Labour Formalization and Inequality: The Distribute Impact of Labour Formalization in Latin America During the 2000s

ABSTRACT

Inequality and informality are two characteristics still present in Latin America. However, the region has experienced a trend towards labour formalization and lower wage inequality during the new millennium. The aim of this paper is to analyse the inflows to formality in four Latin American countries -Argentina, Brazil, Ecuador and Peru- during the 2000s, and assess their distributive impacts. This aspect is relevant given the fact that the increase in formal wage earners was particularly marked, on the one hand, and on the other, it is not possible to determine a priori the sign and intensity of the formalization process on wage distribution. Therefore, the link between both dimensions –inequality and formality- is an empirical question. The results show that labour formalization had an important equalizing effect in Argentina, Brazil and Ecuador, but it was unequalizing in Peru. Most of the existing literature focuses on the distributive impacts of the returns to education. Our study complements these results by adding the working conditions dimension and showing that their improvement can contribute to explain the decreasing trend of inequality observed in Latin America during the 2000s.

INTRODUCTION

Although informality and inequality are characteristics that still define Latin America, since the 2000s, a trend towards an increase in formality has been observed in several countries in the region. Many of them also experienced a decline in wage inequality, a process that considerably offset its growing trend of the 1990s.

The main aims of this article are, first, to evaluate the intensity and characteristics of the inflows to formality among urban salaried workers in four Latin American countries - Argentina, Brazil, Ecuador and Peru- during the 2000s and, second, to assess the distributive impacts of the formalization process. The selection of countries allows us to have a broad picture of Latin American labour markets, since they exhibit occupational structures and dynamics that greatly differ from one another. In particular, the proportion of urban formal employees[1] in total employment is significantly different: 64 per cent in Brazil, 52 per cent in Argentina, 40 per cent in Ecuador and 38 per cent in Peru. At the same time, even when the increase in the proportion of formal workers during the new millennium was particularly strong, its intensity varied according to the country: about 10 percentage points (pp) in Argentina and Brazil, and around 20 pp in Ecuador and Peru.[2]

It is worth emphasizing that this paper covers three aspects which are not usually considered in the literature on income distribution in Latin America. First, it resorts to information on labour transitions, rather than only referring to cross-section data. In particular, the inflows to formality are examined, allowing for a very detailed analysis of the different movements into formal wage employment and for the identification of groups of workers benefiting from this process. In this regard, this document contributes to the scarce but growing literature on occupational mobility mainly focusing on the process of labour formalization during the new millennium.

Second, in this paper the role played by the increase in the proportion of formal workers is considered an important potential factor to explain the decline in inequality in the

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[1] An employee is formal if her/his employment relationship is subject to the national labour legislation, income taxation, social protection or entitlement to certain employment benefits (Hussmanns, 2004: 6).
[2] Own estimates from regular household surveys.

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region, beyond the more traditional weight placed on education. This aspect is particularly interesting given that, a priori, it is not possible to determine the sign and intensity of the distributive impacts of increasing formality because they depend on the specific characteristics of this process.

Third, a detailed study is carried out of the diversity of labour formality trends in Latin American countries. Their heterogeneous labour market structures and overall level of development provide insight for the analysis.

The document is organised as follows. Section 1 discusses the theoretical and empirical framework, with a first subsection including a brief summary of empirical studies on the evolution of inequality in Latin America, and a second subsection analysing the transmission channels between formalization and changes in wage distribution. Section 2 describes the source of information, while section 3 details the methodologies. Section 4 analyses the evolution of wage distribution and informality in Latin America during the 2000s. Section 5 assesses the intensity of transitions into a formal waged job and evaluates the anatomy of labour formalization in urban areas. Section 6 discusses the econometrics results accounting for the role of labour formalization and other factors in the reduction of wage inequality. Section 7 concludes.

THEORETICAL AND EMPIRICAL LITERATURE ABOUT LABOUR FORMALITY AND INEQUALITY

Empirical studies on income distribution for the countries under analysis

From the perspective of income distribution, Latin America appears as a relevant "case study" not only because it continues to be one of the most unequal regions in the world, but also because the distributive changes have been very intense in several countries in the region since the beginning of the nineties. In particular, over this decade there was a generalised household and labour income concentration, while the opposite trend was verified during the new millennium (ECLAC, 2017).

Several studies on the evolution of Latin America income distribution show this clear contrast between the 1990s and the 2000s. Some of them analyse the evolution of income distribution of several countries in the region, as in Lustig et al. (2013), Gasparini et al. (2011), Cornia (2012) or Keifman and Maurizio (2012) Others examine the situation in individual countries, as Gasparini and Cruces (2010; Trujillo and Villafañe, (2011); Salvia and Vera (2011) or Beccaria et. al (2015 for Argentina; Soares (2006), or Barros et al. (2010), for Brazil. Some studies focus on the analysis of the changes observed in household income concentration, and look into the possible causes of such dynamics. One of the main results is that labour income explains most of the increase observed in household income concentration throughout the 1990s as well as its subsequent decline in the following decades.

Most of the studies that evaluated the changes in labour income show that the main factor accounting for the decline in earnings inequality during the 2000s was the returns to education, which had also caused an increase in inequality in the previous decade (Alejo et al., 2014, 2015; Gasparini and Cruces, 2010; Cornia, 2012; Lustig et al., 2013; Gasparini et al., 2011).

In regard to the causes of the changes observed in returns to education, the studies put emphasis on the interaction between the relative supply and demand for qualifications. Gasparini and Cruces (2010) highlight a slowdown in the rate of technology incorporation during the 2000s in a context of growing relative supply of skilled workers. They also mention that after the overshooting in inequality growth of the previous decade due to the rapid incorporation of technology, it is reasonable to expect an adjustment phase, which might have also contributed to the equalizing trends of the 2000s. As put by Gasparini and Lustig, 2011: 'the fading out of the effect of the skill-biased technical change that occurred in the 1990s'.

