

Volume 8, Issue 23 – July – December – 2021

ISSN 2410-342X

# Journal of Administration and Finance

**ECORFAN<sup>®</sup>**

## **ECORFAN-Bolivia**

### **Chief Editor**

MIRANDA-GARCIA, Marta. PhD

### **Executive Director**

RAMOS-ESCAMILLA, María. PhD

### **Editorial Director**

PERALTA-CASTRO, Enrique. MsC

### **Web Designer**

ESCAMILLA-BOUCHAN, Imelda. PhD

### **Web Diagrammer**

LUNA-SOTO, Vladimir. PhD

### **Editorial Assistant**

TREJO-RAMOS, Iván. BsC

### **Translator**

DÍAZ-OCAMPO, Javier. BsC

### **Philologist**

RAMOS-ARANCIBIA, Alejandra. BsC

## **Journal of Administration and Finance**

Volume 8, Issue 23, July - December, 2021, is a journal edited sixmonthly by ECORFAN-Bolivia. Loa 1179, Cd. Sucre. Chuquisaca, Bolivia. WEB: [www.ecorfan.org/bolivia](http://www.ecorfan.org/bolivia), [journal@ecorfan.org](mailto:journal@ecorfan.org). Editor in Chief: MIRANDA-GARCIA, Marta. PhD, ISSN On line: 2410-342X. Responsible for the latest update of this number ECORFAN Computer Unit. ESCAMILLA-BOUCHÁN, Imelda. PhD, LUNA-SOTO, Vladimir. PhD, last updated June 30, 2021.

The opinions expressed by the authors do not necessarily reflect the views of the editor of the publication.

It is strictly forbidden to reproduce any part of the contents and images of the publication without permission of the National Institute of Copyright.

**Research protocol for the implementation of management control tools in the operational areas of a logistics facility in the state of Veracruz**

BALDERRABANO-BRIONES, Jazmín, PÉREZ-GARMENDIA, Gloria, ACOSTA-CADENAS, Montserrat and GARCÍA-REYES, David Antonio

*Tecnológico Nacional de México Campus Úrsulo Galván*



**Management processes in the implementation of environmental legislation in civil engineering companies in the south of Veracruz**

MENDOZA-GONZÁLEZ, Felipe, CÓRDOVA-ESCOBEDO, Jesús Fausto, RAMIREZ-JIMÉNEZ, Alida and GUZMAN-VENTURA, Juan Antonio

*Universidad Veracruzana*



**Wages by sector of economic activity in Mexico, 1994-2019**

FIGUEROA-HERNÁNDEZ, Esther, GODÍNEZ-MONTOYA, Lucila, ESPINOSA-TORRES, Luis Enrique and ARELLANO-HIDALGO, Lorena Itzel

*Universidad Autónoma del Estado de México*



**Wages by sector of economic activity in Mexico, 1994-2019****Los salarios por sector de actividad económica de México, 1994-2019**

FIGUEROA-HERNÁNDEZ, Esther†\*, GODÍNEZ-MONTOYA, Lucila, ESPINOSA-TORRES, Luis Enrique and ARELLANO-HIDALGO, Lorena Itzel

*Universidad Autónoma del Estado de México, Centro Universitario UAEM Texcoco, Mexico.*

ID 1<sup>st</sup> Author: *Esther, Figueroa-Hernández* / **ORC ID:** 0000-0001-9680-8984, **CVU CONACYT ID:** 75431

ID 1<sup>st</sup> Co-author: *Lucila, Godínez-Montoya* / **ORC ID:** 0000-0002-8571-9043, **CVU CONACYT ID:** 45103

ID 2<sup>nd</sup> Co-author: *Luis Enrique, Espinosa-Torres* / **ORC ID:** 0000-0001-6770-5521, **CVU CONACYT ID:** 44798

ID 3<sup>rd</sup> Co-author: *Lorena Itzel, Arellano-Hidalgo* / **ORC ID:** 0000-0001-9689-9396

**DOI:** 10.35429/JAF.2021.23.8.15.24

Received July 20, 2021; Accepted December 30, 2021

**Abstract**

Wages are a fundamental component of worker working conditions and are an essential variable for competitiveness. The objective of the research was to analyze wages by economic activity sector and its effects on the Mexican economy, 1994-2019; for which three multiple linear regression models were developed, one for each economic sector. The statistical results indicated that for wages in the primary sector the most significant variable was the exchange rate, for the secondary sector the Gross Domestic Product (GDP) and for the tertiary the unemployment rate. The accumulated loss of purchasing power in the period studied was greater for the primary and tertiary sectors; in the case of the secondary sector, as of 2009, it began to present positive values.

**Inflation, Gross Domestic Product, Wages, Interest rate**

**Resumen**

Los salarios son un componente fundamental de las condiciones laborales de los trabajadores y son una variable esencial para la competitividad. El objetivo de la investigación consistió en analizar los salarios por sector de actividad económica y sus efectos en la economía de México, 1994-2019; para lo cual se elaboraron tres modelos de regresión lineal múltiple, uno para cada sector económico. Los resultados estadísticos indicaron que para los salarios del sector primario la variable más significativa fue el tipo de cambio, para el secundario el Producto Interno Bruto (PIB) y para el terciario la tasa de desempleo. La pérdida acumulada de poder adquisitivo en el periodo estudiado fue mayor para el sector primario y el terciario, para el caso del secundario a partir de 2009 comenzó a presentar valores positivos.

**Inflación, Producto Interno Bruto, Salarios, Tasa de interés**

**Citation:** FIGUEROA-HERNÁNDEZ, Esther, GODÍNEZ-MONTOYA, Lucila, ESPINOSA-TORRES, Luis Enrique and ARELLANO-HIDALGO, Lorena Itzel. Wages by sector of economic activity in Mexico, 1994-2019. Journal of Administration and Finance. 2021. 8-23:15-24.

