



Please cite the source as:

De Ibarrola, M. (2009). Increase in schooling of Mexico's economically active population and its effect on employment status and income, 1992-2004. *Revista Electrónica de Investigación Educativa*, 11(2). Retrieved month, day, year, from <http://redie.uabc.mx/vol11no2/contents-deibarrola.html>

Vol. 11, No. 2, 2009

Increase in Schooling of Mexico's Economically Active Population and Its Effect on Employment Status and Income, 1992-2004¹

El incremento de la escolaridad de la PEA en México y los efectos sobre su situación laboral y sus ingresos, 1992-2004

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(Received: June 3, 2009; accepted for publishing: July 23, 2009)

Abstract

This paper presents some effects of the remarkable increase in schooling in Mexico on the employment status of the country's non-agricultural, economically-active population (EAP) between the ages of 24 and 60. We analyze the distribution of this population by categories, including the level of schooling attained, hourly earnings and participation in one of the country's five different labor sectors: two informal (self-employed workers and managers of informal microenterprises) and three formal (public sector, companies in the industrial sector, and service sector companies). Data from 1992 to 2004 are compared. The results derive from a database developed for Mexico as part of several national studies conducted by the Information System on Educational Trends in Latin America (SITEAL for its acronym in Spanish), based on the National Survey of Income-Expenditure.

Keywords: Academic achievement, educational attainment, income, labor market.

Resumen

En este artículo se proponen algunos resultados sobre la manera como el notorio incremento de la escolaridad en México se expresa en el destino laboral de la población económicamente activa (PEA) no agrícola del país, de 24 a 60 años de edad. Se analiza la distribución de esa población según categorías de escolaridad lograda, ingresos-horario y adscripción a cinco diferentes sectores laborales del país: dos informales (trabajadores por cuenta propia y patrones asalariados de microempresas informales) y tres formales (sector gubernamental, empresas del sector industrial y empresas del sector terciario). Se comparan los datos de 1992 con los de 2004. Los resultados se derivan de una base de datos elaborada para México, como parte de varios estudios nacionales, realizados por el Sistema de Información sobre Tendencias Educativas en América Latina (SITEAL), con base en la *Encuesta Nacional de Ingreso-Gasto*.

Palabras clave: Escolaridad, logro educativo, ingresos, mercado de trabajo.

Introduction

The increase in schooling in Mexico has been one of the most impressive educational achievements in the country, as an analysis of historical data easily demonstrates, and as has been registered by some researchers (Mercado and Planas, 2005). The effects of this increase in the educational level of the economically active population (EAP) in the country are evident. The latest data from the Institute of Statistics and Geography (INEGI—acronym in Spanish, n.d.) indicate that average years of schooling of the country's EAP rose from 6.8 in 1992 to 8.4 in 2004, and reached 9.1 years of school in 2009.

Despite this there are few studies drawn from national statistics that would allow a systematized and longitudinal analysis of the impact of this increase on the labor distribution of the EAP in the country, according to differences in formality or informality among the occupational sectors as well as the differences in income that result from this double condition. In 2006, UNESCO's Information System on Educational Trends in Latin America (SITEAL--acronym in Spanish, n.d.) systematized a series of common indicators on schooling, average hourly income, age, sex and size of locality, based on five occupational sectors—two informal and three formal—in which the EAP of several countries is pinpointed. In order to facilitate comparison, data were obtained from the *National Survey of Household Income and Expenditures* or its equivalent for the years 1992, 1996, 2002 and 2004. The present analysis was built based on a selection of these data for Mexico.²

The complex relationship between educational level and work

In a recently published textbook, Dr. Martin Carnoy (2006) briefly and simply describes the history of the relationships between education and work and how economists have conceived them. It is surprising that the perception and conceptualization of the differences and inequalities between workers with regard to their education, skills and abilities—despite having been identified by many classic authors, from Adam Smith on—was only taken up again theoretically as recently as the middle of the last century with the theory of *human capital*, a term coined so successfully by Theodore Schultz.³

With this theory it has been common to reduce human capital to years of schooling attained, which is measured in terms of completed grade levels. Research in this area has found some consistent large-scale results; for example, the positive correlations between higher educational levels in the workforce of a country and its productivity; the fact that higher educational levels are positively correlated to higher incomes and job positions, that is, the proportionately higher rates of return that are generated by schooling, not including its direct and indirect costs. These macro results have, with some impunity, transformed the correlation into causality, reinforcing the common-sense belief about the economic benefits of education.

