

**Factors affecting Mexican wages before (1984) and during the globalization Period (1992, 2000 and 2006)**

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Received November 21, 2012; Accepted March 22, 2013

The paper investigates the factors that have influenced wages of Mexican workers during the globalization period in the years 1992, 2000 y 2006. In the analysis, 1984 is taken as a year of reference to show how changes occurred at different stages of the opening-up to world trade: the entry of Mexico to the GATT (1992), the entry to NAFTA (2000) and as compared to the 21 years after entry to GATT and to 12 years after entry to NAFTA (2006).

**Factors, Wages, Globalization, Workers, Mexico**

**Citation:** Luyando J. Factors affecting Mexican wages before (1984) and during the globalization Period (1992, 2000 and 2006). ECORFAN Journal 2013, 4-11: 1125-1140

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## Introduction

Interest on the numerous factors affecting wages in Mexico can be viewed within the perspective of the country's opening up to world trade which the government initiated in the 1980s. From the 1940s, the emphasis of the Mexican government was on import substitution. This is modeled on the setting up of tariff and non-tariff barriers to protect local firms from outside competition; and was the centerpiece of a national industrialization policy. This model produced the expected results whereby the iron-clad protection of domestic firms led to a policy of defending and protecting local jobs, leaving in second plane the long-term economic viability of such national policies.<sup>1</sup>

In the 80s, during which a new economic policy on opening-up to world trade was implemented, the Mexican government initiated some programs oriented to facilitate labor mobility and adjustments in the labor market. In 1985, Mexico joined the General Agreement on Trade and Tariffs (GATT) by which the Mexican government was compromised to lower tariffs and eliminates all non-tariff barriers<sup>2</sup>.

The idea was to define a new economic policy environment, characterized by the increasing importance of the private sector in the economic process and to elevate its efficiency and productivity.

The objective was to enhance the competitive export sector in the international market. In 1989, the government moderated restrictions to foreigners on legal ownership in the national territory<sup>3</sup>.

In early January 1994, Mexico entered the North American Free Trade Agreement (NAFTA) together with the United States (US) and Canada. With this treaty, reforms of 1985 and 1989 were consolidated in Mexico.

A conclusion from studies on the impact of these events among many investigators is that this affected the salary structure in Mexico. There came about a salary premium on higher qualifications, which has widened the gap in wage inequality. Authors like Cragg and Epelbaum (1996), Feliciano (2001), Stiglitz (2002) and Hanson (1995, 2003, and 2005), found that it had been widened wage dispersion in Mexico, caused by the increase in the impact of years of schooling upon wages of Mexican workers. This effect increased with the policy of opening-up to world trade undertaken by the government.

As was expected, the next questions asked by researchers were the causes of this phenomenon. One explanation is almost intuitive in that the demand for workers with higher qualifications increased with the opening up to world trade.

<sup>1</sup> Increasing government transfer schemes sustained or rescued local firms from bankruptcy.

<sup>2</sup> During decades, the Mexican government protected local producers through tariffs and import permits and quotas. Tariffs increased the costs of imported goods while import permits were very limited.

<sup>3</sup> "As it was part of the public domain, the government of Madrid emphasized on various occasions its desire to encourage the arrival of new foreign investments by offering flexibility directly, but also on a case to case basis, to the application of very restrictive Mexican laws on foreign investments and to facilitate the transfer of technology that was authorized by the government of Echeverria. In the beginning of 1984, the government expedited new regulations that specified the conditions to authorize foreign property ownership. Regarding this, there was the possibility to give exemptions in industries which were substituting key imports, those with a high export potential with labor-intensive activities, and to some other specific activities" Guillén, Héctor (1988: p. 54).

Authors like Cragg and Epelbaum (1996) suggested that this was the cause for the increase in the wages of workers with higher schooling.

But the question now arises as to which elements were causing the increase in demand for highly-skilled workers? Some authors like Robertson (2001) and which is based on Stolper-Samuelson theorem (1941), shows that during the period import substitution, the most protected sectors were those that were intensive in labor and workers with lower qualifications. The theorem said that these will have to be the sectors to be more likely affected by the opening-up policy because there were changes in prices of internal products. The prices of the most protected sectors fell and this has led to reductions in the demand for workers in these sectors. The demand for export grew and thereby the demand for high-skilled workers. Authors like Revenga (1997) and Feliciano (2001), in general, found that wage inequality has increased more in industries producing export goods whereas salaries in industries producing domestic goods have fallen. Other authors like Feenstra and Hanson (1996) showed that the demand for high-skilled workers increased in the border regions between the US and Mexico where much of foreign investments are located and where “maquilladoras”<sup>4</sup>, which are mainly locally based US firms producing for export, are located. In this sense, one can talk of regional disparity, such as the states that benefitted were those on the border and which depended on the more sophisticated modes of communication to international markets. For their part, Hanson and Harrison (1999) suggested that the same

occurred with countries like China which depended a lot on low-skilled labor.

For their part, Hanson and Harrison (1999) suggested that the same occurred with Mexico versus US, which his main vantage was the big supply of low-skilled labor and its low wages.

