Decent work in Mexico: the influence of the economic environment and openness to the outside world

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Abstract

This article presents the measurement of decent work in Mexico during the period 2005-2019, using a multidimensional index that encompasses salary (dignified salary) and non-salary (rights) aspects, while analyzing its relationship with the economic environment and openness. Using the hierarchical structure of the database contained in the National Survey of Occupation and Employment (ENOE), a multilevel model is estimated in which a positive relationship is indicated between decent work and the productive branches with the highest direct foreign investment, as well as the states with the greatest weight of exports with respect to their GBP. Also identified is the relationship between this and the heterogeneity in the sociodemographic characteristics of the worker and aspects related to their sectoral and state environment.

Keywords: decent work; multilevel models; labor market; globalization; job quality.

1. INTRODUCTION

In the region of Latin American and the Caribbean, the quality of work has deteriorated significantly in recent decades, with a drop in real wages and an increase in informality in most of the region's countries. This trend is confirmed in Mexico by the fall of wages' share of total income, from 30% of GDP in 2001 to 26% in 2017, and an informality rate which holds steady over 50% (56.5% in 2018) (INEGI, 2019a). There are many jobs currently which lack social security, labor rights and decent pay and there are high rates of working poverty.

Precariousness in the Mexican labor market has intensified in recent decades with new production methods and the promotion of labor flexibility in order to face economic crises while maintaining business productivity[1] (Lust, 2021; Guadarrama *et al*., 2012). The evolution of the productive structure and the openness to the outside world have influenced employment levels and working conditions for Mexican workers, although there is some contention as to whether the relationship between market openness and quantity and quality of employment is positive or negative. Despite the significant share of foreign direct investment (FDI) in the secondary sector, the number of jobs directly generated in the sector is lower than in services, which is characterized by lower foreign investment (Chiatchoua *et al*., 2016). The processes of trade liberalization and the liberalization of capital movements widened the wage gap regarding the quality of work between skilled and unskilled labor.

FDI and trade openness should correlate with better working conditions thanks to labor standards clauses in trade agreements such as the North American Free Trade Agreement (NAFTA) (Casanueva and Rodríguez, 2009). These standards are not always respected however. Many Mexican companies choose to compete via price when faced with trade openness and foreign capital. Unfortunately, these strategies are not compatible with dignified wage levels and decent working conditions, meaning that the quality of employment for many workers has dropped in terms of wages, benefits and union representation.

In response to job insecurity in low- and middle-income countries, the International Labour Organization (ILO) introduced the concept of *decent work*, first mentioned at the 1999 International Labour Conference as one of the organization's main goals (Somavia, 1999). This is the approach that we have adopted in this article to identify the quality of employment, an approach related to the Sustainable Development Goals, also known as Global Goals, established by the United Nations (UN) in 2015 based on the precedent of the Millennium Development Goals. These goals include aspects such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The most relevant to this work is Goal number 8, Develop a Global Partnership for Development, which entails decent and productive employment. An essential part of decent work is wages. The ILO (2008) identifies the concept of a living wage as the wage level that guarantees a certain quality of life for the workers' households.

We seek to contribute to the empirical literature on the topic by proposing a method of measuring levels of decent work. This method consists of a multidimensional index, at the individual (employee) level, with the criteria of a living wage as one of its primary dimensions.

Furthermore, by employing the hierarchical structure[2] of the National Survey of Occupation and Employment (ENOE),[3] we are able to carry out a multilevel analysis to identify the relationship between the level of decency of work in Mexico and individual characteristics of workers, the productive branch in which they work and the macroeconomic environment. With this we seek to contribute to empirical evidence on determinants of decent employment and the likelihood of having a living wage. At the branch level, we delve into the correlation between decent work and a living wage with the concentration of human capital in the branch and the weight of FDI in the sectoral GDP as indicators of branches being oriented to the foreign market and their technological intensity. At the macroeconomic level, we explore, using the relative weight of exports in states' GDP, the impact of the environment and the economic cycle on the level of decency in employment by using GDP per capita and the possible correlation between decent work and openness to the outside world.

We found a greater explanatory power for heterogeneity between productive branches than between states when explaining access to decent work. We also found that exposure to international competition and foreign capital holds higher levels of correlation with non-wage labor achievements than with wages. Furthermore, working in highly skilled sectors and in states with higher levels of development are both related to better access to decent work.

The results obtained may be of interest to government agencies and social agents who wish to help improve the working and living conditions of workers in Mexico. They show just how much levels of decent employment vary. This diversity in turn is indicative of how a large part of the employed population is vulnerable economically and in terms of labor rights. The results also indicate that quality of work is related to the industry's productivity levels and human capital, something which public policies and collective bargaining can influence. Lastly, the results challenge the idea that exposure to the foreign economy, whether through trade or investment, is at odds with dignity of work.

With the hope of approaching the object of study in analytical terms, this research article is split, in addition to this introduction, into four sections. The second section comprises a review of the theoretical and empirical literature associated with the concept of decent work and evidence for measuring it. In the third we outline the database, methodology for building the index and the econometric strategy which consists of a multilevel model. In the fourth, we discuss the results of the estimated model. Finally, we present our conclusions in the fifth section.