Various researchers—educational economists and educational sociologists—have questioned this mechanistic vision (Levin and Kelley, 1994). Gary Becker (1964, p. 17) states that “education and training are the most important investment in human capital”; however, he also recognizes the influence of the family in the formation of the worker as well as the contribution made to the worker’s development by job-site learning and training.

A line of research initiated in 1986 (Hanushek, 1986; Hanushek and Woessman, 2007) proposes distinguishing between *quality of education* and *schooling*. It is not the hours spent “seat-warming” in a classroom that influence economic development, but knowledge and skills, which can indeed be developed in school, but which can also be fostered by the family, peers and culture. Schools in and of themselves are not the answer. Other factors have a significant impact on earnings and growth, on economic institutions, the openness of the economy, property systems, and so on. Without them, education and skills will not have the desired impact on economic performance.

An important part of the arguments and premises that take issue with human capital theory relate to the theory of reproduction. The now classic texts of Baudelot and Establet (1975) and of Bourdieu and Passeron (1964) focus on the unequal distribution of opportunities of access to education, which is closely correlated to preexisting socioeconomic inequalities. Recent studies posit that the increase in educational opportunities has shifted the effects of socioeconomic inequalities onto areas internal to schooling: student failure; delays that result in students pursuing grade levels or degrees at more advanced ages; the possibilities

of finishing each academic cycle in the allotted time; grades; and the type of educational institution to which the student has access, among other aspects that continue to demonstrate such correlations (Schwartzman, 2004; Tenti and Cervini, 2004).

Other authors focus on the limitations of the labor market: education does not create jobs, they argue, and those who attain relatively higher levels of schooling can, if anything, go to the front of the waiting line for employment; they will be the last to lose their jobs, although they may possibly experience wage reductions, or perhaps become underemployed or join the ranks of unemployed college graduates and suffer the “devaluation” of their educational degrees in an increasingly inflationary degree market (National Association of Universities and Institutions of Higher Education [ANUIES, acronym in Spanish], 2003; Muñoz Izquierdo, 2001; Carnoy, 2005).

Income, meanwhile, does not depend on the worker's educational level, but on his/her position in the job market and in the company organization (Levin and Nelly, 1994). As various authors have demonstrated, including Muñoz Izquierdo (1996), Hualde and Serrano (2005) and Planas (2008), among others, the role education plays in work, employment or income varies according to the economic period in question, the geographical region, the economic sector, the individual's gender and age and even the history and culture of the companies themselves.

In a specific job space, the same college degree does not guarantee the same high salary or better job position to all those who hold it (De Ibarrola and Reynaga, 1983), nor does a degree from a technical school ensure getting a job related to the field of studies (De Ibarrola, 1994; National Technical and Vocational Education School [Conalep, acronym in Spanish], 2006). Moreover, to the extent that schooling is distributed more evenly among the population, as is the case with elementary and junior high school, it ceases to be a causal variable of differences in income and job position, at least in well-defined sectors of the labor market (De Ibarrola, 2004a).

Labor markets in Mexico

Most Mexican researchers who analyze the relationship between educational level and employment concur in referring to job *markets* and contend that their heterogeneous character plays an important role in the nature of the relationships established between said markets and schooling (Reynaga, 2003). Due to limitations of space for this article, aspects of formality or informality and other characterizations of the heterogeneous and unequal structure of labor markets in Mexico are not described, as they have been posited and discussed in depth in other studies (De Ibarrola, 1988, 1994, 2004a, 2004b).

