

## **Informality as a Buffer of the Labor Market in Contractionary Phases of the Business Cycle**

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### **Abstract**

Given its structural persistence in the Mexican economy, labor informality constitutes a complex phenomenon that constrains economic and social development while reflecting deep conditions of vulnerability within the labor market. In this context, this study aims to analyze the joint impact of key macroeconomic variables—namely gross domestic product, the interest rate, and the unemployment rate—on the labor informality rate, in order to understand its cyclical dynamics and transmission mechanisms. To this end, a two-stage least squares (2SLS) econometric model is employed, using quarterly data for the period 2006–2024. This methodology allows for the identification of both direct and indirect effects among variables, particularly in the presence of potential multicollinearity. The results indicate that labor informality behaves as a countercyclical variable, increasing during periods of economic slowdown and functioning as a buffer mechanism within the labor market during contractionary phases of the business cycle. As its main contribution, this study provides empirical evidence on the role of informality as an adaptive response to macroeconomic shocks and highlights the need for public policies that not only reduce its prevalence but also improve working conditions in this sector, thereby breaking its structural link with vulnerability.

### **Key Words**

Informal Labor Markets, Unemployment, Economic Cycles

**JEL Classification:** J46, E24, E32

### **Introduction**

Labor informality, understood as the proportion of the employed population working under vulnerable conditions, constitutes a structural and persistent phenomenon within the Mexican economy. This phenomenon is not homogeneous; rather, it is classified into four categories according to the type of economic unit in which the activity is performed: informal employment in informal economic units, informal employment in formal economic units, agricultural employment, and paid domestic work. Although each category exhibits particular characteristics that shape its response to labor policy decisions, together they account for 55.5% of the national labor force (2025) and contribute approximately 25% of Mexico's gross domestic product (2023) (INEGI, s. f.; INEGI, 2025; México, ¿Cómo Vamos?, 2025).

Furthermore, informal employment is not evenly distributed across the country but instead exhibits pronounced regional disparities. In 2024, northern states such as Nuevo León (33.3%) and Chihuahua (35.2%) recorded the lowest labor informality rates, whereas southern states such as Oaxaca (78.0%)

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and Guerrero (77.5%) exhibited the highest levels. At the same time, data from the Population and Housing Census (CPV) and the National Survey of Occupation and Employment (ENOE) reveal persistent structural inequalities by gender, age, and ethnicity. Specifically, the labor informality rate among women declined only marginally, from 56.9% to 55.6% between 2018 and 2024, widening the gender gap to 2.2 percentage points. Across age groups, young workers aged 15–24 exhibit a labor informality rate of 67.7%, while older adults reach 74.9%, both well above the national average. From an ethnic perspective, the Indigenous population faces the highest level of vulnerability, with a labor informality rate of 84.4%, compared with 59% for the general population. Moreover, from an international perspective, the International Labour Organization (ILO) estimates that the labor informality rate in Latin America and the Caribbean reached 47.6% in 2024, placing Mexico above the regional average. This positions the country closer to economies such as Bolivia (83.9%) and Barbados (61.9%) than to countries such as Chile (27.5%) and Uruguay (28.5%) (INEGI, 2024; ILO, 2025; Bensusán & Florez Vaquiro, 2024).

Consequently, this situation not only poses significant challenges to Mexico's economic and social development but also directly conflicts with Sustainable Development Goal 8: Decent Work and Economic Growth, which seeks to reduce labor informality and inequality in the labor market. Although studies such as Poy (2024) have examined the net effect of labor informality on monetary poverty, as well as the labor, sociodemographic, and household characteristics most strongly associated with this phenomenon, important research avenues remain unexplored. A more comprehensive understanding of labor informality is essential for designing effective policy interventions (United Nations, 2023).

Accordingly, the objective of this study is to analyze, based on specialized literature and econometric modeling, the effects of gross domestic product, the interest rate, and the unemployment rate on the labor informality rate in order to understand its cyclical dynamics and transmission mechanisms in Mexico. The analysis is based on the hypothesis that, as proposed by Keynes (1936), an increase in the interest rate discourages investment and reduces aggregate output ( $\Delta \text{Interest Rate} \uparrow \Rightarrow \Delta \text{GDP} \downarrow$ ). Consistent with the evidence reported by Leyva and Urrutia (2019), these contractionary shocks are expected to be transmitted to the labor market, increasing unemployment and, consequently, labor informality ( $\Delta \text{Unemployment} \uparrow \Rightarrow \Delta \text{Labor Informality} \uparrow$ ).