In the same way occurred with Mexico versus China.

The productive processes that requires an abundance of supply low-skilled labor with lower wages got transferred to countries like China – where those two characteristics made that production costs were cheaper – but not in Mexico where productive processes were a little more refined or which required a certain type of workers who are a little more skilled and for which the demand for this type of semi-skilled labor had increased. The demand for low-skilled workers decreased followed by a lowering of their salaries.

Lastly, it has to be highlighted that many studies focused on the opening-up to world trade as the only factor contributing to the increase in the wage inequality in Mexico. Feliciano (2001) showed that the opening to world trade had a modest impact on the Mexican labor market and that the wage inequality also was caused principally by the economic stabilization program, better known as the Economic Solidarity Pact. It was an agreement negotiated by the Mexican government with the main industrial and agricultural labor unions, and representatives from the business sector with the objective of tying down wage negotiations to the expected annual inflation rate.

<sup>4</sup> These were factories which imported all components to the head company in the US and assembled the final products in Mexico with the end goal of selling the majority of the produce to the US as well. The greater demand for these types of workers is found in a market like Mexico.

In this sense, one can say that the Mexican government had the long-term policy of reducing wage rates since the seventies<sup>5</sup>.

The interest of the present study is to contribute to the discussions from a different point of view.

From the aforementioned studies, one can take note on the positive relationship between workers' schooling and wage rate, aside from putting forward the impact of opening-up over the inequalities in the Mexican regional development as well as sectoral wage inequalities. Other factors that are considered to be influential by studies of Urciaga and Almendarez (2006) are gender and types of contracts.

In the case of types of contracts, the Mexican labor market can be divided into workers with written contracts as against those without. In a first instance, we can say that workers with formal written contracts are able to receive the rights as dictated by the Mexican constitution and the federal laws. On the contrary, workers without contract, in general are found in the informal sector and do not receive fringe benefit as required by law. With this variable it is expected that labor market conditions and type of contract may be studied as factors affecting wage inequality.

<sup>5</sup> "The policy of austerity applied by De la Madrid considered wage restrictions as one of the pillars in the fight against inflation. In this sense, wage restriction was facilitated through a mechanism which regulated the labor market. In effect, until 1982, the wage increases were always fixed to recover losses in purchasing power from the last period. Therefore, wage negotiations were undertaken from the point of view of compensating for losses in purchasing power from the last period. From 1983, there were substantial changes in the mechanisms of the wage regulation. Instead of adjusting retrospective in losses, wage revisions were forward-looking based on expected inflation. The misfortune for the hard-working class took root in that the expected inflation always is greater than effective inflation. In these conditions, despite the frequent reviews to salaries, the real salary of the hard-working class it has seen reduced, especially from 1983." Guillén, Héctor (1988: p. 45).

This is very important in the Mexican labor market in so far as the impact of opening-up to world trade is in generating that growth in the informal sector. In fact, Urciaga y Almendarez (2006) found that for the region of Mar de Cortes, workers received on average higher salaries than if they were self-employed.

Other attributes that are considered to affect wages are level of technical studies and belonging to a labor union. In the case of technical education, the Mexican government has enormous interest in the involvement of schooling with the work position, such that one way to attain a good position is by technical education. In 1978, by Presidential Decree, the "Colegio Nacional de Educación Profesional Técnica (CONALEP)" was created, and soon others were similarly created. These schools has the objective of forming technical professionals in the secondary education level and which in the beginning was thought to be equivalent to the degree of "bachillerato" in the Mexican education. In 1993, as part of the educational reform, the government implemented projects to modernize technical education and qualifications. Furthermore, it developed the system of qualifications in the labor market as well as technical assistance and support programs to firms.

The last variable in our study is one that we named institutional duality in the wage market. In Mexico education is divided between basic education (which is mandatory) and education that is not basic. The government is committed to providing basic education to all who require, therefore we can suppose that the major percent of workers in Mexico got basic education, but the education that is not basic might give more opportunities to one worker of get a better job and higher salary. Therefore, we can suppose that there exists an institutional segmentation in the labor market.

This is the result of the government dividing the education between basic and non-basic<sup>6</sup>. It is hoped that the present study will show evidence of this. Therefore, the objective of this study is to see how these variables affect Mexican wages before the opening-up to world trade and how this was modified during the first, second and third stages of the opening-up process. To do this, we used the National Surveys on Household Incomes and Expenditures during the years 1984, 1992, 2000 and 2006 and which were undertaken by the Mexican National Statistical and Geographical Institute. The 1984 survey provides a view of workers' characteristics and of the entire labor market before Mexico opened-up to world trade. The 1992 survey provides us with the possibility to view Mexico as it entered the GATT and before NAFTA. The 2000 survey (one year in which we think Mexico's participation in GATT was consolidated and also some of the effects of NAFTA and six years after its implementation) gives us the possibility to contrast events of 1984 with respect to 2000. The 2006 survey gives us a panorama of what we think is the stage of full implementation of all the treaties on free trade after 21 years since its entry into GATT and 12 years after NAFTA.

