

Effects of inflationary wage increases on jobs in the Mexican labor market

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Abstract

In the international context of the largest increase in inflation in the last 40 years, the recommendations of neoclassical economics continue to be aimed at reducing demand through restrictive monetary policies and therefore oppose higher-inflation wage increases. However, this average causes serious losses in the purchasing power of families and therefore a substantial increase in working poverty. In this article we demonstrate, through a panel model, that increases in the salary level did not negatively affect formal jobs in Mexico from 1997 to 2022, quite the contrary, there is a positive and statistically significant effect. Therefore, it is concluded that it is advisable to carry out policies that promote an inflationary salary increase that avoids the degradation of the living conditions of the working class.

Key Words: Labor Market; Living Wage; Inflation; Labor Policies

Introduction

A recurring topic in the macroeconomic debate is the effect of wages on employment and inflation. The neoclassical school points out, from an intuitive perspective, that the labor market behaves like any other market and therefore an increase in price (salary) will decrease demand (number of jobs), however, empirical evidence seems to prove otherwise (Campos, 2015). Wages have barely perceptible, zero or even positive repercussions on demand according to different scientific analyzes in the United States and Europe (Card and Krueger, 1994; Stewart, 2003; Lemos, 2009; Dube et. Al., 2010; Manning, 2012).

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The causes of invalidity of wage effects can be found in the inelasticity of work as a good, like many inputs, at a level of economic growth, the companies would not renounce the production of a good or service because of the increase in the price of their materials. According to the cost structure of each industry wages could represent between 10 and 30% of the price of a good (Basker and Khan, 2013), even be below this range, so, Companies would have a relatively wide margin for not giving up production and shifting costs to consumers or reducing costs elsewhere, increasing productivity, or implementing product differentiation strategies (Campos, 2015).

In Mexico, the wage debate remained virtually drowned during the neoliberal period (1988-2018), following a policy that virtually froze increases in the minimum wage and resulted in the loss of three-quarters of the purchasing power of wages. Under the myth of containing inflation and maintaining sources of employment through wage containment, working poverty increased alarmingly and precarious employment at the national level.

After the change in economic policies with the sexennium of Andrés Manuel Lopez Obrador (2018-2024), a process of wage recovery began. In 2018 the minimum wage represented 88.36 pesos a day, while in 2022 that amount had increased by 172.87 pesos, representing 95 per cent. A wage zone was added with the municipalities on the northern border of the country with a minimum daily wage of 260.34 pesos, equivalent to an increase of 260%.

Seen as natural experiments, in the words of Campos (2015), the extraordinary wage increases of the last few years showed that they had no effect either on the level of employment (that in 2021 the jobs registered with the Mexican Institute of Social Security increased 5.4%) or on inflation (which has been affected by factors external to the domestic economy).

In this sense, the purpose of this paper is to analyze the effects of the wage increase on the jobs registered with the IMSS, so it is limited to formal employment. It is based on a data panel model in which the bodies of decentralized administrative operation, formerly called the delegations of the IMSS, are the observation entities during the continuous period from 1997 to 2021. The following section outlines some theoretical bases on which the argument of nullity of the negative effects of wages on employment is based; the method of obtaining and processing data is explained later, and the results of the research and the respective recommendations are presented in the conclusions.

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Literature Review

Although there is no widespread agreement on the effects of wages on jobs, empirical evidence suggests that this is a minor or no impact, even positive for the generation of higher jobs. One of the most extensive works in this regard is that of Schmitt (2013) in justifying the nullity of the effects through the concept of “adjustment channels” by identifying three types of market models:

- a) Competitive model, in which adjustments are based on moving increases to the final price, reducing non-wage benefits such as insurance for major medical expenses, retirement plans or special bonuses, and changes in the composition of employment.
- b) Institutional model assumes that adjustments are based on an increase in productivity, mainly as a result of the reorganization of work or an increase in the intensity of the day.
- c) Monopsony model, the main adjustment is that wage increases reduce the costs of rotation to the company because in the face of a wage increase, workers find less incentive to change jobs.

In the case of Mexico, the nullity of wage-job effects has been explained from a flat labor demand curve caused by the government's trampose intervention in the labor market during the neoliberal period (Jiménez-Bandala et. al., 2019), which means that the slope shows insensitivity to salary. This insensitivity is reflected in the fall in the share of wages in the Gross Domestic Product from an average of 28% in 1990 to 17 in 2018.

