

“Results of the study to propose the amount of the increase to the Minimum Wage for 2021 and its repercussions”

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Abstract

In 2019 and 2020, the increases to the Minimum Wage had a positive impact on the fall in Labor Poverty and reduced the wage gap that had existed since 1976; In this sense, this work aims to carry out a projection of a proposal to increase the minimum wage for 2021 in Mexico without affecting the variables inflation and employment. Using a data panel and a multivariate regression model, it is shown that the increase could be in a nominal range of 19 to 23% to reach an amount of between \$ 146.63 to \$ 151.56, in addition to showing that the salary increases had positive repercussions in the face of the CoViD-19 pandemic.

Key Words

Minimum Wage; Neoliberalism; Purchasing Power; Macroeconomic Stability

Introduction

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The CoVid-19 pandemic caused by the SARS-COV-2 virus forced measures to be taken to mitigate its spread. In Mexico, the *Jornada Nacional de Sana Distancia* decreed in the month of March reduced economic activities and this was reflected in the 18.7% year-on-year contraction of the Gross Domestic Product (GDP) in the second quarter of the year which is the largest ever recorded in the history of the National Accounts and ended the period of labor progress from 2019 to the first quarter of 2020 (Jimenez-Bandala, et.al., 2020). Mexico was not an exceptional case, deep declines in economic indicators affected the entire world; the United States, our first trading partner, marked a 32% contraction.

Even in this complicated context, the rest of the macroeconomic variables remained stable, indicating that the economic downturn is due to the stoppage of activities due to the confinement and not to an economic crisis in the technical sense. The above is proven by the 12% growth of the third quarter (INEGI, 2020) showing a "V" shaped recovery. This is the scenario of the discussions between the labor, employer and government sectors through the National Minimum Wage Commission (CONASAMI), to set the minimum wage increase for 2021.

It is necessary to remember that after 1976, wages began a free fall in their purchasing power until they were reduced to one third. The quality of life of the population degraded and there was an increase in poverty and inequality. Starting in 2018, the economic policy of the Fourth Transformation aimed at wage recovery. In 2019 it increased wages 16.2% and in 2020, 20%. Thus, the minimum wage went from 88.36 to 123.22 pesos per day. At the same time, a Free Zone was established in the Northern Border where the wage increased 100% and 5% in 2020 to reach 185.56 pesos per day.

For the year 2021, it is unavoidable to continue with this policy and, therefore, economic and social analyses are necessary to contribute to the decision making of all the actors involved, prioritizing above all social welfare. For this reason, the objective of this paper is to present the main results of the study to determine an increase that responsibly recovers the purchasing power of wages while maintaining the stability of macroeconomic variables: the level of employment and inflation. The next section presents the econometric models, a panel model to verify the effects of the pandemic and the wage policies of the current six-year term, and a linear regression model to verify the effects of the wage increase on the level of employment and inflation. Subsequently, the results and conclusions are shown.

Methodology used

A panel-type data model serves to examine a data set or individuals over time (Hsiao, 2014), which is presented in its general form as in (1).

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

Where,

Y_{it} : resultado

α_{it} : vector de interceptos

X_{it} : variables explicativas entre individuos y tiempo

ε_{it} : error del modelo

Table 1 shows the variables used, as well as the definition of each one of them:

Table 1. Variables of the panel models

Literal	Variable	Definition
Y1	Employment growth	Monthly var % of the number of workers earning up to 1 and 1 to 2 SM by the 32 entities from January 2018 to September 2020 (IMSS, 2020).
Y2	Monthly inflation	Monthly inflation rate from January 2018 to 2020, calculated from the CPI (INEGI, 2020c).
X1	Effects of the pandemic	Yes in the reference month, the state reduced its

“Results of the study to propose the amount of the increase to the Minimum Wage for 2021 and its repercussions”

		mobility for work greater than or equal to 40%= 1; 0 = when the state reduced its mobility for work less than 60% (Google Mobility, 2020).
X2	Wage recovery policy	0=before 01/19; 1= 01/19 and after
X3	Salary mass	Vector matrix resulting from multiplying the number of jobs per entity and per month by the corresponding salary amount in logarithm to standardize units (Prepared from IMSS, 2020).