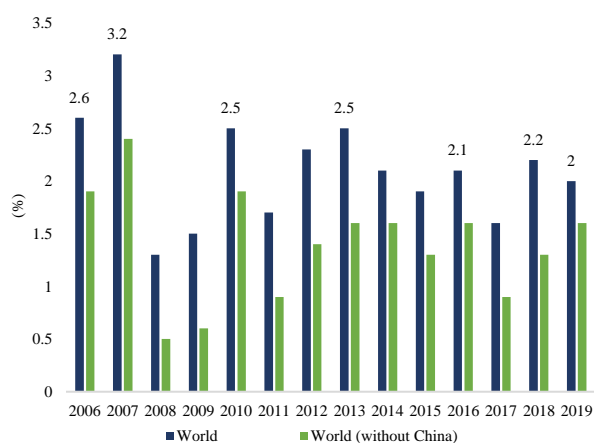
\* Correspondence to Author (E-mail: efigueroah@uaemex.mx)

†Researcher contributing first author.

## Introduction

The minimum wage is “the minimum sum that must be paid to the worker for the activities carried out or services rendered, within a specified period, in whatever way is calculated, per hour or per performance, which cannot be decreased or by individual agreement, nor collective, which is guaranteed by law and can be set to cover the minimum needs of the worker and his family, taking into account the economic and social conditions of the countries ”(ILO, 1992).

The slow increase in wages in developed economies is due to low economic growth, among the main causes are: the slow growth of production, the decrease in the bargaining power of workers, as well as the inability of employment statistics to efficiently capturing the labor market gap and an uncertain outlook that may have discouraged companies from raising wages. According to the World Wage Report 2018-2019, in low- and middle-income economies, the increase in average wages was more stable. Particularly in China in the last decade, these increased, on the contrary, in many other countries, it was insufficient to cover the basic needs of workers (ILO, 2019).



Note: Figures for 2019 are preliminary estimates, as national estimates are not yet available for all countries

**Figure 1** World Average Annual Real Wage Growth, 2006-2019

Source: Own elaboration of ILO world wage data, 2019

Figure 1 shows that the world growth of real wages during 2019 was 2.0%, lower by 0.2% in relation to 2018, while that of 2017 was not only lower compared to 2016, but also presented a similar very low rate. Compared to the one presented in 2008, even the figures for these two years were well below those observed for 2006 and 2007 before the global financial crisis. The decrease in wage growth between 2006 and 2019 can be seen in both series including and excluding China, it is worth mentioning that this country is discarded from the world average wage, since its higher growth influences it. What concerns the countries that make up the Group of Twenty (G20) (made up of 19 countries and the European Union: Germany, Saudi Arabia, Argentina, Australia, Brazil, Canada, China, South Korea, United States, France, India, Indonesia, Italy, Japan, Mexico, Russia, United Kingdom, South Africa and Turkey), although they presented a trend higher than the world average wages in the 2019 estimates, a considerable decrease was observed compared to 2018, noting that this group represents three-quarters of the world's Gross Domestic Product (GDP).

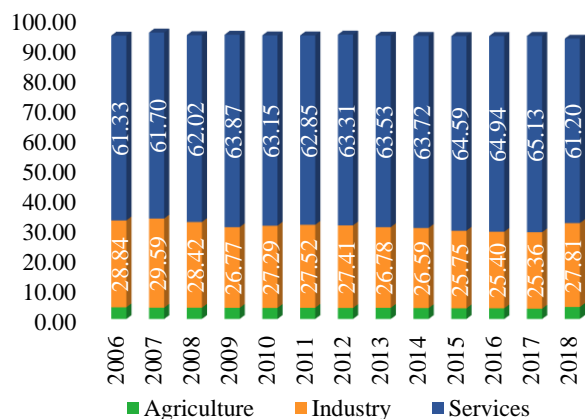
In recent years, the minimum wage has become the subject of debate in economic newspapers, legislative chambers, employers' associations, unions, workers' organizations and academics worldwide. For example, in developed economies such as Germany, the United States, England and other countries of the European Union; As well as in emerging countries such as Argentina, Ecuador, Uruguay and Brazil, this salary was used as an instrument of economic policy to promote equality and raise the income of the poorest workers (IMF, 2014). However, in general for Latin America wage trends are still lower than in Asian countries, this due to low economic growth.



**Figure 2** Average annual world economic growth, 2006-2019 (GDP at constant prices)

Source: Prepared with data from the IMF Annual Report, 2017 and 2018, 2019

Figure 2 shows that world economic growth accelerated in 2017 and there was a slowdown between 2017 and 2019.



**Figure 3** Participation of economic sectors in the world Gross Domestic Product, 2006-2018 (%)

Source: Prepared with data from Fernández, 2020

Figure 3 shows the participation of the economic sectors in the world Gross Domestic Product (GDP) from 2006 to 2018. In the last year, the agriculture sector contributed 4.0%, and the Industry sector around 28.0%, while services represented approximately 61.0% of total world GDP.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average
Latin America and the caribbean	0.7	2.0	2.2	0.2	0.1	0.0	0.4	1.1	0.8	0.8
North America	-0.4	0.3	0.5	0.8	2.1	0.6	0.7	0.8	1.0	0.7
Asia and the Pacific	3.6	4.1	4.6	3.1	4.0	4.6	3.5	3.9	3.4	3.9

**Table 1** Average Annual Salary Growth by Region, 2011-2019 (%)

Source: Own elaboration with ILO estimates, 2019.

In Table 1, we can see the average growth of real wages for Asia and the Pacific of 3.9%, for Latin America and the Caribbean of 0.8%, and North America of 0.7%, for the period 2011-2019 (ILO, 2019).