From the perspective of the institutional model, there are also perspectives such as those of Hall and Cooper (2012) that indicate that an increase in wages increases purchasing power, which stimulates the economy and thus increases demand. Increases in demand cause employers to maintain or even increase jobs, with a positive effect on the economy as a whole. This is applicable for our country following the flat labor market curve of the Jiménez-Bandala model (2019). Even the empirical evidence would confirm this hypothesis, by the third quarter of 2022, Mexico was the country with the highest growth of the member countries of the Organization for Economic Cooperation and Development (OECD).

So, although the effects on the market depend on many other conditions, an increase in the salary level stimulates the economy and represents a countercyclical policy in a scenario of low growth, therefore, if the positive correlation of salaries with jobs is proven, It is advisable for an economy, like Mexico, which has substantially lost the purchasing power of wages, to follow a wage recovery policy without fear of inflation, quite the contrary, the wage increase should consider the increase in the price level and recovery quotas, that is, an inflationary wage increase.

Materials and methods

To measure the incidence of salary increases on employment level, a data model was proposed that considers the tracking of the same sample unit over a given period, so the results provide information in two dimensions: The unit of cross-section and time (Balragi and Wu, 1999). In general a model is expressed as in (1):

$$Y_{it} = \beta'_k X_{kit} + \varepsilon_{it} \tag{1}$$

$$i = 1, \dots, N; \quad t = 1, \dots, T \quad k = 1, \dots, K$$

Where:

Y_{it} - represents the dependent variable of the individual i and the time t .

β'_k - represents the vector of $k + 1$ coefficients of explanatory variables.

X_{kit} - represents the i time observation t for the explanatory variable k .

ε_{it} - represents the random mistake of the individual i and the time t .

For this work the proposed panel model is shown in (2):

$$Y_{it} = \beta'_k X_{kit} + \varepsilon_{it} \tag{2}$$

$$i = 1, \dots, 35; \quad t = 1997 - 2021; \quad k = 1$$

Where i represents the 35 Organs of Decentralized Administrative Operation (ODAO), formerly called delegations of the Mexican Institute of Social Security, represented one by each federal entity, except Mexico City, which has two (North and South), Mexico State, two (East and West) and Veracruz, also, two (North and South).

The t are the years that are taken for the analysis, in this case it is a strongly balanced panel without gaps from 1997 to 2021 and k are the number of explanatory variables in the model. In such a way that each ODAO acts as an observation affected by the variable salary level (X_{kit}) to generate a response in the level of employment (Y_{it}).

A panel model has an advantage over a linear model in the efficiency of its estimates and in presenting fewer multicollinearity problems (Pérez et.al., 2018).

The independent variable salary level was constructed from (3):

$$X_{kit} = \Delta SBC = \frac{SBC_t - SBC_{t-1}}{SBC_{t-1}} \tag{3}$$

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Where ΔSBC represents the exchange rate of the annual Base Contribution Salary by state. The SBC represents the average that jobs per ODAO reported to Instituto Mexicano del Seguro Social (IMSS) for this work, they were considered to be a proxy variable of wage increase for two main reasons: (a) they represent the salary of a formal worker, (b) they represent the average adjustments in wage increases and not only for the effects of the increase to the minimum wage or by collective contract. The change in nominal and non-real amounts was taken into account, because from a Keynesian perspective economic agents do not consider real wages in decision-making because they are under the effect of monetary illusion (Mankiw, 2019).

The dependent variable employment level was constructed from (4):

$$Y_{it} = \Delta TA = \frac{TA_t - TA_{t-1}}{TA_{t-1}} \quad (3)$$

Where ΔTA It represents the rate of change in the number of Permanent Insured Workers that employers reported to IMSS on December 31 of each year and that together their perceptions correspond to the SBC mean that was used in the independent variable. Temporary workers are excluded.

Results

The behavior of the salary and the level of jobs at the national level was compared through the construction of index numbers where 1997=100. The results are shown in Figure 1, it is observed that in the case of salary there is a considerable change in the slope after 2018 which is explained by the change in the neoclassical wage policy of the previous period. The effects of the 2009 crisis are also observed with a slowdown in wage growth, it should be noted that this did not happen during the crisis of the Covid-19 pandemic, partly also because of the encouragement of post-neoliberal wage policies.

