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Effects of the initiative Jóvenes Construyendo el Futuro on the Mexican youth labor market

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Abstract

Mexican youth face a worrying outlook regarding their integration into the labor market. These demographic experiences precarious wages and a high probability of ending up in the informal market. In response to the problems of the youth labor market, the public initiative *Jóvenes Construyendo el Futuro* (JCF) was created. This article's analysis applies a linear regression technique to estimate the effect of the number of program beneficiaries on levels of youth labor informality and poverty within this same cohort, additionally comparing these results with linear estimates of the effect of Foreign Direct Investment on those dependent variables. During the analysis, it was found that the only statistically significant effect was that of foreign direct investment on levels of youth informality, with a p_{value} of 0.06 for the t-student test. The set of results obtained could be explained both by the structure of the Mexican economy and by some potential areas of improvement within the JCF program, particularly the lack of training in skills demanded by the labor market for its beneficiaries. Nonetheless, this article's analysis is a mere exploration and future research, using longitudinal data, is necessary.

Key Words

Jóvenes Construyendo el Futuro, Foreign Direct Investment, informality, poverty

JEL Classification: J08, F21

Introduction

The landscape facing young people in Mexico is characterized by numerous challenges and barriers related to their integration into the formal labor market and their ability to earn a living wage. Currently, it is estimated that approximately 33% of Mexicans between the ages of 15 and 24 are unemployed (Expansión, 2025). One of the primary causes of this unemployment is the inability to obtain prior work experience, which is a common requirement for hiring (OCC, 2024).

Equally concerning is the prevalence of labor informality among these age cohort. It is estimated that 58% of Mexicans between the ages of 15 and 29 are currently employed in the informal sector (INEGI, 2024). Informal employment limits opportunities for

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professional development while also being associated with low wages and economic insecurity (Universidad Iberoamericana, 2024). Therefore, it is estimated that 28.8% of individuals between the ages of 18 and 29 are unable to meet their basic needs with the income they regularly earn (INEGI, 2024).

It is also important to emphasize that wages in Mexico remain particularly low. According to Forbes (2023), 45% of Mexicans earn an income that is insufficient to lift them out of poverty, and this trend persists even among formally employed workers. Furthermore, this situation disproportionately affects young people due to the deterioration of the labor market for entry-level positions (La Silla Rota, 2025). As a result, the average wage for Mexicans between the ages of 18 and 29 is only 35 *pesos* per hour worked (INEGI, 2024).

As a public policy response to these challenges, the Jóvenes Construyendo el Futuro (Youth Building the Future, JCF) program was established. The program provides young people between the ages of 18 and 29 with twelve months of on-the-job training in formally registered businesses. It is specifically targeted at young people who are neither employed nor enrolled in school (STPS, 2024). Although its explicit objective is to reduce youth unemployment, it is also relevant to assess whether the program has succeeded in facilitating participants' integration into the formal labor market within adequately paid positions.

Given this context, it is worth questioning whether the JCF program has produced a measurable positive effect, either by reducing youth poverty or by lowering unemployment within this demographic. Alternatively, it is possible that other factors, such as foreign direct investment, exert a greater influence on these outcomes. Adopting an exploratory approach, this study proposes a linear regression analysis to examine the relationships among a set of variables associated with young people's integration into the labor market.

This article is divided into four sections. The first provides a brief review of labor market dynamics, previous public programs designed to facilitate youth labor market integration, and the existing literature specifically addressing the JCF program. The second section describes the variables and methodology employed in the analysis. The third presents and discusses the empirical findings. Finally, the last section outlines the study's conclusions and discusses its limitations.

Literature review

Determinants of Wage Levels and Formal Employment

The formal labor market is characterized by dynamics that determine employment and wage levels across the economy as a whole. Although these dynamics may vary depending

on the specific economic sector under consideration, their underlying mechanisms remain fundamentally similar.

Broadly speaking, employment and wage levels depend on the equilibrium between labor supply and demand within an economy. Labor supply refers to the number of workers willing to work at a given wage level, whereas labor demand depends on the number of positions created by firms willing to hire workers at that wage. Consequently, the labor demand curve is directly associated with investment expansion and business growth (Kryńska & Kopycińska, 2015). Furthermore, from a neoclassical perspective, firms are expected to hire workers until the marginal cost of employing an additional worker equals the marginal benefit generated by that worker (Joll et al., 2019).

It is important to note that this equilibrium between labor supply and demand does not always occur under perfectly competitive conditions because of the presence of institutional factors such as labor unions. In particular, Bellmann and Emmerich (1992) present a theoretical proposition supported by a systematic review of empirical studies. According to their framework, labor unions generally seek to protect the job security of workers who are already employed, which may, under certain circumstances, prolong the unemployment of other individuals.

From a different perspective, Maechler and Roland-Holst (1995) argue that firms may pay wages above the market equilibrium level for efficiency reasons. According to these authors, firms occasionally provide employees with "gifts" in the form of higher wages to encourage greater individual effort, particularly in multinational or foreign-owned companies. Their study further suggests that this phenomenon is partially related to the degree of competition employers perceive among their workforce. Likewise, Yellen (1984) argues that the payment of efficiency wages may generate involuntary unemployment, since firms allocate their wage budgets to a limited number of positions that are compensated above the market equilibrium wage.