Own elaboration

Therefore, the following models were proposed. To measure the effect on the level of employment (Y_1) we considered the effects of the pandemic measured in terms of reduced mobility (X_1), expecting a negative effect. We included the effects of the wage bill (X_3) and finally the interaction between the wage bill and the wage recovery policy as the product of both variables ($X_2 * X_3$), both with positive expected effect, as shown in (2).

$$Y_1 = \alpha_{it} - \beta_1 X_1 + \beta_2 X_3 + \delta(X_2 * X_3) + \varepsilon_{it} \quad (2)$$

The following model (3) measures the effects on inflation (Y_2) of the same variables, the reduction in mobility due to the effects of the pandemic (X_1), expecting a positive effect; the effects of the wage bill (X_3) and the interaction between the wage bill and the wage recovery policy as the product of the two variables ($X_2 * X_3$) also with positive effects, since we assume that wage increases influence the increase in inflation.

$$Y_2 = \alpha_{it} + \beta_1 X_1 + \beta_2 X_3 + \delta(X_2 * X_3) + \varepsilon_{it} \quad (3)$$

To measure the impact of the wage increase on inflation, we proposed to use the data shown in Table 2.

Table 2. Variables of multivariate regression models

Literal	Variable	Definition
$\Delta\pi$	Annual inflation	Var in the price level at annual rate as of January, from 1960 to 2020. (INEGI, 2020c)
$\frac{w}{P}$	Actual salaries	Purchasing power of wages, calculated by deflating nominal minimum wages through the implicit GDP deflator. (Conasami, 2020; INEGI, 2020c)

Own elaboration

To correlate wage increases with inflation, the model in (4) is proposed with a 60-period observation (1960-2020).

$$\Delta\pi = -a_1 \left(\Delta \frac{w}{P} \right) + a_2 \left(\Delta \frac{w}{P} \right)^2 + U_t \quad (4)$$

Where, a second degree relationship follows between both variables due to the exponential effects that wage increases would have on inflation: $\Delta\pi$, represents the changes in inflation; $\Delta \frac{w}{P}$ represents changes in real wages relative to the minimum wage, a_1 y a_2 are the coefficients of each variable and U_t , the random variable.

Periods of high inflation volatility from the 1980s debt crisis were excluded and a model was run with 29 observations (1989-2018).

To include the effects of changes in contractual wages on inflation, we first proposed a model to observe the effects of increases in contractual wages based on increases in minimum wages for the period 1992-2019, as shown in (4).

$$\Delta \frac{W_m}{P} = \beta + \alpha \Delta \frac{W_c}{P} + U_t \quad (5)$$

“Results of the study to propose the amount of the increase to the Minimum Wage for 2021 and its repercussions”

Where, $\Delta \frac{W_m}{P}$ represents changes in real minimum wages; $\Delta \frac{W_c}{P}$, represents changes in real contractual wages; β y α are the coefficients of each variable and U_t , the random variable. We then included the effects of contractual wages with respect to inflation as in (6).

$$\Delta\pi = -a_1 \left(\Delta \frac{W_c}{P} \right) - a_2 \left(\Delta \frac{W_m}{P} \right) + a_3 \left(\Delta \frac{W_m}{P} \right)^2 + U_t \quad (6)$$

It is assumed that the quadratic effect is of the variable corresponding to minimum wages because according to an adaptive inflation expectations model, the first change of the year is in minimum wages and the other wages are adjusted considering this referent.

Results and discussion

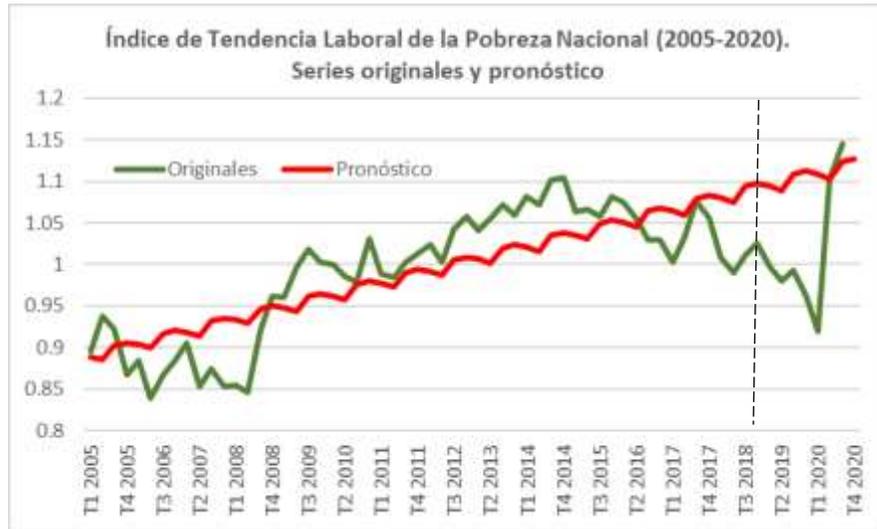
This section presents the results of the statistical analysis of the behavior of the macroeconomic variables of the labor market, as well as the econometric results for the 2021 wage proposal.