In addition, some studies point out that both the implementation of income policies immediately after the crisis and the strengthening of labour unions might have also played a part in the narrowing of income gaps between workers with different skills and educational levels. Maurizio and Vázquez (2016) highlight the strengthening of the minimum wage as a contributing factor to improve wage inequality, both in Argentina

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and other countries in the region. Neri et al. (2000) and Bosch and González Velosa (2013) also found an equalizing effect of the minimum wage in Brazil.

However, only a few studies focus on the possible effects of the labour informality decline in many Latin American countries during the 2000s on labour income inequality. These are Beccaria et al (2015), Maurizio (2015), Maurizio and Vázquez (2015), ECLAC and ILO (2014), and Amarante and Arim (2015). They share the common finding that there is a positive correlation between informality decline and inequality fall.

ECLAC and ILO (2014) also study the impact of the formalization process on gender wage gaps and conclude there is a heterogeneous effect across countries. In Brazil, Ecuador, Panama and Paraguay, greater formality shortened the wage difference between men and women given that the extent of formalization of the latter was greater than that of the former. The formalization process, however, was unequalizing in the Plurinational State of Bolivia and Colombia.

Transmission channels between labour formalization among paid employees and changes in wage inequality

There is an extensive literature on how income distribution in less developed countries (LDCs) changes in the long run as their economic structures evolve. Some of the contributions resort to two sector models (Harris and Todaro, 1970) or three sectors models (Fields, 1975; Rauch, 1991). They examine the distribution impacts of changes in the size of the sectors but also of variations in their relative earnings. They therefore address a different issue to the one considered in this paper -and in those surveyed in the previous section– as it studies how the increase in the proportion of formal wage jobs impacted on earnings income distribution during a relative brief period of 15 years initiated at the beginning of the 2000s.

The sign of the distributive impact of such increase in short periods is a controversial issue as it depends on the characteristics of the process. Therefore, the results presented in the previous section, indicating that labour formalization in Latin America reduced

inequality during the 2000s, respond to specific developments experienced by those countries during this period.

In these cases, the evaluation of the effect of changes in the aggregate size of formality is not enough to understand how earnings distribution changes as it depends on how new formal jobs were filled.

This section presents a brief and schematic discussion of the different channels through which that occurs, channels that will be considered in the empirical work shown in the following sections. In this regard, this paper contributes to the scarce literature on the issue by providing evidence not only from a static but also from a dynamic perspective. The analysis of the inflows to formality can shed some light as it allows identifying who the individuals that move to a formal position are –in terms of their personal and occupational characteristics. To the best of our knowledge, this is the first study that has used this strategy to achieve a better understanding of the distributive impacts of the formalization process in these countries.

Among other factors, the impact of formalization on inequality will be different if the former is the result of either the generation of new formal jobs or the formalization of former informal positions. In the first case, the distributive effect of the creation of a formal job fulfilled by a previously unemployed or not economically active person depends on other additional wage determinants, such as education, gender, age, to name but a few. However, in order to assess the impact of this kind of job creation on inequality we need to draw a comparison between the impact of a formal job with some set of wage determinants and the impact of an informal job with the same set of determinants. In this regard, the creation of a new formal high-paying job (covered, for instance, by a skilled worker) would increase inequality more than the creation of the same new high-paying job of informal character. On the contrary, a new formal low-paying job would increase inequality less than a new informal low-paying job. In both cases, the indicated sign of the likely influence assumes a positive premium to formality. The expected distributive effect of a new occupation with earnings closer to the mean is difficult to ascertain on a conceptual basis and it ends up being an empirical matter.

When the formalization process implies the movement from an informal occupation, the impact is determined by the composition of workers that benefit from formalization: inequality falls as the share of low-wage informal workers transitioned to formality, given the expected increase in wages implied in such transition. On the contrary, labour formalization could widen the average formal–informal wage gap if the process is biased towards the upper tier of informal employees, resulting in a larger proportion of low wages within informality and in ambiguous net effects on wage inequality.

On the other hand, the behaviour of returns to formality along the wage distribution is another important factor: if returns are negatively correlated with the level of wages - that is, these are higher in the lower tail of the distribution than in the upper part-, a proportional growth in the share of formal workers along the distribution would reduce inequality.

Additionally, if wage dispersion is lower within formal workers than informal workers, an increase in the share of formality will also tend to reduce global inequality.

The previous analysis is based on the direct links between formality and inequality. However, the improvement of working conditions associated with the process of formalization may also affect other variables that have an impact on the distribution of wages. From the perspective of workers, it could lead to an increase in the supply of labour through an inverse 'discourage effect', which would moderate overall wage growth with unclear distributional effects. The higher probability of obtaining a formal job could, on the contrary, raise the reservation wage, which makes workers less willing to accept low-wage informal occupations. As a consequence, returns may fall, especially at the bottom part of the distribution.

A rise in the proportion of formal workers could also alter the wage gap between formal and informal workers as some of the newly formalized employees could end up receiving lower wages than those of similar, already, formal salaried workers as employers might transfer onto them part of the increased total labour costs. In this case, returns will fall.

Finally, changes in premia, in turn, have uncertain effects on the wage distribution. An increase in premia would tend to raise inequality through the 'between' effect. Nevertheless, if the increase is higher at the bottom tail of the distribution, wage inequality could grow with less intensity, or even fall.

Due to all these potentially opposite effects, the distributive impact of the formalization process verified in the countries under analysis is *a priori* uncertain and requires empirical evaluation.

SOURCE OF INFORMATION

The data used in this paper come from regular household surveys carried out by the national statistical institutes of each country.

The country-specific sources are as follows: for Argentina, the *Encuesta Permanente de Hogares* (EPH) -covering 31 urban areas-; for Brazil, the *Pesquisa Mensal de Emprego* (PME) -covering six major urban areas-; for Ecuador, the *Encuesta Nacional de Empleo, Desempleo y Subempleo* (ENEMDU), for Peru, the *Encuesta Nacional de Hogares* (ENAHO), both covering urban and rural areas-.

The period under analysis corresponds to the 2000s. However, the set of years considered for each country depends on the availability of comparable data. In Argentina all years between 2003 and 2017 are analysed. The set for Brazil is 2003-2015; 2005-2017 for Ecuador; and 2004-2017 for Peru.