2. THE CONCEPT OF DECENT WORK IN MEXICO AND EVIDENCE FOR MEASURING IT

A controversial concept

Literature on job quality proposes a variety of definitions and strategies for measuring it. These include the ILO's contribution of the concept of decent work, characterized by a living wage and which includes dignity of work and associated rights, the freedom to choose to work, collective bargaining and the ability to partake in decision-making in the workplace as well as social security for all men and women (Nizami and Prasad, 2017).

Furthermore, this concept goes beyond the extrinsic (objective) characteristics of work and job satisfaction and is often used to measure their intrinsic quality. Building on Sen's (1999) capabilities approach, the ILO's concept of decent work encompasses labor rights taken from labor laws as well as ethical concerns. One concern that stands out among the latter is the exclusion of unacceptable types of work such as forced labor, child labor, slavery and others. Other outstanding ethical concerns are equity at work and the absence of labor discrimination. A recent inclusion which came about with the International Labour Organization's (ILO) adoption of Convention No. 190 and Recommendation No. 206 is the right to a workplace free from violence and harassment, including gender-based violence and harassment.

Furthermore, with its concept of decent work, the ILO is recognizing that the economic, productive and institutional contexts determine the quality of employment as collective and individual labor relations influence income, work hours, job stability and labor rights (Weller and Roethlisberger, 2012).

Nevertheless, the concept of decent work is controversial and has both its advocates and critics. Gálvez *et al*. (2011) stand out among the former, arguing that the decent work approach "reclaims work as a fundamental part of one's personal life trajectory, one to which we dedicate much of our time, but which also has the attribute of being a pillar of social integration" (p. 81). Likewise, Lanari (2010) highlights his integrative vision and a call for universal ethics. As for Calvo and González (2013), they consider that the decent work approach has contributed to the debate on quality of employment by taking into consideration objective measurements of its quality such as income, work hours or type of contract, which are preferable to subjective measures, such as job satisfaction, which are sometimes used to measure job quality. Furthermore, the broader definition presents a big picture along with all of its dimensions, thereby making it possible to identify the precise relationships each of these has (Ferraro *et al*., 2016). Lastly, Pereira *et al*. (2019) encourage research into decent work to be interdisciplinary in nature so that it may gain relevance and the power to intervene.

The most common criticism of the concept of decent work underlines its overly broad and imprecise nature arising from combining indicators which vary in nature, ranging from characteristics of the workers to contextual indicators, including those related to the quality of welfare systems (Piasna *et al*., 2017). This lack of precision could be attributed to the fact that the concept was forged in a tripartite institution, the ILO, where the different social agents have different interests and certain indicators could be a reflection of this. As a result, it is unclear which parts of the concept of decent work are fundamental affirmations of ILO values and which are legitimate topics for research and development (Burchell *et al*., 2013). Despite having identified the dimensions of decent work, the ILO has so far been unable to use this concept to create a concrete and comparable measure of job quality.

The same authors point out that the concept of decent work associates the creation of jobs itself with the conditions under which these are created, as well as with workers' rights and their voice in the community. A global definition, based on workers' rights and benefits, is difficult to quantify and use for comparative purposes, aggravated by the lack of adequate statistical information. This lack can be mitigated with quantitative strategies that, like multilevel models, allow one to relate contextual variables to the extrinsic and intrinsic characteristics of employment (Anker *et al*., 2003). Furthermore, research has been able to employ the concept of decent work to carry out comparative exercises with more than 40 countries (Ahmed, 2003; Bescond *et al*., 2003; Thore and Tarvedyan, 2009).

Approaches to measuring decent work in Mexico

We have seen thus far, therefore, that here is no consensus among researchers on how to identify decent work. Empirical strategies in applied research seek the greatest fidelity possible to the concept within the constraints imposed by the available statistical information, all the while taking its multidimensional nature into consideration. So far, the empirical applications for taking on the concept of decent work in Mexico are not many. Most studies focus on informality, underemployment and/or job insecurity. Their focus tends to be on quantifying negative aspects of employment rather than its quality. This analysis eschews that approach and seeks to identify achievements, positive aspects that define decent work.

From the ENOE and the Labor Statistics provided by the Secretariat of Labor and Social Welfare[4] (STPS),[5] three works stand out among the literature which applies the concept of decent work in Mexico. The first is Galhardi's (2008) where he builds an index at the worker level with four dimensions (access to employment, job security, labor rights and social dialogue) for the period of 2012-2013. In the second, Gálvez *et al*. (2011) estimate a composite employment decency index for the state of Nuevo León in 2007. The index combines three other sub-indices (durable employment, population employed with sufficient salary and population employed with social benefits or the equivalent). The third has Ortega (2013) estimating an

index for the entire country for the period of 2005-2011 with eight dimensions. These dimensions are wages, work hours, social security, family and labor benefits, involuntary underemployment, protection of labor rights, respect of labor rights, and job stability) with equal weight given to each of them as they are all considered to be human rights. The index defines non-decent work as when at least one of these rights is violated, in addition to the dimension of wages.