In the case of jobs, growth has been slower and the slope is almost flat in the run-up to 2009, when there is a crisis-explained decline and then a recovery. In 2020, due to the pandemic there was a sharp fall, but a recovery in V is clear, meeting the expected forecasts (Jimenez-Bandala et al. al., 2020).

Figure 1. Indices of the Daily Salary of National Contribution and Jobs registered with the IMSS (1997-2022)

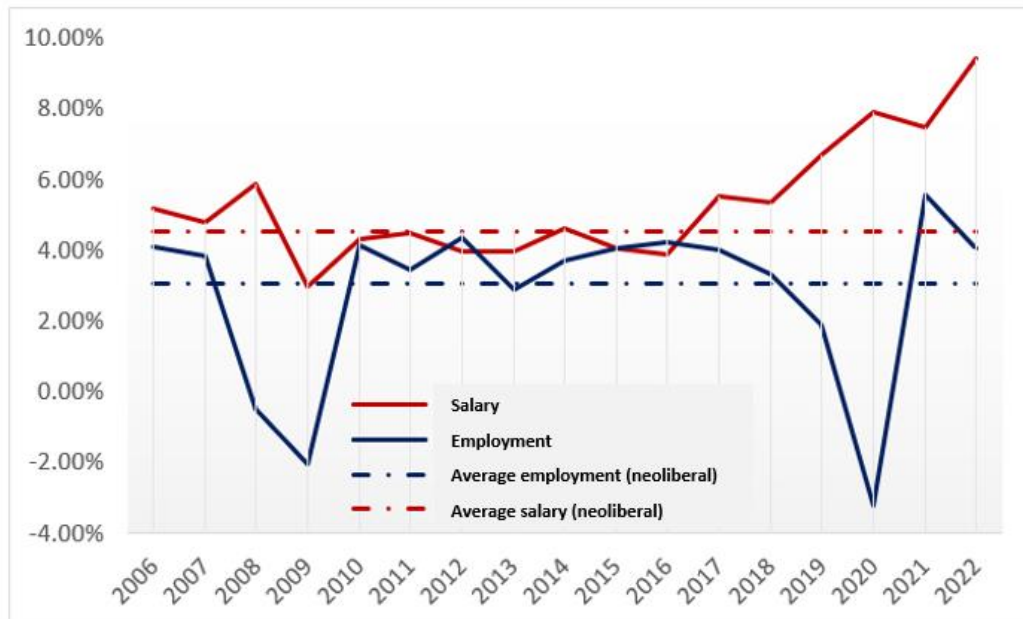


Own elaboration with data from IMSS (2022)

This reflects two different results in the application of labor policies, from 2007 to 2008 wages grew 5.88% in nominal terms, in 2009 growth halved by 2.98%, while employment fell 2.5%. In the Covid-19 crisis, wages grew at a rate of 7.9%, which is almost double what they grew on average in the previous six-year period (2012-2018), which was 3.9%, while employment declined by 3.19%. However, it should be noted that in 2021 employment grew by 5.18 per cent, which is the highest rate recorded in the period under study (Figure 2). As of October 2022, the growth rate in permanent workers was 8.3% and although there is a seasonal reduction in jobs in December, the trend indicates that this would be the highest rate in more than 30 years. This increase would be explained by the post-pandemic recovery, the incorporation of unregistered employment before the IMSS, but also by the countercyclical policies implemented by the government of Andrés Manuel Lopez Obrador.