In this paper we accept the general distinction of heterogeneity between *formal* and *informal sector*, and the five occupational sectors: two informal sectors (self-employed and microenterprises that employ less than five workers) and three

formal sectors (public sector, large companies in the industrial sector and large companies in the service sector) that are identified by the available database and whose operational definition respects the main criteria of the authors that are identified in the above-cited studies. It should be noted that it is not the aim of this paper to explain the political and economic factors that contextualize and determine said heterogeneity in countries like Mexico, or that provide the framework for the relationship between schooling and employment in the country.

The objective of this article is simple and rather limited: it seeks to provide national statistical data showing how the increase in schooling of the economically active population in Mexico between 1992 and 2004 was distributed between the various occupational sectors, defined according to their formality or informality in the labor market, and the differences in income resulting from the level of schooling attained and the work sector in which the individual is employed.⁴

Two theoretical approaches support the importance of the objective of this article. The first contends that the country's increase in schooling is not derived from a rational planning based on the availability of jobs for different types of training, nor does it respond to the qualification requirements for (generic) development. The increase in schooling has been a product of the tensions and contradictions between governmental proposals, aimed in great measure at boosting education in accordance with a (certain) vision of the development needs of the country or the (supposed) demands of the labor market; of the limited vision of labor sectors; of the demands and aspirations of young people and their families; and of the possibilities of educational institutions in a context characterized by the existence of heterogeneous and unequal labor markets (De Ibarrola, 2009). This is not to ignore the fact that educational opportunities, particularly following completion of compulsory education, are clearly insufficient.

The second approach divides interpretations of the effects of increased schooling on earnings and employment into two main arguments:

a) The first, which is related particularly to the growth of higher education, attributes the failure of college graduates to find employment in professional positions commensurate with their level of schooling to the dysfunctionality of the educational system (ANUIES, 2003).

b) The second postulates that the increase in schooling (at all levels) has had a significant supply effect by creating an increasingly better-educated labor force that is expressed as follows: "the increase in education has been extended to all employment categories as a result of the strong effect of educational supply, relatively independent of a parallel development of job categories" (Béduwé and Planas, 2002, p. 58). The educated population is spread throughout all occupational sectors and its higher levels of schooling have been rewarded with the higher relative earnings that the labor market offers to those with relatively higher educational levels (Béduwé and Planas, 2002; Flores and Román, 2005; Planas, Román, Flores and De Ibarrola, 2007).

In none of these cases do the authors analyze the heterogeneity of labor markets.

The data analyzed here, although based on highly aggregated categories, provide results that take into account important differences between occupational sectors, thus offering new possibilities for understanding the impact that the growth in education has had on the employment and earnings attained by the population.

Increase in the educational level of the EAP and decrease in employment formality

Tables I and II offer two seemingly contradictory types of basic data:

a) Table I shows the remarkable increase in the educational level of the economically active population in the period under consideration, particularly the decrease in the EAP that has only achieved a fifth grade education, and the increase in the EAP with higher education.

Table I. Percentage distribution of schooling for the total EAP between 25 and 60 years of age

Years of schooling	1992	2004	Increase 1992-2004
0 to 5 years of school	33.5%	20.3%	-13.2
6 to 9	41.2%	39.7%	-1.5
Percentage with only a basic education	74.7%	60.0%	-14.7
10 to 12	13.6%	19.5%	5.9
13 years or more	11.7%	20.5%	8.8
Total EAP between 25 and 60 years of age	100.0%	100.0%	

Source: SITEAL (n.d.)

b) In Table II we can observe a slight decrease in the formal sector, particularly in favor of self-employed workers, as well as greater growth in the public sector than in large corporations of the secondary and service sectors.