The remainder of this paper is organized as follows. The next section presents the literature review and theoretical framework, followed by the methodology. The subsequent section discusses the empirical results, and the final section concludes the paper.

## Literature Review

In this context, labor informality has been widely addressed in the economic literature as a structural phenomenon associated with labor market failures and institutional constraints in developing economies. From a theoretical perspective, the informal sector can be understood as a mechanism for absorbing workers who are unable to enter the formal sector, either because of insufficient labor demand or because the economic system is unable to generate enough productive and decent jobs. Accordingly, labor informality not only reflects a condition of labor precariousness but also represents a labor market adjustment mechanism in response to macroeconomic imbalances (Loayza & Sugawara, 2009).

Within this framework, different approaches have sought to explain the relationship between labor informality and the business cycle. On the one hand, the literature suggests that during periods of economic expansion, gross domestic product growth tends to create greater opportunities for formal

employment, thereby reducing the relative share of informal employment. On the other hand, during economic downturns, declining economic activity results in layoffs and fewer employment opportunities, pushing workers into the informal sector as a means of subsistence. This dynamic has been empirically documented in several Latin American economies, where labor informality behaves as a countercyclical component of the labor market (Leyva & Urrutia, 2019; Loayza & Sugawara, 2009).

From a macroeconomic perspective, the relationship between interest rates, investment, and output has been extensively examined within the Keynesian framework. According to Keynes (1936), an increase in interest rates raises the cost of borrowing, discourages private investment, and ultimately reduces aggregate output. This contraction in economic activity directly affects employment by limiting firms' ability to create or maintain jobs. Consequently, restrictive monetary shocks may exert indirect effects on the labor market by increasing unemployment and, ultimately, labor informality.

However, the transmission of these effects is not necessarily immediate or linear. Within the context of the business cycle, the relationship between interest rates and unemployment may exhibit time lags and apparently counterintuitive short-run dynamics. As argued by Vargas (2020), periods of relatively low interest rates may coexist with high unemployment levels because the labor market adjusts more slowly than monetary policy following an adverse economic shock. This temporal mismatch suggests that analyses of labor informality should consider not only contemporaneous relationships among variables but also their dynamic interactions throughout the business cycle.

Furthermore, the labor market literature has identified unemployment as a key determinant of labor informality. In particular, increases in the unemployment rate are generally associated with a higher proportion of workers entering informal employment as an alternative to the lack of opportunities in the formal sector. This adjustment mechanism has been documented in studies examining labor market transitions, showing that informal employment often serves as an intermediate stage between formal employment and labor market inactivity (Grossman & Bolaños, 2023).

Likewise, the relationship between unemployment and inflation, traditionally explained through the Phillips curve, provides an additional framework for understanding the interaction between macroeconomic variables and labor market outcomes. According to Phillips (1958), there is an inverse relationship between the unemployment rate and the rate of nominal wage growth, implying that higher unemployment is generally associated with lower inflationary pressures. In this context, monetary policy decisions may indirectly affect labor market conditions by adjusting interest rates in response to changes in inflation and economic activity (León & Martínez, 2013).

Finally, from a broader economic development perspective, the persistence of high levels of labor informality has been associated with lower productivity, limited tax revenue, and greater social inequality. In this sense, labor informality is not only an outcome of labor market conditions but also a factor that reinforces structural economic problems. Recent studies have shown that the widespread prevalence of informal employment is associated with higher levels of working poverty and reduced access to social protection mechanisms, reinforcing its characterization as a structural and multidimensional phenomenon (Poy, 2024; Bensusán & Florez Vaquiro, 2024).

Taken together, the literature reviewed indicates that labor informality is closely linked to the dynamics of the business cycle and to the behavior of key macroeconomic variables, particularly gross domestic product, interest rates, and unemployment. Nevertheless, important gaps remain in understanding the specific mechanisms through which these variables interact and are transmitted to labor informality. Against this backdrop, the present study seeks to contribute to this line of research by estimating an

econometric model capable of identifying both the direct and indirect effects among these variables, thereby providing empirical evidence for the Mexican economy.