For this research, we took as a foundation the dimensions which Ortega (2013) established, though we do use other indicators to measure them. We also used a different method for weighting them and employ a longer period of analysis (2006-2019). The results are similar with respect to the indicators, although it is difficult to compare the trend and evolution in the general index, as Ortega (2013) defines four situations of access to decent and non-decent work, while here we identify them through a continuous variable.

3. METHODOLOGY

The database

The data used by this research comes from the ENOE, whose objective is to obtain statistical information on the nature of the population's employment along with their economic and demographic variables for the purpose of labor analysis. The information has been collected on a quarterly basis by the INEGI since January 2005 and is generally representative of the adult population in Mexico.[6] The period of analysis begins in 2006, as a result of methodological limitations in 2005, and ends with 2019 due to the extraordinary evolution that the Mexican labor market underwent in 2020. The questionnaire is carried out quarterly but here we only use one quarter to represent each year.[7] To identify the aggregate variables, annual information was collected from both the productive branch and the state.

The unit of analysis is made up of employees in all the states of Mexico, which represents between 60% and 65% of the employed population in the whole period analyzed. Observations on the self-employed are not used because the job characteristics that define decent work are only applicable to employees.

The sample analyzed is quite large: for the whole period the ENOE has a total of 2,020,450 observations for working people; of these, 1,638,868 correspond to employees with 1,327,084 of these having a complete set of information for the different dimensions which make up the decent work index and the variables that explain it. This constitutes the final sample for the multivariate models presented below.

Building an index for decent work in Mexico

The indicators that make up this decent work index identify labor achievements and characteristics that contribute to it using different dimensions. This work differs from much of the literature on job quality which emphasizes the problems of instability and informality, etc. The dimensions and indicators chosen were inspired by those established by the ILO (2008) and Ortega (2013) and seek to make the most of the information provided by the ENOE questionnaire.

Table 1 shows the labor achievements in eight dimensions grouped into two large blocks (wage and non-wage), and specifies the indicators used to define them based on variables from the ENOE. The wage aspects were based on the definition of a living wage as the minimum that would allow one meaningful participation in the community, taking into consideration aspects such as supporting a family and recreation, and taking care of immediate needs while allowing for investment in the future (Shelburne, 1999). The monthly wage (normalized for worker's household size) was identified as a living one when it surpasses the poverty line established for households annually by the National Council for the Evaluation of Social Development Policy (CONEVAL).[8] This is the monthly cost of the basic food basket and basic services basket, which includes housing, transportation, personal care, clothing, health care, education and recreation, among other expenses, and which takes on different values in rural and urban environments in order to reflect differences in the cost of living.

Table 1. Average incidence rate of labor achievements assigned to the different dimensions of the decent work index, by gender (2006-2019)

			Average values		
Dimensions	*ENOE variables*	*Indicators**	*Total*	*M*	*F*
Block 1: Living wage					
Living wage	Monthly wage over the poverty line (set by household size)	$L_{i,1}$	0.311	0.338	0.264
Block 2: Labor rights					
Workday	Adequate working hours (not excessive) according to the FLL	$L_{i,2}$	0.861	0.829	0.913
Social security	Public health care	$L_{i,3}$	0.540	0.529	0.557
	Housing Credit	$L_{i,4}$	0.437	0.423	0.459
	Pension system	$L_{i,5}$	0.446	0.434	0.466
Employment Benefits	Life Insurance	$L_{i,6}$	0.202	0.201	0.202
	Private Medical Insurance	$L_{i,7}$	0.036	0.037	0.034
	Personal loans and/or savings account	$L_{i,8}$	0.244	0.235	0.260
Family Benefits	Childcare services	$L_{i,9}$	0.113	0.074	0.178
	Maternity or paternity leave	$L_{i,10}$	0.105	0.072	0.159
Underemployment	Does not work in conditions of underemployment	$L_{i,11}$	0.944	0.934	0.961
Protection of labor rights	Has a written contract	$L_{i,12}$	0.520	0.502	0.551
Job stability	Has an open-ended written contract	$L_{i,13}$	0.429	0.414	0.453
Respect for labor rights	Aguinaldo**	$L_{i,14}$	0.584	0.559	0.627
	Paid holidays	$L_{i,15}$	0.507	0.485	0.545

Note: * all indicators correspond to dichotomous variables that take on a value of 1 if the employee has the corresponding achievement and 0 if not.

**TL note: the Aguinaldo is a taxable Christmas bonus which employers are legally required to give employees every year equal to half a month's wages (if they worked the whole year; if they worked less, the pay is adjusted proportionately).

Source: created by the authors using data from the ENOE for 2006-2019 (INEGI).