Table II. Distribution of the EAP between the informal and formal labor sectors 1992-2004

Labor sector	1992	2004	Difference
Informal sector	33.1%	34.6%	1.5
Self-employed	6.5%	8.8%	2.3
Employees and employers in companies >5	26.6%	25.8%	-0.8
Formal sector	66.9%	65.4%	-1.5
Public sector	4.6%	6.0%	1.4
Large corporations secondary sector	22.4%	21.0%	-1.4
Large corporations service sector	40.0%	38.4%	-1.5

Source: SITEAL (n.d.)

Educational level and insertion in labor market sectors

Table III analyzes the distribution by occupational sectors of the population with incomplete elementary level schooling⁵, a demographic which decreased 13.2 percentage points for the total economy during the period under consideration.

Table III. Percentage of the EAP that did not complete elementary education by occupational sector

Occupational sector	1992	2004	Difference
Informal sector	14.7%	9.5%	-5.2
Self-employed	3.1%	2.6%	-0.5
Employees and employers in companies >5	11.6%	6.9%	-4.7
Formal sector	18.8%	10.8%	-8.0
Public sector	1.3%	0.6%	-0.7
Large corporations secondary sector	8.3%	4.7%	-3.6
Large corporations service sector	9.3%	5.5%	-3.8
Total population with incomplete elementary schooling	33.5%	20.3%	-13.2

Source: SITEAL (n.d.)

The EAP with this low educational profile decreased by just half a percentage point (-0.5) among the self-employed and workers in the public sector (-0.7). However, it declined significantly among employees and employers in companies with less than five workers, followed by workers in large corporations in the secondary and service sectors.

Meanwhile, as can be observed in Table IV, the labor force with more than thirteen years of schooling—which rose 8.8 percentage points during the period—increased mainly in the formal service sector and only slightly among the self-employed. However, the growth in workers with higher education in informal micro-enterprises was greater than that in the public sector and almost equal to that in the formal industrial sector. Large corporations in the tertiary sector continued to be the biggest employers of the population with more than thirteen years of schooling.

Table IV. Percentage of the EAP with 13 or more years of education by occupational sector

Occupational sector	1992	2004	Difference
Informal sector	1.8%	4.0%	2.2
Self-employed	0.2%	0.9%	0.6
Employees and employers in companies >5	1.6%	3.1%	1.6
Formal sector	9.9%	16.5%	6.6
Public sector	0.7%	2.1%	1.4
Large corporations secondary sector	1.8%	3.5%	1.7
Large corporations service sector	7.4%	10.9%	3.5
Total EAP with 13 or more years of schooling	11.7%	20.5%	8.8

Source: SITEAL (n.d.)

It should be noted—although the data is not displayed thus in the charts—that the informal sector in 1992 comprised 33.1% of the total and 43.8% of the EAP with incomplete elementary level schooling, but only 15.3% of the labor force with higher education. By contrast, during the same year, the formal sector contained 65.4% of the total EAP, and while it included 56.2% of the population without an elementary education, it also concentrated 84.4% of the economically active population with higher education. However, by 2004 the distribution had changed, in particular due to the increase in workers with higher education in the informal sector, which eventually captured 19.5% of the work force with thirteen or more years of schooling.

In both years, employees with the higher level of schooling were concentrated in large corporations in the service sector, but this concentration declined from 63.2% to 53.1% during the period, while the public sector nearly tripled its proportion of workers with more than thirteen years of schooling.

Variation in hourly earnings according to economic sector

As indicated in Table V, income is significantly affected by the economic sector in which the worker is employed. In the years for which we have information, the income of workers in the informal sector represents only between 0.64 and 0.68 of the national average for income for those dates, while the incomes of those in the formal sector were between 1.23 and 1.29 times the average. Those with the lowest earnings were self-employed,⁶ whose income did not amount to even a fifth of the national average. In contrast, those who surpassed the average were, in first place, employees of the service sector, followed by workers in the public sector.