### Methodology

In line with the foregoing discussion, a multiple linear regression model was proposed, as specified in Equation (1), using quarterly data covering the 2006–2024 period. The data were obtained from the National Institute of Statistics and Geography (INEGI), the National Survey of Occupation and Employment (ENOE), and the Bank of Mexico's Economic Information System (SIE), considering the population aged 15 years and older. According to Gujarati and Porter (2010) and Wooldridge (2013), this technique provides a straightforward framework for simultaneously estimating the effects of multiple independent variables on a dependent variable.

Within this framework, the dependent variable corresponds to the Labor Informality Rate ( $LIR_t$ ), defined as the proportion of the employed population comprising, without duplication, workers who are labor-vulnerable due to the nature of the economic unit for which they work, together with those whose employment relationship or labor dependency is not formally recognized by their employer. The explanatory variables include Gross Domestic Product ( $GDP_t$ ), understood as the economic indicator that measures the monetary value of all goods and services produced within a territory during a given period; the 28-day Interbank Equilibrium Interest Rate ( $TIIE_t$ ), which represents the benchmark interest rate applied to lending and borrowing operations among financial institutions and is calculated by the Bank of Mexico every 28 days based on quotations submitted by commercial banks, inflation, and market conditions; and the Unemployment Rate ( $UR_t$ ), defined as the percentage of the Economically Active Population (EAP) that is unemployed but actively seeking employment (INEGI, n.d.; Arias, 2025; BBVA, 2025).

The variables, together with their transformations and sampling frequency, are summarized in Table 1.

**Table 1.** Data for the variables used

| Unit |         | Percentage | ln(GDP in million pesos) | Percentage | Percentage |
|------|---------|------------|--------------------------|------------|------------|
| Year | Quarter | $LIR_t$    | $GDP_t$                  | $TIIE_t$   | $UR_t$     |
| 2006 | I       | 58.7087    | 16.7789                  | 8.0200     | 3.5255     |
| ...  | ...     | ...        | ...                      | ...        | ...        |
| 2024 | IV      | 54.4501    | 17.0651                  | 10.5767    | 2.5678     |

Source: Author's own elaboration based on data from the National Institute of Statistics and Geography (INEGI), the National Survey of Occupation and Employment (ENOE), and the Bank of Mexico's Economic Information System (SIE).

### Notes:

1. The labor informality rate for the second quarter of 2020 was estimated as the average of the first, third, and fourth quarters of the same year. To assess the sensitivity of the results to the inclusion of this extraordinary observation, a robustness test excluding 2020-Q2 was performed.

The estimated coefficients retained the same sign and statistical significance, with only minor changes in magnitude, indicating that the model is relatively robust and that the conclusions do not depend exclusively on the COVID-19 shock.

2. Gross Domestic Product was transformed using the natural logarithm of the original series, expressed in annualized millions of pesos at constant 2018 prices, in order to standardize the scale across variables.
3. Monthly interest rates were converted into quarterly rates by averaging three consecutive monthly observations.
4. The unemployment rate was calculated as the ratio of the total unemployed population to the total Economically Active Population (EAP).
5. Data are reported with four decimal places, rounding upward when the following digit is five or greater and downward otherwise.

The proposed model is specified as follows:

$$LIR_t = a_0 + a_1 \ln(GDP_t) + a_2 TIE_t + a_3 UR_t + U_t \quad (1)$$

The objective of this specification is to estimate the coefficients ( $a_j$ ) of the explanatory variables and evaluate their statistical significance with respect to the dependent variable through individual p-values and the overall F-statistic, while considering the stochastic error term ( $U_t$ ), which captures unexplained variation not accounted for by the regressors (Gujarati & Porter, 2010; Wooldridge, 2013). The corresponding hypothesis test is defined as follows:

$$H_0: a_j = 0 \quad vs \quad H_a: a_j \neq 0, \quad for \ j = 1, 2, 3 \quad (2)$$

After estimating the initial model, the results corresponding to Estimation (1) were obtained and are presented in Table 2.