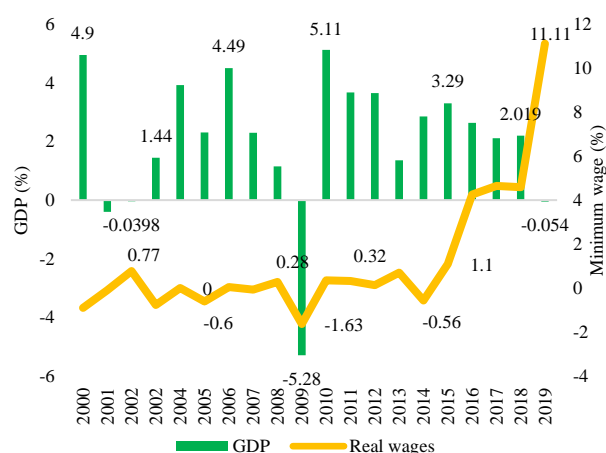
**Figure 4** Annual Growth Rate of GDP and Employment in Latin America and the Caribbean, 2010-2019 (%)

Source: Own elaboration with data from ECLAC, 2019

As shown in Figure 4, the GDP rate in 2015 was -0.2%, and -1.0% in 2016, this caused the employment share to decrease in 2015 and 2016, being 62.2 and 61.9% respectively. After this fall in GDP that had an impact on employment, the recovery began in 2017, presenting this year a figure of 62.4%, falling again in 2019 (ECLAC and ILO, 2019).

### Overview of salary in Mexico

According to the ILO (2017a), in recent years the need to control trends in wages and to apply sustainable wage policies has been recognized, to curb their stagnation, to increase the levels of remuneration of millions of workers the world's poor, ensure a fair distribution, reduce excessive inequalities in wages and income, and reinforce consumption as a fundamental pillar of a sustainable economy and with-it economic growth.



**Figure 5** Annual growth rate of GDP and real minimum wage in Mexico, 2000-2019

Source: Own elaboration with data from CONASAMI and INEGI, 2019

As shown in Figure 5, Mexico presented low economic growth, which was impacted by the 2008-2009 economic crisis, being -5.3% in 2009, this in turn had an impact on the loss of the purchasing power of the minimum wage. However, for 2010 the GDP grew again, presenting a figure of 5.1% and the salary began to recover, reaching 11.11% in 2019.

In recent decades, the wage policy has gone down (CAM, n / d), since during the period from 1997 to 2018, real wages maintained an annual growth of 1.3%, going from \$ 267.00 to \$ 354.00 per year. day (or from \$ 8,000.00 to \$ 10,600.00 per month on average). However, at the state level, the behavior was not uniform; since while states like Zacatecas and Campeche presented favorable economic conditions for their population; On the other hand, workers in Mexico City and the State of Mexico, whose incomes were stagnant, did not allow improvements in wages (Suarez, 2018).

Contrary to what happened in general in the aforementioned period, per-capita income decreased 2.5% during 2016-2017, which implied an increase in the poverty level, where 41.0% of the population was below the cost of the basic basket. The southern states Chiapas (71.3%), Guerrero (65.6%), Oaxaca (64.5%), Veracruz (54.4%), were those that presented lower incomes than the basket (Animal Político, 2018).

It is important to mention that the continuous fall in the purchasing power of wages in Mexico has affected the capacity to build wealth in an important segment of the Mexican population, so that around 40.0% are in precarious conditions. Thus, the loss of this has been more than 80.0%, when comparing the real daily minimum wage of December 2016 with that of 1982. Important efforts have been made to recover purchasing power, however, in real terms it has decreased due to the rise in the prices of the basic food basket, services and gasoline. Due to the low salary level, negative consequences were generated in economic growth (Cilia, 2017).

### Economic growth by sector of economic activity in Mexico

Regarding the GDP by economic activities for 2019, the primary ones were those that presented the best economic performance, reporting a growth of 2.0% compared to the previous year. On the other hand, secondary activities showed a negative growth of 1.8%. While tertiary activities, which are the ones that contribute the highest percentage to GDP with more than 60.0%, for the year mentioned, only grew by 0.5% (Animal Político, 2020).

The Global Indicator of Economic Activity (IGAE) showed a slight improvement after seven consecutive months of contractions. During 2018 it contracted 0.1%. While, in 2019 an economic expansion was registered in January (1.0%), February (0.8%), April (0.1%) and December (0.1%), that is, the economy had an average growth of 0.5% (Morales, 2020).

Concept	Real% variation compared to the previous quarter	Real% variation compared to the same quarter of 2018	Real% variation during nine months of 2019 compared to the same period of 2018
GDP	0.0	-0.2	0.0
Primary activities	3.3	5.4	2.2
Secondary activities	-0.1	-1.5	-1.7
Tertiary Activities	0.1	0.1	0.6

**Table 2** GDP by Economic Activity Sectors, third quarter of 2019 (seasonally adjusted figures)

Source: Own elaboration with data from INEGI, 2019



Consequently, as can be seen in Table 2, the GDP of primary activities increased 3.3% and that of tertiary activities by 0.1%, while that of secondary activities decreased 0.1% in the July-September quarter of 2019 compared to the quarter previous.

According to the antecedents, the objective of the research was to analyze wages and purchasing power by sector of economic activity in Mexico, 1994-2019. An inverse relationship between wages and loss of purchasing power is expected.

### Materials and methods

To carry out this research, a documentary investigation was carried out, which consisted of the review of different statistical sources such as the National Institute of Statistics and Geography (INEGI), the Bank of Mexico (Banxico), the National Commission of Minimum Wages (CONASAMI), the International Monetary Fund (IMF), the International Labor Organization (ILO), the Mexican Institute of Social Security (IMSS), the Organization for Economic Cooperation and Development (OECD), the Economic Commission for Latin America and the Caribbean (CEPAL), the UNAM Center for Multidisciplinary Analysis (CAM), the National Council for the Evaluation of Social Development Policy (CONEVAL), among others.