Taking into consideration the dimensions and indicators proposed by the ILO (2008) and Ortega (2013), indicators of compliance with labor rights and benefits are collected for the non-wage aspects. The first achievement is to enjoy an adequate (not excessive) work day, less than 48 hours a week, with at least one day of rest a week, and, if working the night shift, it should not exceed seven hours according to the Federal Labor Law of 1970 (FLL). The second is indicators related to social security (access to public health care, housing credit and pension system). Third are employment benefits not required by law (life insurance, private medical insurance, personal loans and/or savings account). Fourth are family benefits (childcare and maternity and paternity leave). Fifth is not being underemployed and not having to work extra hours. Sixth and seventh is the protection of labor rights (having a written contract) and job stability (open-ended written contract), for though not a requirement, not having one can result in reduced negotiating power if the employee finds themselves at odds with the company or unfairly terminated[9] . Finally, are labor rights such as receiving an *aguinaldo* [10] or Christmas bonus and having paid holidays which, like number two, the employer is legally required to provide. Unlike previous studies, we did not take into consideration indicators related to social dialogue and trade union representation as the ENOE only asks whether the worker is a member of a union or has used their services and this depends on other aspects of their employment.

The most common achievements are: *1)* not being underemployed (94.6%), *2*) adequate work hours (86%), and *3) aguinaldo* (62.1%). The rights and/or benefits most difficult to obtain are: *1*) daycare services (13.6%), *2)* maternity or paternity leave (12.8%), and *3)* private health insurance (*3.42*%). There is a significant wage gap favoring men: 33.7% of male employees are paid a living wage, compared to 26.7% of women. This means more male employees have a monthly salary which allows them to cover their basic household needs, while women enjoy to a greater extent (about four points) most of the rights, such as access to public health care, *aguinaldo* and having a written and open-ended contract, etc.

Once the points for consideration have been defined, the second most important aspect when constructing a multidimensional index is determining the weight of each dimension. One way to estimate the index is with the argument that rights cannot be substituted; Therefore, the lack of one is enough to consider work as non-decent. As such, different levels of non-decent work are established in accordance with the shortcomings. However, in this case we opted for a frequency-based weights method. This procedure consists of determining the weight of a dimension from the distribution of achievement levels within it. Akin to García-Pérez *et al*.'s (2017) work, the weight of each dimension is established by giving greater importance to less frequent achievements; so, if a person does not have access to an achievement enjoyed by the majority, they will feel more disadvantaged than the rest (Decancq and Lugo, 2013).

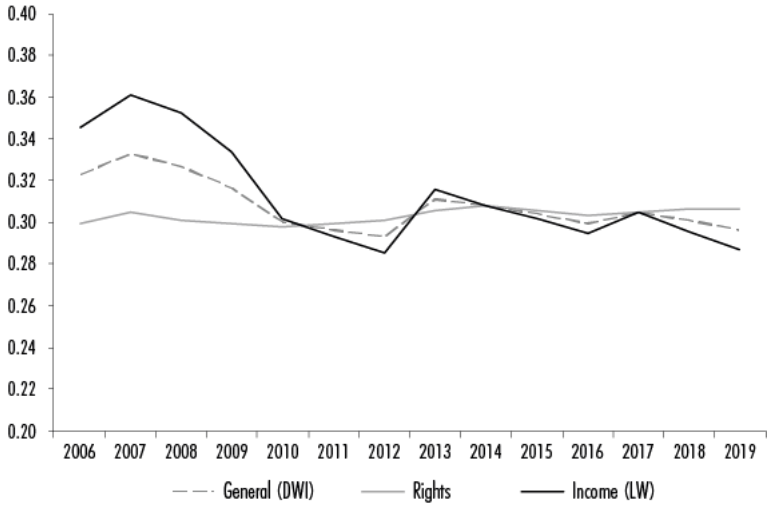
In that regard, the aggregation method adopted here is adapted from Desai and Shah's (1988) methodology to calculate an index of poverty and material deprivation while using the *Townsend Deprivation Index* [11] to weight deprivations. Here we will add the achievements in lieu of the lacks or deprivations so that the decent work index (DWI_i) is the sum of the values that the *achievements* (indicators) take for each worker *i,* weighted and normalized to 1, and this is expressed as follows:

$$ITD_i = 0.5 * L_{i,1} + 0.5 * \frac{\sum_2^L L_{i,n} p_{i,n}}{\sum_2^L p_{i,n}} \quad (1)$$

where the vector $L_{i,\,k}$ consists of 15 dichotomous variables ($L_{i,1},...L_{i,\,15}$) which take on a value of 1 when worker *i* has reached *labor achievement n*, and 0 when they have not; $p_{i,\,n}$ represents the proportion of people who do not have access to achievement *k*, which allows more importance to be given to less frequent achievements. This differs from Ortega's (2013) formulation by identifying two large blocks of equal weight in the indicator: the living wage ($L_{i,\,1}$) and the rest (from $L_{i,\,2}$ to $L_{i,\,15}$). The DWI_i index can be interpreted as follows: a fully decent job will be one where all the achievements occur, in which case the DWI_i will have a value of 1; at the opposite end, for workers who have none of these achievements, the indicator will take on the minimum value of 0. The value of the index will be higher the greater the number of labor achievements and will grow with greater intensity each time a more infrequent achievement is attained.[12]

Figure 1 shows the evolution of the average values for each of the three indexes: the decent work index (DWI), the index for labor rights and the one for a living wage (LW). Curiously, we see similar values for them (an average of 0.3), with the general composite index (DWI) between the other two as it is their arithmetic mean. Both the living wage indicator and the rights indicator maintain very similar values throughout the period analyzed.[13]

Figure 1. Evolution of the average values of the decent work index, the living wage indicator and the labor rights indicator (2006-2019)



Source: created by the authors using data from the ENOE.