Table V. Distribution of hourly earnings by sector of the economy and income gap () in relation to the average hourly income of the total population for each date (2004 Mexican pesos)

Occupational sector	1992*	2004*	Difference compared to the average in 1992/2004
Informal sector	24.1 (0.68)	59.1 (0.64)	-.04
Self-employed	5.6 (0.16)	22.0 (0.24)	+0.08
Employees and employers in companies >5	26.9 (0.76)	68.2 (0.74)	-.02
Formal sector	40.4 (1.14)	107.3 (1.17)	+0.03
Public sector	35.1 (0.99)	118.2 (1.29)	+0.30
Large corporations secondary sector	35.8 (1.01)	87.7 (.95)	-.06
Large corporations service sector	43.7 (1.23)	116.4 (1.27)	+0.04
Total	35.2 (1)	91.5 (1)	

*Figures in constant 2004 Mexican pesos, based on changes in the Consumer Price Index between 1992 (base 100) and 2004, valued at 457.65%, according to official data from the Bank of Mexico. Source: SITEAL (n.d.)

It is interesting to note that formal secondary sector workers saw an increase in the gap between their earnings and the average formal sector earnings: in 2004 their income was lower than the overall average, approaching that of employees and employers of informal microenterprises.

Moreover, those who most increased their income were public sector workers, who by 2004 were, on average, the highest paid. This is due, without a doubt, to all of the policies implemented to support the poorest sectors of the country; the self-employed tripled their meager income during the period, although they continue to be—by definition—the workers with lowest earnings.

The role of schooling

The distribution of hourly earnings by schooling attained is highly significant: Table VI shows a steady increase in average earnings as the level of schooling attained rises. The income difference between those that have higher education and those who failed to complete their primary education is very high in the two years indicated: 4.5 times higher earnings for the college educated group in 1992, although in 2004 the difference fell to 3.9. The income difference between those with higher education and the level of schooling immediately below them, a 10th to 12th grade education, is almost double for the college educated: 1.83 times higher in 2004 and in 1992, 1.6 times higher.

Table VI. Distribution of hourly earnings by educational level attained and income gap () in relation to the overall average (2004 Mexican pesos)

Years of schooling	1992 A	2004 B	Difference in income gap compared to average B/A
a) 0 to 5 years	17.8 (.51)	45.8 (.50)	(0)
b) 6 to 9 years	31.6 (.90)	64.5 (.70)	(-.19)
c) 10 to 12 years	50.2 (1.43)	98.7 (1.07)	(-.35)
d) 13 years or more	80.7 (2.29)	181.1 (1.97)	(-.32)
Average	35.2 (1)	91.5 (1)	
Difference d/a	4.5 times	3.95 times	
Difference d/c	1.6	1.8	

Source: SITEAL (n.d.)

Impact of schooling and occupational sector on income

It is also clear that the occupational sector in which the EAP is employed affects the income gap between those with higher education and those who barely finished their elementary education, as can be observed in Table VII.

Table VII. Distribution of hourly earnings by economic sector and income gap () in relation to the average of the total of the group with 13 or more years of schooling (2004 Mexican pesos)

Occupational sector	Income of the EAP with 13 or more years of schooling 1992	Income of the EAP with 13 or more years of schooling 2004	Difference in income gap
Informal sector	73.6 (.91)	125.2 (.69)	(-.22)
(a) Self-employed	5.3 (.07)	23.3 (.12)	(.06)
(b) Employees and employers in companies >5	76.5 (.95)	140.4 (.77)	(-.17)
Formal sector	82.0 (1.02)	193.4 (1.06)	(.05)
(c) Public sector	68.5 (.85)	177.8 (.98)	(0.14)
(d) Large corporations secondary sector	114.6 (1.42)	183.7 (1.01)	(-0.40)
(e) Large corporations service sector	74.9 (.93)	199.5 (1.10)	(0.18)
Average of the group in this educational level	80.7 (1)	181.1 (1)	
Difference between highest and lowest earners	21.6 times (d/a)	8.56 times (e/a)	

Source: SITEAL (n.d.)

