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FACTORS DRIVING CHANGES IN INCOME DISTRIBUTION IN POST-REFORM MEXICO*

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RESUMEN

Después de 1984 y posterior a la liberalización económica, la desigualdad del ingreso en México se incrementó. Algunos de los principales factores que contribuyeron a esta tendencia son, el crecimiento relativo del ingreso promedio en el sector servicios, en relación con los sectores agrícola y manufacturero, lo cual es consistente con argumentos tales como la expansión de los servicios y la reducción de rentas en el sector comercial; el incremento en la tasa de retorno a la educación, que es consistente con la hipótesis del comercio como detonante de la demanda de la mano de obra calificada; y, la estabilización de la tasa de sindicalismo. Por otra

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parte, entre 1998 y 2002, la desigualdad disminuyó gradualmente. Algunos de los factores que propiciaron esta caída son, el decremento de la tasa de retorno a la educación, la caída de la tasa de retorno al sindicalismo y la estabilización de la tasa de sindicalismo. Esta tendencia es consistente con argumentos que sugieren efectos adversos temporales y ciclos en la evolución de la desigualdad del ingreso en el largo plazo. La recomposición de los hogares y los ingresos por transferencias son factores que mitigan la desigualdad, mientras que el deterioro del sector agrícola es una causa persistente de la dispersión del ingreso.
Palabras clave: Desigualdad del ingreso, liberalización económica
Clasificación JEL: C10, F14, J01, O15

ABSTRACT

After 1984 and following economic liberalisation, income inequality in Mexico increased. Some of the main factors that contributed to this trend are the relative expansion of the average income in the service sector in relation to the agricultural and manufacturing sectors, which is consistent with arguments such as the rise of services and the reduction of rents in the traded sector, the increase in skill premium, which is in keeping with the skill enhancing trade hypothesis, and the fall in unionisation rates. On the other hand, between 1998 and 2002, inequality fell gradually and some of the factors driving this trend are the decrease in returns to skill and union premium, and the stabilisation of unionisation rates. This trend is consistent with arguments suggesting temporary adverse effects and cycles in the evolution of income inequality over the longer-run. Households re-composition and transfer income are factors that mitigate inequality, whereas deterioration of the agricultural sector is a persistent sources of income dispersion.
*Keywords:*Income Inequality, Economic Liberalisation
JEL classification: C10, F14, J01, O15

1. INTRODUCTION

In Mexico, the debt crisis of 1982 signalled the end of the import-substitution industrialisation model (ISI) and the predominance of protectionist policies. Over the subsequent years a number of structural reforms and market-oriented policies were undertaken. In 1985 the government eliminated some import licences and reduced the number of tariff categories. In 1987 the elimination of import licences was extended, the degree of tariff dispersion was reduced, and a stabilisation programme was put in place. Between 1988 and 1990 the government liberalised the financial system, reformed the FDI regime, eliminated some restrictions to portfolio investment, and opened the stock market and the money market to foreign investors; in addition, the external debt was renegotiated. The privatisation process initiated in 1982 and was intensified during the late 1980s and early 1990s. Negotiations on the North America Free Trade Agreement (NAFTA) commenced in 1990 and it became effective in 1994.

On the basis of the Stolper-Samuelson theorem (SST) we can expect that trade liberalisation in Mexico can increase demand for unskilled labour, as this is consider an abundant factor in this country. The introduction of trade reforms therefore should lead to a rise in the relative return to unskilled labour and to a narrowing of inequality. However, the empirical evidence shows that income distribution worsened in Mexico following economic liberalisation (Feliciano, 2001; Cortez, 2001; Tanski and French, 2001; Ros and Bouillon, 2002).

Globalisation is sometimes presented in the relevant literature as a cause for the deterioration of income distribution in recent decades across developed countries (Smeeding, 2002). Furthermore, some empirical studies show a positive relationship between the increase in trade and income dispersion (Baldwin and Cain, 2000; Haskel and Slaughter, 2001). This trend in many developed countries is in keeping with the SST. On the other hand, several studies attribute the rise in inequality to the skill-biased technological change (SBTC) (Berman *et al.*, 1998; Acemoglu, 2002). According to this argument,

countries tend to experience a fall in relative demand for unskilled labour and an increase in that for skilled labour, due to an acceleration of technical change over the past few decades, this process is expected to exacerbate inequality. Both explanations (trade and technical change) dominate the literature dealing with the study of inequality in industrialised countries and have been dubbed the "transatlantic consensus".

Some evidence from the developing world is also consistent with the idea that trade openness can lead to more income inequality, despite the opposite SST prediction (Litwin, 1998; Flemming and Micklewright, 2000; Ros and Bouillon, 2002; Mah, 2002). An approach to explain this relationship is the idea that greater competition leads to a reduction of producer rents in the traded sector; to the extent that these rents are shared with workers, wages will decline post-liberalisation. The skill enhancing trade hypothesis (SETH), based on empirical evidence, is another explanation about the expansion of the wage gap in developing countries (Robbins, 1996; O' Connor and Lunati, 1999). It takes arguments that, to some extent, can be similar to those used in the "transatlantic consensus". This hypothesis claims that economic liberalisation and the intrinsic adoption of new technologies are accompanied by a relative increase in demand for skill labour, which can worsen inequality. The relevant literature offers substantial support to both approaches (Feenstra and Hanson, 1997; Arbache *et al.* 2004). Thus, trade and technological change are also relevant causes of inequality in developing countries.

Other complementary causes have also been advanced to explain the rise in income dispersion; two of them deserve highlighting. Firstly, "the rise of service" argument holds that globalisation fosters demand for specialised services; this process can increase income dispersion, as the service sector can be considered skill-biased in developing countries. Secondly, "the decline of labour market institutions" argument claims that economic liberalisation can decrease minimum wages, unionisation rates and bargaining power of unions, aimed at cost reduction and competitiveness (Singh, 2001).

In this paper we explore whether trade, technological change, the rise of services and the decline of unions can be a cause of increasing inequality in

post-reform Mexico. On the other hand, there is some evidence that since the late 1990s inequality has levelled and even decreased slightly. In this respect, we also explore whether these four arguments can remain in force during the new period of improvements in income distribution in Mexico.

The data source, the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH), is a household income and expenditure survey produced by the Mexican government's statistical office, Instituto Nacional de Estadística, Geografía e Informática (INEGI). It has been carried out in 1984, 1989 and subsequently every two years since 1992 in randomly selected households. The period of analysis is from 1984 to 2002; this timeframe allows us to examine the sub-period of rising inequality and the later sub-period in which inequality reverses.

We find that income inequality worsens after liberalisation, mainly because of an increase in skill premium, an expansion of the income gap between the service and the agricultural sectors, and the fall in unionisation rates. On the other hand, there is evidence that inequality decreases after 1998 and, potentially, the factors driving this trend are the decrease in returns to skill and union premium, and the stabilisation of unionisation rates. In this study we also identify two main factors that help to mitigate inequality along the period, transfer income and the re-composition of households, whereas the deterioration of the agricultural sector is a persistent source of inequality.

