARD DEVIATION OF LOG VARIANCE AND PERCENTAGE EXPLAINED BY
HUMAN CAPITAL (R²)

I. PAIR COMPARISONS	STD			STD			STD					
	DEVIATION	R ²		DEVIATION	R ²		DEVIATION	R ²				
	1	9	8	4	1	9	8	9	1	9	9	0
II.- ALL WAGE EARNERS	0.886	0.42	0.879	0.36	1.299	0.22						
III.- RURAL	1.144	0.35	1.024	0.24	1.145	0.20						
III.- URBAN	0.912	0.39	0.841	0.32	1.331	0.20						
1) MALE	0.850	0.40	0.815	0.34	1.288	0.22						
FEMALE	1.009	0.40	0.856	0.30	1.331	0.17						
2) UNION	0.467	0.26	0.621	0.26	1.530	0.14						
NONUNION	0.989	0.40	0.899	0.32	1.245	0.23						
3) POOR	0.744	0.39	0.778	0.38	1.191	0.10						
NONPOOR	0.922	0.39	0.845	0.32	1.339	0.21						
4) BORDER	0.901	0.31	0.897	0.26	1.457	0.24						
NONBORDER	0.914	0.41	0.823	0.35	1.312	0.20						
5) TRADE	0.776	0.34	0.838	0.32	1.321	0.27						
NONTRADE	0.870	0.27	0.830	0.32	1.328	0.18						
IV.- ALL URBAN												
MANUFACTURING												
WAGE EARNERS	0.770	0.33	0.835	0.31	1.320	0.27						
1) EXPORT	0.734	0.46	0.811	0.29	1.455	0.30						
NONEXPORT	0.761	0.24	0.842	0.32	1.218	0.24						

* NOTE: R² IS FROM REGRESSION WITH MONTHLY WAGES AS DEPENDENT VARIABLE

SOURCE: OWN CALCULATIONS BASED ON INEGI-ENIGH 1992.

TABLE 5

STANDARD DEVIATION OF LOG VARIANCE, THEIL INDEX,
GINI COEFFICIENT, AND COEFFICIENT OF VARIATION

I.- ALL WAGE EARNERS	1984	1989	1992
MEASURE			
STD. DEVIATION OF			
LOG VARIANCE	1.036	0.978	1.299
THEIL L INDEX	0.396	0.398	0.627
STANDARDIZED THEIL *	0.039	0.031	0.047
GINI COEFFICIENT	0.419	0.443	0.519
COEFFICIENT OF VARIATION	0.930	1.092	1.319
II.- RURAL WAGE EARNERS	1984	1989	1992
MEASURE			
STD. DEVIATION OF			
LOG VARIANCE	1.144	1.024	1.145
THEIL L INDEX	0.492	0.403	0.494
STANDARDIZED THEIL	0.051	0.032	0.038
GINI COEFFICIENT	0.471	0.423	0.468
COEFFICIENT OF VARIATION	0.954	0.908	1.084
III.- URBAN WAGE EARNERS	1984	1989	1992
MEASURE			
STD. DEVIATION OF			
LOG VARIANCE	0.912	0.841	1.331
THEIL L INDEX	0.319	0.320	0.632
STANDARDIZED THEIL	0.031	0.024	0.047
GINI COEFFICIENT	0.383	0.411	0.514
COEFFICIENT OF VARIATION	0.870	1.020	1.288
IV.- URBAN MANUFACTURING WAGE EARNERS	1984	1989	1992
MEASURE			
STD. DEVIATION OF			
LOG VARIANCE	0.770	0.835	1.320
THEIL L INDEX	0.269	0.300	0.758
STANDARDIZED THEIL	0.026	0.024	0.048
GINI COEFFICIENT	0.369	0.411	0.528
COEFFICIENT OF VARIATION	0.960	1.018	1.437
* NOTE: STANDARDIZED THEIL IS THEIL'S L INDEX DIVIDED BY THE NATURAL LOGARITHM OF MEAN MONTHLY WAGES			

SOURCE: OWN CALCULATIONS BASED ON INEGI-ENIGH 1984, 1989 AND 1992.