Similarly, Varela et al. (2010) contend that improvements in worker productivity lead to greater wage accumulation over the long run. These authors further argue that formal education constitutes one of the principal mechanisms through which workers can increase their productivity. Likewise, Bassi et al. (2012) emphasize the need for training in information and communication technologies, arguing that an ever-evolving labor market requires workers who possess the skills necessary to use emerging technologies effectively. Consequently, they advocate for the establishment of institutions capable of providing high-quality technical education.

Because of those differences in workers' skill levels and other relevant macroeconomic factors, labor markets in many regions are divided into a formal and an informal sector, the latter operating outside the legal and regulatory framework. In some cases, economic

agents remain outside the formal economy because of the costs associated with formalization, while in others they are excluded by barriers to entry. In Mexico's specific case, labor informality is partly explained by the barriers employers face when attempting to formalize their businesses. Among the most common obstacles are the administrative requirements associated with official registration and the costs derived from complying with legally mandated employer obligations. These conditions highlight the need for institutional reforms aimed at reducing barriers to formalization (Loayza & Sugawara, 2009).

Insufficient workforce skills may also discourage firms from hiring workers (Chacaltana, 2005). Although relatively few academic estimates have quantified this cost, an estimate reported by the business network Universia suggests that training a newly hired employee for a formal-sector position costs between three and six months of wages (Universia, as cited in *Estrategia y Negocio*, 2019).

Additionally, Robles and Martínez (2018) argue that workers who are unable to enter the formal labor market because of hiring barriers frequently resort to informal employment, following a pattern similar to that observed among employers operating in the informal economy.

Meanwhile, Lara et al. (2020), argue that labor informality is exacerbated by demographic pressures, particularly rural-to-urban migration. Similar findings were reported by Guzmán and Quezada (2025), who, using a fixed-effects model, concluded that population growth in metropolitan areas is a significant determinant of labor informality. This conclusion is further supported by Cuevas et al. (2016), who analyzed microdata from the 2015 edition of the National Survey of Occupation and Employment (ENOE, for the Spanish acronym) and found that economic marginalization in certain regions contributes to the development of informal labor markets.

Young people constitute one of the demographic groups most vulnerable to labor informality in Mexico. Sánchez (2013), using an ordinal logistic regression analysis based on ENOE data collected between 2005 and 2010, found that youth are particularly susceptible to informal employment. This vulnerability is partly explained by low educational attainment, which may exclude young individuals from highly skilled occupations that are generally associated with formal employment. Similar conclusions were reached by De Oliveira (2006) through a series of regression analyses using data from the 2000 National Youth Survey.

Additionally, Dougherty and Escobar (2013), based on a state-level analysis covering all of Mexico, emphasize the importance of developing a skilled labor force as a strategy for

reducing labor informality. They further identify foreign direct investment (FDI) as a contextual factor capable of mitigating labor informality. This finding is consistent with the work of Padilla (2018), who identified a negative correlation between FDI and labor informality in Mexico using data beginning in 2000, suggesting that this relationship may be explained by the increased competitiveness generated through the entry of foreign firms.

Previous Youth Labor Market Integration Programs

A variety of government programs aimed at promoting youth labor market integration have been implemented both in Mexico and throughout Latin America. These initiatives have produced highly heterogeneous outcomes in terms of effectiveness. Consequently, it is useful to provide a brief overview of the characteristics and results of several programs that have served as references for the design of similar public policies across the region.

Firstly, the Chile Joven program, launched in Chile in 1992, can be cited in this regard. The program enrolled socially vulnerable young people living in urban areas in training courses lasting between three and six months. Participants also received 200 hours of instruction at specialized training centers that offered courses aligned with current labor market demands and regularly updated their curricula. In addition, participants received a stipend. The program is estimated to have increased the probability of obtaining formal employment by approximately 18% among its beneficiaries (Ibarrarán & Rosas-Shady, 2009).

Drawing upon the experience of Chile Joven, Peru implemented the ProJoven program, later renamed the Youth Training Program. According to Rosas Shady (2006), the program emphasized vocational training while also providing employment intermediation services to facilitate participants' transition into the labor market after completing the program. Accounting for the selection bias arising from the program's focus on socioeconomically vulnerable youth and employing a kernel difference-in-differences approach, the author found that participants increased their probability of obtaining formal employment by 13% and experienced a 39% increase in earnings over the 18 months following program completion.

Brazil, meanwhile, adopted a different approach through the enactment of the Apprenticeship Law. This legislation requires medium-sized and large firms to include apprentices within their workforce by allocating a legally established proportion of their payroll to apprenticeship positions. The program also provides subsidies to firms that retain apprentices for longer periods. Additionally, it incorporates a government monitoring system responsible for certifying the skills acquired by participants throughout the apprenticeship (Freires de Carvalho et al., 2021).

Complimentary, Dema et al. (2015) report that beneficiaries of this initiative experience a significant increase in their probability of securing permanent formal employment, together with modest gains in future earnings. Other researchers have reached similar conclusions

while also identifying several limitations. For example, Nunes et al. (2021) conclude that the program has had a positive effect on youth unemployment. However, using a regression discontinuity design, they estimate that by 2019 firms had fulfilled only 26.6% of the legally mandated apprenticeship quota. Likewise, Klitzke et al. (2023) argue that the program contributes positively to young people's professional development but emphasize that continuous updates are necessary to preserve its effectiveness.