The Mexican case is particularly interesting for the following reasons. Firstly, this country has long been known for its unequal distribution of income.[1] Secondly, in a few years Mexico moved from protectionism to market liberalism; moreover, it has signed a number of free trade agreements and was the first developing country to implement one (NAFTA) with two developed countries. Finally, the era of market openness in Mexico has now lasted for more than two decades. Therefore the Mexican case offers a good time-span for assessing whether market-oriented polices can reduce high levels of inequality or produce a different effect.

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[1] From a sample of 49 countries including different definitions of Gini coefficients over time, Li *et al.* (1998) show that the Mexican average Gini, 54.59, is the second highest of the sample.

The paper is organised as follows: Section two gives a discussion of theoretical issues supporting distributional effects under conditions of market openness and also discusses contesting arguments. Section three explores individual income distribution and wage inequality through a descriptive approach. The analysis is extended in section four by using parametric methods. Section five explores additional forms of income distribution, at the level of households and at the level of income source. Finally concluding remarks are provided in section six.

2. THEORETICAL DEBATE AND COMPLEMENTARY ARGUMENTS

2.1 STANDARD THEORY

Since the 1980s a number of developing countries, especially in the Meso-south American subcontinent, have adopted an economic model that places special emphasis on market forces. The set of policies involved in this development paradigm can be summarised as deregulation, privatisation, liberalisation of markets, and macroeconomic discipline. This prescription is intended to create preconditions for the expansion of trade and flow of investment across countries and finds theoretical support in familiar neoclassical theory (Jones and Barry, 1988: 30-33; Corden, 1993), which claims that trade, investment and the market mechanism in general boost growth and facilitate development.

Proponents of the model maintain that improvements in income distribution can be achieved for two main reasons. Firstly, emphasis on outward-looking growth fosters exports, employment and output, and thus provides additional resources for redistribution. Secondly, economic liberalisation facilitates the operation of market forces and the price mechanism, which allows resources to be allocated more efficiently.

The basis for tracing distributional effects of market liberalism in developing countries is the SST (FitzGerald, 1996: 32; Litwin, 1998: 3).

Within this two-factor (capital and labour) neoclassical model, liberalisation of foreign trade increases demand for the abundant factor, as exports and imports adjust according to the orthodox principle of comparative advantages, and redirects demand away from the scarce factor. This mechanism increases the return of the factor which is relatively most used in the export sector and which is also more abundant –this factor is conventionally assumed to be low-wage, unskilled labour in developing countries– and leads toward factor price equalisation; by the same token income distribution improves.

2.2 CONTESTING ARGUMENTS

The skill-enhancing trade hypothesis. According to this proposition, increasing openness in developing countries can accelerate inflow of foreign technology due to a rise in imports and FDI. Robbins (1996) finds that the skill gap tends to widen in a sample of developing countries and shows that there is a high correlation between increasing demand for skill and imports of technology. He calls this effect "skill-enhancing trade hypothesis" (SETH), and argues that trade liberalisation may sometimes widen wage dispersion instead of compressing relative wages, as more openness permits or encourages the acceleration of imported physical capital stock.

In this sense, Arbache *et al.* (2004: 76-77) argue that the new inflowing technology can be skill-biased because it is designed through relatively skill-intensive methods in more industrialised countries and because its implementation and operation involves new procedures and techniques. As a result, technological change can increase demand for skilled workers. Moreover, they point out that the reduction in demand for skilled labour predicted by orthodox theory can be surpassed by this process depending on the magnitude of the shift. New technology is not only considered skill-biased in developing countries but also in developed economies (Berman *et al.*, 1998).

The rise of services. An alternative argument undermining basic predictions of neoclassical theory is the idea that the service sector, which has traditionally been considered a sector with higher wages than some of the conventional

economic activities in developing countries, is likely to expand faster than other sectors, under conditions of economic liberalisation, and can also be considered skill-biased. This is because the globalisation and internationalisation of the economy brings with it increasing demand for financial, communication, IT, transport and business services among others. These activities clearly require workers relatively more qualified, on average, than workers in some of traditional economic activities in developing countries, such as primary production and labour-intensive manufacturing. Gordon and Gupta (2003) show that factors playing an important role in accelerating services growth are high income elasticity of demand, increased input usage of services by other sectors, and deregulation and economic reforms.

Sinha (2005) shows that although employment in the service sector in India during the 1990s remained steady, its share of GDP rose substantially. She also stresses that the pattern and composition of growth acceleration of services creates further inequality between rural and urban areas, and between the skilled and the unskilled.

Reduction of rents in the traded sector. Arbache *et al.* (2004) hold that the reduction or elimination of trade barriers and tariffs turns protected markets into more contestable ones, which induces lower prices and therefore a reduction of producer rents; if rents are shared with employees it is expected that wages fall after liberalisation. They show that contrary to the predictions of the SST, wages fell substantially in the traded sector after trade liberalisation in Brazil, consistent with the reduced rents argument, as industries faced greater competition.

The decline of labour market institutions. In many countries before their processes of economic liberalisation started, labour unions played an important role in defining working conditions for a substantial number of workers. They bargained for higher wages, job stability and better social benefits. However, as a result of the implementation of market-oriented policies a number of changes have constrained the scope for action of labour unions (Cortez, 2001). For example, privatisation processes of state-owned firms can contribute to the weakening and dissolution of an important number of them. Moreover,

increasing domestic and international competition, due to deregulation and market openness, can drive firms to reduce labour costs by hiring temporary and part-time workers, subcontracting stages of production, lessening conditions to fire workers, and adopting overall labour flexibility. The decline of labour market institutions has been considered in the relevant literature as an important explanation about post-reform income inequality because the average labour income of the increasing number of non-union workers tends to fall in relation to the wage of those who remain unionised or in relation to alternative income sources. (Aghion *et al.*, 1998; Fishlow and Parker, 1999).

3. INDIVIDUAL INCOME DISTRIBUTION

The data source is ENIGH by INEGI, as outlined earlier. We use data from five periods 1984, 1989, 1994, 1998 and 2002. Initially, the selected sample comprises individuals reporting monetary income, aged between 16 and 65 inclusive, and there are no restrictions for the number of hours employed in the corresponding economic activity. In a first stage the analysis involves the main source of income only and is not restricted to labour earnings. In other words, individuals whose main source of income comes from entrepreneurial and financial activities, property rents and transfers are also included in the sample. The hourly income is computed as monthly income in the respondent's main economic activity, divided by weekly hours employed in the corresponding economic activity multiplied by 4.33. The hourly income is deflated by the consumer price index based in 2002 pesos in order to obtain real hourly income.

Between 1984 and 1998 the Gini coefficient for individuals increased from 0.512 to 0.632 and then dropped to 0.560 between 1998 and 2002. To understand the forces driving this pattern we present a decomposition of income by educational levels, economic sectors and deciles, and conduct a comparative analysis between the period of increasing inequality and the latter one. Due to the importance of unionisation in Mexico before the early 1980s and the significant transformation that has been experienced over the last twenty years

or so, we also explore labour union changes and therefore restrict the data-set to labour income sources for this particular case. In addition, a parametric analysis is conducted using labour income data.