Working Poverty

According to the National Council for the Evaluation of Social Development Policy (CONEVAL), the labor poverty trend index (ITLP), which represents the percentage of Mexicans whose salary was insufficient to acquire a food basket, reported an increase of 4 basis points in the third quarter with respect to the second quarter. This was mainly due to the effects of the economic paralysis to mitigate the CoVid-19 pandemic.

A time series analysis shows that, although the third quarter ITLP is the highest since the calculation began in 2005, the extraordinary wage increases in 2019 and 2020 helped to contain it. The graph below shows the original series (green line) and the expected forecast without the current government's wage policies (red line). There is a clear upward trend in the

previous period and a change from the first quarter of 2019, when the new wage level comes into effect (dotted line).



Own elaboration with data from CONEVAL, 2005-2020.

The ITLP recorded its lowest level in 11 years during the first quarter of 2020. Since the pandemic, working poverty has increased, but was just above the level predicted if wages had not increased. As activities resume, ITLP levels are expected to decline again, so it is important to continue the wage recovery policy in 2021.

The Cost of the Welfare Basket

Starting in 2019, OISAD constructed a Welfare Basket composed of a Nutritional Basket and a Non-Food Basket with the necessary elements of life, beyond the basic and indispensable ones. For 2020, at prices of the first fortnight of November, the Basket registered an increase of 1.07% with respect to the cost it had in the same period of 2019. This is largely due to the deflation (fall in prices) registered by agricultural products and the containment of energy prices.

“Results of the study to propose the amount of the increase to the Minimum Wage for 2021 and its repercussions”

The 2020 Welfare Basket has a cost of 862.24 pesos per day, which means that the current minimum wage has a lag of 739 pesos. The above supports our argument to continue pressing for the recovery of wages to reach the welfare level in the shortest possible time.

Stability of macroeconomic variables

Despite the effects of the pandemic, macroeconomic variables have shown stability. The exchange rate with respect to the dollar responded efficiently, the parity of the peso recovered during the first year of this six-year term and before the pandemic it was at levels of 19.64 pesos per dollar; at its peak, at the end of March, the dollar was quoted at up to 25.35 pesos. In the last week, it averaged 20.04 pesos, which is equivalent to August 2019 levels.

The price level showed a fairly orderly behavior, helped to a great extent by non-core inflation, and only in two periods did it present levels above Banco de México's target (3% +/- 1%). For the first two weeks of November it registered a rate of 3.49%, only 0.3% higher than the same period last year.

The level of employment was affected by the pandemic with the loss of almost 1.1 million formal jobs registered with the IMSS; as of October, this figure decreased to 700 thousand. Unemployment reached a peak level of 5.5% in July, by October it decreased to 4.7%; this figure is similar to the average of Peña Nieto's six-year term and is lower than the average of Calderon's administration.

The wage bill

The wage bill is the overall amount of remuneration and is calculated by multiplying the number of jobs by the wage level; it indicates the quality of the jobs generated. In other words, it is not only the quantity of jobs that is important, but also their quality in terms of the level of

income. Seen in this way, the wage bill increased 15.4% in the first 21 months of the six-year term, which is equivalent to half of the increase registered during Peña Nieto's six-year term (32%); 60% of the increase under Fox (26%) and 83% of the increase under Calderón (18.4%), the darkest six-year term in labor matters.

The following graph shows the performance of the wage bill. After April it fell due to job losses, but in September there was a marked recovery.



Own elaboration with data from IMSS, 2018-2020.

The increase in the wage bill peaked in March and was higher than the increase during the six years of Felipe Calderon's administration. A higher wage share will improve the distribution of national income and therefore a notable decrease in inequality is to be expected.

To verify the effects of the wage policy of the current six-year term and the pandemic on the inflation and employment variables, an econometric panel data model was built that included the behavior of these variables in the 32 entities of the country from January 2018 to September 2020.