**Table 2.** Estimates

| Estimation              | Estimation (1) |        |         | Estimation (3) |       |         | Estimation (4) |        |         |
|-------------------------|----------------|--------|---------|----------------|-------|---------|----------------|--------|---------|
| Variable                | Coef.          | S.E.   | P-value | Coef.          | S.E.  | P-value | Coef.          | S.E.   | P-value |
| $GDP_t$                 | -10.155        | 1.710  | 0.000   | -              | -     | -       | -11.961        | 1.371  | 0.000   |
| $TIE_t$                 | -0.109         | 0.075  | 0.152   | -0.283         | 0.027 | 0.000   | -              | -      | -       |
| $UR_t$                  | 0.434          | 0.251  | 0.089   | -              | -     | -       | -              | -      | -       |
| $\widehat{UR}_t(TIE_t)$ | -              | -      | -       | -              | -     | -       | 0.733          | 0.178  | 0.000   |
| <b>Cons.</b>            | 228.063        | 29.716 | -       | 5.918          | 0.187 | -       | 256.677        | 23.482 | -       |
| <b>N</b>                | 76             |        |         | 76             |       |         | 76             |        |         |
| <b>R<sup>2</sup></b>    | 0.669          |        |         | 0.597          |       |         | 0.655          |        |         |
| <b>F</b>                | 48.62          |        |         | 109.72         |       |         | 69.56          |        |         |
| <b>Prob &gt; F</b>      | 0.000          |        |         | 0.000          |       |         | 0.000          |        |         |

Source: Author's own elaboration.

**Notes:**

1. Blank cells indicate that the corresponding variable was not included in that specific regression because it was not relevant to the estimation.
2. The coefficient obtained by multiplying the partial derivatives estimated in both stages equals  $-0.207$ , representing the indirect effect of the interest rate on labor informality through unemployment.
3. Values are reported with three decimal places and are not rounded.

The high value of the F-statistic (48.62), together with its associated p-value (0.000), allowed rejection of the null hypothesis of the overall significance test, indicating that the explanatory variables jointly provide statistically significant information for explaining variation in the labor informality rate. However, two individual variables were not statistically significant at the 95% confidence level, suggesting the possible presence of multicollinearity. This issue was explored through a statistically significant correlation matrix, which identifies both the magnitude and direction of pairwise associations (Wooldridge, 2013).

**Table 3.** Correlation Matrix and Variance Inflation Factor (VIF)

| Variable | $GDP_t$ | $TIE_t$       | $UR_t$         | VIF  | 1/VIF |
|----------|---------|---------------|----------------|------|-------|
| $GDP_t$  | 1.000   | 0.373 (0.000) | -0.648 (0.000) | 1.86 | 0.538 |
| $TIE_t$  | -       | 1.000         | -0.772 (0.000) | 2.67 | 0.374 |
| $UR_t$   | -       | -             | 1.000          | 3.97 | 0.252 |

Source: Author's own elaboration.

**Notes:**

1. Values in parentheses correspond to the p-values associated with each correlation coefficient.
2. The mean VIF was approximately 2.83.
3. Data are reported with two and three decimal places without rounding.

The results revealed statistically significant associations among all explanatory variables. In particular, the strongest relationship was observed between the interest rate and unemployment, with a negative correlation of  $-0.772$ , suggesting a potential source of multicollinearity. From a theoretical perspective, this relationship can be explained by the interaction among macroeconomic variables as described by the Phillips Curve (1958), according to which higher unemployment tends to be associated with lower inflationary pressures and, consequently, with adjustments in interest rates (León & Martínez, 2013).

Additionally, Variance Inflation Factors (VIFs) were estimated and, as shown in Table 3, all remained below the commonly accepted critical threshold ( $VIF < 5$ ), indicating that multicollinearity does not constitute a severe problem. Nevertheless, in order to separate direct and indirect effects among variables and avoid potential distortions in the estimated coefficients, a Two-Stage Least Squares (2SLS) model was implemented, although this methodology is more commonly employed to address endogeneity problems (Wooldridge, 2013).

In the first stage, a simple linear regression was estimated between the pair of variables exhibiting the highest correlation:

$$UR_t = a_0 + a_1 TII E_t + U_t \quad (3)$$

In the second stage, the fitted values obtained from the first-stage regression were incorporated as an explanatory variable, together with Gross Domestic Product, into the final multiple regression model:

$$LIR_t = a_0 + a_1 \ln(GDP_t) + a_2 \widehat{UR}_t(TII E_t) + U_t \quad (4)$$

Finally, the indirect effect of the interest rate on the labor informality rate through unemployment was quantified by multiplying the partial derivatives estimated in both stages of the model:

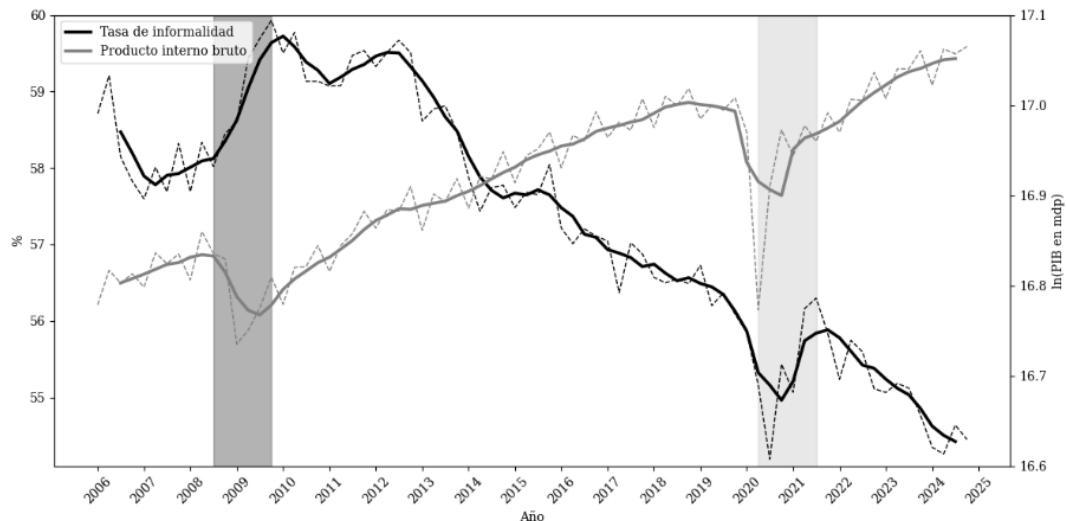
$$\frac{d\widehat{LIR}_t}{dTII E_t} = \frac{d\widehat{LIR}_t}{d\widehat{UR}_t} \cdot \frac{d\widehat{UR}_t}{dTII E_t} \quad (5)$$

## Results and Discussion

Based on the proposed methodological framework, the analysis focused exclusively on interpreting the results obtained from the two-stage least squares (2SLS) model, presented in estimations (3) and (4) of Table 2.

As shown in estimation (4), all independent variables were individually statistically significant in explaining the dependent variable, without introducing distortions due to multicollinearity, as evidenced by the associated p-values (both equal to 0.000). In particular, the coefficient of gross domestic product (-11.961) indicates that a 1% increase in GDP is associated with an approximate 0.12 percentage-point reduction in the labor informality rate. This magnitude is not only statistically significant but also economically meaningful, as it reflects the sensitivity of labor informality to changes in aggregate economic activity.

*Labor informality rate vs. Gross Domestic Product*



**Figure 1.** The figure shows the relationship between the labor informality rate (percentage) and gross domestic product (natural logarithm), using both the original data (dashed line) and the smoothed data (solid line). Two episodes of economic contraction are highlighted by shaded gray areas: the first in 2008 and the second in 2020. Author's own elaboration in Python using data from INEGI and the ENOE.

This finding confirms a negative relationship —shown in Figure 1— consistent with the proposed hypothesis and reinforces the notion that, during periods of economic expansion, the formal sector has a greater capacity to absorb labor, thereby reducing the need for workers to rely on informal employment. Conversely, during economic downturns, declining production limits the creation of formal jobs, pushing workers into the informal sector. This empirical evidence is consistent with Duarte (2024), who argues that liquidity constraints faced by firms during economic slowdowns lead to labor adjustments that increase informality as a short-term survival mechanism.

From an economic perspective, the estimated GDP coefficient measures the sensitivity of labor informality to changes in economic activity and should not be interpreted as identifying a specific growth target capable of eliminating informality by itself. In other words, although the model indicates that higher economic activity is associated with lower levels of informality, it does not imply that any particular percentage increase in GDP would be sufficient to absorb the large proportion of workers currently employed in the informal sector. Rather, the estimated coefficients represent average relationships over the study period and quantify the magnitude of these associations. Consequently, their primary contribution lies in improving the understanding of the direction and intensity of the phenomenon rather than establishing specific economic policy targets (Gujarati & Porter, 2010; Wooldridge, 2013).