3.1 RETURNS TO EDUCATION

This section analyses whether skill premium is likely to increase after economic liberalisation and also explores whether returns to skill can decrease over a longer period. We present the average real hourly income for three different levels of education, primary secondary and tertiary.[2] From column 1 in table 1 we observe that the average hourly income for both, primary and secondary education, tends to decline along the whole period. As for tertiary education, this indicator has a substantial increase between 1984 and 1994 but then shows a sharp fall over the last two periods. It is worth noting that the percentage change between 1984 and 2002 is negative for the three educational levels but it decreases less in the tertiary level, as illustrated in column 2.

In order to explore how these changes on average income of educational levels have affected income dispersion between skilled and unskilled individuals, table 1 presents the ratio of average hourly income in column 3. We observe that marginal returns to tertiary education in relation to primary and secondary levels increased between 1984 and 1998 and declined between 1998 and 2002, but remained above their original levels. On the other hand, although returns to secondary education fluctuated, they actually decreased slightly in relation to the first period. Therefore, only income premium paid to high skilled individuals has expanded, although there is evidence that this trend has reversed over the last few years.

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[2] The classification is conducted under the following criteria. Primary level comprises individuals with some elementary or completed elementary education. In Mexico, the first nine years of the educational system are considered elementary education. Secondary level includes individuals with some education after the basic level but with no university education. The tertiary level comprises individuals with university education, completed or incomplete, also includes individuals with one or more years of postgraduate education.

Table 1 also reports share of the three education categories under two different considerations. Column 4 presents labour share weighted by hours[3] and column 5 displays income bill share of individuals. In both columns we observe that the share of tertiary education increased along the whole period, the share of secondary education also increased, but the variation is more moderate; in contrast, the share of primary education fell gradually.

The bottom panel makes comparisons between the rising inequality period, and the later period, by exploring annualised changes in the shares mentioned above and in the average hourly income for both primary and tertiary educational categories. Adopting Autor *et al.* (1998) assumptions,[4] and following Airola and Juhn (2005), we interpret changes in income bill share as relative demand shifts.

As for the first period, the simultaneous increase in relative income and relative supply of individuals with tertiary education suggests that demand for highly educated individuals also increased. In fact, labour share increased at an annual pace of 2.57 per cent, whereas income bill share expanded at an annual rate of 4.38 per cent. Although highly skilled labour supply increased over the first period, its expansion was not enough to meet the larger increase of demand;[5] this fact explains the rise in income of this educational category.[6]

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[3] We also calculated the educational distribution weighted by individuals, and it was found that it does not differ substantial from that weighted by hours.

[4] Autor *et al.* (1998) show that under the assumption that the elasticity of substitution between skilled and unskilled workers equals 1 and the production function is Cobb-Douglas, relative demand shifts can be represented by changes in wage bill share.

[5] By conducting an international comparison Cortez (2001) shows that Mexico's performance in terms of educational expansion is poor, as the reduction in the percentage of low-education workers is slow and the increase in the percentage of workers with higher education is small compared to countries like South Korea and Sweden.

[6] Although the average hourly income of the highly educated group rose between 1984 and 1998, the annualised change was relatively low, 0.43 per cent; however, between 1984 and 1994 the rate was higher, 1.47. This can be explained because supply of skilled individuals fell between 1989 and 1994 and then continued to increase in the later periods. Nevertheless, the analysis considers periods before and after 1998, because the rest of the changes in the trend of supply and demand of skilled and unskilled individuals, and changes in individual income Gini, appear to be stronger around this year.

On the other hand, changes in labour share and income bill share of the least educated group show that relative unskilled labour demand decreased faster than relative supply. Not surprisingly, average income of this category fell at an annual pace of 2.26 per cent.

During the second period, income bill share of the most educated individuals continued to increase but slowed to the rate of 1.20 per cent per year, and labour share continued its expansion and even accelerated to the pace of 6.09 per cent. Consequently, income of the tertiary education category decreased at an annual pace of approximately 3.11 per cent. Finally, changes in income bill share and labour share of the primary education category continued to decrease; however, the former slowed to the rate of 1.32 per cent and the latter accelerated to the pace of 1.39 per cent; as a result, average income of the least educated group continued to fall but at a negligible annualised rate of 0.09 per cent.

3.2 DECOMPOSITION OF INCOME BY ECONOMIC SECTORS

Here we evaluate whether the service sector is likely to rise post-liberalisation in relation to other income sources and its evolution over further periods. Income is decomposed into three main economic sectors –agriculture, manufacturing, and services–. Initially, column 4 in table 2 illustrates changes in the sectoral composition of employment by reporting labour shares weighted by hours. It can be observed that the share of agriculture declined throughout the period and the decrease is more severe between 1998 and 2002. The manufacturing sector remained more or less steady. In contrast, the share of the service sector increased and the largest variation is registered during the latest period too.

Average real hourly income per sector is presented in column 1 and the percentage change throughout the period is displayed in column 2. We observe that individual income fell 8.72 per cent in the service sector whereas it fell 25.17 and 32.89 per cent in the manufacturing and agricultural sectors respectively.

TABLE 1

Average real hourly income (2002 pesos) per level of education

	(1) Income	(2) Income variation % 02 vs 84	(3) Ratio of income	Shares (4) Hours weighted	Shares (5) Income bill
2002					
Primary	16.76	-27.50	1.62 *	69.04	47.19
Secondary	27.08	-30.85	2.18 **	17.43	19.54
Tertiary	59.09	-6.27	3.53 ***	13.53	33.27
1998					
Primary	16.82		1.76 *	72.99	49.75
Secondary	29.57		2.26 **	16.42	18.54
Tertiary	66.92		3.98 ***	10.60	31.71
1994					
Primary	20.77		1.68 *	75.49	51.31
Secondary	34.97		2.09 **	14.31	17.70
Tertiary	73.01		3.52 ***	10.19	30.99
1989					
Primary	22.91		1.42 *	73.07	55.29
Secondary	32.65		1.90 **	15.01	17.38
Tertiary	61.92		2.70 ***	11.92	27.33
1984					
Primary	23.12		1.69 *	82.38	68.21
Secondary	39.16		1.61 **	10.23	14.71
Tertiary	63.04		2.73 ***	7.39	17.08

Changes in average hourly income and share of educational levels
(annualised log change x 100)

	1984-1998	1998-2002
Primary		
Average income	-2.26	-0.09
Hours	-0.86	-1.39
Income bill	-2.25	-1.32
Tertiary		
Average income	0.43	-3.11
Hours	2.57	6.09
Income bill	4.38	1.20

Notes: * Comparison between secondary and primary education
** Comparison between tertiary and secondary education
*** Comparison between tertiary and primary education

Source: Own computation with information from ENIGH by INEGI, various years.

Column 3 presents ratios of average hourly income. This indicator shows that income dispersion between the service and the other two sectors expanded between 1984 and 1998; however, during the last period the income gap with respect to the manufacturing sector fell, whereas it continued to increase in relation to the agricultural sector. Column 5 illustrates that income bill share of the service sector rose along the whole period. It remained more or less steady in the manufacturing sector after a decrease between 1984 and 1989; in contrast, income bill share of the agricultural sectors dropped permanently. Finally, column 6 shows that individuals in the service sector have higher educational attainment and their skill upgrading is faster than in the other two sectors. In contrast, individuals in the agricultural sector have the lowest educational attainment and their skill upgrading is the slowest; in fact, educational achievement declined during the last period in this sector.