Although these surveys are not longitudinal, their rotating panel sample allows flow data to be drawn from them. In such schemes, the total sample is divided into a certain number of household groups and each group remains in the sample for a given number of observation periods. To obtain cross-country comparable results, we included one transition per individual based on a one-year interval between observations.

As well as using the panel structure of the sample, this paper also uses retrospective information. Specifically, all workers are asked how long they had been in their present jobs. This information allows us to define the 'job tenure' variable, used to check

whether a person who was employed both in month *t* and month *t+12* remained in the same job or had moved to another. If the employed individuals responded, during the second observation, that they had been in their current job for over a year, it was understood that they had not changed jobs between the two observations.[3]

Since not all the surveys used in this study are representative of each country as a whole, and given that labour markets in rural areas and urban centres may behave differently, our analysis was restricted to urban areas.

APPROACH AND METHODOLOGY

Approach and measurement of informality

This study focuses on labour informality among wage workers.[4] The analysis will be based from the perspective of the jobs and not of the establishment where the person works (i.e. employment in the informal sector).[5] ILO recommendations indicate that wage earners "are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits".[6] The empirical identification of informal wage jobs in each country is based on available information derived from household surveys.

In Argentina, formal wage earners are those whose employers make payroll deductions in order to make social security contributions. In Brazil, a wage earner is formal if he/she has signed a labour contract. In Peru, formality is marked by whether or not the employee is affiliated to a pension system. And finally, in Ecuador, formal salaried workers are those receiving social insurance from their jobs.

When putting this approach into practice, we sought to make the formal wage earner identification criterion comparable, which does not necessarily imply the same empirical

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[3] Further consistency analyses were carried out to ensure that this criterion was correctly applied.
[4] All figures considered in the paper include domestic service among wage earners.
[5] ILO (2002), Hussmanns (2004).
[6] Hussmanns (2004: 6).

implementation in each country given that household surveys capture this dimension in different ways. These are, in fact, the definitions usually employed to identify formal wage-earning jobs in these countries.[7]

The decision to identify formal workers exclusively within the group of wage earners is based, on the one hand, on the relevance of this group to understand the process of formalization and, on the other, on the availability of comparable information in the four countries. As for the former, it is in itself relevant to analyse the anatomy of formalization by looking at entries to a formal salaried job and at the reasons behind the decision of employers to register employees, and in particular, a certain subgroup of those workers. On the other hand, labour formalization of other job categories, such as independent workers, generally do not imply higher income or additional non-monetary improvements of job quality. Finally, the surveys employed do not always identify the registration condition for non-wage earners, and hence the formal/informal classification can only be made for wage earning jobs.

Analysis of occupational inflows to a formal salaried job

Labour formalization can take place through three channels: (1) in situ formalization — i.e. a worker becomes formal, maintaining the same occupation between t and $t+1$; (2) transitions from a non-formal occupation (informal or independent job); and (3) transition from unemployment or inactivity.

In order to analyse the contribution of the different groups of workers to formalization through the second and the third channel, it is possible to start with the following equation:

$$\frac{f_{ij}}{F_j} = \frac{S_i \; x \; P(E_{ij})}{F_j}$$

where:

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f_{ij} indicates the total transition from state i (any labour status other than a formal job) in t to state j (formal job) in $t + 1$

F_j indicates total transitions from any state in t to state j (formal job) in $t + 1$

S_i indicates the stock of non-formal individuals (informal or independent workers, unemployed or inactive) in t

$P(E_{ij})$ indicates the probability of transition from state i in t to state j (formal job) in $t + 1$

$i \neq j$

In turn, the probability of entering formality $P(E_{ij})$ can be decomposed into two factors: on the one hand, the probability of leaving the initial state (different from a formal job) $-P(E_i)-$, and on the other hand, the conditional probability of entering a formal job after leaving the initial state $-P(E_j|E_i)-$:

$$P(E_{ij}) = P(E_j|E_i)\, P(E_i)$$

This decomposition allows evaluation of the extent to which transitions to formality of given groups of individuals are associated with their relative participation in non-formal employment or with a higher probability of transiting to formality. Then, it is also possible to find out if the latter higher probability is in turn associated with the fact that these individuals exit the initial state more frequently or because they have greater possibilities of moving to formality once they abandon their initial state.

Assessment of the distributive impacts of labour formalization

In order to evaluate the contribution of labour formalization process to the reduction of inequality we employ the Firpo et al. (2007, 2011) approach, since it can be understanding in terms of an extension of the decomposition method developed by Oaxaca (1973) and Blinder (1973)[8]. The most important advantages of this procedure over OB are to have more flexible specifications of the underlying wage model; and to

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[8] Other studies employing this same methodology for Latin American countries are Serrano and Yupanqui (2012), Campos et al. (2012), and Alejo et al. (2014).

quantifying partial effects of changes in the distribution and in the returns of the covariables over other functionals (v) besides the mean; like quantiles, variance or the Gini coefficient.

The decomposition method following here consists of two stages: 1) the estimation of the aggregate composition and return effects, by employing a reweighting procedure; and 2) the disaggregation of those effects into the individual contribution of each attribute using regressions on the recentered influence function of the distributional statistic of interest.

The total variation of v between $T = 0$ and $T = 1$ can be formalized as:

$$\Delta^v = v\left(F_{(Y_1|T\,=\,1)}\right) - v\left(F_{(Y_0|T\,=\,0)}\right)$$

where $F_{(Y_1|T\,=\,1)}$ is the wage distribution function in time 1, and $F_{(Y_0|T\,=\,0)}$ in time 0.

After the differences in the distribution of attributes between years is controlled by considering a counterfactual distribution $F_{(Y_0|T\,=\,1)}$ - i.e. the wage distribution that would have been prevailed in $T = 0$ if the individuals had the distribution of characteristics observed in $T = 1$ -it is possible to split up the total change into the 'composition effect' (Δ_C^v) and the 'returns effect' (Δ_S^v):[9]

$$\Delta^v = \left[v\left(F_{(Y_0|T\,=\,1)}\right) - v\left(F_{(Y_0|T\,=\,0)}\right)\right] + \left[v\left(F_{(Y_1|T\,=\,1)}\right) - v\left(F_{(Y_0|T\,=\,1)}\right)\right]$$

$$\Delta^v = \quad \Delta_C^v \quad + \quad \Delta_S^v$$

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[9] It is worth noticing that for the mentioned effects to be identified it is necessary to consider two restrictions on the joint distribution of (T, X, ε), namely: 1) ignorability assumption, i.e. the distribution of non-observable attributes determining wages -ε- is the same for the two groups considered; 2) common support assumption, i.e. observed attributes cannot be considered for one of the groups under analysis and not the other, but rather observable characteristics should overlap. These are the two assumptions usually considered in the program evaluation literature.