The data in Table VII show that the average income of workers with thirteen years or more of schooling varies significantly depending on the occupational sector. In 1992 workers in large corporations in the secondary sector far outperformed the category average, whereas the self-employed, despite having the same high level of education, were the farthest from the group's average income, earning 21.6 times less than workers in the industrial sector. By 2004, this gap was reduced by almost two thirds. Throughout the period, however, the gap in income compared with the average also increased for those working in microenterprises in the informal sector and, in particular, for those working in large corporations in the secondary sector, as they clearly lost the big advantage they had had with respect to workers in the other sectors.

The figures also show a significant increase in salary for workers in the public sector, although proportional to their lower earnings in relation to those of the other

occupational sectors. Surprisingly, the greatest relative increase during the period went to the self-employed.

In Table VIII income by occupational sector for those who only studied up to the fifth grade of elementary school is analyzed, with the following results:

Table VIII. Hourly income distribution by economic sector and income gap () in relation to the average of the total for the group with less than 5 years of elementary school education (2004 Mexican pesos).

Occupational sector	1992	2004	Difference in income gap
Informal sector	13.9 (.78)	36.9 (.81)	(.03)
(a) Self-employed	5.6 (.32)	17.6 (.38)	(.06)
(b) Employees and employers in companies >5	15.4 (.87)	42.2 (.92)	(.05)
Formal sector	20.7 (1.16)	53.1 (1.16)	0
(c) Public sector	16.3 (.92)	51.1 (1.12)	(.20)
(d) Large corporations secondary sector	16.8 (.94)	49.5 (1.08)	(.14)
(e) Large corporations service sector	25 (1.40)	56.5 (1.23)	(-.17)
Average of the group in this educational level	17.8 (1)	45.8 (1)	
Difference between highest and lowest earners	4.41 times	3.18 times	

Source: SITEAL (n.d.)

There is a marked contrast between workers employed by large corporations in the service sector (the highest earners) and the self-employed (the lowest earners). The former earned 4.42 times more in 1992, while in 2004 their income was 3.21 times higher, due to the reduction in income gap for corporations in the tertiary sector. Once again we can observe the wage increase for workers in the public sector. However, the income gap between occupational sectors for those with this low educational level was not as pronounced in either of the two years studied as was observed for the group who had some higher education.

Table IX examines the income gap between those with higher or lower levels of schooling within each occupational sector, which proves to be the source of the most significant gap, although it varies between sectors and throughout the period under consideration. The largest gap occurred in large companies in the secondary sector during 1992, when workers with more than thirteen years of schooling employed in said sector earned 6.8 times the income of those in the same sector with no more than five years of schooling. In the public sector those with the highest educational levels earned 4.18 times more than those with the least schooling. By 2004, the size of the gap was reduced by almost half in all of the sectors, particularly in large corporations in the industrial sector, although it

widened in large companies in the service sector and among the self-employed (who in 1992 earned even less than those who did not finish elementary school).

Table IX. Income gap between those with the most schooling (13 years or more) and those with the least (5 years or less), by occupational sector in 1992 and 2004

Occupational sector	1992	2004
Informal sector	5.29	3.39
Self-employed	.94	1.32
Employees and employers in companies >5	4.95	3.33
Formal sector	3.95	3.64
Public sector	4.18	3.48
Large corporations secondary sector	6.82	3.71
Large corporations service sector	2.99	3.53
Average gap	4.52	3.95

Source: SITEAL (n.d.)

Summary and Conclusions

This paper just touches a very small piece of the surface of the complex and multidimensional puzzle that is the relationship between education and work in Mexico.