## 1 Empirical Model

To undertake this research, the basic model of Mincer (1974) is used. It is a basic theoretical model of human capital which is widely used for wage determination. Aside from Mincer (1957, 1958 and 1962), the theory was developed thanks to the valuable contributions of Theodore Schultz (1960, 1961) and Gary Becker (1962, 1964).

<sup>6</sup> Before 1983, basic and obligatory education known as primary education was six years. With reforms in 1993, secondary education was included which changed basic education from 6 to 9 years. Non-basic education would consist of college preparatory (3 years of bachillerato), university studies and postgraduate studies.  
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Mincer's basic model considers the general effects of human capital accumulation on wages. It assumes that the worker can accumulate more human capital through years of work experience. However, human capital can also depreciate through years of unemployment and the passage of time. As a worker ages, he or she loses human capital in the sense that she will take more time in executing his or her tasks. To take all these into account, the model will include variables on years of experience and its squared value. Moreover, we would like to know the effect of other variables such as: sex, technical education, work conditions, belonging or not to a labor union, geographical region of work, and a variables which differentiates between workers with basic education as against non-basic<sup>7</sup>. As such, the proposed model can be formulated as follows:

$$\ln Y_i = \ln Y_0 + \beta_1 Escol_i + \beta_2 Exp_i + \beta_3 Exp2_i + \beta_4 Sexo_i + \beta_5 D\_Ed\_Técnica_i + \beta_6 D\_Contrato_i + \beta_7 Sindicato_i + \beta_8 D\_Sector\_II_i + \beta_9 D\_Sector\_III_i + \beta_{10} D\_Estados\_Ind_i + \beta_{11} D\_Estados\_Fron_i + \beta_{12} D\_Ed\_Formal_i + u_i \quad (1)$$

Where the variables are defined as follows:

$\ln Y$  = Logarithm of hourly wage rate.

$Escol$  = Level of education by years of schooling.

$Exp$  = Years of work experience.

$Exp2$  = Years of work experience squared.

$Sexo$  = Gender as a dummy variable which takes on a value of 1 if male and 0 if female.

$D\_Ed\_Técnica$  = Technical education as a dummy variable.

<sup>7</sup> We have to say that each model has all the characteristics of a good OLS model: all variables are significant, there isn't collinearity, the R-squared is right for this type of models and the F statistic is significant in each model. Therefore, each model has the robust characteristics for OLS estimation for this kind of data.

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D\_Contrato = Labour contract as a dummy variable.

Sindicato = Membership to a labour union as a dummy variable.

D\_Sector\_II = Ssecondary sector as a dummy variable.

D\_Sector\_III = Tertiary sector as a dummy variable.

D\_Estados\_Ind = State with high industrial development as a dummy variable.

D\_Estados\_Fron = Border state as a dummy variable.

D\_Ed\_Formal = Dummy variable which measures division of workers with basic versus higher than basic education.

u = Random term.

This model is estimated by ordinary least squares (OLS). Nevertheless, when Mincer's equation is estimated by OLS, authors like Griliches (1977) indicated that problems may arise. In general terms, the equation does not take into account abilities or individual innate capabilities. The inclusion of these variables implies that for two individuals with identical educational levels and experience, but with distinct innate capabilities or skills, will obtain different wage levels. As such, the exclusion of this variable would generate bias in the effect of schooling --- a bias that can affect other variables as well.

The main inconvenience to obtain an optimal solution to this problem is to include an unobservable variable which measures level of intelligence, talent, aptitude, skills and abilities. These variables are difficult to measure, hence the majority of proposed solutions focus on an approximation of these variables. Perhaps for the Mexican case, the work of Barceinas (2003) is the most complete in seeking to explore this type of problem for the Mexican labor market.

He stated that "the instrumental variable estimator does not represent the average level

of education, but to a particular level very far from the sample average, but frequently correlated with the instruments utilized.

The instruments act as a way to differentiate groups with the same marginal cost-benefits and the estimated value is that of the average of such effects."

In our case, we are interested in the simple averages to compare the average changes, taking into reference 1984 (when the effects of opening-up to world trade has not had any effects yet), with what we consider the first, second and third phases of the opening-up process. For this, rather than using OLS directly for each year studied, what we did was to combine independent cross-sectional samples. Hence, "With the combination of random samples extracted from the sample population, but in distinct time frames, we obtain more precise and more powerful statistical estimators".<sup>8</sup> As such the model which combines samples is developed as follows<sup>9</sup>:

$$\begin{aligned} \ln Y_t = & \ln Y_0 + \delta_0 1992 + \gamma_0 2000 + \alpha_0 2006 + \beta_1 Escol + \delta_1 Escol1992 + \gamma_1 Escol2000 \\ & + \alpha_1 Escol2006 + \beta_2 Exp + \delta_2 Exp1992 + \gamma_2 Exp2000 + \alpha_2 Exp2006 + \beta_3 Exp^2 \\ & + \delta_3 Exp^2 1992 + \gamma_3 Exp^2 2000 + \alpha_3 Exp^2 2006 + \beta_4 Sexo + \delta_4 Sexo1992 + \gamma_4 Sexo2000 \\ & + \alpha_4 Sexo2006 + \beta_5 D\_Ed\_Técnica + \delta_5 Ed\_Técnica1992 + \gamma_5 Ed\_Técnica2000 \\ & + \alpha_5 Ed\_Técnica2006 + \beta_6 D\_Contrato + \delta_6 D\_Contrato1992 \\ & + \gamma_6 D\_Contrato2000 + \alpha_6 D\_Contrato2006 + \beta_7 Sindicato + \delta_7 Sindicato1992 \\ & + \gamma_7 Sindicato2000 + \alpha_7 Sindicato2006 + \beta_8 D\_Sector\_II + \delta_8 D\_SectorII1992 \\ & + \gamma_8 D\_SectorII2000 + \alpha_8 D\_SectorII2006 + \beta_9 D\_SectorIII \\ & + \delta_9 D\_SectorIII\_1992 + \gamma_9 D\_SectorIII\_2000 + \alpha_9 D\_SectorIII\_2006 \\ & + \beta_{10} D\_Estados\_Ind + \delta_{10} D\_Estados\_Ind1992 + \gamma_{10} D\_Estados\_Ind2000 \\ & + \alpha_{10} D\_Estados\_Ind2006 + \beta_{11} D\_Estados\_Fron + \delta_{11} D\_Estados\_Fron1992 \\ & + \gamma_{11} D\_Estados\_Fron2000 + \alpha_{11} D\_Estados\_Fron2006 + \beta_{12} D\_Ed\_Formal \\ & + \delta_{12} D\_Ed\_Form1992 + \gamma_{12} D\_Ed\_Form2000 + \alpha_{12} D\_Ed\_Form2006 + u \end{aligned} \quad (2)$$

<sup>8</sup> Wooldridge, J.M. (2002). *Introducción a la econometría: un enfoque moderno [English translation "Introduction to Econometrics,, a modern approach]* . México: Thomson Learning. p. 409.

<sup>9</sup> As can be observed, the base year is 1984 (before the commercial opening) and the other time variables indicate 1992, 2000 and 2006.

## 2 Characteristics of the data base and definition of variables used

With the aim of creating a database that we needed for each year, we utilized two of three the internal databases found in the ENIGH to each year<sup>10</sup>.

On one hand, information on income is found in detail from the sources of workers' wages in one data set; and another has data on education, as well as socio and labor characteristics of all household members. These data bases were combined into one with one identifying household variable called Folio and another data field called Numrem, which contains the data of each household.<sup>11</sup>

The intention of combining these data sets is to identify each individual member of a household and to obtain some income data as well as specific data on sources of income as well as individual social and labor characteristics. In the four years studied, we utilized the variable called "last month's income", that is, the last income that a worker received.

Specifically, we speak of daily wages and salaries as well as overtime pay, while considering only net income from wage remunerations.

That is, labor hours sold to firms or employers as established in a specific contact or agreement.<sup>12</sup>

But as the model utilizes as a dependent variable the natural logarithm of the hourly wage rate, it is also useful to take the number of hours worked<sup>13</sup> to obtain this variable after some mathematical operations and after which the natural logarithm is obtained for each individual case.

The variable on work experience is obtained in the traditional method of age in years less years of schooling less six years.

This variable on experience is squared as an indication of its parabolic nature. To identify the effect of gender, we introduce a dummy variable with a value of 1 for male and 0 otherwise. In the case of formal schooling, a unified coding scheme was developed because the variable was measured differently for the 4 surveys. As such, the coding scheme used the following categories: 0 for workers who were unschooled, 3 for workers with incomplete primary education, 6 for workers who completed primary education, 8 for workers with incomplete secondary education, 9 for workers who completed secondary education, 11 for workers with incomplete college preparatory education, 12 for workers with complete college preparatory education.

<sup>10</sup> The dataset includes three independent datasets and we used two of these to do the investigation.

<sup>11</sup> To undertake this merger the program Access was used. Needless to say, for the years 1984, 2000 and 2006 there were no problems, but for 1992, various problems needed to be addressed. In the second place, various fields were aggregated as one, so it was necessary to disaggregate them depending on the longitude of each variable. For this, Access was used as well.

<sup>12</sup> When the worker indicated that he had different sources of income by salary within a year, these revenues were added and taken as one, to avoid duplication. That is, if we identified, through the line number of the workers in the household, those with two or more incomes by salary, those incomes are aggregated so as not to create distortions within the sample. This was done through Crystal Reports program.

<sup>13</sup> Should a worker pointed out as having more than one job, the hours of all his work are accumulated as total hours worked.

15 for workers with incomplete university education, 17 for workers with completed university education, and 18 for workers with postgraduate education.

The technical education variable is used to observe if it has some effect on hourly wages and we divide workers into those with (dummy = 1) and without technical education (dummy = 0).