The composition effect measures the total change derived from modifications of the attributes while holding constant the wage structure between two moments in time. The second effect measures the impacts of changes in returns, holding constant the structure of characteristics.

To conduct the first stage is necessary to build on the contrafactual distribution, to do this we follow the strategy based on a reweighting function given by the quotient between the distribution of X in $T = 1$ and the distribution of X in $T = 0$, both multivariate. Then, following DiNardo et al. (1996), and applying Bayes' rule, such quotient can be summarized as:

$$\psi(X) = \frac{Pr(T = 1/X)}{Pr(T = 0/X)} \frac{Pr(T = 0)}{Pr(T = 1)}$$

The $\hat{\psi}(X)$ generated by this procedure was used to reweight the observations registered in $T = 0$ in order to estimate the counterfactual distribution of the functional of interest[10]. On the other hand, the distributions associated to $T = 0$ and $T = 1$ were estimated straightforward by their respective empirical distributions. This is,

$$\hat{\Delta}^v = \left[v\left(\hat{F}_{(Y_0|T = 1)}\right) - v\left(\hat{F}_{(Y_0|T = 0)}\right)\right] + \left[v\left(\hat{F}_{(Y_1|T = 1)}\right) - v\left(\hat{F}_{(Y_0|T = 1)}\right)\right]$$

Finally, to obtain the detailed disaggregation of both effects (the second stage in the procedure), it was employed a recentered influence function (RIF) regression to apportion the composition effect and the return effect into the contribution of each individual covariable.

The RIF function is defined as $RIF(y; v) = v(F) + IF(y; v)$, where F is the distribution function of the variable of interest (in this case, wages) and IF is the influence function.

The composition and return effects can be rewritten suitably in terms of expectation of the conditional RIF considering the law of iterated expectations and the expected value of the influence function is equal to zero:

$$\Delta_C^v = E_X\big[E[(RIF(Y_0;v)|X,T=1)]\big] - E_X\big[E[(RIF(Y_0;v)|X,T=0)]\big]$$
$$\Delta_S^v = E_X\big[E[(RIF(Y_1;v)|X,T=1)]\big] - E_X\big[E[(RIF(Y_0;v)|X,T=1)]\big]$$

Letting $E[(RIF(Y;v)|X)] = X'\gamma^v$, and substituting the previous expressions by their respective linear projections[11], we obtain:

$$\Delta_C^v = E(X|T=1)'\gamma_{0I1}^v - E(X|T=0)'\gamma_0^v \equiv$$

$$\equiv \sum_{k=1}^{K}(E(X^k|T=1)' - E(X^k|T=0)')\gamma_{0,k}^v + SPE^v \quad \text{I}$$

$$\Delta_S^v = E(X|T=1)'\gamma_1^v - E(X|T=1)'\gamma_{0I1}^v \equiv$$

$$\equiv (\gamma_{1,0}^v - \gamma_{0I1,0}^v) + \sum_{k=1}^{K} E(X^k|T=1)'.(\gamma_{1,k}^v - \gamma_{0I1,k}^v) + RWE^v \quad \text{II}$$

Where k refers to the k-th attribute.

The expression I, 'the composition effect', now is expressed considering the specification error (SPE^v), originated in the fact that the procedure provides a first order (linear) approximation of such effect. It can be estimated as the difference between the overall composition effect, obtained using the counterfactual distribution of wages, and the estimation of the effect obtained using RIF regressions. Expression II refers to 'the returns effect' and incorporates the error of reweighting (RWE^v), which results from the fact that the attributes of $T = 1$ might not be exactly replicated when obtaining the counterfactual values.

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[11] Here, we follow the suggestion made by FFL (2007), who highlight the practical advantages of such linear specification. They argue that: i) the methodology carries an approximation error anyway, given that it is a first order approximation of the impact of significant changes in the distribution of X; ii) a linear specification does not affect the estimations obtained when employing a reweighting procedure; and iii) the substitution simplifies the interpretation of results.

The estimation procedure for the detailed decomposition of both effects was carried out by running a regression of the RIF of the functional of interest, i.e. ordinary least square method was chosen in this case.

This is, being $v\left(\hat{F}_{(Y_1|T = 1)}\right) = \hat{E}(X, T = 1)\hat{\gamma}_1^v$, $v\left(\hat{F}_{(Y_0|T = 0)}\right) = \hat{E}(X, T = 0)\hat{\gamma}_0^v$, and $v\left(\hat{F}_{(Y_0|T = 1)}\right) = \hat{E}(X, T = 1)\hat{\gamma}_{0I1}^v$, we obtain the estimation of the detailed decomposition, given by:

$$\hat{\Delta}^v = \sum_{k=1}^K \left[\hat{E}(X^k|T = 1) - \hat{E}(X^k|T = 0)\right]\hat{\gamma}_{0,k}^v + \widehat{SPE}^v +$$

$$\left(\hat{\gamma}_{1,0}^v - \hat{\gamma}_{0I1,0}^v\right) + \sum_{k=1}^K \hat{E}(X^k|T = 1)' . \left(\hat{\gamma}_{1,k}^v - \hat{\gamma}_{0I1,k}^v\right) + \widehat{RWE}^v$$

This methodology is applied to decompose changes in hourly wage inequality in the four countries between $T = 0$ and $T = 1$. The indicators of inequality employed are the Gini index and the log of the ratios between the median and the 10th and 90th percentiles.