A different strategy was adopted in Colombia with the launch of the 40,000 First Jobs (40,000 Primeros Empleos) program in 2015. According to Hincapié (2019), this initiative provided wage subsidies to private firms that hired young people between the ages of 18 and 28 for a specified period. The government covered participants' wages and social security contributions during the first half of their employment. Evidence suggests that the program did not produce statistically significant effects. Applying a difference-in-differences methodology to aggregated national data, Hincapié (2019) found no measurable impact attributable to the program. Similarly, Alegría and Otálvaro (2022) argue that the initiative failed to address the structural causes of persistent youth unemployment.

Regarding the Mexican track record, several public policies have been implemented under different strategies aimed at reducing youth unemployment. One such initiative was the *Primer Empleo* program, introduced during the administration of President Felipe Calderón Hinojosa. Broadly speaking, the program provided firms with a subsidy equivalent to a portion of the employer's mandatory social security contributions generated during the employee's first year of employment whenever they hired a newly employed worker (Mexicano, 2021). According to Dema et al. (2015), approximately 83,000 jobs were created through this mechanism. However, the same authors note that the program's overall impact was constrained by firms' willingness to create new job vacancies.

Mexico has also implemented workplace training policies. One of the most recent initiatives in this area is the Bécate program, which succeeded the PROBECAT and SICAT programs. Under one of its modalities, Bécate offered supervised on-the-job training within microenterprises for periods of up to five months (Cervantes, 2011). According to CONEVAL (2016), approximately 75% of participants who took part in the program between 2013 and 2014 successfully obtained employment, based on surveys administered to beneficiaries. However, it is important to note that this estimate is derived exclusively from the descriptive analysis of a specific group of participants rather than from a causal impact evaluation.

Previous Literature on the Economic Effects of Jóvenes Construyendo el Futuro

Following the same approach as the previously described youth employment initiatives, the Jóvenes Construyendo el Futuro (JCF) program was established in Mexico. Its economic

effects have been examined in the academic and policy literature. First, the National Minimum Wage Commission (CONASAMI, 2023), in its impact evaluation of the program, reports that beneficiaries were 2.7 times more likely to obtain employment than a control group of 4,553 individuals. This conclusion was derived from an analysis of data from the 2022 National Household Income and Expenditure Survey.

In contrast, Turrent (2020), based on a series of interviews with former beneficiaries and workplace mentors, concludes that only 30% of program participants obtain employment immediately after completing their training. It should be noted, however, that the study was based on a very limited sample that did not include even a few dozen participants.

Using a more quantitative approach, Rubio et al. (2022) employ a difference-in-differences methodology and conclude that, after controlling for business cycle effects, the program does not have a statistically significant impact on youth employment levels.

Regarding the program's potential effects on beneficiaries' earnings and the reduction of youth poverty, CONASAMI (2023) reports that beneficiaries experienced an average increase in income of 6,731 *pesos*. The report further highlights that transfers provided through the program account for nearly 40% of total household income among beneficiary families belonging to the poorest decile of the Mexican population. Nevertheless, Muñoz et al. (2022) argue that the program faces important limitations with respect to long-term labor market placement. They suggest that improvements are needed to effectively increase wages among young people, particularly by strengthening the program's targeting mechanisms toward the most vulnerable sectors of the population through modifications to its implementation procedures.

Similarly, Miquel (2022), based on a review of the program's operational framework and a series of interviews, concludes that the initiative does not guarantee access to adequately remunerated employment for program graduates. According to the study, this is largely because most beneficiaries are not offered permanent positions by the firms in which they complete their training period.

Likewise, Alemán and Vital (2022) argue that additional research is needed to determine whether participation in the program increases the likelihood of obtaining decent employment regardless of participants' previous educational attainment. They also warn that many beneficiaries may return to precarious forms of employment after completing the training period. Furthermore, the authors contend that some firms use the program primarily as a source of subsidized labor without any genuine intention of hiring participants once government support has ended.

Lastly, evidence indicates that some workplaces registered as JCF training centers have engaged in corrupt practices and have misused the program to obtain public resources without providing meaningful training to participants.. This situation has been exacerbated by insufficient oversight on the part of the Ministry of Labor and Social Welfare (STPS) (Míquel, 2022).

Data and methods

In order to examine statistically significant relationships among the factors associated with young people's integration into the labor market, the variables presented in the following table were selected.

Table 1
Data and variables

Algebraic representation	Variable	Source
Y_1	Percentage of the population aged 18 to 29 living in poverty, by state. Poverty is defined as the lack of sufficient income to meet basic needs (INEGI, 2024).	INEGI (2024), Biennial Multidimensional Poverty Measurements.
Y_2	Percentage of the population aged 15 to 29 employed in the informal sector, by state.	SNIEG (2025)
X_1	Number of beneficiaries of the Jóvenes Construyendo el Futuro (JCF) program, by federal entity. The natural logarithm of this variable $\ln(X_1)$ was used in the regression analysis	STPS (2025), JCF Beneficiary Registry.
X_2	Total net foreign direct investment (FDI) inflows, by federal entity. The regression uses values expressed in billions of U.S. dollars; the original data were reported in millions of U.S. dollars.	*Secretaría de Economía* (2025)

Source: Author's own work.