Once the index has been estimated, we can move on to estimating the multilevel model in order to prove whether there is a relationship between access to decent work and the characteristics of one's environment, at two levels: the state and the sector, as explained below.

Econometric strategy: multilevel model

A multilevel analysis allows us to contemplate the interconnection between realities or variables that are measured at different levels and is especially useful in social sciences, given the influence exerted on one's reality by context and the groups to which one belongs (Hox *et al*., 2018). Its relevance is greater the more determinant the hierarchy of the data used to understand the dependent variable's behavior, or in other words, the more conditioned the behavior of individual observations within a group (aggregate variables).

The ENOE makes it possible to formulate this type of model as its sampling is composed of employees (level 1) who work in all productive sectors (groups, 11 branches) and reside in all the federal entities (states) of Mexico (level 3, 32 entities). This structure makes it possible to capture an adequate degree of heterogeneity at the aggregate level. There is no consensus in the literature on the minimum number of aggregate units though Hox *et al*. (2018) warn that using fewer than 50 groups increases the risk of getting typical bias errors associated with second-level explanations and is therefore less reliable (Cebolla, 2013). In the same vein, Bryan and Jenkins (2016) argue that for a statistically significant estimate, it is important that the number of level 1 observations be large enough and the number of groups not be less than 30. The structure of the database used partially meets both these requirements, with 143 branch-year (level 2) and 416 potential observations for state-year (level 3), which together represent a total of 4,543 aggregate groups. This constitutes a noteworthy variability/heterogeneity at levels higher than that of the interviewee.

We propose a series of multilevel regressions in order to identify the profile of decent work in Mexico. We estimate a random intercept level with three levels which incorporate five unique variables (gender, rural versus urban, seniority, previous experience, and occupation), two at the branch-year level (percentage of highly skilled labor and weight of FDI in GDP) and two at the state-year level (GDP per capita and weight of exports in GDP). The

independent variables selected at the level of the individual employee and branch are sourced from the ENOE, while those of the federal entity level were collected from the Statistical Information Bank (BIE),[14] which is on the INEGI website, the Bank of Mexico (BANXICO) and the National Population Council (CONAPO).[15]

Using the same specification, we estimate three endogenous variables which make up vector y_{ijk}, consisting of the variable relative to living wage, the index of non-wage achievements and the decent work index that combines them both (y_{ijk}={LW_{ijk}, $RIGHTS_{ijk}$, DWI_{ijk}}). The three variables adopt specific values for each individual *i* in branch *j* and in state *k*. Formally, the proposed model is as follows (see Cebolla, 2013, for a general formulation):

$$y_{ijk} = \beta_0 + \sum_{a=1}^{5} \beta^a X_{ijk}^a + \sum_{b=1}^{2} \beta^b X_{jk}^b + \sum_{c=1}^{2} \beta^c X_k^c + v_{0k} + u_{0jk} + e_{ijk} \quad (2)$$

$$v_{0k} \sim N(0, \sigma_v^2) \quad (3)$$

$$u_{0jk} \sim N(0, \sigma_u^2) \quad (4)$$

$$e_{ijk} \sim N(0, \sigma_e^2) \quad (5)$$

Where $\sum_{a=1}^{5} \beta^a X_{ijk}^a + \sum_{b=1}^{2} \beta^b X_{jk}^b + \sum_{c=1}^{2} \beta^c X_k^c$ is the fixed part of the model and $v_{0k} + u_{0jk} + e_{ijk}$ represents the random part. The fixed part of the model specifies the overall mean relationship between vector variables y_{ijk} and the predictive ones. The vector X_{ijk}^a brings together five level 1 independent variables with slopes given by the vector of coefficients β^a; X_{jk}^b represents the vector of two level 2 (branch) independent variables, with slopes defined by the coefficient set of β^b and X_k^c are the two level 3 variables with their corresponding coefficients, which make up the vector β^c. Since the dependent variable is treated as continuous and the linear version of the multilevel models is estimated, the estimated coefficients can be interpreted as elasticities.

For its part, the model's error term has three random components (v_{ok}, u_{0jk} and e_{ijk}) that represent the residual variance corresponding to each level (state, branch and employee, respectively), assuming a normal distribution for all of its components.