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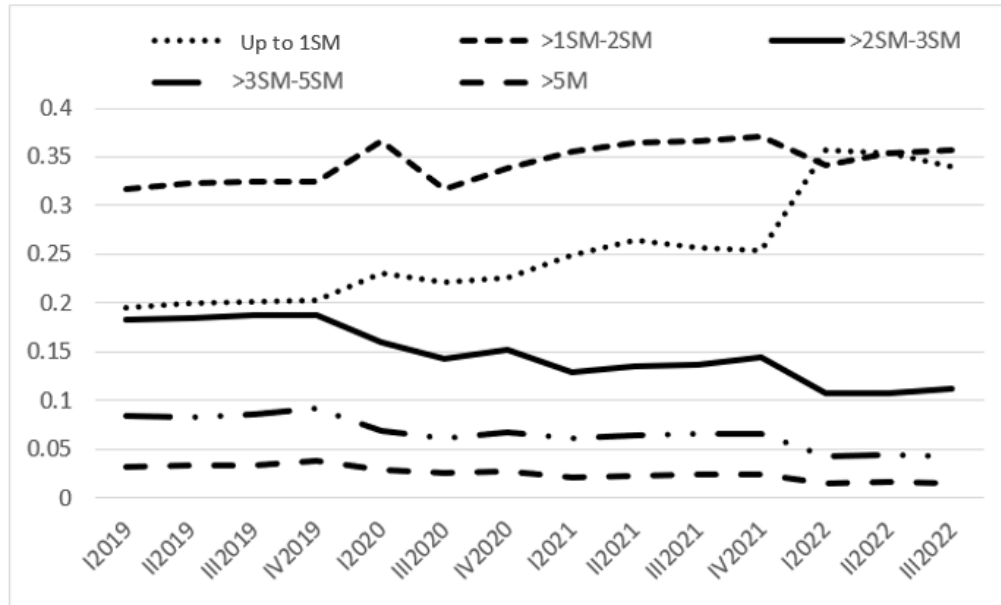
Figure 2. Growth rates of the Base Contribution Salary and Permanent Jobs before the IMSS (2006-2022)



Own elaboration with data from the IMSS (2022)

This shows that the increase in wages in the formal market has not negatively impacted job creation. However, what has been observed is a change in the structure of employment. Figure 3 shows the changes in the labor market as measured by the National Employment and Employment Survey (ENOE) of the National Institute of Statistics and Geography (INEGI), including formal and informal markets. Workers earning less than one minimum wage increased from 20 to 34 per cent of the employed population; while the rest of the higher wage earning segments declined. This means that the labor market applies competitive adjustment mechanisms to absorb wage increases (Hirsch et al., 2011). However, the correlation of variables could give us a better understanding of the effects of wages on employment.

Figure 3. Composition of the labor market in Mexico by income level (2019-I to 2022-III)



Own elaboration with data from the ENOE (INEGI, 2022)

The econometric model of panel data allowed to check the effects of the change in salary level on the change in employment level and the results are shown in Table 1 as a pooled, fixed and random effects:

Tabla 1. Panel Regression Results

Variable	Pooled (MCO)	Random effects	Fixed effects
Salary	0.1917**	0.1833***	0.1243
Constant	0.0981**	0.2552**	0.4230
<i>Pr > F</i>	0.041		0.267
<i>Pr > Chi2</i>		0.001	
N	840	840	840

*** Significant at 1%; **Significant at 5%; *Significant at 10%

Own elaboration

The first model indicated in the second column (Pooled) shows the results of panel data treated linearly from ordinary least squares (MCOs). The model is significant at 5%, as is the independent variable. The increase in wages would have a positive effect of 19 per cent on the increase in the number of places to work.

The third column shows a random effects panel model, this type assumes that the intercept (β_0) it is different for each transverse unit, that is, rather than assuming it as a constant, a random variable is considered that follows a chi-

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square probability distribution with an average value of (β) and random deviation (u_i), that is, the variance of errors is affected by regressors (ε_{it}). So, considering equation (2), we have (4):

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + u_i + \varepsilon_{it} \quad (4)$$

The resulting model is expressed in (5)

$$Y_{it} = 0.2552 + 0.1833 X_{1it} + u_i + \varepsilon_{it} \quad (5)$$

We observed that the independent variable shows the expected sign and is significant at 1%. So we can point out that for every percentage point of increase in wages there is a 18% effect on the increase in employment.

The last column shows a fixed-effect model, as in (6). This model is used when it is assumed that individual and temporal heterogeneity is adjusted for individual intercepts (ε_{it}); assumes that the differences between entities are constant, but whose individual effects have some correlation with the regressor, so the terms (u_i) they are not considered part of the mistake term.

$$Y_{it} = v_i + \beta_1 X_{1it} + \varepsilon_{it} \quad (6)$$

Results are shown in (7)

$$Y_{it} = 0.124 + 0.4230 X_{1it} + \varepsilon_{it} \quad (7)$$

We observe that the wage effect decreases and increases the intercept, however, it is not statistically significant.

A series of successive tests are followed to determine the most appropriate panel model type. The results of these tests showed for both models that it is advisable to use random effects over fixed effects because the differences between coefficients is not systematic. The above implies for our economic analysis that the components fail individually (u_i) they don't correlate with independent variables and that the differences between states are random. This is congruent if we assume that there is a change in labor policy in the sexennium that began in 2018, it is also coherent that the fixed effects model has lost significance.