From the processing of the information obtained from these official sources, a database was generated in order to determine the behavior of wages by sectors, Gross Domestic Product, inflation, interest rate, unemployment rate, exchange rate of 1980-2018. Subsequently, with the variables considered, three multiple linear regression models were developed for the research period using the statistical package Statistical Analysis System (SAS), using the Ordinary Least Squares (OLS) method, to adjust them, logarithms were applied for some variables (WSprim1, WSsec1, Wster1 and PIB1).

The multiple linear regression models that were considered were the following:

$$WSprim1_t = \alpha_0 + \alpha_1 INF_t + \alpha_2 PIB1_t + \alpha_3 U_t + \alpha_4 E_t + \alpha_5 r_t + \varepsilon_1 \quad (1)$$

$$WSsec1_t = \beta_0 + \beta_1 INF_t + \beta_2 PIB1_t + \beta_3 U_t + \beta_4 E_t + \beta_5 r_t + \varepsilon_2 \quad (2)$$

$$Wster1_t = \gamma_0 + \gamma_1 INF_t + \gamma_2 PIB1_t + \gamma_3 U_t + \gamma_4 E_t + \gamma_5 r_t + \varepsilon_3 \quad (3)$$

Where:  $\alpha_i$ ,  $\beta_i$ ,  $\gamma_i$ , are the coefficients to estimate;  $\varepsilon_1$ ,  $\varepsilon_2$  and  $\varepsilon_3$ , are the terms of mistake. WSprim1 = Real minimum average wage of the primary sector (constant 2018 prices). WSsec1 = Real minimum average wage of the secondary sector (constant 2018 prices). Wster1 = Real minimum average wage in the tertiary sector (constant 2018 prices). GDP1 = Gross Domestic Product of Mexico (millions of pesos at constant 2013 prices).  $r$  = 28-day Cetes interest rate (%).  $U$  = Unemployment rate (%).  $E$  = Real exchange rate (pesos per dollar).  $INF$  = Annual inflation (%). With the data per day of nominal wages and the price of the food basket plus the rural non-food (CA) rural and urban (considering this for 4 people, since that is the average of a Mexican family), the loss was calculated of purchasing power, the nominal salary was used, because the methodology used in the work of the Center for Multidisciplinary Studies (CAM) of the UNAM was used, as well as the percentage that with a daily nominal salary, you can buy from the basic basket. Analysis and interpretation: Statistical and economic analysis of wages by sectors of economic activity was carried out, and the loss of purchasing power.

### Results

The results obtained were analyzed from a statistical and economic point of view in relation to the main economic variables of the models studied.

### Statistical analysis of economic sectors

In each of the models, the statistical analysis was based on the parameters of the determination coefficient ( $R^2$ ), the value of the calculated F, ( $F_c$ ) the mean square of the error, the value of each partial t-value for each of the estimators from the analysis of variance given. To test the statistical significance of the fitted regression equation, the following sets of hypotheses were considered,  $H_0: \alpha_1 = \alpha_2 = \dots = \alpha_n = 0$  Vs  $H_a = \alpha_1 = \alpha_2 = \dots = \alpha_n \neq 0$ ;  $H_0: \beta_1 = \beta_2 = \dots = \beta_n = 0$  Vs  $H_a = \beta_1 = \beta_2 = \dots = \beta_n \neq 0$ ;  $H_0: \gamma_1 = \gamma_2 = \dots = \gamma_n = 0$  Vs  $H_a = \gamma_1 = \gamma_2 = \dots = \gamma_n \neq 0$



The results obtained in Table 3 show the global test for each of the models, so for a test of significance at 0.05, in the case of equation 1, when comparing  $F_c = 4.75$  with  $F_t(5,20) = 2.71$  of the primary sector, the first was greater than the second. For the secondary sector  $F_c = 38.66 > F_t(5,20) = 2.71$  and for the tertiary sector  $F_c = 6.31$  was greater than  $F_t(5,20) = 2.71$ . This means that, for each model, the null hypothesis is rejected in favor of the alternative, which indicates that, in each case, at least one of the parameters estimated by the regression is different from zero. On the other hand, the coefficient of determination  $R^2$  shows that the salaries of the primary sector were explained by 54.28%, those of the secondary sector by 90.62% and those of the tertiary sector by 61.20%, each one by the independent variables considered in each equation, such as: Inflation (INF), Gross Domestic Product (GDP1), unemployment (U), the exchange rate (E) and the interest rate (r).

Regarding the individual test, for the case of model 1,  $WSprim1_t$ , the variables that were significant were the exchange rate with a t value of  $2.07 > 1$  with probability 0.0518 and unemployment whose t value of 1.70 with probability of 0.1048. For the secondary, the highly significant variables were unemployment (U) and GDP1 with a t of 4.96 and 2.78  $> 1$  respectively, likewise the exchange rate was significant, although with a lower level of significance with a t of  $1.33 > 1$  and  $Pr | t |$  of 0.1649. For the tertiary, both the exchange rate and unemployment were significant with a t of 2.26 and  $1.93 > 1$  (Table 3).

Dependent variable	Independent variables				
<b>Equation 1</b>					
$WSprim1_t$	<i>PIBR</i>	<i>INF</i>	<i>U</i>	<i>E</i>	<i>R</i>
Coefficient	-0.1073	-0.00498	0.02669	<b>0.06167</b>	-0.00393933
$t_c$	-0.50	-0.94	1.70	<b>2.07</b>	-0.81
$P_{> t }$	0.6214	0.3598	0.1048	<b>0.0518</b>	0.4280
$R^2 = 54.28\%$ F-value = 4.75 Prob>F = <.005					
Dependent variable	Independent variables				
<b>Equation 2</b>					
$WSsec1_t$	<i>PIBR</i>	<i>INF</i>	<i>U</i>	<i>E</i>	<i>R</i>
Coefficient	<b>0.56240</b>	-0.00522	0.07368	0.04063	-0.00392
$t_c$	<b>2.78</b>	0.00502	4.96	1.33	-0.85
$P_{> t }$	<b>0.0115</b>	0.3102	<b>0.0001</b>	0.1649	0.4046
$R^2 = 90.62\%$ F-value = 38.66 Prob>F = <.0001					
Dependent variable	Independent variables				
<b>Equation 3</b>					
$WSTER1_t$	<i>PIBR</i>	<i>INF</i>	<i>U</i>	<i>E</i>	<i>r</i>
Coefficiente	-0.07750	-0.00418	0.02882	<b>0.06385</b>	-0.00465
$t_c$	-0.38	-0.83	1.93	<b>2.26</b>	-1.01
$P_{> t }$	0.7066	0.4167	0.0675	<b>0.0354</b>	0.3267
$R^2 = 61.20\%$ F-value = 6.31 Prob>F = <.0011					