EVOLUTION IN WAGE DISTRIBUTION AND LABOUR FORMALITY IN LATIN AMERICA

Distribution trends

As mentioned before, Latin America continues to have one of the largest levels of income inequality in the world[12]. However, in a context of high and sustained economic expansion with positive impacts on social and labour market indicators, the region has experienced a process of decline in income concentration since the early 2000s that contrasts with that observed in the nineties. As we can see in Figure 1, the average Gini coefficient of labour income increased about 3 percentage points (pp) during the nineties and dropped sharply by 6 pp over the 2000s.

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[12] ECLAC (2017).

[Insert Figure 1 here]

Since the beginning of the new century, the four countries under analysis have experienced a similar behaviour towards decreasing inequality. When contrasting the extremes of the periods (Table 1), the Gini coefficient of hourly wages and monthly earnings fell at around 12 / 20 per cent in these countries. This shows very significant falls in pp: between 6 and 10 (pp), respectively.

[Insert Table 1 here]

However, the intensity of the equality-enhancing process was not homogeneous throughout the distribution in the four countries. As it can be seen in this table - this will be analysed in greater detail in section 6-, while in Argentina and Brazil, this process was similar throughout their distributions, in Ecuador and Peru the reduction in inequality was verified with greater intensity in the first half than in the second part of distribution. This is an important aspect when evaluating the distributive impact of different factors, including labour formalization, since these could have a different sign and absolute importance along the wage distribution.

The process of labour formalization

Towards 2014, 76 per cent of all wage earners in the region were formal according to ILO estimates (Table 2).[13] These figures are the average of those corresponding to eleven countries weighted by population; the simple average (of these countries) is 70 per cent. That share reaches 86 per cent for those working in medium and large establishments (5 or more workers) and 44 per cent for those in micro and small companies. When the comparison is made over total employment, it appears that formal wage earners accounted for a little over half (55 per cent) of the region's total employment considering the weighted average; the simple average amounts to 48 per cent. In other words, about two – thirds of all informal employees (63 per cent) worked

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[13] 2014 is the last year with estimates of ILO for the aggregate of the region.

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in small productive units and in the domestic service sector. Therefore, the proportion of those belonging to medium and large-sized establishments is far from negligible as it reaches almost a third of all wage earners.

Among the four countries analysed in the paper, Brazil shows the largest share in formality –83 per cent of wage employment and near two-thirds of total employment (64 per cent) – while Ecuador has the lowest.

Although informality continues to be a feature characteristic of Latin American labour markets, as mentioned, several countries in the region have registered a rise in the share of formal wage earners from the beginning of the new century. According to ILO (2018a), one of the most important transformations of the Latin American labour markets is the process of formalization that has been observed since the beginning of the new millennium. Out of the 51 million jobs created in the region in the 2005-2015 decade, 39 million were formal jobs, thus evidencing the reduction of the informal employment rate in this period.

This increasing trend in formality was also observed in the four countries here under analysis, but it was particularly intense in Ecuador and Peru, where the proportion of formal wage earners in total salaried employment increased about 25 and 24 pp, respectively. Although the formalization process was not as strong in Argentina and Brazil, it was still significant, around 10 pp.

[Insert Table 2 here]

The process of labour formalization took place in a period of strong total employment growth, which resulted in the creation of a significant volume of new formal wage-earning occupations (Figure 2).

For example, the number of formal jobs rose by almost 60 per cent in Argentina between 2003 and 2017, while total employment increased by 20 per cent. In Brazil, these numbers are 40 per cent and 20 per cent, respectively. As we said earlier, the process of formalization was even more pronounced in Ecuador and Peru, where the number of

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registered jobs more than doubled during the period under review.

[Insert Figure 2 here]

Although the identification of formal/informal self-employed workers is not made in this paper, it is worth mentioning that formalization also increased among non-wage works during the new millennium in Latin America. In particular, pension coverage rose from 22 per cent in 2001 to 34 per cent in 2014 and health coverage saw an increase from 18 per cent to 29 per cent.[14] This increase reflects, to a certain extent, the expansion, in many countries, of simplified tax systems and voluntary affiliation that requires low contributions from independent workers.

The main drivers in formality growth

The intensity of the labour formalization process is the result of both macroeconomic and institutional factors (ILO, 2018a), hence the great relevance of the policies that contributed directly to this process. While providing an exhaustive assessment of each of them is beyond the scope of this article, this section presents theoretical arguments and empirical evidence of some causal factors.

The business cycle

The business cycle is a relevant factor to be considered when analysing the drivers of the decline in labour informality. There are theoretical arguments on both the demand and supply sides of the labour market that account for the countercyclical nature of informality. During a period of sustained economic growth, the labour market becomes more predictable and the probability of layoffs falls, favouring the increase of formal contracts and lowering the incentives to maintain informal labour relations. In this context, employers can benefit from the positive effects of long-term labour relations:

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[14] There is less information on the formal/informal character of non-wage employment in Latin America. Although the ILO Regional Office (our source for the regional average) recorded data for some years of the period beginning in 2001, neither Argentina nor Mexico are included.

higher productivity resulting from a greater number of training activities and increased engagement in the job.

In the early 2000s Latin America began a period of high and sustained economic expansion. The annual GDP grew 3.7% during 2004-13 -a period that includes the episode of the international crisis- but it slowed down to only 0.3% during 2014-2017. As indicated above, this high economic growth during the first phase had a positive impact on regional social and labour market indicators: overall employment grew relatively fast (the employment rates increased from 52.7% to 55.7% between 2003 and 2014) and the regional unemployment rate fell from 9% to 6.1%. This rising trend in employment continued even after the 2008/09 crisis, but at a slower pace.

There is evidence regarding the impact of the economic cycle on formalization. For example, Bosch and Esteban-Pretel (2009) use a two-sector search and matching model where firms can choose between hiring formal or informal workers. The model predicts that during booms the number of matches increases between firms and workers (as in other matching models), but firms also engage more intensely in formal contracts, since they benefit from the increase in productivity. Both effects boost rates of entry into formal jobs. Moreover, the rate of job destruction — both formal and informal — decreases and unemployment falls accordingly. In their article, the authors verify these predictions for the 1983–2001 period in Brazil. Similarly, Boeri and Garibaldi (2007) predict a positive correlation between unemployment and informality using a two-sector formal/informal model.