To determine the relevance of a multilevel model, one usually uses the rho (ρ) statistic, also known as the Intraclass Correlation Coefficient (ICC) or as the Variance Partition Coefficient (VPC). This measures the correlation implicit in the model (similarity or homogeneity) of the responses observed within a given group. It reports the proportion of the observed response variation found at each level of the model's hierarchy and obtains the quotient between each level's variance and the sum of the variances of all levels. The higher this quotient, the greater the capacity of level 2 and 3 variables to explain the heterogeneity in the dependent variables and the more appropriate the multilevel estimation will be.

Just as with the number of units at the aggregate levels, there is no clear rule on the variance percentage of the dependent variable explained by aggregate variables which in turn would justify a multilevel analysis. We follow Cebolla's (2013) approach, which identifies a high ICC value when a third of the variance is attributed to groups of levels greater than 1.

Listed in Table 2 are the variables which make up the common specification of the three multivariate models, with a brief description of the sample composition according to the level 1 variables. It shows the relative frequencies of those which are discrete (identified with each category's average values) and, in the case of continuous variables, their means and standard deviations. Likewise, the average for the set of productive branches and states of the level 2 and 3 variables, respectively, is shown.

Table 2. Explanatory variables of multilevel models

Name	*Description*	*Average (typical deviation)*
Level 1 (employees)		
Gender	Male	0.612
	Female	0.388
Environment	Rural	0.348
	Urban	0.652
Seniority	Time since relationship with current employer began (in years)	6.496
		(7.880)
Previous experience	Potential work experience* less tenure (in years)	13.937
		(12.426)
Occupation	Education workers	0.100
	Civil servants and managers	0.063
	Office workers	0.018
	Industrial workers, artisans and assistants	0.111
	Merchants	0.283
	Transport operators	0.123
	Personal Services Workers	0.060
	Security and surveillance workers	0.171
	Agricultural workers	0.011
Level 2 (branch of activity-year)		
Pqualif_branch	Percentage of qualified people in the branch	0.280
		(0.226)
Fdi_branch	Weight of FDI in sectoral GDP	0.038
		(0.047)
Level 3 (state- year)		
Gdppcstd	GDP per capita by state (standardized)	0.020
		(0.958)
Exports	Relative weight of exports in the state GDP	0.309
		0.318
Number of observations		1 327 084

Note: * potential experience in the job market is calculated as the difference between the worker's age at the time of the interview and years of schooling plus 5.
Source: created by the authors.

We expect the results to show that women register a higher average value of the DWI due to having a greater access to labor rights. In rural areas we expect a positive coefficient for the wage component due to the lower value of the basic basket, although it is expected to be negative for the labor rights index due to the higher incidence of informality.

In job related variables, we expect to find a positive and significant correlation between seniority and work in skilled occupations with labor rights and a living wage. Working in the public sphere or in medium or large enterprises is expected to register advantages in terms of access to decent work, both in terms of rights and income (living wage).

A positive relationship is expected between the level of decency of employment and the percentage of highly qualified workers in the productive branch, which acts as an indicator of the branch's level of technological development and productivity. In particular, one can expect spillover effects due to higher profit margins which allow workers in these branches, regardless of their educational level, to enjoy better wages and working conditions. Something similar can be expected in the case of GDP per capita in a state: a higher level of GDP per capita indicates higher levels of development which in turn favor the establishment of companies where decent work can flourish.

As we saw in the introduction, the variables that capture the degree of openness to the outside do not have *a priori* a clear relationship with access to decent work. However, the bivariate correlation analysis between the level 2 and 3 variables prior to estimating the multilevel regression (see Table 3) revealed all had a positive relationship with the main dependent variable DWI. This was especially notable in the case of the percentage of qualified people in the sector. These first exploratory analyses point to a positive and significant relationship between the dependent variable and the four aggregated exogenous variables.

Table 3. Bivariate correlations between dependent and aggregate variables (level 2 and 3)

	Wage index	*Rights index*	*General DWI*	*Pqualif_branch*	*FDI_branch*	*gdppc_std*
Rights index	0.2384					
General DWI	0.888	0.6583				
Pqualif_branch	0.1731	0.4345	0.3399			
FDI_branch	-0.0066	0.0949	0.0401	-0.0382		
gdppc_std	0.0287	0.0405	0.0414	0.0213	0.0019*	
exports	0.0294	0.1099	0.0749	-0.0363	0.0828	0.1654

Note: * significant at 90%. The rest of the bivariate correlations are 99% significant.
Source: created by the authors using data from INEGI and BANXICO 2006-2009.

The model is estimated by the most common method in multilevel modeling, the full maximum likelihood method. According to Hox (2018) one of its main advantages is that it is usually robust and produces asymptotically efficient and consistent estimates. Furthermore, when using large samples, this method's estimates are usually robust against minor violations of assumptions, such as errors that do not follow normal distributions.

4. MULTILEVEL MODEL RESULTS

In Table 4 we show the parts corresponding to the variance of the three endogenous variables explained by each level. For the probability of achieving a decent wage level, the values tend to be low for level 2 and 3 variables. However, in the case of non-wage labor achievements (rights), branch level variables have greater relevance, which in theory would explain the 11% of the synthetic labor rights index's total variance compared to the 5% which can be explained by level 3 variables.