**Table 3** Variance analysis

Source: Elaboration based on the results of the statistical package SAS, 2009

## Economic analysis

At this point, it is important to analyze the parameters in their structural form, since it allows us to interpret the congruence of the estimators..

$$WSprim1_t = 12.45888 - 0.00498INF_t - 0.1073PIB1_t + 0.02669U_t + 0.06167E_t - 0.00393r_t \quad (4)$$

$$WSsec1_t = 2.18247 - 0.00522INF_t + 0.56240PIB1_t + 0.07368U_t + 0.04063E_t - 0.00392r_t \quad (5)$$

$$WSTER1_t = 12.55620 - 0.00418INF_t - 0.07750PIB1_t + 0.02882U_t + 0.06385E_t - 0.00465r_t \quad (6)$$

For the primary sector wage function (4), the variables that met the signs of economic theory were inflation and interest rate; for the secondary (5), inflation (INF), GDP1 and the interest rate (r). In relation to the tertiary sector model (6), in the face of an increase in inflation and the interest rate, the salary decreases, which fulfilled the expected sign.

## Economic analysis of elasticities

For the analysis of elasticities, the parameters estimated from the structural form of the model were considered, with a significance level of 5.0%:

Primary sector	Secondary sector	Third sector
$\epsilon_{INF}^{WSprim1_t} = -0.00498$	$\epsilon_{INF}^{WSsec1_t} = -0.00522$	$\epsilon_{INF}^{WSTER1_t} = -0.00418$
$\epsilon_{PIB1}^{WSprim1_t} = -0.1073$	$\epsilon_{PIB1}^{WSsec1_t} = 0.56240$	$\epsilon_{PIB1}^{WSTER1_t} = -0.07750$
$\epsilon_U^{WSprim1_t} = 0.02669$	$\epsilon_U^{WSsec1_t} = 0.07368$	$\epsilon_U^{WSTER1_t} = 0.02882$
$\epsilon_E^{WSprim1_t} = 0.06167$	$\epsilon_E^{WSsec1_t} = 0.04063$	$\epsilon_E^{WSTER1_t} = 0.06385$
$\epsilon_r^{WSprim1_t} = -0.003939$	$\epsilon_r^{WSsec1_t} = -0.00392$	$\epsilon_r^{WSTER1_t} = -0.00465$

**Table 4** Elasticities of the Models in their Structural Form  
Source: Own elaboration with the results of the statistical package SAS, 2009

As can be seen in Table 4, the elasticities for the primary sector were as follows: with respect to the exchange rate, if it increases by 10.0%, wages would increase by 0.61% and the unemployment rate would only increase by 0.26%; In the case of the secondary, of the elasticity of GDP1, that is to say that if these were increased by 10.0%, wages would increase by 5.6%, 0.052, and 0.039% respectively, which agrees with economic theory. Regarding the elasticity of the tertiary, with respect to the exchange rate, the interest rate and inflation were 0.063, 0.00465, and 0.00418, which means that if these were increased by 10.0%, wages would increase by 0.63 %, 0.046, and 0.0418% respectively.

**Calculations of purchasing power and the rural and urban basic food basket**

Year	Daily nominal salary (pesos)	Cumulative increase	Price Rural Food Basket per day for 4 people	Cumulative percentage of the price of the rural Food Basket	Percentage of food Basket can be acquired with a salary	Real wage index 1994=100	Purchasing power of wages 1994-2019 (%)
1994	29.75		33.84		87.91	100	
1995	33.16	11.46	44.76	32.27	74.08	84.27	-15.73
1996	39.16	29.56	61.16	68.91	64.03	72.83	-27.17
1997	47.08	49.78	73.61	89.31	63.93	72.72	-27.28
1998	55.85	68.42	85.72	105.72	63.16	74.12	-25.88
1999	65.94	86.48	99.08	121.3	66.56	75.71	-24.29
2000	75.7	101.28	107.48	129.78	70.43	80.12	-19.88
2001	85.98	114.85	113.8	135.66	75.55	85.94	-14.06
2002	93.41	123.5	119.88	141.01	77.92	88.64	-11.36
2003	100.82	131.43	125.52	145.71	80.52	91.37	-8.63
2004	106.07	136.64	132.66	151.41	79.95	90.94	-9.06
2005	110.28	140.61	138.68	155.94	79.52	90.45	-9.55
2006	111.76	141.95	144.6	160.21	77.29	87.92	-12.08
2007	121.45	150.62	151.64	165.07	80.09	91.1	-8.9
2008	127.23	155.38	160.16	170.69	79.44	90.36	-9.64
2009	131.93	159.08	172.28	178.26	76.58	87.11	-12.89
2010	136.42	162.48	179.8	182.63	75.87	86.3	-13.7
2011	145.38	167.58	183.62	185.92	77.2	87.82	-12.18
2012	150.11	172.27	197.68	192.36	75.93	86.37	-13.63
2013	156.21	176.33	207.16	197.15	75.4	85.77	-14.23
2014	165.63	182.36	216.76	201.79	76.41	86.91	-13.09
2015	174.09	187.47	223.92	205.09	77.75	88.44	-11.56
2016	180.39	191.09	232.32	208.84	77.65	88.32	-11.68
2017	194.05	198.66	247	215.16	78.56	89.36	-10.64
2018	208.47	206.1	258.36	219.76	80.69	91.78	-8.22
2019	225.57	214.3	268.16	223.55	84.12	95.68	-4.32