For all variables, aggregated data were collected for the years 2020, 2022, and 2024. Aggregate-level data were preferred because it is difficult to determine whether a specific former beneficiary of the *Jóvenes Construyendo el Futuro* (JCF) program is currently employed or living in poverty, owing to data privacy restrictions and the limited public availability of individual-level information.

When preparing the dataset, X_1 was used was transformed using the natural logarithm, while the scale of variable X_2, was adjusted to facilitate the interpretation of its relationship with the dependent variables, both of which are expressed as percentages. It is important to note that X_2 was not log-transformed because some of its original values were negative.

Excluding observations with negative values solely to perform a logarithmic transformation was deemed inappropriate, as doing so would have eliminated cases reflecting potential capital outflows in particular states, thereby excluding economically relevant information from the analysis.

It is important to emphasize that labor informality (X_1) was selected instead of unemployment as the dependent variable because a substantial proportion of workers discontinue their search for formal employment and instead enter the informal sector as a means of sustaining themselves economically (Cortés, 2000, as cited in Martínez et al., 2018). In addition, the youth poverty variable (X_2) was included to capture the degree of income insecurity associated with the wages earned by young people. A sample of the data used in the analysis, prior to the transformations described above, is presented in Appendix 1.

Finally, it is worth noting that all calculations presented in the following sections were performed using the Python programming language (version 3.12) within the Google Colaboratory integrated development environment (IDE).

Methodology

The objective of this analysis is to examine the effects of foreign direct investment (FDI) and the number of beneficiaries of the *Jóvenes Construyendo el Futuro* (JCF) program on youth poverty rates and youth labor informality rates. To this end, a series of simple linear regression models are estimated, each including a single independent variable. Specifically, each explanatory variable is regressed separately against each of the dependent variables considered in the analysis.

In addition, a sequential regression model is presented. In the first stage, labor informality is regressed on FDI. The predicted values obtained from this regression are then used as the dependent variable in a second regression, in which the explanatory variable is the number of JCF beneficiaries. This sequential specification is intended to facilitate the interpretation of the effects of the explanatory variables by first accounting for the contribution of one variable and subsequently estimating the additional effect of the second through the use of the predicted dependent variable. All estimations were performed using the Ordinary Least Squares (OLS) method.

Before presenting the empirical results, it is useful to introduce two fundamental concepts underlying linear regression analysis. The first is the interpretation of the estimated slope coefficient, which measures the relationship between an independent variable and a dependent variable. The second is the statistical significance of the estimated effect of the explanatory variable on the dependent variable. Both concepts can be illustrated using the following linear equation:

$$Y_i = a_0 + a_1 X_i + U_i \quad (1)$$

Where Y_i denotes the dependent variable for each observation, and X_i represents the corresponding explanatory variable. The coefficient a measures the effect of a change in the independent variable on the dependent variable. Meanwhile, , U_i denotes the stochastic error term, which captures all sources of variation in the dependent variable that are not explained by the regressor.

To determine whether X_i has a statistically significant effect on Y_i, the following hypothesis test is specified:
$H_0: a_1 = 0$ vs $H_1 : a_1 \neq 0$

To evaluate these hypotheses, p_{values} are used. A p_{value}below 0.05 indicates that the explanatory variable X_i is statistically significant in explaining variation in Y_i at the 95% confidence level. The hypothesis tests are based on the Student's t-distribution. Throughout the remainder of this study, these probability values are referred to as p_{values} (Andrade et al., 2023).

A series of simple linear regression models was estimated, each including one independent variable and one dependent variable, in order to examine the individual effect of each explanatory variable on each outcome of interest. This approach also makes it possible to determine whether any explanatory variable is not statistically significant when evaluated independently, without controlling for the influence of the other explanatory variables and therefore disregarding any potential correlation among them.

Results

First, a linear regression was estimated using the logarithm of the number of *Jóvenes Construyendo el Futuro* (JCF) beneficiaries, $\ln(X_1)$, as the explanatory variable and the percentage of the youth population living in poverty, Y_1, as the dependent variable. The model is specified as follows:

$$Y_1 = a_0 + a_1 \ln(X_1) + U_i \quad (2)$$

As a result, the following coefficients and p_{values} were obtained:

$$Y_1 = 34.5404 + 6.0229 \ln(X_1) + U_i \quad (3)$$

$$p_{values}\ (0.039) \quad (0.000)$$

These results suggest the existence of a positive and statistically significant correlation between an increase in the number of beneficiaries of the *Jóvenes Construyendo el Futuro* (JCF) program and an increase in the percentage of young people living in income poverty.

However, this correlation should not be interpreted as evidence of a causal relationship, as the interaction between these variables is likely influenced by additional factors (see Discussion).

Following, the variable regarding FDI (X_2) was regressed against the one regarding juvenile poverty (Y_1), as detailed in the next ecuation:

$$Y_1 = a_0 + a_1 X_2 + U_i \quad (4)$$

From said ecuation, it can be estimated that:

$$Y_1 = 35.0193 - 0.1804\, X_2 + U_i \quad (5)$$

$$p_{values}\,(0.000) \quad (0.147)$$

These results suggest that foreign direct investment (FDI) is associated with a reduction in youth poverty. However, this relationship is not statistically significant under conventional levels of statistical confidence. This finding may be explained by a number of factors specific to the Mexican labor market during the 2020–2024 period (see Discussion).