Bosch and Maloney (2008) find that unemployment is countercyclical in Brazil and Mexico due to the increase in job separations of informal workers during downturns. These authors also find that the share of formality/informality is procyclical because it is mainly associated with a lower probability of transiting from inactivity, unemployment or informality to a formal job during recessions, rather than with higher formality exit rates.

Corsueil and Foguel (2012) also find formality to be procyclical by modelling labour transitions. At the beginning of the recovery phase, employment in small firms rises, as they can hire informal workers at very low wages. However, assuming that the

reservation wage of informal workers is higher than that of the unemployed, the probability of transiting from informality to formality and the share of formal workers grows as unemployment falls in the expansion phase. This prediction was verified for Brazil during the 2003–08 period.

Arias and Sosa Escudero (2007) assess the relationship between informality, informal/formal wages and unemployment in Argentina during the 1985–2003 period using Panel VAR methods. Their findings are consistent with the exclusion hypothesis, which states that workers are pushed into informal jobs due to a lack of better employment opportunities. In this context, informality is countercyclical: higher unemployment induces workers to accept informal positions and to earn lower salaries than formal wage earners, thus raising informality.

The evidence therefore suggests that economic growth is positively correlated to changes in formal wage-earning employment. However, it seems a necessary but not sufficient condition. Some of the specific policies implemented in these countries may also account for the process of formalization.

Incentives for employment formalization

Labour costs are a relevant factor in labour demand. It is often argued that these costs should be reduced, and administrative procedures to register workers should be simplified in order to stimulate the creation of formal employment. Latin American countries have implemented this kind of programme so as to encourage greater formalization.

In 2001 Argentina passed a regulation by which employers' contributions were reduced for every new hired worker in the firm. From 2004, this reduction was restricted only to firms with up to eighty employees, but later in 2008, in the middle of the international crisis, firms of all sizes could again benefit from said scheme, while the tax rate was further reduced. Castillo et al. (2012) evaluate the impact of the last measure and find that it contributed to sustaining formal labour demand in the group of firms that benefited from this programme.

Also referring to Argentina, Cruces et al. (2010), assess the impact of reduced social contributions over the period 1995–2001. They find no significant effect on employment, but an increase in formal wages.

On the contrary, Chacaltana (2001) finds that the Peruvian labour market reforms of the 1990s, which deregulated hiring and dismissal, did not boost labour formalization. Moreover, the significant cut on labour costs for small- and medium-sized firms of 2003, and then of 2008, had little or no effect on registration (Chacaltana 2008).

With a view to making it simpler, some countries introduced changes in their tax system and the registration procedures for small and micro enterprises. Brazil is an important example with the introduction of Simples National programme in 1996 and the Lei do Microempreendedor Individual (Individual Entrepreneur Law) passed in 2009. They simplified registration and reduced taxation, including social security contributions. Fajnzylber et al. (2009), Delgado et al. (2007) and Monteiro and Assunção (2012) find positive effects of the Simples programme on registration levels. Berg (2010) and Krein and Dos Santos (2012) also conclude that this programme has been positive regarding formality growth. On the contrary, Andrade et al. (2013) find no impact of exemption in registration fees on firm formalization.

Similarly, Bruhn and McKenzie (2013) find a zero effect on business registration of another administrative simplification programme in Brazil. Authors conclude that this policy was not successful to increase registration and, therefore, other difficulties that firms encounter should be taken into account when formalizing.

In 2006 Argentina launched the programme Mi Simplificación, which required a single procedure for the registration of workers and employers and for the subsequent control of compliance with labour norms. Ronconi and Colina (2011) find it positive although with little effect on registration levels.

Mullainathan and Schnabl (2010) also find a positive impact of the simplification of municipal licensing processes in Peru. However, most of the firms that were formalized asked for a provisional license as their owners considered that the probability of surviving the first year was very low.

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Castillo et al. (2007), nevertheless, indicate that there is no evidence showing that the simplification of procedures has had a positive impact in terms of reducing informality in Latin America. This could be explained in part by the low proportion of the registration costs over total costs. They also argue that the problem resides in the low productivity of firms, the solution to which does not appear to be only or even essentially the simplification of registration procedures, but rather more comprehensive and complex strategies that include better access to credit, markets and technology, among other determinants.

Those results, therefore, seem to suggest that schemes to simplify registration are necessary to support the formalization of small firms, but they are clearly not sufficient to achieve that objective, and a wide range of instruments promoting the productive development of such establishments is therefore needed, as discussed below.

Labour inspection

Another factor associated with the decline in informality is labour inspection. It is argued that the threat of greater controls or tougher sanctions for non-compliance with labour regulations should act as an incentive for the regularization of labour relations. In several countries of the region, the costs of non-formalization faced by employers rose as a result of the measures implemented to strengthen and improve labour inspection. The Plan Nacional de Regularización Laboral (National Plan for Labour Regularization) established in Argentina in 2004 tightened controls to detect salaried employment not registered in the social security system. With this plan, the Ministry of Labour reclaimed the national coordination role for this type of activity. Also, the technologies employed improved and the number of inspectors rose. Ronconi (2010) finds a positive impact of inspections on formalization in Argentina. In fact, the number of formalised workers increased due to inspections throughout that period.

Brazil strengthened labour inspection though the implementation of organizational changes and reforms in the structure of incentives. According to Pires (2009), a bond system for inspectors was introduced in the mid-1990s that linked part of their wages to individual and group performance. Then, special inspection teams were created to deal

with more complex situations in certain sectors. Berg (2010) points out that these two new approaches had significant positive effects on labour formalization in Brazil. Furthermore, Almeida and Carneiro (2009) find that regions with stricter controls in Brazil presented lower informality rates. They do not find negative effects of inspections on total employment, which suggests that informal employment was replaced by formal employment. The results of the impact evaluation of de Andrade et al. (2013) also show that inspection was the only effective instrument in Belo Horizonte (Brazil) to induce formalization, since neither a higher level of information nor monetary incentives had a significant impact on labour regularization.