**Table 5** Purchasing Power and rural basic basket of the primary sector, 1994-2019  
 Source: Own elaboration with data from STPS and CONEVAL, 2019

After the crisis of 1995-1996, the Mexican economy suffered the interruption of money movements for investment purposes from abroad to Mexico, added to this, the consequent devaluation of the national currency originated an inflationary effect that was reflected in the power. As shown in Table 5, wages in the primary sector went from a loss of 15.73 to 27.17% respectively. From 2003 to 2005 it remained an average of 9.08%. Finally, for 2018 and 2019 it was 8.22 and 4.32%, respectively. However, this has not been able to recover in the primary sector, causing it not even to cover the cost of the basic rural food basket.

Year	Daily nominal salary (pesos)	Cumulative increase	Price Urban Food Basket per day for 4 people	Cumulative percentage of the price of the urban Food Basket	Percentage of food Basket can be acquired with a salary	Real wage index 1994=100	Purchasing power of wages 1994-2019 (%)
1994	54.13	-	57.08	-	94.83	100	-
1995	62.15	14.82	73.92	29.5	84.08	88.66	-11.34
1996	74.66	34.94	99.48	64.08	75.05	79.14	-20.86
1997	88.83	53.92	119.92	84.63	74.07	78.11	-21.89
1998	105.96	73.21	139.2	100.7	76.12	80.27	-19.73
1999	126.63	92.71	160.2	115.79	79.04	83.35	-16.65
2000	149.45	110.74	174.08	124.45	85.85	90.53	-9.47
2001	173.27	126.67	185.04	130.75	93.64	98.74	-1.26
2002	190.16	136.42	195.76	136.54	97.14	102.43	2.43
2003	204.88	144.16	204.4	140.96	100.23	105.7	5.7
2004	221.95	152.5	215.2	146.24	103.14	108.76	8.76
2005	241.56	161.33	224.56	150.59	107.57	113.43	13.43
2006	259.61	168.8	233.2	154.44	111.33	117.39	17.39
2007	278.81	176.2	243.28	158.76	114.6	120.85	20.85
2008	299.43	183.59	256.2	164.07	116.87	123.24	23.24
2009	320.4	190.6	272.76	170.54	117.47	123.87	23.87
2010	337	195.78	285.44	175.18	118.06	124.5	24.5
2011	357.1	201.74	294.12	178.23	121.41	128.03	28.03
2012	379.86	208.12	309.16	183.34	122.87	129.57	29.57
2013	402.3	214.02	323.24	187.89	124.46	131.24	31.24
2014	428.76	220.6	340.44	193.21	125.94	132.81	32.81
2015	449.9	225.53	348.52	195.59	129.09	136.12	36.12
2016	461.88	228.2	359.24	198.66	128.57	135.58	35.58
2017	482.27	232.61	381.44	204.84	126.43	133.32	33.32
2018	514.24	239.24	399.52	209.58	128.71	135.73	35.73
2019	549.2	246.04	413.92	213.19	132.68	139.91	39.91

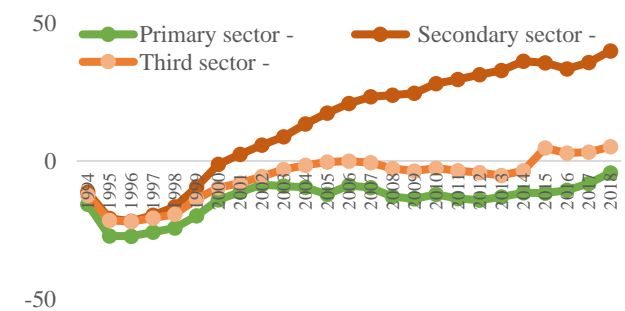
**Table 6** Purchasing power and urban basic food basket of the secondary sector, 1994-2019  
 Source: Own elaboration with data from STPS and CONEVAL, 2019

As can be seen in Table 6, during the first nine years the salary was not enough to cover the basic food basket, therefore, in this period there was an average acquisitive loss of 12.65% considering that the salary received by the sector's employees Secondary was to pay for the food basket for four members of a Mexican family. It is necessary to take into account that since they are qualified people, the salary is considered good, and it is from 2003 that it was above the price of the urban food basket, where there was no loss of purchasing power, where the secondary sector was the best paid according to STPS data.

Year	Daily nominal salary (pesos)	Cumulative increase	Price Urban Food Basket per day for 4 people	Cumulative percentage of the price of the urban Food Basket	Percentage of food Basket can be acquired with a salary	Real wage index 1994=100	Purchasing power of wages 1994-2019 (%)
1994	54.13	-	57.08	-	94.83	100	-
1995	62.15	14.82	73.92	29.5	84.08	88.66	-11.34
1996	74.66	34.94	99.48	64.08	75.05	79.14	-20.86
1997	88.83	53.92	119.92	84.63	74.07	78.11	-21.89
1998	105.96	73.21	139.2	100.7	76.12	80.27	-19.73
1999	126.63	92.71	160.2	115.79	79.04	83.35	-16.65
2000	149.45	110.74	174.08	124.45	85.85	90.53	-9.47
2001	173.27	126.67	185.04	130.75	93.64	98.74	-1.26
2002	190.16	136.42	195.76	136.54	97.14	102.43	2.43
2003	204.88	144.16	204.4	140.96	100.23	105.7	5.7
2004	221.95	152.5	215.2	146.24	103.14	108.76	8.76
2005	241.56	161.33	224.56	150.59	107.57	113.43	13.43
2006	259.61	168.8	233.2	154.44	111.33	117.39	17.39
2007	278.81	176.2	243.28	158.76	114.6	120.85	20.85
2008	299.43	183.59	256.2	164.07	116.87	123.24	23.24
2009	320.4	190.6	272.76	170.54	117.47	123.87	23.87
2010	337	195.78	285.44	175.18	118.06	124.5	24.5
2011	357.1	201.74	294.12	178.23	121.41	128.03	28.03
2012	379.86	208.12	309.16	183.34	122.87	129.57	29.57
2013	402.3	214.02	323.24	187.89	124.46	131.24	31.24
2014	428.76	220.6	340.44	193.21	125.94	132.81	32.81
2015	449.9	225.53	348.52	195.59	129.09	136.12	36.12
2016	461.88	228.2	359.24	198.66	128.57	135.58	35.58
2017	482.27	232.61	381.44	204.84	126.43	133.32	33.32
2018	514.24	239.24	399.52	209.58	128.71	135.73	35.73
2019	549.2	246.04	413.92	213.19	132.68	139.91	39.91