As a second stage of the analysis, a series of linear regression models was estimated using the youth labor informality rate (Y_2) as the dependent variable. First, this variable was regressed on the logarithm of the number of Jóvenes Construyendo el Futuro (JCF) beneficiaries, ($\ln(X_1)$),), in accordance with Equation (6):

$$Y_2 = a_0 + a_1 \ln(X_1) + U_i \quad (6)$$

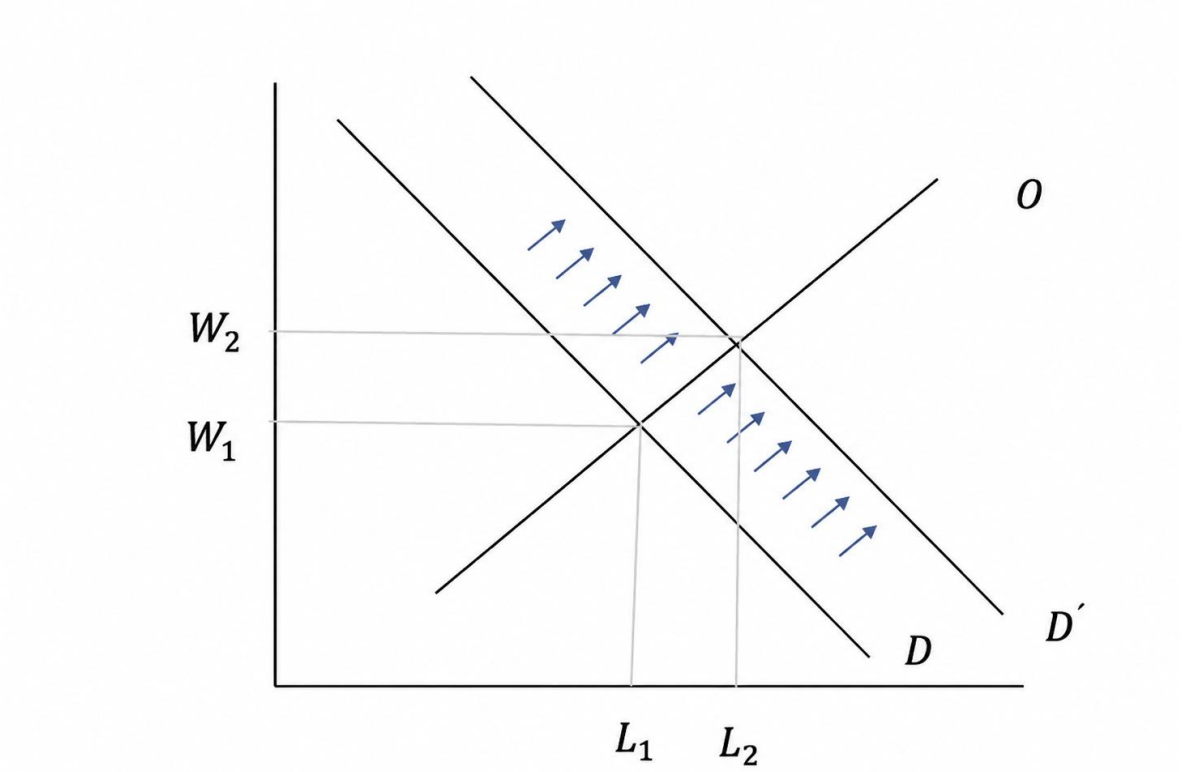
For the given specification, the following estimators were obtained:

$$Y_2 = 38.4775 + 1.817 \ln(X_1) + U_i \quad (7)$$

$$p_{values}\,(0.031) \quad (0.241)$$

The proposed between FDI and the studied dependent variables is shown in the following graph:

Graph 1
Proposed Relationship Between Foreign Direct Investment and the Dependent Variables Examined.



Note: In this figure, the lines W_1 and W_2 represent successive wage levels, where each increase in wages corresponds to a reduction in poverty. Likewise, L_1 and L_2 denote successive levels of formal employment; movement upward along this axis represents a reduction in the labor informality rate. Finally, the line O represents the labor supply curve, while the curves D and D' correspond to two different levels of labor demand.
Source: Author's own.

In other words, an increase in foreign direct investment would be expected to generate an expansion in labor demand within the formal sector, associated with a reduction in informality and an increase in wages. However, although there is a relationship between increases in formal employment rates and labor market dynamics in Mexico, there is insufficient evidence to conclude that higher levels of foreign direct investment are associated with wage growth.

Based on these estimations, an apparent direct association can be observed between increases in youth labor informality and the number of JCF beneficiaries. Nevertheless, this relationship was considered statistically insignificant according to the reported p-value. Therefore, there may be structural factors explaining the lack of statistical significance in Equation (7) (see Discussion).

Within this series of regression models, a linear regression was estimated for the same dependent variable, using foreign direct investment (FDI), represented by X_2, as the explanatory variable, as specified in the following equation:

$$Y_2 = a_0 + a_1 X_2 + U_i \text{ (8)}$$

By estimating Equation (8) using the Ordinary Least Squares (OLS) method, the following results are obtained:

$$Y_2 = 60.7120 - 0.2296 X_2 + U_i \text{ (9)}$$

$$p_{values}\,(0.000) \quad (0.060)$$

From this regression, it is possible to infer, at the 90% confidence level, that foreign direct investment is associated with a reduction in youth labor informality. This relationship may be explained by the effect that the expansion of foreign firms has on the youth labor market (see Discussion).