“Results of the study to propose the amount of the increase to the Minimum Wage for 2021 and its repercussions”

For the first model expressed in the methodology section in (2), we have that,

$$Y_1 = Y_1 = \alpha_{it} - \beta_1 X_1 + \beta_2 X_2 + \delta(X_2 * X_3) + \varepsilon_{it} \quad (2)$$

$$Y_1 = -260.03 - 2.65X_1 + 15.60X_3 + 3.54(X_2 * X_3) + \varepsilon_{it}$$

$p = 0.004 \quad 0.002 \quad 0.000$
 $Chi2 = 45.46$

All variables are significant at 95% and the model as a whole is also significant at 95% (*Chi2*). It is observed that the constant is negative and has a larger dimension than the rest of the coefficients, so it is deduced that employment conditions were adverse in a structural situation. On the other hand, we check what was intuitively proposed with a negative sign which is the effects of the pandemic, given that it is a dichotomous variable that takes a value of 1 if the states reduced mobility beyond 40%, we can say that this was negative for job formation.

On the other hand, the wage increase, represented by the wage bill, had a positive impact almost 7 times greater than the negative effect of the pandemic (15.60 versus 2.65). Finally, the combination of the effects of the wage bill with respect to the current six-year policy has a positive effect. When the wage policy takes values of one (present) the employment effects are positive by 3.54 jobs, which is greater than those lost due to the pandemic.

From the above we can conclude that the loss of employment that we saw in the second quarter of 2020 is largely due to a structural trend, most likely associated with the weakening of the economy present since 2017, added to the effects of immobility due to the pandemic. However, it was not wage policies that were the determinants of this loss, quite the contrary,

they acted as forces in resistance to prevent jobs from plummeting. This would mean that jobs could recover promptly towards the last month of the year.

For the model that measured the effects on inflation and that was presented in (3) in the methodological section, we have that:

$$Y_2 = \alpha_{it} + \beta_1 X_1 + \beta_2 X_3 + \delta(X_2 * X_3) + \varepsilon_{it} \quad (3)$$

$$Y_2 = -0.56 + -0.21X_1 + 0.002X_3 - 0.004(X_2 * X_3) + \varepsilon_{it}$$

$$p = 0.000 \quad 0.000 \quad 0.000$$

$$F = 35.23$$

In the same way, it is observed that all variables were significant at 95% and the model as a whole was also significant (F). It is interpreted that the pandemic had inverse effects with inflation, but the greatest effect of inflation is in the constant, so that a previous period of low inflation like the one we had at the beginning of the six-year term is noticed, mainly due to the containment of energy prices. It should also be noted that during the pandemic period, agricultural prices fell.

The wage bill had a positive effect on inflation, as initially assumed, but the value of the coefficient indicates that this effect is insignificant. It is also observed that in combination the wage policy of the current six-year term and the wage bill show a negative correlation higher than the positive effect of the wage bill, so we conclude that the current wage policies have also acted as a restraint on price stability.

“Results of the study to propose the amount of the increase to the Minimum Wage for 2021 and its repercussions”

It should be noted that model (2) of the employment level was obtained with random effects, since the Hausmann test gave us a $p= 0.31$ value; while model (3) of inflation was obtained with fixed effects because Hausmann indicated a $p= 0.002$ value. This is congruent if we consider our previous analysis, indicating that inflation has been contained more by the containment of energy prices that national policy is present in all entities (effect captured as fixed); while in employment other variables intervened depending on the preponderant industries by entity.

The 2021 salary increase

Despite the extraordinary wage increases of previous years, the purchasing power of the current wage is still barely one third of the wage of 1976, when it reached its highest level. Although in the previous two years there were convergent voices in promoting wage recovery, even on the part of the employers, this year, the promotion of the increase seems to be hidden by the effects of the pandemic.

The private sector, through the Confederación Patronal de la República Mexicana (Coparmex) proposes that the new wage level be in the range of between 128.15 and 135.83 pesos per day, which means an increase of between 4 and 10%. In other words, they suggest suspending recovery increases (MIR) beyond 6%, arguing that higher increases would destabilize the level of employment (Carbajal, 2020).

Other organizations, including the labor unions, have been absent in their pronouncements. The President of the Republic, without specifying an amount, has expressed his desire for the recovery increases (MIR) to continue.

According to the models presented here and in previous studies, inflation does not show a significant sensitivity to increases in minimum wages. This phenomenon has been explained by pointing out that during the entire neoliberal period the labor market was intervened by the State, which artificially kept wages below the market price, so that while real GDP per capita increased, real wages decreased. As a result, the slope of the labor supply curve remains horizontal; this fact makes it possible to increase wages without inflation overflowing.