**Table 7** Purchasing power and urban basic food basket of the tertiary sector, 1994-2019  
 Source: Own elaboration with data from STPS and CONEVAL, 2019

In Table 7, during the period 1994-2015, it is observed that the salary was low compared to the price of the urban food basket, which generated a loss of accumulated purchasing power, but in the last four years (2016-2019) this loss disappeared.



**Figure 6** Loss of purchasing power of wages by economic sector, 1994-2019 (%)  
 Source: Own elaboration with data from STPS and CONEVAL, 2019

The behavior of the purchasing power of wages by sectors is shown below:

In Figure 6, it is observed that the primary sector was the one that during the entire period studied showed purchasing loss. For the secondary and tertiary sectors, there were losses in the same way, but it was until 2002 and 2016 respectively, where they no longer occurred.

According to Rendón (2017), in Mexico higher productivity does not necessarily equate to higher wages. In this regard, some voices argue that low wages relative to productivity can boost profits, investment, exports and job creation, but others claim that this will reduce aggregate demand and employment. In fact, with a low salary the company saves on costs, but its productivity is affected because workers are unmotivated by not finding an economic incentive to reward their work (ILO, 2017) reviewed in: Contreras Álvarez & Ríos Nequis, 2020: 38).

According to Contreras Álvarez & Ríos Nequis (2020), the dynamic insufficiency of the Mexican manufacturing export sector explained from manufacturing labor productivity can be addressed from two perspectives. The first, at the macro level, where government participation is essential not only for the design of policies aimed at promoting greater training of workers and stimulating greater investment in new technologies, machinery and equipment, but also, in a comprehensive manner, to generate an industrial development plan capable of articulating the domestic productive apparatus through the creation of the necessary linkages to achieve real growth of the Mexican economy through the manufacturing export sector. Second, at the micro level, through the implementation of business strategies that promote the training and accumulation of human capital to improve production processes and, in addition, the adoption of new technologies that allow workers to increase their productivity and thus grant them a competitive advantage to exporting companies. Regarding FDI, it is important to bear in mind that it has significant potential as an engine of growth and structural transformation; However, it has been shown that, although it can generate immediate direct effects on economic growth, its effects are rapidly diluted due to its high concentration in certain states of the country and in certain productive activities.

Therefore, it is essential for the government to formulate new policies and strategies for attracting investments with the purpose not only of strengthening current markets, but also to bet on the diversification of markets in terms of economic activities that are not currently being promoted. and that could be of great interest and profitability for FDI (Contreras Álvarez & Ríos Nequis, 2020: 41).

CONASAMI (2020) announced a 15.0% increase in the general minimum wage, which is intended to recover purchasing power and meet international expectations. However, it is important to mention that the loss of purchasing power continues in the Mexican economy, since government policy has not been able to reverse this situation. However, no particular information was given for wages by sector of economic activity.

## Conclusions

In accordance with the objectives set, it is concluded that the variables that most influenced wages in the primary sector (  $[[WSprim1]]_t$  ) were the unemployment rate and the exchange rate. In the case of the secondary sector (  $[[WSsec1]]_t$  ) they were GDP1 and the unemployment rate. For the tertiary sector (  $[[WSTER1]]_t$  ) the unemployment rate and the exchange rate were obtained.

According to the results, the hypothesis that wages is inversely related to inflation and the interest rate is accepted. In the case of wages with GDP1, it is accepted that there is a direct relationship between wages in the secondary sector (  $[[WSsec1]]_t$  ) with GDP; while for the other sectors (  $[[WSprim1]]_t$  and  $[[WSTER1]]_t$  ) it was not fulfilled. For the loss of purchasing power, it is accepted that this is directly related to inflation, if inflation increases the purchasing power decreases.

According to Varela Llamas (2021), the analyzes of the Critical Occupancy Conditions Rate (TCCO) taking into account the scope and limitations of a conceptual nature. Precariousness is conceived as the existence of a critical job from the salary perspective that has been present in the Mexican economy for some years.

It is a complex problem that can be studied from different methodological edges, it is also relevant to limit the size of its study to be able to make a very specific analysis and thus contribute to its understanding.