With regard to productive sectors, these were classified into: primary sector, secondary sector and tertiary sector<sup>14</sup>. To this effect, two dummy variables were formulated whereby one variable takes on a value of 1 if the worker is in secondary sector and 0 otherwise; while another dummy variable takes on a value of 1 if the worker is in tertiary sector and 0 otherwise. The omitted variable refers to workers are in primary sector. With reference to working conditions, which takes into account the type of contract a worker has, the study divides the workers into those with formal contracts (dummy = 1) against those without (dummy=0). The variable labor union refers to membership (dummy = 1) or non-membership (dummy = 0). The regional federal variable serves to identify a worker's regional location<sup>15</sup>. The first region refers to those which were considered as more industrialized before the opening-up to world trade and they have better services and are more developed.

The second region refers to those Border States neighboring the United States which as had been mentioned earlier have directly benefitted from the NAFTA and the third set of region are the rest of Mexico.<sup>16</sup>

For this, a set of dummy variables were constructed whereby region1 takes on a value of 1 if the worker is from an industrialized region and 0 otherwise; and region2 which takes on a value of 1 if the worker comes a border region and 0 otherwise. The omitted variable refers to those workers not coming from either industrialized or border regions. In addition, a variable named formal education (D\_Ed\_Formal) serves to divide the Mexican labor market between those workers with a basic level schooling and those with an education above to this. In the Mexican case, the division of workers with regard to this variable is almost natural. The official definition of formal basic education for our investigation in Mexico is 9 years<sup>17</sup> (primary and secondary schooling) and the schooling that is not basic, more of nine years of education (pre-university, university and postgraduate). Additionally, we are taking only salary workers between 12 to 65 years old. This was done for 2 reasons: firstly, because laws in Mexico state that a worker can be affiliated to a labor union when he or she is 12 years old and secondly because the retirement age is at 65 years old. Lastly, the model was estimated using StataSE10.

<sup>14</sup> The primary sector consists of agriculture, hunting, forestry and fishing. The secondary sector consists of the mining and oil extraction industries, manufacturing, electricity and water, and construction. In the tertiary sector are services and trade.

<sup>15</sup> The federal entity is in the Folio variable with codes for the years 1984, 1992 and 2000, and coded for each worker.

<sup>16</sup> The industrialized states are the Federal District, State of Mexico, Jalisco and Nuevo Leon. Border states are Baja California, Chihuahua, Coahuila, Sonora and Tamaulipas.

<sup>17</sup> Although since 1993 also was added the pre-primary education (two years before of primary education), we didn't consider it because in the base year (1984) didn't exist this education.



### 3 Results

In table 1, we show the results of the combined estimation by OLS. Only variables that have level of significance at 95% are shown. It also shows that the F-statistic is almost 100%.

<i>VARIABLE</i>	<i>COEFFICIENT</i>
1984	2.937511* (0.0474527)
1992	3.361997* (0.0581117)
2000	-2.193024* (0.0560954)
2006	-1.793171* (0.0534099)
Escolaridad-1984	0.0833487* (0.0043251)
Experiencia-1984	0.0407107* (0.0026197)
Experiencia2-1984	-0.0006241* (0.0000518)
Experiencia2-2000	0.0001149* (0.0000608)
Experiencia2-2006	0.0001335* (0.0000573)
Sexo-1984	0.1288776* (0.0225911)
Sexo-1992	-0.0509138* (0.0268018)
Sexo-2006	-0.0465366* (0.0246714)
Educación-Técnica-1984	0.165939* (0.0244368)
Educación-Técnica-2000	-0.132312* (0.0300303)
Contrato-1984	0.4116404* (0.0228074)
Contrato-1992	-0.182312*

**Table 1**

The average effect of schooling on wages in 1984 is estimated to be 8.3%<sup>18</sup>. The variations for 1992, 2000 and 2006 with respect to 1984 are not significant.

<sup>18</sup> For sure, this is the average finding reported in many of the researches made for Mexico as shown by Villareal (2008).

This means that the impact on schooling on the wage has not varied significantly with respect to that had in 1984<sup>19</sup>. But the earlier result mentioned contradicts what was found by other authors. In another studies, it was shown that the average wage rate tends to increase with higher levels of schooling during the globalization phase in Mexico, and that this relationship gains more strength through time.

The difference in this sense is that the model presented here uses real wages and is comparing the different steps of Mexican opening with representative years before when the Mexican economy was opened to world market<sup>20</sup>. Whereas that others relationships indicated previously between schooling and wages is given in nominal terms. Even if exist an increasing relationship between the schooling and the nominal wages, this positive relationship cannot be sustained when wages are measured in real terms<sup>21</sup>.

On the average, the experience variable has an impact on schooling of 4.1% in 1984, but the variation for 1992, 2000 and 2006 with respect to 1984 are not significant. The experience variable squared has the expected sign with an impact on wages of about -0.06 in 1984. In 1992, the variation is not significant, but it is significant for the years 2000 and 2006. The analysis of the experience variable is difficult in this situation, because is important to take into account these two variables.