From a public policy perspective, these findings suggest that economic growth is a necessary—but not sufficient—condition for achieving a sustained reduction in labor informality in Mexico. Given the structural and heterogeneous nature of this phenomenon, economic expansion should be complemented by policies aimed at increasing productivity, promoting business formalization, expanding social protection coverage, and reducing the costs associated with formal employment, particularly among the most vulnerable population groups. Therefore, the results of this study are not intended to propose a specific economic growth target but rather to provide empirical evidence that contributes to the design of comprehensive strategies for reducing labor informality and strengthening labor market performance (United Nations, 2023; Duarte, 2024).

Likewise, this behavior is consistent with the international literature on developing economies. In particular, Fernández Martín (2015) documents that labor informality in Mexico follows a countercyclical pattern, systematically increasing during recessions. Similarly, La Porta and Shleifer (2014) argue that the informal sector functions as an employment buffer for workers excluded from the formal economy, especially in environments where labor market institutions and economic rigidities hinder adjustment through formal employment.

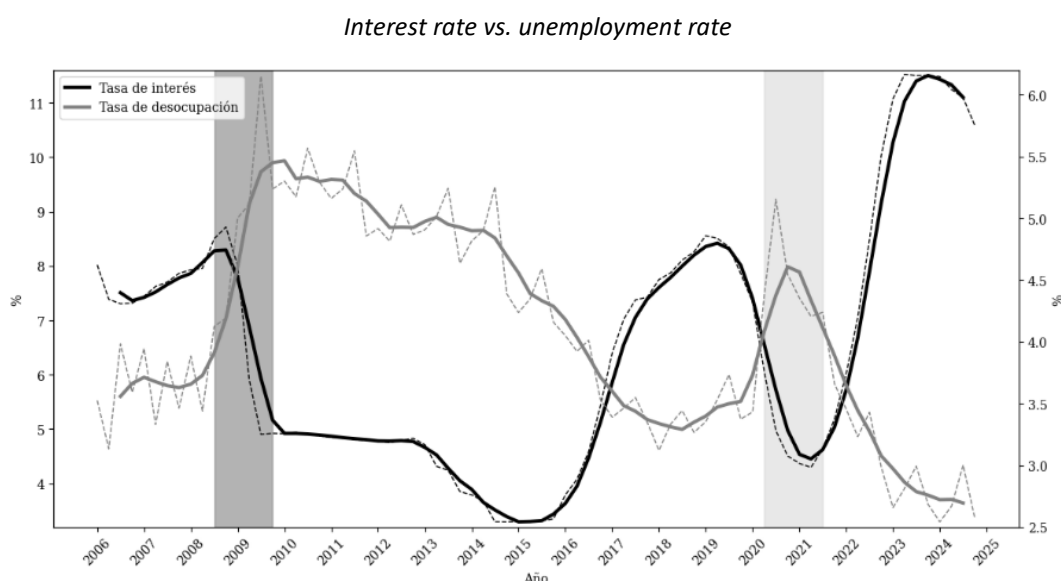
Furthermore, the magnitude of the estimated coefficient suggests that labor informality does not respond proportionally to changes in GDP but rather adjusts only moderately, indicating the presence of structural factors that prevent a complete response to the business cycle. This implies that, although labor informality reacts to macroeconomic shocks, its persistently high levels are also explained by institutional and structural characteristics of the Mexican labor market, as emphasized by La Porta and Shleifer (2014).

Regarding estimation (3), the results show that a one-percentage-point decrease in the interest rate generates an increase of approximately 0.283 percentage points in the unemployment rate. This highly significant coefficient ( $p$ -value = 0.000) suggests the existence of a contemporaneous inverse relationship between both variables during the study period. Combining this estimate with the second-

stage coefficient (0.733) yields a total indirect effect of approximately -0.207, implying that a reduction in interest rates increases labor informality through its impact on unemployment.

This result reveals the existence of an indirect transmission channel through which monetary policy influences labor market conditions and, consequently, labor informality. From an economic standpoint, this finding suggests that monetary policy decisions affect not only productive activity but also the composition of employment.

Nevertheless, this estimate may initially appear counterintuitive, since the negative relationship between interest rates and unemployment differs from the evidence presented by Antón and Villegas (2013), who argue that restrictive monetary policy tends to increase unemployment. However, this apparent contradiction can be reconciled by incorporating the temporal dimension of the analysis. As explained by Vargas (2020), the effects of monetary policy on labor market outcomes are not immediate but occur with lags that depend on the phase of the business cycle. This dynamic can be observed in Figure 2.