Additionally, a regression analysis using an estimated dependent variable was performed. This approach was preferred over a multivariate regression because, in the long run, some degree of relationship is expected to exist between variables X_1 and X_2, as both are influenced by the public policy strategies adopted by the federal government at any given point in time.

For this same reason, the analysis evaluated whether, conditional on the existence of foreign direct investment at a given level, which reduces labor informality according to Equation (9), the observed reduction in informality could also be explained by the effect of the program as a secondary influence on the labor market. It should be noted, however, that this estimation has already been adjusted for the error term from regression (9). The specification used was the following:

$$\widehat{Y_2}(X_2) = a_0 + a_1 \ln(X_1) + U_i \text{ (10)}$$

Estimating, the following results are obtained:

$$\widehat{Y_2}(X_2) = 59.8388 - 0.0673 \ln(X_1) + U_i \text{ (11)}$$

$$p_{values}(0.000) \quad (0.823)$$

Due to the p_{value} obtained, the previously proposed hypothesis was rejected. The lack of statistical significance in this result may be explained by the particular dynamics of the Mexican labor market and the factors determining labor informality (see Discussion).

Finally, it is important to note that the diagnostic tests for the assumptions underlying each of the estimated linear regression models are presented in Appendix 2. It should also be clarified that, on average, statistically insignificant regressions do not necessarily exhibit higher mean squared errors than statistically significant regressions, as shown in the aforementioned appendix.

Discussion

The regressions involving the FDI variable produced results that should be contrasted with previous literature. First, the results from Equation (9) indicate that foreign direct investment may be associated with a reduction in youth labor informality.

These findings are consistent with the arguments presented by Dougherty and Escobar (2013), as FDI was found to be significantly and negatively correlated with the prevalence of informal employment. This relationship could be explained by several macroeconomic factors prevalent throughout Latin America. According to Amal et al. (2010), FDI is strongly associated with the generation of economic stability and improvements in institutional and political performance in developing countries. These changes, in turn, may play an important role in reducing informality (Ulyssea, 2020). Additionally, Gómez et al. (2020) argue that FDI increases as transaction costs decline. In turn, lower transaction costs may encourage labor market formalization (González & Muñoz, 2023). These findings suggest the existence of a more complex relationship between FDI and labor informality than initially proposed.

In contrast, the results obtained from the regression between youth poverty and accumulated FDI (Equation (5)) appear to contradict the expectations derived from previous literature. This is because an increase in labor demand resulting from higher investment should theoretically generate wage growth and, consequently, reduce the share of the population below the income poverty threshold (Kryńska & Kopycińska, 2015). However, no statistically significant relationship was found between FDI and the reduction of youth poverty. This apparent contradiction reinforces the idea of a more complex interaction between foreign investment and labor market dynamics.

Regarding this issue, several particular conditions have been identified that could explain the persistence of precarious wages despite the presence of FDI. Cardoso (2016), for instance, argues that different geographic locations tend to exhibit different wage levels at the same point in time due to differences in perceived market potential. The same study concludes that formal-sector wages are more sensitive to this phenomenon than informal-sector wages. This finding may help explain the results of the present study, as geographic differences captured by state-level data may prevent the identification of a statistically significant trend across the entire sample in Equation (5).

Sáenz and Morales (2017) add another possible explanation, highlighting the role of insufficient training, in addition to the lack of previous work experience identified by Suastegui (2025). In response to these challenges in the youth labor market, the Jóvenes Construyendo el Futuro (JCF) program was initially established (STPS, 2025). According to the CONASAMI (2023) evaluation, the program would be expected to contribute to increasing the probability of formal employment or, alternatively, reducing youth poverty over extended periods if labor market conditions remained constant in the long-term theoretical scenario.

Nevertheless, the only statistically significant effect related to the number of JCF beneficiaries identified in this analysis was a potential positive correlation between the logarithm of beneficiary numbers and youth poverty levels, as estimated through Equation (3). It is important to note that the effect of a change in the independent variable in this equation is approximately six times larger in the dependent variable. However, this result is influenced by the logarithmic transformation, which highlights outliers and may produce different results under a normalization approach that does not depend on data scale. Additionally, the analysis found that the accumulated number of program beneficiaries does not have a measurable effect on labor informality (see Equation (7)). Even when FDI was incorporated as a preceding factor in the reduction of informality, no relevant effect of the program was identified, as reported in regression (11).

This latter finding may be explained by several structural characteristics of the Mexican economy that, although potentially influenced by FDI, cannot be directly modified through youth training programs and contribute to the persistence of a secondary and informal labor market. First, Farrell (2004) argues that fiscal policy can create incentives for informality, as economic agents may be encouraged to avoid taxation under certain circumstances. This structural factor may help explain the limited impact of JCF training on youth informality rates.

Furthermore, Martínez et al. (2018) argue that increases in the purchasing power of formal wages can reduce informality by creating incentives for workers to enter formal employment. However, this mechanism may not apply to the sample analyzed in this study, as no statistically significant negative effect was found for the youth poverty variable. Instead, the observed wage dynamics appear to be better explained by the analysis of Andrade and Coronado (2026), who conclude that FDI tends to increase wages only among sectors with skills aligned with labor market demands. This conclusion explains the lack of significance observed in Equation (5), since not all Mexican workers possess specialized skills. Furthermore, this argument may also explain the limited effect of the JCF program on wage levels. In this regard, Rodríguez (2025) argues that the program is not sufficiently aligned with labor market requirements.