First, it is determined the convenience of using a Pooled model of a random-effects one. The Lagrange multiplier test for Breusch and Pagan random-effects (Greene, 2000) is performed which consists of defining if the variance of (u_i) is zero, in that case equation (4) is meaningless from equation (1) because there would be no relevant difference. The test results for both models are shown in Table 2.

Tabla 2. Breusch and Pagan proofs (Lagrange multiplier)

Formal jobs (Y_{it})	$Pr > Chi2 = 0.0046$
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Own elaboration

For the proposed model, the test indicates that we cannot reject the null hypothesis (H_0) and that random effects are relevant, so they are preferred over a Pooled estimate.

To determine the convenience between a Pooled model and a fixed effects model, using a restrictive F-test that assumes that all intercept variables are equal to zero. if the test is rejected, it means that at least one variable is from the model and fixed effects must be used. The results are shown in Table 3.

Tabla 3. F-test significance of fixed effects

Formal jobs (Y_{it})	$Pr > F = 0.430$
Own elaboration	

In this case it is indicated that H_0 cannot be rejected and therefore Pooled is preferred over fixed effects. So far the tests in Tables 2 and 3 have ruled out the fixed effects model; For redundancy, to define between the fixed effects model and the random one, the Hausman test is considered, which verifies that the estimators of both models don't differ substantially. In this case, not rejecting H_0 indicates that the estimators do not differ and therefore it is more convenient to use random effects as shown by the results in Table 4.

Tabla 4. Hausman test

Formal jobs (Y_{it})	$Pr > Chi2 = 0.540$
Own elaboration	

Model validation tests

A panel data model requires demonstrating that Gauss-Markov assumptions are not violated to define the best unbiased linear estimators (MELI). For this, as with any linear model, the absence of autocorrelation and heterocedasticity must be checked. In the panel models it is also necessary to verify problems of contemporary correlation.

Serial correlation or autocorrelation implies that mistakes (ε_{it}) are not time-independent. To test this, the Wooldridge test (2002) is applied, which considers that there is no autocorrelation in its null hypothesis. The results of both models are shown in Table 5.

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Tabla 5. Wooldridge autocorrelation test

Formal jobs (Y_{it})	$Pr > F = 0.673$
Own elaboration	

From the above it follows that there are no autocorrelation problems in the proposed model. To verify heteroscedasticity problems, the Breusch and Pagan Lagrange Multiplier test is performed; however, some authors question the test for being sensitive to the assumption of normality of the errors and propose the Modified Wald test (Greene, 2000; Aparicio and Marquez, 2005). The H_0 is that there is no heteroscedasticity and therefore the variance of the errors of each transversal unit are constant. The results are shown in Table 6 and indicate that H_0 of homoscedasticity is not rejected.

Tabla 6. Modified Wald Test

Formal jobs (Y_{it})	$Pr > Chi2 = 0.760$
Own elaboration	

Finally, contemporaneous correlation is often a common panel data problem and implies that observations of some entities are correlated with observations of other entities in the same period. This is the presence of characteristics that are unobservable correlated between entities or units. The verification of this problem is carried out by means of the Breusch and Pagan test of the residuals of a fixed effects model. The H_0 assumes that there is no contemporaneous correlation. The results are shown in Table 7 and highlight that there are no contemporaneous correlation problems.

Tabla 7. Breusch and Pagan Independence Test

Formal jobs (Y_{it})	$Pr > Chi2 = 0.634$
Own elaboration	

Conclusion

Based on the above results, the hypothesis that wage increases have a positive effect on the level of formal employment in the Mexican labor market is not rejected. The panel model most suitable for data processing was a random effects type that makes sense if we consider that the study period (1997-2022) involves at least two clearly differentiated labor policies, one of wage restraint during neoliberalism and the other of recovery of the purchasing power, during 4T.

Therefore, we can point out that before wage increases the Mexican labor market assumes adjustment mechanisms of a competitive type, at least in the general composition of the job, the jobs with lower wages have increased above

those with higher incomes. Specifically in the formal market, a mechanism is assumed to stimulate the internal market and thus economic growth, which nullifies the possibility of job losses.

It is recommended that the federal government continue with a policy of recovering purchasing power, even in a period of high inflation, wages will have to recover the inflationary increase in order to have a positive impact on economic dynamics.

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