Table 4. Variance of error terms at different levels and Variance Partition Coefficient (VPC) corresponding to level 2 (branch) and 3 (state) variables

	Income (LW)	*Rights*	*General DWI*
Level 2: Branch (σ^2_v)	0.0026	0.0063	0.0031
Level 3: state (σ^2_u)	0.0067	0.0029	0.0037
Level 1: individual (σ^2_e)	0.1810	0.0474	0.0646
Total	0.1902	0.0566	0.0714
VPC (2)	1.344	11.127	4.382
VPC (3)	3.529	5.081	5.158

Source: created by the authors using data from INEGI-ENOE (2006-2009).

Based on the multilevel regression results, it is clear that productive branch level variables have more influence on the decency level of work than those related to the state. This is because of the heterogeneity between sectors regarding costs structures, productivity and workforce profiles, while, on the other hand, labor laws are the same in all of Mexico's federal entities. The implication is that the disparity in access to decent work is less between workers in the same branch, regardless of the state where they reside, than workers in different branches but in the same state. The variability between productive branches helps explain to a greater extent the heterogeneity in labor rights (by 11%), than that of wages (only 1.3%), where the variables at the state level contribute a bit more to determining their variance (with 3.4%).

The relationship of each variable with the three indicators (DWI, LW and rights) can be seen in Table 5 in the regression coefficients in the models that estimate each of them. Those related to level 1 variables are consistent with expectations: women have better achievements in non-wage areas and a significant wage disadvantage; that is, women have 15 percentage points more than men in terms of non-wage achievements, yet, they are 7 points below them in terms of a living wage. In rural areas, companies find it difficult to comply with the labor rights which make up decent work and find themselves four points below those in an urban environment; however, there is greater access to a living wage there, which may be due to a lower cost of the basic basket. Elements that capture human capital, either via qualification (occupations) or specific human capital (previous experience and seniority in their current position) are remunerated with greater access to decent jobs and living wages.

Table 5. Linear multilevel models with random error and constant slope

		Income (LW)	*Rights*	*General DWI*
Level 1 variables				
Gender (ref: male)	Female	-0.0774***	0.0157***	-0.0308***
		(0.0009)	(0.0005)	(0.0005)
Environment (ref: urban)	Rural	0.1664***	-0.0451***	0.0606***
		(0.0009)	(0.0004)	(0.0005)
Specific human capital	Seniority	0.0048***	0.0058***	0.0053***
		(0.0001)	(0.0000)	(0.0000)
	Previous Experience	0.0005***	-0.0005***	-0.0000
		(0.0000)	(0.0000)	(0.0000)
Occupation (ref: professionals and technicians)	Education workers	0.0247***	0.0314***	0.0281***
		(0.0021)	(0.0011)	(0.0013)
	Civil servants and managers	0.1193***	0.0865***	0.1029***
		(0.0030)	(0.0015)	(0.0018)
	Office workers	-0.0652***	0.0347***	-0.0153***
		(0.0017)	(0.0008)	(0.0010)
	Industrial workers, artisans and assistants	-0.1431***	-0.0974***	-0.1202***
		(0.0016)	(0.0008)	(0.0010)
	Merchants	-0.1382***	-0.1197***	-0.1288***
		(0.0019)	(0.0010)	(0.0011)
	Transport operators	-0.0694***	-0.1139***	-0.0915***
		(0.0022)	(0.0012)	(0.0013)
	Personal service workers	-0.1926***	-0.0846***	-0.1386***
		(0.0018)	(0.0009)	(0.0011)
	Security and surveillance workers	-0.1535***	0.0150***	-0.0692***
		(0.0039)	(0.0020)	(0.0023)
	Agricultural workers	-0.2850***	-0.2129***	-0.2480***
		(0.0044)	(0.0023)	(0.0027)
		Income (LW)	*Rights*	*General DWI*
Level 2 variables	pqualif_branch	0.1680***	0.3591***	0.2637***
		(0.0217)	(0.0326)	(0.0233)
	FDIGDP	0.1703*	0.4271***	0.2997***
		(0.0877)	(0.1322)	(0.0944)
Level 3 variables	gdppc_std	0.0094***	0.0043***	0.0068***
		(0.0013)	(0.0008)	(0.0009)
	exp	0.0435***	0.0770***	0.0603***
		(0.0043)	(0.0028)	(0.0031)
	Constant	0.1219***	0.2497***	0.1857***
		(0.0080)	(0.0117)	(0.0084)
Number of observations		1 327 084	1 327 084	1 327 084
Number of level 2 groups (branch # year)		143	143	143
Number of level 3 groups (state # year)		4543	4543	4543
	Wald chi2(17)	80 512.29	155 476.11	106 689.79
	Prob > chi2	0.000	0.000	0.000
	Log likelihood	-754 076.16	13 3725.27	-71 639.16

With respect to level 2 and 3 variables, as they are continuous, they can be interpreted as elasticities. With level 2 (branch) variables, there is a positive relationship between the percentage of qualified people in the branch with DWI, both in terms of rights and wages. That is, for every percentage point of qualified people in the branch, the wage indicator gains 0.16 and the rights indicator .035. On the other hand, working in branches with a greater weight of FDI only contributes significantly to achieving better labor rights results, with the correlation with wages being much lower. Regarding level 3 variables, there is a positive correlation with the wage and rights indices at similar magnitudes when working in states with higher GDP per capita and those with a higher weight of exports with respect to GDP.