In Ecuador, the Trabajo Digno (Dignified Work) programme for strengthening labour inspection was launched in 2011 whereby the number of inspectors was increased and the organization of their work was modified. A World Bank study (2012) highlights the role of inspection in fighting informality. According to the report, over the period studied, inspections became increasingly frequent; approximately 60% of the firms included in this survey expressed having been inspected at least once during the previous year. The study also found a positive and statistically significant correlation between inspection and compliance with legal and labour rules. Also in Ecuador, a law was passed in 2011 that punishes with a criminal offence failure to register dependent workers with IESS. While the impact of that reform has not been directly evaluated, affiliation in the social security system grew significantly that year, consistent with the increase in labour formality mentioned above. According to the World Bank (2012), while it is not possible to assert that this increase is only due to the change in the legislation, which was not in force that year, the signal sent in terms of informality zero-tolerance is thought to have helped stimulate registration.

In short, the few studies evaluating the impact of inspection seem to confirm that they have a positive effect on labour market formality. That would reinforce the idea that certain firms, especially the smallest ones, operate informally because they cannot pay regularization-associated costs. The combination and inspection with different policies to promote productive growth, profitability and competitiveness are indispensable in those cases.

THE DYNAMIC PERSPECTIVE

Channels of labour formalization

As shown in Table 3, in Argentina and Ecuador, the biggest source of formalization was that observed in situ*:* i.e. a worker becomes formal, maintaining the same occupation between *t* and *t+1*.

In particular, around 40 per cent of new formal workers became formal employees in the same job. But even in Brazil and Peru this channel accounts for about 30 per cent of the increase in formality. The number of formal workers coming from a non-formal job range from 26 per cent in Brazil and Argentina to 44 per cent in Peru. This is the main channel of labour formalization in the latter country. The remaining 30/40 per cent of the new formal workers were either unemployed or inactive, this being the major source of entry into formality in Brazil.

[Insert Table 3 here]

As it follows, we firstly analyse the job characteristics and the personal attributes of the workers that became formal through the first channel, then we study the characteristics of those who become formal through transitions from another labour status or occupation. Finally, we jointly assess the contributions of the different worker groups to the formalization process through these channels.

Formalization in the same occupation

Table 4 presents four different groups of workers: (1) the distribution of non-formal workers in *t,* (2) the formality rate in *t* (initial percentage of formal wage earners in total salaried employment), (3) the probability of becoming a formal salaried worker (percentage of non-formal salaried workers in *t* that became formal in *t+1* in the same job)[15], and (4) the contribution of each worker group to the in situ formalization process

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[15] Following the frequentist approach, for any given event defined in a representative random sample, the relative frequency of occurrence of such event is a measure of the probability of that event.

(the proportion of each group in the total formalization in the same occupation).

[Insert Table 4 here]

There is a strong positive correlation between the educational level and both the initial formality rate (column 2) and the speed of the formalization process (column 3) in all countries; i.e., most skilled workers exhibited at the beginning of 2000 the highest formality rate and the formality gap with the rest of wage earners widened throughout the period under study. However, given the importance of workers with an intermediate educational level — i.e. complete secondary and incomplete tertiary education — among initially non-formal workers (column 1), they made the largest contribution to this process (column 4). On the contrary, even though the initial formality rate and the intensity of the process were higher among workers with complete university degree, they contributed the least to this formalization channel (except in Peru where the least skilled workers occupied this position).

Men exhibited a higher formality rate than women at the beginning of the period. The exception is Brazil, where the rates were similar for both groups. Men have also benefited more than women from this process except, again, in this country. Consequently, the men's contribution to formality inflows was higher than that of women. This is particularly evident in Ecuador and Peru.

An inverted U-shape is found for the relationship between formalization in situ and age in Argentina, Ecuador and Peru: middle-aged people experienced the highest probability of becoming formal in the same job during the period. In Brazil there is a negative correlation between these two variables. In all cases, however, the formalization process reproduces the initial formality gaps between wage earners. Likewise, in all countries, prime-age people accounted for half or more of total transitions to formality; the opposite is verified among young workers.

A positive and strong correlation between the probability of becoming formal and the size of the firm is found in all countries. As a result, the initial difference in the formality rates of large and small companies rose given the also positive relationship

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between the initial formality rate and the size of the enterprise. However, the contribution to the process of formalization in situ by these groups varied across the countries. While in Argentina and Ecuador the workers from small firms contributed more intensely to this process, it was the workers from large companies in Brazil and those from intermediate firms in Peru who contributed the most.

Finally, an inverted U-shaped relationship between in situ formalization and tenure was found. In particular, in Argentina and Peru, the workers with the least tenure benefited less from this process than the rest of workers. However, due to the different initial distribution of non-formal workers according to job tenure, the contribution of each of these groups of workers to the formalization process are also different across countries. In Argentina and Brazil workers with tenure between 1 and 5 years (intermediate tenure) explain the most important portion of these types of inflows, while in Ecuador and Peru those with a tenure of less than 1 year contributed the most.

To sum up, two important aspects appear here. On the one hand, the rhythm of the formalization has not been homogenous across workers; on the other hand, the contributions to this process by the different groups also exhibit important differences.

Regarding the first aspect, those with the highest skills, men (except in Brazil) and working in larger companies, have benefited the most from this improvement in labour conditions.

Since it is assumed that labour informality is mainly dependent on a decision made by the employer[16], it seems important to identify the factors that may have induced them to favour the workers that presented a 'better' vector of characteristics.

On the one hand, based on the Efficiency Wage theory, it can be said that the growth in vacancies can increase the voluntary turnover of employees in the search for better employment opportunities causing a higher number of exits and resulting in greater costs for employers. Moreover, the higher the investment made by the employer in the employee's specific training, the greater the costs incurred when they exit the firm. In

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[16] For further discussion regarding this issue see Kucera and Roncolato (2008).

addition, since the educational level is often highly correlated with qualification for a position, and given the complementarity of specific and general human capital, the most educated workers are usually the ones involved in training activities. Thus, employers want to retain them, even more so as they gain experience in their jobs. One way to do so is by offering them better working conditions, for example, through formalization. This might therefore help explain why employees with higher educational levels were preferred for in situ formalization. On the other hand, the tightening of controls through labour legislation might have increased the potential costs of noncompliance.[17] Given that these costs increase with wages, this might be an additional explanation for the greater formalization rate of those with a higher educational level. Finally, the greater intensity of formalization within large companies might also be explained by the fact that controls are generally tighter in this type of company.