Table 3 separates income bill shares for individuals by sector and education category and reveals that in the service sector skill demand increased permanently, whereas demand for unskilled individuals fell in relative terms. Relative demand for unskilled labour was expected to increase in the manufacturing and agricultural sectors, but it fell gradually in the former –although seems to stabilise in the latest periods– and substantially in the latter. From these two sectors, relative skill demand seems to remain steady throughout the period.

From the descriptive analysis provided above, changes in inequality can be explained as follows: Between 1984 and 1998 both employment and skill demand increased in relative terms in the service sector. In contrast, relative employment and demand for unskilled individuals did not increase in the manufacturing and agricultural sectors, as predicted by standard theory; this fact can explain the increasing income gap between the service sector and the other two sectors, and can be consistent with the *rise of services argument*. Following the Arbache *et al.* (2004) industry classification, we can consider the agricultural and the manufacturing sectors as the traded industry and the service sector as the non-traded industry; in this sense, we observe a sharp fall of income in the traded industry relative to the non-traded industry, and this pattern is in keeping with the argument supporting the *reduction of rents in the*

TABLE 2

Average real hourly income (2002 pesos) and educational attainment per sector

	(1) Income	(2) Income variation % 02 vs 84	(3) Ratio of income	Shares (4) Hours weighted	Shares (5) Income bill	(6) Years of Education
2002						
Agriculture	14.61	-32.89	1.91 *	13.82	7.56	3.85
Manufacturing	20.94	-25.17	1.33 **	18.01	16.29	7.83
Services	27.90	-8.72		68.17	76.15	8.94
1998						
Agriculture	16.75		1.71 *	19.77	12.05	4.41
Manufacturing	19.46		1.47 **	17.68	16.76	7.58
Services	28.62			62.55	71.19	8.36
1994						
Agriculture	19.46		1.75 *	22.11	13.57	3.52
Manufacturing	24.69		1.38 **	17.18	16.14	7.20
Services	34.05			60.71	70.28	8.00
1989						
Agriculture	19.59		1.71 *	20.49	13.13	3.54
Manufacturing	25.91		1.30 **	18.29	16.86	7.61
Services	33.57			61.21	70.01	8.30
1984						
Agriculture	21.78		1.40 *	22.73	16.76	2.94
Manufacturing	27.98		1.09 **	17.99	18.90	6.69
Services	30.57			59.28	64.34	7.13

Notes: * Comparison between the service sector and the agricultural sector

** Comparison between the service sector and the manufacturing sector.

Source: Own computation with information from ENIGH by INEGI, various years.

TABLE 3

Income bill per sector and level of education

	1984	1989	1994	1998	2002
Agriculture					
Primary	15.63	11.98	12.30	10.66	6.52
secondary	0.64	0.42	0.65	0.77	0.43
Tertiary	0.49	0.73	0.62	0.62	0.61
Manufacturing					
Primary	12.82	10.00	9.47	9.20	9.16
secondary	2.28	3.07	2.90	3.00	3.53
Tertiary	3.79	3.79	3.78	4.57	3.61
Services					
Primary	39.76	33.31	29.97	29.88	31.51
secondary	11.78	13.89	14.22	14.77	15.58
Tertiary	12.80	22.81	26.10	26.53	29.06

Source: Own computation with information from ENIGH by INEGI, various years.

traded sector. Furthermore, in this period demand for skill increased faster than supply, whereas relative demand for unskilled individuals dropped; this fact can explain the upturn in skill premium and is consistent with the SETH. Hence, the increase of relative income in the service sector, the sharp fall of income in the traded sector, and the expansion of the skill premium can contribute to explain the growth of overall inequality between 1984 and 1998. However, it is important to explore whether the non-traded sector keeps a relative increase in average income, once education and other variables are controlled for.

Between 1998 and 2002 the increase in overall skill demand slowed down and educational attainment, on average, increased faster, although the increase

does not necessarily occur among individuals with relative low income and low educational achievement.[7] As a result, skill premium declined and this fact seems to be an important reason explaining the decrease in inequality in this period. Both employment and skill demand continued to increase in relative terms in the service sector, whereas in the manufacturing sector relative employment had negligible improvements and relative demand for unskilled individuals fell slightly. Bearing this in mind, we should expect further income dispersion between these two sectors; nevertheless the income gap dropped; the most plausible reason for this drop is thus a reduction of skill premium. However, as noted before, it is important to explore whether, allowing for education and other variables, the changes of relative income between sectors persist.

3.3 LABOUR INCOME, UNIONISATION AND WAGE INEQUALITY

This section evaluates changes in union premium during the era of market liberalism and in general assesses the impact of the transformation in labour unions on wage inequality. The data set is restricted to labour income sources.

From column 1 in table 4 we observe that on average unionised workers earn a higher wage rate than non-unionised ones. Furthermore, column 2 shows that although the wage rate of unionised workers oscillated over time, by the end of the period it had decreased just 2.64 per cent in relation to its original level. In contrast, the wage rate of the non-unionised workers fell 16.05 per cent between 1984 and 2002, but there is some evidence that it increased slightly during the last period. As a result, the ratio of average hourly union wages to non-union wages expanded between 1984 and 1998 and then stabilised, as illustrated in column 3. Column 4 shows that on average unionised workers

[7] We also decompose income by deciles and find that the lower the income level of individuals the fewer the years of schooling received in every period. Furthermore, throughout the period the speed of skill upgrading is the lowest in the first quintile whereas it is the highest in the fifth quintile. We also find that between 1998 and 2002 human capital increased faster in the last fourth quintiles compared to the previous periods, only the first quintile showed a decrease. Information computed by deciles is available upon request.

have higher educational attainment and their skill upgrading is faster than non-unionised workers. Column 5 reveals that wage inequality, as expressed by the Gini coefficient, is higher among non-unionised workers, but wage inequality within unionised workers grew faster overtime. In keeping with the overall pattern of income dispersion, wage inequality reversed between 1998 and 2002 within both groups. Finally, column 6 illustrates that the unionisation rate dropped between 1984 and 1998, but it levelled and even increased slightly during the last period.

TABLE 4

Average real hourly wage (2002 pesos), educational attainment and inequallity per unionised and non-unionised workers

	(1) Wage	(2) Wage Variation % 02 vs 84	(3) Ratio of wage*	(4) Years of education	(5) Gini	(6) Unionisation rate %
2002						
Non-union	18.17	-16.05		8.0	0.444	83.57
Union	33.34	-2.64	1.84	11.6	0.409	16.43
1998						
Non-union	17.08			7.7	0.500	84.49
Union	31.85		1.86	10.7	0.433	15.51
1994						
Non-union	20.55			7.0	0.506	81.78
Union	34.27		1.67	10.0	0.424	18.22
1989						
Non-union	21.52			7.3	0.468	75.06
Union	31.31		1.46	9.6	0.391	24.94
1984						
Non-union	21.64			6.2	0.424	75.60
Union	34.24		1.58	8.8	0.303	24.40

Notes: * Union vs non-union

Source: Own computation with information from ENIGH by INEGI, various years.

By exploring the composition of unionised employment by sectors, we find that throughout the period, the proportion of union workers employed in services increased from 69.74 to 75.58 per cent whereas those employed in manufacturing and agriculture dropped from 27.83 to 23.58 per cent and from 2.43 to 0.85 per cent respectively.