Many facets were not analyzed here: the younger populace in the country, workers in the primary sector, gender impact, the size of localities, to mention a few. We also did not address the fluctuations of the economy: inflation reached 457% in the period under consideration; between 1994 and 1995 in particular, the economic crisis was brutal, with a currency devaluation of 100% in 1994. By 1999 a recovery was underway that was reflected in the better wages recorded for 2004 in all occupational sectors. However, starting in 2007 a new crisis emerged that is now recognized as far worse than the previous one. The dramatic fall of the gross domestic product (GDP), a more severe recession than that of 1994-1995, the serious loss of formal jobs, the decline of economic activity in all sectors and in earnings, together with the rise in poverty (Acosta, 2009), mark a new economic period that clearly limits the scope of the data analyzed here to a very specific period and demonstrates the great sensitivity of income to the fluctuations of the economy.

It is, therefore, useful to highlight the contributions of this study:

1) The increase in schooling in the country is undeniable, reflected in the increasingly higher levels of average schooling of the economically active population between 25 and 60 years of age from 1992 to 2004, although most of the active population in this age group (60%) is still below the now compulsory basic educational level.⁷ Paradoxically, despite the increase in schooling, the possibility of integration/insertion in the formal sector of the economy decreased slightly.

2) The differences in education among the population tend to correlate with the different sectors of the economy identified in this paper: those with less than five years of schooling tend to be concentrated in the informal sector among the self-employed and those who achieved thirteen or more years of schooling in large tertiary sector corporations and in the public sector. But there are individuals with higher and lower levels of education in all the occupational sectors, and the increase in schooling is discernible in all of them, even slightly modifying the proportional distribution among them.

3) In all occupational sectors, those with higher educational levels have significantly higher average incomes than those with less schooling. (Self-employed individuals with higher education in 1992 comprise the one exception to this trend.) Therefore, the increase in schooling is remunerated within all occupational sectors.

4) The difference in income for those with the same level of schooling can be very high between occupational sectors, particularly for those who have higher education. Among those with no more than five years of schooling the differences are not so great.

5) Throughout the period under consideration the income gap between those with less and those with more schooling tended to decrease. One might conclude that the increase in the average schooling of the population had a positive effect on reducing income inequalities; but the fluctuations encountered do not allow us to infer that we are already facing a trend, especially if one takes into account more recent economic data.

6) The proportion of the EAP with little schooling decreased in all occupational sectors, although most significantly in large companies in the industrial as well as the service sector, which impose academic requirements on their prospective employees, demanding increasingly better educated workers. In the public sector, union policies most likely impede calls for higher academic requirements for the same type of job positions. One of the characteristics of the informal sector is precisely that there are no educational prerequisites for joining it.

7) For its part, the EAP with higher education increased in all sectors and its weight in percentage terms shifted slightly toward the informal occupational sectors. Without a doubt, a possible explanation could be the dysfunctionality of the schooling achieved, since 20% of those with the highest educational level were actually unable to find jobs in the best occupational sectors. But the fact that they are spread out in other sectors—in particular among the ranks of the self-employed and microenterprises—should not preclude their obtainment of higher incomes than those with less schooling. These results could be explained as an indication of the emergence of new sources of employment and new professions generated by those with high levels of schooling, but which fall into the informal sector of the economy. A more complete analysis would require a review of the performance of the rate of return on the investment in education.

8) The sector comprising large industrial companies, despite the rise in educational level of its employees, was proportionally the most affected throughout the period in question. The sector continued to attract workers with thirteen or more years of schooling, despite the fact that their income advantage, compared with workers with the same educational level in other sectors, decreased markedly. This could be an indication that the sector has not managed to fully apply its employees' higher levels of knowledge to its competitiveness strategies. It is also the sector that has been hardest hit by trade liberalization in the country.

9) Large companies in the service sector boasted the largest concentration of the EAP with higher education for both of the years under consideration, although their share of highly educated workers declined during the period, while the public and informal sectors saw corresponding increases in their numbers of highly schooled workers. The income advantage of workers in this type of large corporation increased. These are companies that tout the need for higher educational levels in view of the new knowledge economy, an approach that many of them are implementing (Planas, 2008), notwithstanding that even so they are not able to accommodate all the available workers with higher education.