**Figure 2.** The figure shows the relationship between the interest rate (percentage) and the unemployment rate (percentage), using both the original data (dashed line) and the smoothed data (solid line). Two episodes of economic contraction are highlighted by shaded gray areas: the first in 2008 and the second in 2020. Author's own elaboration in Python using data from INEGI, the ENOE, and the SIE.

Accordingly, periods may exist in which relatively low interest rates coexist with high unemployment, particularly during the recovery phase following a recession, when monetary policy has already become more expansionary, but labor market conditions have not yet fully recovered. This interpretation is consistent with the findings of Horvath and Yang (2021), who show that, in small open economies, unemployment and informality dynamics are strongly influenced by macroeconomic shocks and gradual adjustment processes.

Additionally, the positive relationship between unemployment and labor informality—captured indirectly by the model—reinforces the notion that unemployment acts as an immediate determinant of informal employment. In other words, when individuals are unable to obtain formal jobs, they increasingly rely on informal employment as a short-term alternative. This adjustment mechanism has

been widely documented in the literature and represents one of the principal channels through which economic shocks are transmitted to labor markets.

Overall, the findings indicate that labor informality in Mexico is not only a structural phenomenon but also a dynamic adjustment mechanism in response to economic fluctuations. Its countercyclical nature is reflected both directly, through its relationship with gross domestic product, and indirectly, through the interaction between interest rates and unemployment.

This dual dimension reinforces the notion that labor informality functions as a labor market buffer, absorbing part of the negative effects generated during economic downturns. However, this buffering role should not be interpreted as an efficient solution but rather as a suboptimal response to the inability of the formal sector to generate sufficient employment, highlighting important challenges for the design of public policies aimed at improving job quality and reducing labor vulnerability in Mexico.

### **Conclusions**

In summary, the findings demonstrate that labor informality behaves as a countercyclical variable in Mexico, functioning as a labor market buffer during periods of economic contraction. Accordingly, the general objective of this study was achieved by identifying and quantifying the effects of gross domestic product, interest rates, and unemployment on labor informality, as well as their transmission dynamics throughout the business cycle.

Specifically, a contraction in gross domestic product is associated with an increase in labor informality, while, within the context of business cycle dynamics, an increase in interest rates indirectly contributes to higher informality through its positive—although lagged—effect on unemployment. One of the study's main contributions is the identification of this indirect transmission channel using a two-stage least squares (2SLS) model, allowing a more precise assessment of the interaction between macroeconomic variables and their impact on labor market outcomes.

However, these findings should not be interpreted in an overly optimistic manner. Because labor informality consists primarily of precarious employment characterized by low wages, limited social protection, greater economic vulnerability, and unreported production, it remains one of Mexico's most significant socioeconomic challenges. It perpetuates inequality, labor poverty—since, holding other factors constant, labor poverty would be lower if informal workers earned wages comparable to those in formal employment—long-term structural unemployment—given its limited capacity to provide sustainable employment and its role as a transition toward labor market inactivity—and deterioration in the provision of essential public goods by restricting the government's fiscal capacity. Consequently, labor informality constrains the country's prospects for achieving sustainable economic growth (Poy, 2024; Grossman & Bolaños, 2023; Loayza & Sugawara, 2009).

Based on the structural and heterogeneous nature of labor informality identified in this study, together with the absence of effective public policies capable of guaranteeing decent working conditions and an adequate regulatory framework—particularly for women, young people, older adults, and Indigenous populations, who represent the groups most affected—future research should continue advancing this line of inquiry. Specifically, future work should focus on modeling and evaluating the intervention strategies proposed by the United Nations, which aim to break the vicious cycle linking vulnerability and labor informality (United Nations, 2023).

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**Notes:** Based on the links provided for the data sources, the download procedure for some of the datasets is as follows:

1. Labor informality rate: Predefined tables > Quarterly > Labor informality > Rates/Quarterly, 2005–2025 > Quarterly informality rates > Point estimates > National Labor Informality Rate 1 (TIL1).
2. Unemployed population: Interactive tables > Unemployed population > Total.
3. Gross domestic product: Predefined tables > Detailed series > Original series > Annualized millions of pesos at 2018 prices, 1993–2025 > Concept > aB.1bP – Gross Domestic Product.