Although the unionisation rate has fallen, labour unions have tended to favour workers with higher educational attainment, and have tended to concentrate within the service sector over the last two decades. This pattern can help to explain the expansion of the rate of return to unionisation as the wage rate of union workers has benefited from the increase in skill premium and from a relative increase of wages in the service sector, if any. In contrast, relative educational attainment of non-union workers has decreased and low wage agricultural workers have nearly lost access to labour unions in recent years.[8]

The fact that a large number of workers moved away from unions and entered a non-union sector characterised by diverse and flexible wages, and higher Gini coefficient, also represents a source of inequality.

In short, the increase in the wage gap between union and non-union workers and the fall in the unionisation rate contribute to explain labour inequality and therefore the increase of overall individual inequality. The preliminary evidence above is consistent with the argument supporting the *decline of labour market institutions* to the extent that post-liberalisation, the unionisation rate dropped substantially and wages fell, especially in the non-union sector; overall this trend reflects less bargaining power of labour. On the other hand, those unions that have remained in the labour market have achieved more representation and higher wages for their members. Although this point is not in keeping with the weakening of unions, it helps to explain the increase of wage inequality between the union and the non-union sectors. In general, the transformation of labour unions post-liberalisation is a relevant cause to

[8] Bensusán (1999) provides an additional argument to explain the rise in union wages, as he holds that some workers who have remained unionised have constituted more representative and efficient labour unions.

explain increasing inequality. However, it is important to explore whether relative union wages increase once education and other factors are controlled for.

The drop of intra-group Ginis, the slight upturn of unionisation rates, and the slight drop of union premium can contribute to explain the decline of the individual Gini between 1998 and 2002.

4. ECONOMETRIC ANALYSIS WITH DISAGGREGATE DATA (LABOUR INCOME)

This section extends the preliminary analysis by conducting parametric methods. It uses labour income data and applies standard Mincerian earning functions, in which the log of real monthly wages are regressed on personal characteristics and different variables in order to analyse the effect of the skill premium, returns to labour by sector, and returns to unionisation on wage dispersion. So as to explore the effects of economic liberalisation over different stages in time, the analysis follows a before-after (liberalisation) approach as in Arbache *et al.* (2004), and also splits the sample in different periods. A (0,1) dummy variable is created; it takes a value of one for the post-liberalisation period, which is defined as after 1984. In addition, the impact of liberalisation is explored separately for the different sectors, and we also focus on the wage gap between union and non-union workers and returns to education pre and post liberalisation by applying the corresponding interactions.

4.1 RETURNS TO LABOUR BY SECTORS

Column 1 of table 5A shows an OLS regression which decomposes the log wage between sectors (agriculture and manufacture *vs* services) and distinguishes trade regime. On average, workers in the agricultural and manufacturing sector were paid 50.80 per cent less and 6.37 per cent more respectively than those in the

service sector before liberalisation.[9] However, as anticipated in columns 1 and 2 of table 2, in the post-liberalisation period average wages in agriculture and manufacturing fell more than those in services.[10] In agriculture average wages dropped 21.31 per cent and in manufacturing they dropped 27.22, whereas they fell 14.06 per cent in services.[11]

Once age, gender, education attainment and unionisation are controlled for in column 2, we observe that higher human capital and higher unionisation rates in the service sector contribute to increase average wages compared to those in the other sectors. By comparing columns 1 and 2 we notice that before liberalisation the wage gap between the agricultural and service sectors changes from -50.80 per cent to -42.61 per cent and between the manufacturing and service sectors it changes from 6.37 per cent to 11.02 per cent. Moreover, after liberalisation the drop of average wages in the service sector is larger and the fall of average wages in the manufacturing sector is more moderate. Nevertheless, column 2 illustrates that average wages post-liberalisation increase in relative terms in the service sector, as they fall 19.98 per cent, whereas wages in agriculture and manufacture drop 22.06 and 24.4 respectively. In addition, the wage gap of agriculture widens slightly from -42.61 per cent to -44.10 per cent and the wage gap of manufacturing decreases from 11.02 per cent to 4.89 per cent, between the pre and post liberalisation periods.[12] This result is consistent with the *rise of services* argument; it is also consistent with the *reduction of rents in the traded sector* argument if we consider both the agricultural and the manufacturing sectors as the traded sector.

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[9] Figures computed as (exp(β) -1)*100 where β is the coefficient on the corresponding sector dummy variable.

[10] Although table 2 comprises all sources of income, in 2002 labour income accounted for 60 per cent of total income; hence, this table can be representative of the pattern followed by this income source over time. Moreover, we construct table 2 using labour income only and also observe that relative wages in agriculture and manufacturing fell more than in services.

[11] The Change in average wages after liberalisation is computed as (exp(β_1 - β_2)-1)*100, where β_1 and β_2 are the coefficients of the corresponding sector post and pre liberalisation respectively.

[12] In the post-liberalisation period the wage gap of Agriculture and manufacturing in relation to services is computed as (exp(β_1 - β_2)-1)*100, where β_1 is the coefficient of the corresponding sector and β_2 is the coefficient of the service sector post-liberalisation.

We also observe that there is an inverted U-shaped age-earning profile with a peak at around 45 years, women earn 29.14 per cent less than men with similar age and education, union workers earn 32.80 per cent more than equivalent non-union workers, and returns to education increase with higher education levels. This wage equation explains 37 per cent of total variation in earnings between workers.

Using the before and after methodology the post-liberalisation period is disaggregated in four sub-periods in order to examine any differential effect of liberalisation over time, results are presented from column 3 to column 6 in table 5B. The sharpest fall in wages in the immediate post-liberalisation period occurs in the manufacturing sector and the most moderate occurs in the agricultural sector. Over the subsequent periods wages continue to fall, there is some recovery in the manufacturing and service sectors between 1998 and 2002, but wages do not return to their pre-liberalisation levels in any of these two sectors. In the agricultural sector the fall is permanent.

TABLE 5A

Performance of sectors (labour income)

	(1)		(2)	
Table 5A	Pre-lib	Post-lib	Pre-lib	Post-lib
Services		-0.152		-0.223
Agriculture	-0.709	-0.949	-0.555	-0.805
Manufacture	0.062	-0.256	0.105	-0.175
Age			0.079	
Age^2			-0.001	
Female			-0.344	
Union			0.284	
Secondary education			0.433	
Tertiary education			0.931	
Constant	8.215		6.571	
Observations	57,832		57,832	
R^2	0.10		0.37	

Source: Own computation with information from ENIGH by INEGI, various years.

TABLE 5B

Performance of sectors (labour income)

	(3) 84,89		(4) 84,94		(5) 84,98		(6) 84,02	
Table 5B	Pre-lib	Post-lib	Pre-lib	Post-lib	Pre-lib	Post-lib	Pre-lib	Post-lib
Services		-0.113		-0.091		-0.375		-0.275
Agriculture	-0.593	-0.683	-0.536	-0.694	-0.523	-0.877	-0.552	-0.962
Manufacture	0.103	-0.059	0.117	-0.085	0.109	-0.308	0.099	-0.222
Age	0.083		0.083		0.084		0.080	
Age^2	-0.001		-0.001		-0.001		-0.001	
Female	-0.324		-0.345		-0.340		-0.328	
Union	0.185		0.263		0.350		0.326	
Secondary education	0.420		0.503		0.473		0.394	
Tertiary education	0.770		1.045		0.988		0.868	
Constant	6.538		6.469		6.461		6.567	
Observations	16,137		17,108		15,311		22,281	
R^2	0.33		0.41		0.40		0.38	

Notes: Results corrected for heteroskedasticity, all coefficients are significant at the 1 per cent level

Source: Own computation with information from ENIGH by INEGI, various years.