<sup>19</sup> However, in 2006 this variable is not significant at 95% but it is at 92%. That is to say, if we take the last percentage, then in 2006 there was a slight improvement in the relation.

<sup>20</sup> With 1984 as base year.

<sup>21</sup> The minimum real wage, which is a reference point in the study of this kind of workers, has lost its purchasing power since 1984. One can consult the following web page to see it <http://www.mexicomaxico.org/Voto/SalMinInf.htm>

However, on the basis of the results, one can say that for 1984, the experience years that the worker need to obtain the highest hourly wage is 32.6 years.

The effect of gender on wages in 1984 is 12.9%, that is on the average men (*ceteris paribus*) were receiving higher wages of 12.9% for the same type of work than women before the opening-up to world trade. For 1992, this effect is 5.1 percentage points lower. This shows that the gender effect lowered by about 7.8% which means that wage differentiation by gender decreased in the opening-up to world trade.

In the second stage of the opening-up process, this effect was no longer significant with respect to 1984. In the third phase of the opening-up process, this effect became significant once more at 4.7 percentage points lower than in 1984. This means that men were on the average receiving significantly higher wages at 8.2% more than women in 2006, but it is yet a percentage lesser than in 1984. With these outcomes we might tell that gender discrimination trends in average are lowering in the opening-up to world trade.

One of the principal objectives of the opening-up to world trade was to consolidate an industrialization model with emphasis on export promotion and stimulate private investment. All of this supported in lowering of production costs (principally the work costs). The end goal was to promote higher productivity, to attain more profits and higher economic growth. With regard to labor input, the government had the idea of stimulating industrial policy by means of strengthening specialized technical education and to construct a stronger link between the educational system and the requirements of industry. It was thought that technical education would answer to the

needs of productivity that the firms require in this new international order.

In this regard, the firms could get higher profits and maybe the wages for the workers could increase. In this sense, we get that the average effect of technical education on wages (*ceteris paribus*) was 16.6% in 1984. Before the opening-up to world trade, workers with this type of education on average obtained a higher salary of about 16.6%. The change in the first stage of the opening-up process was not significant. In the second phase, the politics applied by the government they showed poor results which were reflect in the low impact of technical education on workers' wages: there was an impact of 13.2 percentage points lesser than in 1984.

Is to say, in 2000 a worker with technical education, in average, he received a higher wage by 3.4%. In the third phase of the opening-up to world trade there were fewer workers with this type of education and the result is not significant. However, it needs to be pointed out that the percentage of workers with this type of studies was considerably low in 2006, with about only 5.7% of the total sample having this type of education and this may have affected the result substantially.

In the case of the contract variable, it is interesting to note that on the average, this variable affects in great measure to wages in the 4 years. On the average, before the opening-up process, the effect of this variable on wages is about 41.2%. A worker with a written contract (*ceteris paribus*) would on the average receive a higher wage rate by about 41.2%. During the first phase of the opening-up process, the impact was about 18.2 percentage points, less than in 1984. This means that in 1992, a worker with a written contract would receive a higher wage rate of about 23% more than a worker without. In the second stage of the

opening-up process, the impact of this variable 11.6 percentage points lower than in 1984.

In the year 2000, a worker with a written contract received a highest wage of 29.6%, with respect to worker that without have contract In the third stage of the opening-up process, the impact of this variable was 21.2 percentage points lower than in 1984. In the year 2006, a worker with a written contract received a higher wage of 20% more. Although wage average fell more a half for 2006, there still is a gap that we can consider as significantly extending between the wage a worker with written contract and other without contract. It is supposed that a worker with a written contract is a formal worker who has received all the legal benefits such: medical care, paid vacations, bonus and other government subsidies.

Also, we can suppose these workers in average should receive higher wage rates because they are being protected by laws of country, principally in reference to minimal salary. However, in the globalization, the salary gap between formal workers and informal workers has diminished more than half. The salary conditions and benefits of formal worker and the informal are increasingly near.

In the case of labor union membership, the opening-up to world trade in Mexico was a bad omen for this kind of workers, given that the union can be seen as an additional cost for firms. Under the new economic scheme, the Mexican government knew that the strong labor unions did not have place or that they should be debilitated because the principal goal of the policy was to attract direct foreign investment and the investors could be reluctant to make productive investment if the unions represented an additional cost or problems with the workers.

Therefore, in general terms, at first instance the decline in the percentage of workers with union affiliation could be seen as a direct result of this new policy.

In this regard, it must first be considered that during the opening-up to world trade the number of workers affiliated to a union fell drastically from 24.5% in 1984 to 15.5% in 2006. Before the opening-up to world trade, a worker who is a member of a union earned on the average (*ceteris paribus*) about 17.3% more than non-members.

In the first stage of the opening-up process, the effect of labor membership was about 9.6 points lower than what it was in 1984. Is to say, the gap between wages of unionized and non-unionized workers was notably low. Therefore in 1992, a worker who is a labor union member has an average salary of about 7.7% more than non members.