## References

- Animal Político (14 de febrero de 2018). A más de 50 millones de mexicanos el salario no les alcanza para comprar una canasta alimentaria. *Animal Político*. Recuperado de: <https://www.animalpolitico.com/2018/02/millonnes-mexicanos-sin-acceso-canasta-alimentaria/>.
- Animal Político. (26 de febrero de 2020). #SemáforoEconómico: En 2019 el PIB cayó 0.1%; hiló cuatro periodos de bajas. *Animal Político*. Recuperado de: <https://www.animalpolitico.com/2020/02/economia-baja-mexico-pib/>.
- Centro de Estudios de las Finanzas Públicas (CEFP). (2019). Boletín: Empleo y salario en el IMSS enero 2019. Recuperado de: <https://www.cefp.gob.mx/publicaciones/boleco/2019/becefp0082019.pdf>.
- Centro de Análisis Multidisciplinario (CAM). (2018). El salario mínimo en México: de la pobreza a la miseria. Pérdida del 78.66% del poder adquisitivo del salario. Reporte de Investigación 117. UNAM México. Recuperado de: <https://cam.economia.unam.mx>.
- Comisión Económica para América Latina y el Caribe (CEPAL). (2019). Balance Preliminar de las Economías de América Latina y el Caribe, 2019 (LC/PUB.2019/25-P), Santiago, 2019. Recuperado de: [https://repositorio.cepal.org/bitstream/handle/11362/45000/125/S1901097\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/45000/125/S1901097_es.pdf)
- Cilia L., Gildardo. (2017). *México: Salarios y Pobreza*. SDP Noticias. Recuperado de: <https://www.sdpnoticias.com>.
- Comisión Nacional de Salarios Mínimos (CONASAMI). (2020) *Salarios Mínimos*. Recuperado de: [http://www.conasami.gob.mx/salarios\\_minimos.html](http://www.conasami.gob.mx/salarios_minimos.html).
- Comisión Nacional de los Salarios Mínimos (CONASAMI). (2019), *Informe Anual de la Dirección Técnica*. Recuperado de: [https://www.gob.mx/cms/uploads/attachment/file/515301/Informe\\_anual\\_noviembre\\_2019.pdf](https://www.gob.mx/cms/uploads/attachment/file/515301/Informe_anual_noviembre_2019.pdf).
- Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL). (2019). Evolución de la canasta alimentaria. Medición de la pobreza. Recuperado de: <https://www.coneval.org.mx/Medicion/MP/Paginas/Lineas-de-bienestar-y-canasta-basica.aspx>.
- Contreras Álvarez, I., & Ríos Nequis, E. I. (2020). La dinámica exportadora manufacturera como restricción al crecimiento en México mediante el análisis de la productividad y la IED, 2005-2018. *Ciencias Administrativas*, (17), 073. <https://doi.org/10.24215/23143738e073>
- Fernández, R. (2020). Participación de los sectores económicos en el producto bruto mundial (PIB) mundial desde 2006 hasta 2018. *Statista*, 6 de noviembre. Disponible en: <https://es.statista.com/estadisticas/598959/participacion-de-los-sectores-economicos-en-el-producto-interno-bruto-pib-mundial-de-2003-a/>
- Fondo Monetario Internacional (FMI). (2014). *Consulta del Artículo IV con Estados Unidos de América correspondiente a 2014*. Declaración al final de la misión. Fondo monetario Internacional. Recuperado de: <https://www.imf.org/external/np/ms/2014/061614.htm>.
- Fondo Monetario Internacional (FMI). (2017). Informes de perspectivas de la economía mundial. Recuperado de: <https://www.imf.org/es/Publications/WEO/Issues/2017/09/24/world-economic-outlook-october-2017>.
- Instituto Nacional de Estadística y Geografía (INEGI). (2019). Producto Interno Bruto de México durante el tercer trimestre de 2019. comunicado de prensa núm. 625/19 25 de noviembre de 2019. Recuperado de: [https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2019/pib\\_pconst/pib\\_pconst2019\\_11.pdf](https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2019/pib_pconst/pib_pconst2019_11.pdf)

Morales, Y. (2020, 26 de febrero). Economía mexicana se contrajo 0.14% durante el 2019, confirma el INEGI. *El Economista*. Recuperado de:

<https://www.economista.com.mx/economia/Economia-mexicana-se-contrajo-0.14-durante-el-2019-confirma-el-Inegi-20200226-0019.html>.

Organización Internacional del Trabajo (OIT). (1992). Conferencia Internacional del Trabajo 79.a reunión. Oficina Internacional del Trabajo, Ginebra. Recuperado de: <https://www.ilo.org/public/libdoc/ilo/P/09663/09663281992-79-4B29.pdf>

Organización Internacional del Trabajo (2017). Informe Mundial sobre Salarios 2016-2017: La desigualdad salarial en el lugar de trabajo. Recuperado 8 de enero de 2020 de <http://www.ilo.org/global/research/global-reports/global-wage-report/2016/lang-es/index.htm>

Organización Internacional del Trabajo (OIT). (2017a). *Informe Mundial Sobre Salarios 2016/2017*. Recuperado de [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms\\_541632.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_541632.pdf)

Organización Internacional del Trabajo (OIT). (2019). *Informe Mundial Sobre Salarios 2018/2019*. Recuperado de: [https://www.ilo.org/wcmsp5/groups/public/dgreports/dcomm/publ/documents/publication/wcms\\_712957.pdf](https://www.ilo.org/wcmsp5/groups/public/dgreports/dcomm/publ/documents/publication/wcms_712957.pdf).

Rendón, L. (2017). Indicadores de productividad en la industria manufacturera de México. 2007-2017. *Economía Actual*, 10(3), 38-42.

Secretaría del Trabajo y Previsión Social (STPS). (2019). Salarios diarios asociado a cotizantes del IMSS. México. Recuperado de: [http://www.stps.gob.mx/gobmx/estadisticas/302\\_0057.htm?verinfo=2](http://www.stps.gob.mx/gobmx/estadisticas/302_0057.htm?verinfo=2).

Suarez, Urrutia René. (2018). Radiografía salarial en México. *Nexos*, 28 de agosto. Recuperado de <https://economia.nexos.com.mx/?p=1830>

Varela Llamas, R. (2021). Empleo precario y actividad económica en las entidades federativas de México. *Panorama Económico*, 16(33), 185–205. Recuperado a partir de <http://www.panoramaeconomico.mx/ojs/index.php/PE/article/view/69>