When education and other variables are controlled for, we observe that a source of inequality between the pre and post liberalisation periods is the change in the wage gap of agriculture relative to services, as it widens from -42.61 per cent to -44.10 per cent, although the variation is slight. On the other hand, the relative increase in wages in the service sector tends to equalise wages in relation to the manufacture sector, since manufacturing wages are originally higher and therefore the wage gap between these two sectors falls from 11.02 per cent to 4.89 per cent.

The evolution of returns to labour by sectors does not contribute to explain the reversal of inequality between 1998 and 2000, because the wage gap relative to services continues to widen in agriculture and remains stable in manufacturing. Thus, the rise of services and the relative reduction of rents in the traded sector do not seem to stop during the whole observed period; however, both patterns have an inequalising effect in relation to the agricultural sector only.

4.2 SKILL PREMIUM

Table 6 focuses on the returns to education pre and post liberalisation. The first column illustrates the results obtained from the whole sample and the last four columns show the results obtained once the post-liberalisation period is disaggregated over time. Three main findings emerge from this analysis. Firstly, average income tends to be lower in every level in the post-liberalisation periods and this is consistent with decreasing real wages as noted previously. Furthermore, as anticipated in columns 1 and 2 of table 1, average wages for the primary and secondary levels fall relative to the tertiary level. In the post-liberalisation period workers with primary and secondary education are paid 21.78 per cent and 26.09 per cent less respectively, whereas workers at the highest educational level are paid 8.58 per cent less.[13]

Secondly, the marginal returns to education –comparing each education level with those below– tend to be greater along the post-liberalisation periods only for high skill workers or those with tertiary education, but not for those with secondary education. The point estimate of the marginal return to tertiary level rises from 119.10 per cent to 156.06 per cent and from 34.74 per cent to 66.65 per cent in relation to the primary and secondary levels respectively, between the pre and post-liberalisation periods.[14] This finding confirms the trend observed in column 3 of table 1[15] and is in keeping with the *skill-enhancing trade hypothesis*.[16] Finally, the marginal returns to tertiary education peak by 1994 and then decline, but remain higher than in the pre-liberalisation period.

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[13] Fall post-liberalisation is computed as $(\exp(\beta_1-\beta_2)-1)*100$, where β_1 and β_2 are the coefficients of the corresponding educational level post and pre liberalisation respectively.

[14] Marginal returns to education comparing two levels of education can be obtained as $(\exp(\beta_{upper} - \beta_{lower})-1)*100$, where β_{upper} and β_{lower} are the coefficients on the education level dummy variable for the upper and lower level respectively for a specific period.

[15] Although table 1 is constructed from all income sources it shows a good approximation of the trend in labour income as this income source represents 60 per cent of total income, as noted in footnote 10.

[16] Note that the hypothesis applies to tertiary education in particular. This finding is similar to that obtained by Arbache *et al.* (2004) for the case of Brazil, as they conclude that the SETH applies to college-educated labour only.

TABLE 6

Returns to education (labour income)

	(1)		(2) 84,89		(3) 84,94		(4) 84,98		(5) 84,02	
	Pre-lib	Post-lib	Pre-lib	Post-lib	Pre-lib	Post-lib	Pre-lib	Post-lib	Pre-lib	Post-lib
Age	0.079		0.083		0.083		0.084		0.080	
Age^2	-0.001		-0.001		-0.001		-0.001		-0.001	
Female	-0.345		-0.325		-0.348		-0.344		-0.330	
Union	0.283		0.184		0.261		0.348		0.321	
Primary education		-0.246		-0.098		-0.160		-0.407		-0.308
Secondary education	0.486	0.184	0.508	0.295	0.494	0.347	0.483	0.066	0.455	0.077
Tertiary education	0.784	0.695	0.800	0.663	0.786	0.928	0.782	0.643	0.760	0.580
Agriculture	-0.580		-0.576		-0.585		-0.509		-0.655	
Manufacture	0.053		0.068		0.038		0.081		0.064	
Constant	6.592		6.526		6.523		6.486		6.590	
Observations	57,832		16,137		17,108		15,311		22,281	
R^2	0.37		0.33		0.41		0.40		0.38	

Notes: Results corrected for heteroskedasticity, all coefficients are significant at the 1 per cent level

Source: Own computation with information from ENIGH by INEGI, various years.

When controlling for sectors, unionisation and personal characteristics, we observe that the evolution of skill premium post-liberalisation is a factor that has a clear effect on changes in inequality because returns to tertiary education increase after 1984 and this fact widens the income gap between skilled and unskilled labour. This trend is due to a faster increase in skill demand than supply, whereas relative unskilled demand decreased faster than supply between 1984 and 1998, as shown in table 1. Hence, the evidence illustrates that during periods of economic liberalisation and its intrinsic technological change, relative demand for skill tends to increase and this pattern supports the SETH. Moreover, variations in skill premium also contribute to explain the fall in overall inequality after 1998 because skill premium tends to fall, especially after this year. The cause of this trend is also shown in table 1, where we observe that the increase in skill demand slows down whereas the increase in supply accelerates, and unskilled supply falls faster than demand. Hence the rise in skill premium is temporary and cyclical.

4.3 UNIONISATION

We now explore wage dispersion between union and non-union workers. Column 1 of table 7A distinguishes unionisation and trade regime. It indicates that, on average, union workers were paid 82.63 per cent more than non-union workers before liberalisation.[17] Over the post-liberalisation period average wages paid to union workers decreased 11.80 per cent and those paid to non-union workers fell 15.93 per cent, which represents an increase of union wages in relation to non-union wages.[18]

Age, gender, sectors and educational attainment are controlled for in column 2. A comparison between columns 1 and 2 confirms that average wages paid to union workers are higher, but reveals that much of this is due to the higher human capital among these workers, as suggested in column 4 of table 7B. In fact, the wage gap shrank from 82.63 per cent to 39.29 per cent before liberalisation. Moreover, the relative increase of union wages post-liberalisation seems to be the result of faster skill upgrading, as non-union wages fell by less than union ones. Accordingly, column 2 reveals that the wage gap of union workers in relation to non-union ones decreased from 39.29 per cent to 32.16 per cent between the pre- and post-liberalisation periods.[19]

Once the post-liberalisation period is disaggregated over time from column 3 to column 6 in table 7B, we can infer that the wage gap of union workers in relation to non-union ones dropped in the immediate pos-liberalisation period, then increased and peaked around 1998, and was even higher in this period than its original level; however, after 1998 the wage gap decreased and returned to its pre-liberalisation level.

The evidence observed in the post-liberalisation period is consistent with the *decline in labour market institutions argument*, to the extent that the action and bargaining power of labour unions decrease, because average wages and

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[17] Figures computed as $(\exp(\beta) - 1)*100$, where β is the corresponding coefficient.