The correlation of inflation with respect to wage increases was analyzed in an econometric model that considers 60 periods as in (4) of the methodological section, with the resulting model, statistically significant at 95% reliability, the intervals were calculated for a wage increase that maintains inflation less than or equal to 4%, which is the upper limit of Banxico's inflationary target.

$$\Delta\pi = -a_1 \left(\Delta \frac{W}{P}\right) + a_2 \left(\Delta \frac{W}{P}\right)^2 + U_t \quad (4)$$

$$\Delta\pi = -0.379 \left(\Delta \frac{W}{P}\right) + 2.455 \left(\Delta \frac{W}{P}\right)^2 + U_t$$

$$p = (0.011) \quad (0.035)$$

While, including contractual wages as in equation (6) of the methodological section, we have that:

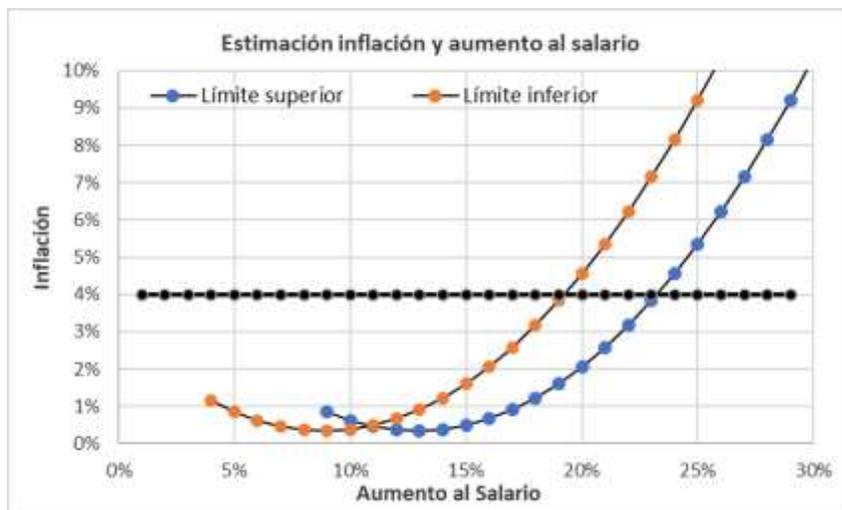
$$\Delta\pi = -a_1 \left(\Delta \frac{W_c}{P}\right) - a_2 \left(\Delta \frac{W_m}{P}\right) + a_3 \left(\Delta \frac{W_m}{P}\right)^2 + U_t \quad (6)$$

“Results of the study to propose the amount of the increase to the Minimum Wage for 2021 and its repercussions”

$$\Delta\pi = -1.72\left(\Delta\frac{W_c}{P}\right) - 0.07\left(\Delta\frac{W_m}{P}\right) + 3.21\left(\Delta\frac{W_m}{P}\right)^2$$

$$p = (0.021) \quad (0.001) \quad (0.000)$$

The results shown in both 4 and 6 are not very different from those presented last year 2019 in similar studies (Jiménez-Bandala, et.al., 2019).



Own elaboration

As shown in the graph above, the 2021 wage increase could be between 19 and 23% to reach 146.63 and 151.56 pesos per day, without fear of a drag effect on the general price level, as was predicted last year with the 2020 wage increase.

On the other hand, it should also be noted that the increase in the Minimum Wage has a direct impact on only 15% of workers, and although the extraordinary increases have also benefited other wage levels, they have not been reproduced in the same magnitude, so the price level remains within the inflationary targets.

It is important to point out the limitations of econometric models for projecting scenarios and that they should be taken with the corresponding reservations; consider externalities and, above all, value the social over the economic.

Finally, we emphasize the necessary continuation of the policy for the recovery of the purchasing power of wages, since, as has been demonstrated, neither inflation nor the level of employment were affected and they served to diminish the negative effects of the pandemic, in addition to the fact that the wage increase would serve to increase aggregate demand and achieve in a shorter period of time the post-CoVid-19 recovery.

Conclusions

The results showed that the variables were significant. The wage increase positively affected the level of employment, moreover, if we consider the combined effects of the wage policy and the wage bill, together they had positive effects in containing inflation and the fall in the amount of employment.

This shows that the wage recovery of the last two years was a measure that had positive effects in the face of the pandemic and is explained because the recovery of purchasing power allowed aggregate demand not to fall sharply. A data that may be encouraging is the 20% increase in sales during the "Buen Fin" period in 2020, which shows that in the midst of the pandemic, domestic consumption is still strong; as a reference, in 2019 the increase was 7%.

Econometric models also showed that job losses are correlated with the reduction in mobility due to the pandemic and not due to the wage increase. Therefore, it is advisable to continue with the recovery wage policy and by 2021 it could be in a range between 19 and 23%.

“Results of the study to propose the amount of the increase to the Minimum Wage for 2021 and its repercussions”

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