Trade openness, approximated here with the weight of exports in GDP, therefore seems to have a positive relationship with decent work and exposure to foreign capital, via FDI, which is essentially linked to labor rights. As such, even though trade agreements stipulate an obligation to comply with minimum job quality standards, competition via wages continues to be a strong element in being competitive against more developed trade partners, which in turn favors Mexico's integration into certain global value chains.

5. CONCLUSIONS

In this article, we calculated a multidimensional index to identify the level of decency in work in Mexico. We followed a methodology inspired by Desai and Shah (1988), contributing to the line of evidence defined by Ortega (2013), with which we identify decent employment at the worker level with indicators that reflect both the living wage and access to labor rights. Our contribution to this field of literature is incorporating into the analysis variables that identify heterogeneity in the worker's environment, as well as those which characterize the productive sector to which their employer belongs and the state they find themselves in.

The results show that an important part of heterogeneity in the level of decency of work corresponds to characteristics of the environment, be they productive or macroeconomic. Those related to the worker's exposure to globalization are proven to be positive, although with some distinctions, such as the fact that working in sectors exposed to FDI is only related to higher levels of labor rights but not better wages, in spite of these being measured with a relatively low reference, the poverty line set by CONEVAL. This result could be related to stagnant wage levels in Mexico which, in spite of helping maintain Mexican companies' competitiveness in global markets, make it increasingly difficult for workers and their family to attain decent living conditions. It is also relevant that workers living in states with more international trade enjoy – on average – better levels of decency in employment when it comes to both the wage and non-wage components. This may be due to the fact that certain groups' higher levels of income allow others to enjoy better working conditions as a spillover effect.

Nevertheless, the results suffer from certain limitations; for example, it would have been opportune to have a higher level of disaggregation in the number of branches to adequately reflect the heterogeneity among them, especially in manufacturing which has very different levels of exposure to technological development, human capital and globalization (trade and foreign investment). Furthermore, by recording only one set of valid coefficients for the entire analysis period, the results don't register structural changes in the relationship between the economic context or openness to the outside world with the level of decency of work. There are also opportunities to expand upon this work in the future, such as searching for differences in sensitivity that decency of work has to the environment according to various groups, defined by gender, age and, above all, educational level. Finally, when data on the post-pandemic period is available, we will analyze the possible structural change that Covid-19 could have caused in the level of decent work and its determinants at the microeconomic and aggregate scale.

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[1] Examples of these strategies are adapting the workday to the changing needs of companies, flexibility in remuneration systems by introducing productivity bonuses and outsourcing labor, among others (Neffa, 2010)

[2] The units for analysis, employee observations, are distributed across all federal entities with employers grouped by industry.

[3] TL note: from the original Spanish *Enuesta Nacional de Ocupación y Empleo*.

[4] In 2018, the STPS invited companies, owners, managers, union representatives and employees to answer the Decent Work Survey which they made available on their website. To this day, the results of the survey have not been made public.

[5] TL note: from the original Spanish *Secretaría de Trabajo y Previsión Legal*.

[6] The information collected reaches a sample size of 120,260 households per quarter, using a probabilistic, two-stage, stratified, cluster sampling. The population 12 years and over is included although the published statistical information refers to the population 14 and over (15 and over starting with the fourth quarter of 2014, when the minimum legal age for employment was raised from 14 to 15 years of age)(INEGI, 2019b).

[7] We use the first quarter for all years, except for 2006, 2007 and 2008 when it was necessary to use the second.

[8] TL note: from the original Spanish *Consejo Nacional de Evaluación de la Política de Desarrollo Social.*

[9] TL note: as employment in Mexico is not at-will, open-ended contracts are considered to provide greater job security than those with fixed terms.

[10] TL note: the Aguinaldo is a taxable Christmas bonus which employers are legally required to give employees every year equal to half a month's wages (if they worked the whole year; if they worked less, the pay is adjusted proportionately). [11] The Alkire and Foster (2011) aggregation method resulted in a similar indicator with the same trend shown here. The results are available for any reader interested.

[12] This is not indicated in equation (1) for the sake of simplicity but the relative frequencies upon which weightings for the achievements are based are specific for each year observed.

[13] The stability of the labor rights index reflects the fact that during the period analyzed, there were no advances or setbacks in any of the rights which make up the indicator. There were only slight improvements in terms of the aguinaldo and paid vacations.

[14] TL note: from the original Spanish Banco de Información Estadística.

[15] TL note: from the original Spanish Consejo Nacional de Población.