Taken together, these findings suggest that JCF participants may not acquire skills that fully correspond to labor market demands and that firms may lack sufficient incentives to hire

these young workers after their training period. Therefore, future policy improvements could consider combining two different approaches. The first would involve providing incentives for employers to permanently hire program beneficiaries within their workplaces, as proposed by Garrido and Romero (2024). The second would involve implementing mechanisms for monitoring and certifying the skills acquired by participating apprentices, elements that Dema et al. (2015) identify as key factors behind the success of Brazil's Apprenticeship Law in reducing informality and increasing wages.

This program and other similarly effective initiatives (see literature review) emphasize skills development as a central component. Nevertheless, future research could further examine the effect of firm-specific regulations within each program on their effectiveness, as well as the role of beneficiary selection criteria and participants' demographic and educational characteristics.

Conclusions

In summary, the results of this analysis suggest that the Jóvenes Construyendo el Futuro program may not be producing the desired effects in the youth labor market. Based on a classical linear regression approach, it was not possible to identify a measurable effect of the number of program beneficiaries on either youth labor informality or poverty levels among this demographic, as shown in equations (3) and (7). This finding could potentially be explained by considering the literature regarding structural factors of the Mexican economy, labor demand dynamics, and the influence of these factors on the dependent variables examined.

In contrast, linear estimations provided evidence that foreign direct investment has a statistically significant effect on youth labor informality (Equation (9)). This effect is likely related to improvements in economic stability factors that increase business confidence, according to previous literature on the subject. However, no evidence was found that FDI has a significant effect on poverty levels among young people (Equation (5)).

When analyzing the results as a whole and contrasting them with the existing literature, it is possible to conclude that foreign investment has contributed to labor formalization without generating significant wage increases, due to insufficient workforce training among young people, whose skills remain disconnected from employers' demands. This issue does not appear to have been fully addressed through the implementation of the JCF program. Therefore, modifications are necessary to improve the quality of training provided and ensure the effective integration of young people into the labor market.

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Among the limitations of this analysis, the first is the lack of a sufficiently large time-series sample, since the program has only existed since 2019 and multidimensional poverty measurements are available only on a biennial basis. Additionally, this study does not account for the potential effects of different stages of the economic cycle on the dependent variables. Therefore, future research should consider applying statistical techniques capable of mitigating potential biases introduced by this factor.

A second avenue for future research would involve evaluating the specific skills developed by those program beneficiaries who have successfully entered the formal labor market while earning sufficient income to meet their basic needs. This could be conducted through a longitudinal study of former beneficiaries from different regions of the country. Such an approach could strengthen the methodological design of future investigations. Furthermore, it would be relevant to examine whether these market-demanded skills can be effectively acquired through programs such as *Jóvenes Construyendo el Futuro* or whether they must necessarily be developed through alternative sources, such as the traditional education system.

Finally, further research is needed to explore the relationship between youth labor informality and foreign direct investment in order to determine whether the relationship identified in Equation (9) persists over the long term and across specific localities with different educational and training systems.

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Appendix 1: Database used for the lineal regression estimations.

STATE	YEAR	Y_1	Y_2	X_1	X_2
AGUASCALIENTES	2020	24.2	59.32491286	13994	2853.206009
BAJA CALIFORNIA	2020	20.2	44.17102571	5620	7534.265286
BAJA CALIFORNIA SUR	2020	25.5	36.48279429	10179	3056.354447
CAMPECHE	2020	51.3	37.52658	62955	1008.618228
COAHUILA DE ZARAGOZA	2020	25.7	69.40656857	14986	6723.026337
COLIMA	2020	25.8	33.62932714	17443	562.9803635

CHIAPAS	2020	75.8	58.67919857	317533	1364.186675
CHIHUAHUA	2020	23.1	83.80927429	26273	6034.03975
CIUDAD DE MÉXICO	2020	36.8	36.52651	90934	48423.62693
DURANGO	2020	37.5	52.31456714	21709	2776.276045
ESTADO DE MÉXICO	2020	41.1	55.60521	194855	17239.9894
GUANAJUATO	2020	65.9	54.78448857	29065	2913.743696
GUERRERO	2020	47.9	84.44951857	166676	2083.134135
HIDALGO	2020	30.9	75.77771857	54466	1711.539937
JALISCO	2020	50.8	52.99634571	46668	15360.73965
MICHOACÁN DE OCAMPO	2020	39.8	59.58683571	143324	1810.443222
MORELOS	2020	50	74.94250571	79175	2739.611742
NAYARIT	2020	29	71.94578286	28922	2703.246559
NUEVO LEÓN	2020	23.3	69.5761	11280	18569.89224
OAXACA	2020	60.1	36.77687	113335	1367.774447
PUEBLA	2020	62.2	85.85080857	71518	6848.020203
QUERÉTARO	2020	27.1	78.73371857	23903	6710.882051
QUINTANA ROO	2020	45.3	42.65944571	33897	2322.423897
SAN LUIS POTOSÍ	2020	37.9	47.80797571	30926	5471.481481
SINALOA	2020	27.6	57.70825	31058	3212.456141
SONORA	2020	29.2	51.36096	12366	3118.414458
TABASCO	2020	51.9	44.34693	254198	2903.610869
TAMAULIPAS	2020	33.6	71.36385143	45238	6477.338905
TLAXCALA	2020	60.5	44.84906	60334	2083.23764
VERACRUZ DE IGNACIO DE LA LLAVE	2020	58.8	75.64415429	247549	7418.710715
YUCATÁN	2020	51	70.83617857	52744	1050.641949
ZACATECAS	2020	43.2	63.85578857	41330	1640.061931

Table 2: Example of database used for the lineal regression estimations. Author's own.