[18] Fall post-liberalisation is computed as $(\exp(\beta_3-\beta_4)-1)*100$, where β_3 and β_4 are the coefficients of the corresponding union status post and pre-liberalisation respectively.

[19] Wage advantage of union workers is computed as $(\exp(\beta_1-\beta_2)-1)*100$, here β_1 and β_2 are the union and non-union coefficients respectively for a specific period.

TABLE 7A

Unionisation and wages (labour income)

	(1)		(2)		
Table 7A	Pre-lib	Post-lib	Pre-lib	Post-lib	
Non-Union		-0.174		-0.226	
Union	0.602	0.477	0.331	0.053	*
Age			0.079		
Age^2			-0.001		
Female			-0.345		
Agriculture			-0.579		
Manufacture			0.052		
Secondary education			0.432		
Tertiary education			0.932		
Constant	7.965		6.573		
Observations	57,832		57,832		
R^2	0.08		0.37		

Source: Own computation with information from ENIGH by INEGI, various years.

TABLE 7B

Unionisation and wages (labour income)

	(3) 84,89		(4) 84,94		(5) 84,98		(6) 84,02		
Table 7B	Pre-lib	Post-lib	Pre-lib	Post-lib	Pre-lib	Post-lib	Pre-lib	Post-lib	
Non-Union		-0.068		-0.110		-0.387		-0.304	
Union	0.340	0.062	0.309	0.134	0.331	-0.026	0.326	0.020	*
Age	0.084		0.083		0.084		0.080		
Age^2	-0.001		-0.001		-0.001		-0.001		
Female	-0.325		-0.345		-0.340		-0.328		
Agriculture	-0.575		-0.587		-0.509		-0.654		
Manufacture	0.066		0.036	^	0.079		0.062		
Secondary education	0.417		0.502		0.472		0.395		
Tertiary education	0.772		1.048		0.987		0.871		
Constant	6.501		6.478		6.470		6.589		
Observations	16,137		17,108		15,311		22,281		
R^2	0.33		0.41		0.40		0.38		

Notes: Results corrected for heteroskedasticity, all coefficients are significant at the 1 per cent level unless otherwise indicated, * significant at 5 per cent, ^ insignificantly different from zero at conventional levels

Source: Own computation with information from ENIGH by INEGI, various years.

the unionisation rate drop, besides the fact that union premium falls when education and other variables are controlled for. This patter can contribute to explain income inequality in the sense that the proportion of the non-union sector in the labour market increased, and this sector is characterised by higher Gini coefficients. On the other hand, the average drop of the union premium between 1984 and 1998 has an equalising effect; however, in 1998 the union premium contributes to increase inequality because it reaches a peak located at a higher level than its original position pre-liberalisation.

Changes in labour unions can also contribute to explain the fall in inequality after 1998 because the unionisation rate stabilises and even increases slightly, and the union premium falls after reaching a peak.

We also use the data-set comprising all income sources in the analysis of educational levels and sectors, and find that the general conclusions are similar to those using labour income only.

5. ADDITIONAL FORMS OF INCOME DISTRIBUTION (ALL INCOME SOURCES)

5.1 HOUSEHOLD INEQUALITY VERSUS INDIVIDUAL INEQUALITY

Initially, a simple comparison between households and individuals in terms of income and Ginis is presented in table 8. From the first panel we observe that household Gini is lower than individual Gini and the last column reveals that the former grew slower than the latter throughout the period. Moreover, the rise of household Gini started to reverse slightly after 1994, whereas individual Gini started to drop after 1998. The second panel shows that real hourly individual income declined 12.43 per cent, whereas real monthly household income fell 1.43 per cent over the whole period. It is worth noting that household income increased 18.09 per cent when it is expressed in per capita terms.

An important reason for mitigation of inequality and income fall among households is presented in the bottom panel. We observe that the average

number of members per household dropped 16.53 per cent, whereas the number of income receivers increased 30.85 per cent. As a result, the proportion of income receivers per household increased, from 31.66 per cent to 49.63 per cent between 1984 and 2002. Although the upper quintiles have kept a higher proportion of income receivers over time, the lower quintiles have increased the proportion faster and therefore the percentage of income receivers tends to converge across income levels. This families' reaction counteracts the increase in inequality and the general trend of declining real income; this in fact raises per capita household income.

TABLE 8

Average real monthly income (2002 pesos), Gini and composition of income receivers per household and individuals

	1984	1989	1994	1998	2002	Change % 02/84
(1) Gini						
Household Gini	0.485	0.530	0.553	0.549	0.515	6.19
Individual Gini	0.512	0.551	0.587	0.632	0.560	9.38
(2) Income						
Monthly income per household	6,441	7,146	6,928	5,859	6,348	-1.43
Monthly income per member	1,270	1,437	1,469	1,331	1,499	18.09
Hourly individual income	28.03	29.30	29.02	24.40	24.55	-12.43
(3) Household composition						
Household members	5.07	4.97	4.72	4.40	4.23	-16.53
Receivers per household	1.61	1.68	1.86	2.00	2.10	30.85
Receivers per household %	31.66	33.86	39.52	45.51	49.63	56.78
Receivers per quintile %						
1st	23.03	22.71	29.82	37.90	46.50	101.94
2nd	27.21	29.30	33.93	41.59	44.50	63.53
3rt	31.41	35.12	40.13	45.53	47.81	52.21
4th	36.95	42.27	46.78	52.11	54.31	46.96
5th	47.84	47.59	54.98	56.42	59.26	23.88

Source: Own computation with information from ENIGH by INEGI, various years.

5.2 GINI DECOMPOSITION BY INCOME SOURCE

Table 9 presents the decomposition of the household Gini coefficient by three main income sources –labour, transfers, and business and finance (B & F)– applying the Yao (1999) method. The first panel reveals that the transfer income is the most equally distributed and its Gini has fallen markedly, as recorded in column 6. In contrast, the Gini of B & F income is the largest and has expanded sharply over time. As a result, the second and third panel illustrate that the contribution of transfer income to total income is larger and has increased faster over time (column 7) than its contribution to the overall Gini, whereas the contribution of B & F income to total income is lower and has decreased more than its contribution to the overall Gini. As for labour income, its income share has increased slightly more than its Gini share.

Consequently, transfer income, which is mainly composed of remittances from emigrant workers and social government expenditure, helps to reduce household inequality for the following reasons: Firstly, its Gini is reasonably smaller than the overall Gini and the gap has expanded over time (panel 4). Secondly, although the smallest income source out of the three categories, it has increased gradually. In this context and to a lesser extent, labour income helps to reduce household Gini too. On the other hand, B & F income drives inequality up as its Gini is higher than the overall household Gini and the gap has tended to increase over time (panel 4).

The last panel summarises the impact of every income category on the overall household income inequality by displaying the ratio of Gini share to income share. If the ratio is greater than one, it means that the corresponding income source can increase inequality, otherwise it helps to decrease the household Gini coefficient. We observe that the contribution ratio of the B & F income is greater than one and has increased over time (column 6), which suggests that this income source is a driving force of household inequality. Labour income is relatively neutral. Finally, the contribution ratio of transfer income is the lowest and has decreased sharply along the period, which indicates that transfer income is an important factor to reduce the household Gini coefficient.