The importance of this result showed the decrease in the importance of labor union membership in affecting wages during the first stage of the globalization process. In the second stage of globalization, this effect was not significant. With regard to the third stage, the effect was about 6.5 percentage points higher than in 1984. This means that workers who were labor union members earned on the average 23.8% more that in 1984. The unions recovered their negotiating power. Moreover there is evidence of disappearance of unions weaker. Hence, only stronger unions remained and who are able to negotiate well and defend workers' rights, most particularly in the sectors of education, electric utility, oil and others. We suppose that the disappearance of weaker unions led to on average an increase in the wages of unionized workers and on average of the conditions of these<sup>22</sup>.

<sup>22</sup> Additionally, it should be noted that according to the official statistics of the Department of Work and Social Services, strikes were down during this period which could be a sign of Luyando J. Factors affecting Mexican wages before (1984) and during the globalization Period (1992, 2000 and 2006).

By the case of the productive sector variable, we have to say that we took the Mexican primary sector as the control variable, because in general this sector has contained the majority of the marginalized sector of the population and the lowest wages. For this, it is not surprising that before globalization there was a marked difference in wages between the primary productive sector, the secondary and the tertiary productive sector of the Mexican economy.

In the 80s, the Mexican government lowered its share in the primary agricultural sector significantly to support its participation to NAFTA. The official policy was to foment recapitalization of the sector with an export orientation through private investment (both local and international) as a way of increasing productivity in the sector.

But this policy propitiated few benefits to little producers, principally because the principal objective was lower costs of production and they neither had access to better technology nor financial credits. The situation became worst in the second stage of commercial opening for this type of producers because now it depends on the consumer demand of the US. In other words, the articulation of internationalization of the agricultural sector has focused on products with strong international demands which in general will generate more profits<sup>23</sup>.

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the conditions of unions in Mexico which seem to have debilitated in their defense of workers' conditions.

<sup>23</sup> These actions had led to in many cases the small cultivators (called "ejidatarios") being converted into workers. Because the production of smaller land owners is oriented to internal market with low profits or the self consumption. His small or void capacity to generate earnings propitiated that their lands were bought for bigger owners that are orientated to export-focused agri-businesses. Without lands to produce or for self consumption, they have three options: they could become salary workers in their own lands (with the increase in the number of workers, there was pressure for salaries to decrease) or they

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In the same way, the government aimed to develop an export industry and this one in turn generated a parallel service sector narrowly linked to industrial sector. This was principally in the subsectors of finance, transport and public services.

Before the opening-up to world trade, workers in the secondary industrial sector earned on the average 44.5% more than workers in the primary sector and workers in the tertiary service sector earned 39.2% more than those in the primary sector. There was a marked difference in wages across the primary, secondary and tertiary sectors of the economy. In the first stage of globalization, the percentage variation in wages in the secondary and tertiary sectors was not significant. For the second stage, there was a change of less 20.8% with respect to there were in 1984 for the secondary sector. For the tertiary sector, there was an equivalent effect of 17 percentage points lesser.

This means that in 2000, workers in the secondary sector earned on an average 23.7% more than those in the primary sector, and those in the tertiary sector earned on average 22.2% more. Both percentages were lower by about half than what they were in 1984. In the second stage there was a clear reduction between wage differences the secondary and tertiary sectors (it is notable that the average wage rate fell strongly in the secondary sector and to a lesser extent in the tertiary sector). For the third stage, there was an effect of about 13.5 percentage points less than in 1984 for the secondary sector and 9.9 percentage points lesser for the tertiary sector. For 2006, workers in the secondary sector earned on the average about 29% more than those in the primary sector while those in the tertiary sector earned 29.2% more.

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could migrate to the US or they could migrate to big Mexican cities.

Luyando J. Factors affecting Mexican wages before (1984) and during the globalization Period (1992, 2000 and 2006).

The gap increased with respect to this was in second stage and for this stage the differences between the primary sector and the secondary and tertiary sectors are very similar.

In this stage of the opening-up to world trade, things gravely changed; there was a convergence in the wage situation between the secondary and tertiary sectors. In the case of the tertiary sector and in particular the finance sector has benefited and it has generated a big number of employments. This was not surprising because the more is the consolidation in the conditions in opening of the economy bases are created toward a major development of services sector that impact in the average wage of his workers<sup>24</sup>.

In the case of the variable that dividing to federal Mexican states, workers were grouped into 3: Border States, Industrialized States and others. The last category is the control group. As found by other researchers, workers in the border states and the industrialized states had the most advantage in terms of wages received during the opening-up period.

Before globalization, workers in the industrialized states were receiving wages that was 16.1% higher than the others. On the other hand, workers in the border states were earning 21.6% higher wages than those in the others category. The difference was major for the border states. One reason for this is that during the 80s, there was a policy of de-centralizing industrialization from traditionally industrial states like Jalisco, Nuevo Leon and the surrounding areas around Mexico City toward states like Chihuahua, Coahuila, Sonora, Tamaulipas, Guanajuato, Puebla, Hidalgo, Oaxaca y Tlaxcala.