TABLE 6

THEIL L INDICES

WITHIN-GROUP AND BETWEEN-GROUP INEQUALITY *

GROUP	1984	1989	1992
1.- ALL WAGE EARNERS	0.396	0.398	0.627
RURAL	0.492	0.403	0.494
URBAN	0.319	0.320	0.932
BETWEEN-GROUP %	7.7	13.6	5.0
2.- FEMALE	0.341	0.291	0.657
MALE	0.300	0.317	0.609
BETWEEN-GROUP %	2.2	3.6	1.4
3.- UNION	0.104	0.198	0.744
NONUNION	0.390	0.366	0.590
BETWEEN-GROUP %	2.7	0.8	0.02
4.- MANUFACTURING WAGE EARNERS	0.269	0.319	0.654
EXPORT	0.258	0.300	0.758
NONEXPORT	0.249	0.326	0.576
BETWEEN-GROUP %	6.3	1.3	0.7
5.- ORGANIZATION			
NO CONTRACT	0.392	0.366	0.409
NONUNION DETERMINATE CONT.	0.243	0.300	0.694
NONUNION INDETERMINATE CONT.	0.223	0.328	0.453
UNION CONTRACT	0.104	0.198	0.744
BETWEEN-GROUP %	18.8	8.5	5.4
6.- GEOGRAPHY			
POOR STATES	0.251	0.250	0.515
BORDER STATES	0.323	0.344	0.740
DF / NUEVO LEON	0.296	0.346	0.708
REST OF COUNTRY	0.321	0.296	0.580
BETWEEN-GROUP %	2.4	2.2	10.9
7.- EDUCATION			
NO EDUCATION	0.308	0.291	0.360
PRIMARY	0.262	0.259	0.457
SECONDARY	0.256	0.276	0.581
TERTIARY	0.244	0.261	0.747
BETWEEN-GROUP %	16.7	16.2	12.1
8.- OCCUPATION			
ELITE	0.244	0.313	0.798
TECHNICAL	0.144	0.183	0.593
WORKER	0.207	0.258	0.511
POOR	0.399	0.364	0.423
BETWEEN-GROUP %	24.5	17.7	13.5

* NOTE : THEIL L INDICES ARE NOT COMPARABLE OVER TIME BECAUSE THEIR
MAXIMUM VALUE VARIES WITH THE LOGARITHM OF AVERAGE MONTHLY WAGES

SOURCE: OWN CALCULATIONS BASED ON INEGI-ENIGH 1984, 1989 AND 1992.

TABLE 7

CHANGES IN RELATIVE WAGES

GROUP	1 9 8 4	1 9 8 9	1 9 9 2			
	ACTUAL WAGE	WAGE INDEX	ACTUAL WAGE	WAGE INDEX	ACTUAL WAGE	WAGE INDEX
1.- ORGANIZATION						
NO CONTRACT	18,630	100	384,918	100	535,716	100
NONUNION						
TEMPORARY	26,655	143	485,957	126	788,303	147
NONUNION						
PERMANENT	41,772	224	677,681	176	1,029,252	192
UNION	37,165	200	616,242	160	808,208	151
2.- EDUCATION						
NO EDUCATION	15,837	100	310,919	100	422,633	100
PRIMARY	21,140	133	424,057	136	568,764	135
SECONDARY	29,481	186	514,887	165	706,844	167
TERTIARY	50,502	318	981,037	315	1,606,619	380
3.- OCCUPATION						
POOR UNSKILLED	14,893	100	321,413	100	457,183	100
WORKERS	28,990	195	482,868	150	657,749	144
TECHNICAL	36,164	243	634,864	198	957,444	209
ELITE	71,298	479	1,151,856	358	1,857,892	406

SOURCE : OWN CALCULATIONS BASED ON INEGI-ENIGH 1984, 1989 AND 1992.

TABLE 6
 PERCENTAGE OF URBAN EMPLOYEES
 AT EACH EDUCATIONAL LEVEL

GROUP	1984	1999	1992
NO EDUCATION	5.1	4.3	4.4
PRIMARY	21.7	22.7	22.8
SECONDARY	52.7	45.1	46.3
TERTIARY	16.5	16.9	15.5

SOURCE : OWN CALCULATIONS BASED ON INEGI- ENIGH 1984, 1999 AND 1992.

TABLA 4

PSEUDO-GINI COEFFICIENTS FOR WAGE CATEGORIES
BY EDUCATION AND OCCUPATION

II.- RANKING BY TOTAL URBAN WAGES			
GROUP	1984	1989	1992
UNEDUCATED	-0.202	-0.056	0.032
PRIMARY	0.184	0.190	0.279
SECONDARY	0.411	0.347	0.450
TERTIARY	0.765	0.729	0.814
PROFESSIONALS	0.632	0.764	0.846
TECHNICIANS	0.416	0.438	0.621
TEACHERS	0.535	0.541	0.728
MANAGERS	0.910	0.882	0.907
SUPERVISORS	0.727	0.721	0.683
WORKERS	0.227	0.236	0.372
SCALEE PEOPLE	0.256	0.325	0.398
URBAN WAGES	0.364	0.411	0.514

SOURCE: OWN CALCULATIONS BASED ON INEGI-ENIGH 1984, 1989 AND 1992.