TABLE 9

Decomposition of household Gini by income source

						Change	
	(1)1984	(2)1989	(3)1994	(4)1998	(5)2002	(6) % 02/84	(7) Diff 02-84
(1) Gini							
Business & finance	0.515	0.624	0.612	0.616	0.601	16.79	
Labour	0.471	0.476	0.547	0.526	0.496	5.47	
Transfer	0.448	0.481	0.384	0.452	0.378	-15.61	
Total	0.485	0.530	0.553	0.549	0.515	6.19	
(2) Contribution to income							
Business & finance	35.73	35.98	32.20	33.89	29.40		-6.32
Labour	56.63	56.70	59.53	56.14	60.00		3.36
Transfer	7.64	7.32	8.28	9.97	10.60		2.96
(3) Contribution to Gini							
Business & finance	37.94	42.38	35.37	38.03	34.34		-3.60
Labour	55.00	50.97	58.52	53.77	57.87		2.87
Transfer	7.07	6.64	6.10	8.20	7.79		0.73
(4) Gini variation % (income source vs overall)							
Business & finance	6.18	17.79	10.64	12.21	16.78		
Labour	-2.89	-10.10	-1.00	-4.22	-3.55		
Transfer	-7.46	-9.21	-30.52	-17.76	-26.46		
(5) Contribution ratio (gini/income)							
Business & finance	1.062	1.178	1.099	1.122	1.168	9.98	
Labour	0.971	0.899	0.983	0.958	0.965	-0.68	
Transfer	0.925	0.908	0.737	0.822	0.735	-20.53	

Source: Own computation with information from ENIGH by INEGI, various years.

6. CONCLUSIONS

Due to market-oriented reforms in Mexico since the mid 1980s, and on the basis of the SST we might expect a rise in the relative return to low-income, unskilled labour, or an increase in individual income in activities such as agriculture and labour-intensive manufacturing, and therefore a reduction of income inequality. However, in the post-liberalisation period skill premium and income differential between low and high income individuals expanded,[20] and relative income in agriculture and manufacturing dropped. Furthermore, overall individual inequality increased, although there is some evidence that has tended to decline after 1998. These trends undermine orthodox theory and provide room for contesting arguments.

The analysis, finds various factors driving inequality between 1984 and 1998. An important reason for income dispersion is the fact that marginal returns to education increased, which is consistent with the SETH. Note, however, that the hypothesis applies to tertiary education in particular.

In the service sector relative income, employment and demand for skill increased; consequently, the evidence corresponds with the *rise of service* argument. This pattern contributes to explain income dispersion, in the sense that the wage gap between the service and the agricultural sectors expanded.

Relative income in the traded sector fell following liberalisation, and this is in keeping with the view that market-oriented reforms increased the degree of competition and therefore reduced rents. Income also dropped in the non-traded industry, indicating either a degree of spill-over, or the effect of other reforms such as privatisation or deregulation.[21] However, the

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[20] By decomposing the overall income by deciles, it is found that the bottom nine deciles lost income share and decreased average real hourly income between 1984 and 1998; furthermore, the lower the income level, the higher is the loss. In contrast, the top decile gained income share and increased average income in this period. Consequently, the ratios of the tenth decile to the first decile, in both indicators, increased until 1998, and they actually doubled, as they passed from 32 to 64. Information computed by deciles is available upon request.

[21] Arbache *et al.* (2004) reached similar conclusions for the case of Brazil.

relevant finding is that income in the traded sector fell in relative terms, which is another reason of income dispersion.

The evidence also corresponds with the *decline of labour market institutions* argument to the extent that average wages, union density and union premium fell. However, changes in the wage gap between union and non-union workers can not contribute to explain an increase in income dispersion, as the gap decreased in average in the post-liberalisation period. Only around 1998 union premium was higher than its position pre-liberalisation. Nevertheless, the fact that a large number of workers moved away from unions and entered a non-union sector, characterised by diverse and flexible wages and higher Gini coefficient, represents a source of inequality.

The rise in income Gini coefficient reversed between 1998 and 2002 and so did the income gap between upper and lower deciles. The factors that can explain this variation are summarised as follows: The upturn in skill premium started to reverse around 1994 and the downturn was faster around 1998. In addition, by 1998 the wage gap between union and non-union workers had peaked and fell afterwards and the fall in the unionisation rate stopped and reversed slightly.

In this respect, some authors have stressed the possibility that income distribution can follow cycles under conditions of market openness and technological change. One of these approaches explains that when a country begins to adjust to a more competitive environment serious dislocations are encountered as the economy adapts to the shifting patterns of employment and resources. As a consequence, income dispersion may widen and absolute poverty increase in the short-run. However, this effect is considered to be temporary because as the period of adjustment continues markets stabilise and individuals adapt to the prevailing conditions. Eventually, there may be a decrease in unemployment and income gap, and inequality may begin to decrease in the longer-run (Jacobsen and Giles 1998, 419-20; FitzGerald 1996, 32).

In keeping with this approach, evidence in the Mexican case shows that over the longer-term, individuals react by achieving higher educational

attainment or increasing movements toward higher income activities.[22] In addition, transition and adjustment in labour unions seem to come to an end, or at least changes are less marked. Finally we observe that individuals tend to increase the number of income receivers and to reduce the number of members in their households, which leads to higher per capita income, especially in low income sectors.

In terms of technological change Pissarides (1997) shows that in developing countries, that have adopted market-oriented polices, the importation and assimilation process of new technology can be skill-biased and give a temporary and relative advantage to skilled labour only during the period of transition toward a higher level of technology. He also argues that the response of relative supply of skilled and unskilled labour to trade openness can also explain a temporary increase of wage differentials. In addition, Goldin and Katz (1998) hold that within firms, demand for skill rises when new technologies are introduced, but it declines once the other workers have learned to use the new equipment. Around 1998 the evidence starts to correspond with these ideas since we observe higher levels of educational achievement and an acceleration of skill supply in relation to previous periods, whereas skill demand falls substantially.

Although we have found factors that can contribute to lessen inequality in the longer-term, there are adverse effects lasting the whole period of study for instance the deterioration of the agricultural sector. We also found two main factors that can contribute to mitigate adverse effects; they are the re-composition of households and transfer income.

The study identifies reactions of individuals that can help to reduce inequality. However, the results suggest that solutions for income inequality can also rely on government action. Some of the main policies implied are to increase expenditure in the form of transfers, to take strategic action to develop the agricultural sector, and to facilitate access to education, especially to the

[22] By decomposing income by quintiles and economic sectors we observe that between 1998 and 2002 the employment share in services and manufacturing increased, but the former had the highest increase in the first and second quintile and the latter in the first quintile.

vulnerable and those at low income levels. Furthermore, the boost of employment in unskilled, labour-intensive activities, combined with the reduction of supply of unskilled individuals by increasing educational levels can encourage factor price equalisation. However, heavy reliance on low-wage employment is not a desirable long-term solution as it does not encourage domestic markets and sustained growth; in this context, gradual and strategic industrialisation can be a complementary strategy. Finally, income redistribution can be encouraged by introducing a progressive taxation policy at the highest income levels.

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