10) During the period analyzed, the public sector had the greatest relative increase in terms of the number of workers that it incorporated and in the incorporation of the EAP with more schooling as well as in terms of the wage increase of its labor force. Interestingly, at the national level, based on highly aggregated data, two important policies relating to employees in the public education sector can be observed: the requirement of a bachelor's degree starting in 1984 and the salary adjustments granted to teachers in the national educational system, who comprise the occupational group with the greatest salary increase during the last decade (Flores and Román, 2005).

The analyzed data confirm on a macro scale the theoretical warnings about the limits that heterogeneous occupational sectors—in this case—impose on schooling per se as a factor of direct impact on labor placement and income, as was posited at the outset of this study and about which other research has been conducted. At the same time, we can discern three situations that are important for the study of the relationship between schooling and work, all three of which must be examined more deeply in the double context of the heterogeneity of the country's labor markets and the rise in educational levels: a) the increase in schooling in all sectors, b) the possible reduction of income inequality that is attributable to widely varying educational levels as well as to the disparities between occupational sectors, to the extent that inequalities of educational level decrease, and, c) the potential positive effects of schooling on productivity and income in the different sectors.

Independently of the very poor quality of the schooling attained, as currently measured and subsequently denounced in the results of international assessments, the increased presence of a more highly educated population in the informal sectors allows us to affirm that workers with more than thirteen years of

schooling earn higher average income than those with less education. The increase in the level of schooling over time would translate into: a) improved skills and higher levels of knowledge, which in turn would lead to new beneficiaries of education; b) landing those job positions that are characterized by being the best paid (presumably because they require higher levels of knowledge); c) better job performance, or, alternatively, d) the creation of new and more productive jobs, even in the most disadvantaged sectors.

On the other hand, this situation could also denote, as others have pointed out (Muñoz, 1996), the shifting of selectivity towards other levels and its rigorous implementation in the formal occupational sectors. Nevertheless, a better understanding of its characteristics and significance is essential.

Schooling per se clearly has not solved the problems of the country's economic growth or of the heterogeneity of the job markets. But the increase in schooling operates within the unequal occupational sectors in ways and with effects that make it imperative that it be analyzed more rigorously and in greater depth.

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¹ Excerpts from the Chapter of the Report by Country, unpublished: De Ibarrola, María. *El caso mexicano* [The Mexican Case], prepared under contract with SITEAL, UNESCO-IIPE, OEI (February 2006). Translator's Note: SITEAL is the Spanish acronym for the Information System on Educational Trends in Latin America, which is under the auspices of the International Institute of Educational Planning (IIPE, acronym in Spanish) of UNESCO and the Organization of Iberian-American States (OEI, acronym in Spanish).

² I was asked to draw up the report on Mexico in relation to education and labor markets (De Ibarrola, 2006). It should be noted that the database had some important limitations: it did not include the EAP in the agricultural sector nor workers less than 24 years old. Categories for studying the level of schooling attained, as can be seen in the corresponding section, were highly aggregated, but the importance of the database consisted in the possibility it offered for analyzing five different sectors of the economy, which are described later.

³ The first translation into Spanish [of Schultz' book], *Valor económico de la educación* (The Economic Value of Education), was issued by UTEHA publishing house (Barcelona) in 1968.

⁴ In this regard, and given the nature of the data, the statistical analyzes are based on percentage distributions and in particular on the differences in earnings for each of the different categories.

⁵ We analyzed only the most extreme categories of educational levels: those who received only five years of schooling or less, and those who had at least one year of higher education (thirteen years or more).

⁶ It should be remembered that a criterion for identifying the self-employed was that their hourly earnings be 30% lower in the distribution of hourly earnings consisting solely of self-employed workers 2.7.

⁷ Translator's note: Compulsory education in Mexico, what is known as "educación básica" is elementary and junior high school, grades 1 through 9, and usually also requires two to three years of preschool as well.