Appendix 2: Assumption test for each lineal regression

Assumption	Considered value	Applied criteria (at 95% confidence)
Correct especification (RESET test)	$p_{value} = 0.6708$	The model is correctly specified.
Error homoscedasticity (Breusch Pagan test)	$p_{value} = 0.8520$	Errors are homocedastic.
Error normality (Jarque Bera test)	$p_{value} = 0.0636$	Errors are normally distributed .

Error independence (Breusch Godfrey test)	$p_{value} = 0.0491$	Errors present degree 1 autocorrelation.
Model significance (F-test)	$p_{value} = 0.00007$	The model is significant.
Exogeineity (correlation of independent variables to error)	7.0049×10^{-17}	All independent variables are exogenous.
MSE		N/A

Table 3 : Assumption tests for lineal regression corresponding to Equation (3).

Assumption	Considered value	Applied criteria (at 95% confidence)
Correct especification (RESET test)	$p_{value} = 0.1157$	The model is correctly specified.
Error homoscedasticity (Breusch Pagan test)	$p_{value} = 0.4028$	Errors are homocedastic.
Error normality (Jarque Bera test)	$p_{value} = 0.1080$	Errors are normally distributed .
Error independence (Breusch Godfrey test)	$p_{value} = 0.5750$	Errors do not present degree 1 autocorrelation.
Model significance (F-test)	$p_{value} = 0.147$	The model is not significant.
Exogeineity (correlation of independent variables to error)	-1.3140×10^{-16}	All independent variables are exogenous.
MSE	236.4864	N/A

Table 4 : Assumption tests for lineal regression corresponding to Equation (5).

Assumption	Considered value	Applied criteria (at 95% confidence)
Correct especification (RESET test)	$p_{value} = 0.8151$	The model is correctly specified.
Error homoscedasticity (Breusch Pagan test)	$p_{value} = 0.4028$	Errors are homocedastic.
Error normality (Jarque Bera test)	$p_{value} = 0.2328$	Errors are normally distributed .
Error independence (Breusch Godfrey test)	$p_{value} = 0.5750$	Errors do not present degree 1 autocorrelation.
Model significance (F-test)	$p_{value} = 0.5545$	The model is not significant.
Exogeineity (correlation of independent variables to error)	$7.2219 \times 10\text{^}(-17)$	All independent variables are exogenous.
MSE	204.2711	N/A

Table 5 : Assumption tests for lineal regression corresponding to Equation (7).

Assumption	Considered value	Applied criteria (at 95% confidence)
Correct especification (RESET test)	$p_{value} = 0.3700$	The model is correctly specified.
Error homoscedasticity (Breusch Pagan test)	$p_{value} = 0.0640$	Errors are homocedastic.
Error normality (Jarque Bera test)	$p_{value} = 0.1140$	Errors are normally distributed .
Error independence (Breusch Godfrey test)	$p_{value} = 0.9914$	Errors do not present degree 1 autocorrelation.
Model significance (F-test)	$p_{value} = 0.0597$	The model is significant, at 94% confidence.
Exogeineity (correlation of independent variables to error)	2.7842×10^{-16}	All independent variables are exogenous.
MSE	225.54478	N/A

Table 6: Assumption tests for lineal regression corresponding to Equation (9).

Assumption	Considered value	Applied criteria (at 95% confidence)
Correct especification (RESET test)	$p_{value} = 0.8634$	The model is correctly specified.
Error homoscedasticity (Breusch Pagan test)	$p_{value} = 0.2808$	Errors are homocedastic.
Error normality (Jarque Bera test)	$p_{value} = 0.0000$	Errors are not normally distributed .
Error independence (Breusch Godfrey test)	$p_{value} = 0.7675$	Errors do not present degree 1 autocorrelation.
Model significance (F-test)	$p_{value} = 0.823$	The model is not significant.
Exogeineity (correlation of independent variables to error)	1.2433×10^{-15}	All independent variables are exogenous.
MSE	8.7115	N/A

Table 7 : Assumption test for the lineal regressiong corresponding to Equation (11)

Appendix 3: Descriptve statistics

Variable	Y1	Y2	X1	X2

Mean	33.7343	59.0763	134132.0104	7123.4039
Median	31.7000	57.4791	87063.5000	3165.4352
Standard deviation	15.6336	15.3859	134254.5293	12925.3318
25th percetile	21.5500	45.3710	40967.0000	1839.1230
75th percetile	44.1000	71.5227	169779.5000	6986.1139
Interquantile range	22.5500	26.1517	128812.5000	5146.9908

Table 8: Descriptive statistics for the used variables