<sup>24</sup> It is a fact that occurs in the majority of economies worldwide.

In the first stage of globalization, workers in the industrialized states were receiving 9.1 percentage points higher than in 1984. Is to say, these workers received a wages on average 25.2% more. In this stage the effect was not significant for workers of border states. In the second stage of globalization, the situation for workers in the industrialized led to a 6.2 percentage points more than in 1984, is to say, in average they were receiving 22.3% higher wages.. With reference to the industrial states, it is evident that there was a positive impact on wages, even if this was lesser during the second phase. This accords well with the hypothesis that with the opening-up to world trade, the industrial states have an advantage with respect to other states. They have better services and infrastructures. To workers of border states, the effect in percentage change was 7.5, which means that this workers were earning on the average 29.1% than those in the control group. With the NAFTA, there is a positive impact on wages of workers in these states as expected, given that around 90% of trade of Mexico is with the US.

In the third stage of globalization, the situation for workers in the industrialized was 9 percentage points less than in 1984. Is to say, these workers earned 7.1% more.

In time, other states implemented infrastructure similar policies to attract firms. This situation, he snatched privileges to workers of these states. This has led to a dispersion of services and infrastructure to other states. The competition broke the privileged salaries of the workers in the states that we named industrialized. To workers of border states, the effect in percentage change also was negative at 6.8%. These workers were earning on average 14.8%, higher than those in the others category. The initial positive effect of NAFTA became less effective for this year. Some companies established themselves or Luyando J. Factors affecting Mexican wages before (1984) and during the globalization Period (1992, 2000 and 2006).

moved to others states in the center of the country and some others moved out to others countries like China, India and others in Centre America because these countries or states gave companies many facilities for they established in this sites.

Lastly, a variable named formal education (D\_Ed\_Formal) is analyzed. It is hoped that this variable captures any institutional indicator which divides the Mexican labor market. We call this an institutional division which was prompted by government policies. In our case, we mean a division within the Mexican labor market fostered by the government educational policy of dividing the workers between with basic education (compulsory and free) as against those workers with education beyond basic education (which is not mandatory, and only, the public education, with a supply less to demand, is free) --- a division that we believe have increased and strengthened in the opening trade. Before the opening-up to world trade, workers with schooling highest than basic education on the average were earning 7.5% more. In the first stage there was a positive percentage change of 13.7 with respect to 1984, this type workers now were earning on the average 21.2% more.

In the second stage, there was a positive percentage change of about 9.9% with respect to 1984, this type workers were earning on the average 17.4% more. In the third phase, the effect was not significant. Firstly the effect increased, but across the time it was diluted. We think it could be due to the novelty that resulted, in a first step, the commercial opening for the productive sector and since 2000 year the change that suffer the basic education years. But these facts ceased to be novelty for 2006 because the laboral market was adjusted and these facts become in something normal.

#### 4 Some conclusions

The demand of workers with high schooling in Mexico is a reality. But although the level of schooling of employees in Mexico has been increasing during these periods, this situation didn't significantly affect their average real salary.

In this sense, the cost of investment in human capital has increased in Mexico but in average it has not been rewarded by the market. The families with sufficient budget in Mexico are trying to send their children to private schools, because the public education has been stigmatized as poor quality. They are trying to find quality education for their children to have the opportunity to get the highest salaries in the future. But in a country with almost 50 million people in poverty level, there are few families that can afford it, above all in the schools with the best prestige, because those are the most expensive. If the previous does not change it will generate poverty traps and an increase in wage inequality.

Moreover, in the first stage of opening, there are variables that become less important like sex, contracts and unions; while there are variables that become important like belonging to industrialized states and institutional duality.

All these effects were expected. In the second stage of opening, some variables become less significant like technical education, the secondary and tertiary sectors and other variable become more significant like as expected border states. This started during the time when NAFTA took effect. In the third stage of opening, we can see a general decreasing trend with respect to 1984. In the commercial opening, in a first instance, we can see varied effect on the average salaries which depend on the characteristic studied. But when we consider that the opening was in full Luyando J. Factors affecting Mexican wages before (1984) and during the globalization Period (1992, 2000 and 2006).

maturity, there were a generalized trend for the variables to be less significant, independently of the studied variable (only the variable education and maybe experience didn't have significant changes). In consideration of the above, we believe it is due to a political premeditation of the government to make the economy more competitive.

The strategy is based almost exclusively in decreasing real salaries to help the firms lower their production cost. This will increase the productivity of work and therefore the profits of firms besides attract foreign investment.

But the last governments have not took in consideration the development of investigation, the development of technology and the investment to create a modern infrastructure, elements that are indispensable to the overall development of the whole economy and for the enough welfare of their people. In this regard, if the only strategy is to lower real salaries we think that the country has lost part of its attractiveness to foreign investors.

With the advance of the commercial opening-up and the shortcomings in investment in research and infrastructure, there was investment that was headed toward emerging countries like Brazil, China and India, where there was a major emphasis on the development of technology and the modernization of infrastructure.

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