The second aspect is particularly relevant from the distributive point of view since it shows the characteristics of the workers who entered with greater intensity into formality through this channel. Here the picture is more heterogeneous among countries due to, in part, the different composition of individuals outside the formality at the beginning of the period. We will return to this aspect in Section 5.4.

Individuals entering into a formal job

The second and third channels of labour formalization refer to formal salaried occupation entries through a labour status different from a formal wage-earning job. Table 5 presents the results of the decomposition detailed in the methodology section. In the first part of this table, we considered all individuals entering formality, while in the second part, the analysis is restricted to those initially occupied.

[Insert Table 5 here]

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[17] In several LACs, the costs of non-formalization faced by employers rose as a result of the measures implemented to improve labour inspection. For example, The Plan Nacional de Regularización Laboral (National Plan for Labour Regularization) was established in Argentina in 2004 while in Brazil and Ecuador organizational changes were introduced to increase the effectiveness of inspection. Some studies found that these interventions had positive effects on labour market formality (Ronconi, 2010; Pires, 2009; Berg, 2010; World Bank, 2012)

In all the countries, as for *in-situ* formalization, individuals with an intermediate educational level accounted for the largest share of transitions from non-formality and formality. The relatively smaller contribution made by workers with a university education to these transitions is mainly explained by their reduced number among non-formal workers and, in Argentina and Brazil, also by their lower probability of exiting the initial job. Nevertheless, in all the cases, once they exited the initial labour status, they had a significantly higher conditional probability of entering a formal job. As already mentioned, workers with higher education usually receive more training, and this makes employers try to retain them, thus resulting in relatively lower exit rates for this group. On the other hand, such workers are better qualified to obtain a formal job once they have left the initial informal position.

Additionally, like with the *in-situ* formalization, a higher entry rate to formal jobs can be found among men, both among all individuals transiting to formality and among those initially occupied in a non-formal job. This is mostly explained by the fact that they have a relatively higher conditional probability of transiting to formality after leaving the initial state. This is in line with the results found in the international literature which suggests that women suffer greater difficulties to obtain a formal job than men.[18] In turn, the greater chances of moving towards formality explain that men contribute more intensively than women to formal job entry.

There are significant differences regarding age if we consider all individuals transiting to formality or only those initially occupied. Among the first group, young workers made the greatest contribution to inflows towards formality (except in Peru). In all the cases, the importance of these workers is mainly explained by the greater instability of their initial position.[19] Strikingly, they also face higher probabilities than prime-age workers of entering a new formal job once they exit their initial occupation (except in Peru). This age group (25-45 years old) contributed the most to transits between a non-formal position to a formal job, mainly because they represented the majority among non-formal workers.

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[18] See, for instance, Blau et al. (2002); ILO (2018b).
[19] The high occupational turnover experienced by young workers is an international stylised fact. See, for example, Corseuil et al. (2014), Maurizio (2011).

There is a negative correlation between the size of firms and the amounts of transits towards a formal position (except in Brazil). However, this is only due to the greater number of non-formal workers in small companies since the conditional probability and the entry rate to a formal position, like in the first channel, increase with the size of the company from which workers transit to formality. It is worth mentioning that a significant part of non-formal workers from large companies transited to another large company after leaving the initial position. Therefore, these transitions might be associated with the fact that formality rates are higher in this type of firm compared to the rest. Moreover, workers in large companies are more likely to have a wider social network that provides them with more information on employment opportunities in other companies with the same characteristics. Lastly, there could be a *signalling* effect whereby workers from large companies might be considered more suitable by future employers to occupy a formal position.

Finally, there is a negative correlation between the tenure and both the entry rate to formality and the intensity of inflows to formality in all the countries. The former is a consequence of two factors: on the one hand, a long job duration reduces exit rates;[20] on the other hand, the conditional probability of entering formality also decreases as tenure increases. This pattern is really striking because it means that informal workers with lower tenure have greater chances of entering a formal job once they have abandoned their initial informal occupation. This finding is particularly relevant because it is related to the discussion as to whether informal employment constitutes a stepping stone towards formality. Under this assumption, informal jobs might increase the human capital of workers and expand their social networks, which would provide them with better information on job vacancies. Both factors would result in informal workers having a higher probability of transiting to formality than the unemployed. On the contrary, informality could produce a *scarring* effect. Under this hypothesis, it could be said that going through informality results in lower chances of getting a formal job, and that the chances get smaller as the duration of the informality episode increases. This is an aspect of great relevance and that deserves further analysis, but it is beyond the scope of this study.

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[20] Evidence for the negative relationship between job tenure and exit rate (hazard rate) is commonly found in the international literature. See, Farber (1999).

An overview: the contribution of different groups of workers to the whole labour formalization process

In this section we present the joint results of formalization through the different channels. In particular, Table 6 shows the contribution of each worker group to the whole process. Data on age, education and gender apply to all individuals becoming formal, while enterprise size and job tenure only refer to those initially occupied in a non-formal job.

[Insert Table 6 here]

In all the countries, individuals with intermediate levels of skills, prime-age and male accounted for most of the transitions to formality. Additionally, the initially non-formal workers occupied in small companies (except in Brazil) and those with lower job tenure were also part of this group.

The composition of the inflows to formality does not provide enough evidence to predict their distributive impact given at least two aspects. On the one hand, some of the worker categories with more weights in these transitions are usually placed in the middle part of the wage distribution (as those with intermediate education) while other are more common among workers with relatively low income (those working in small firms and having less tenure) or among those associated with higher wages (men and prime-age workers).

On the other hand, and as mentioned above, the impact of the formalization process also depends on the behaviour of returns to formality along the wage distribution, among other factors. Consequently, to obtain more direct evidence on the influence of the increase in the share of formal wage earners on wage distribution, the following section reports the results of the decomposition exercise estimated for each country using the method described in Section 4.3.

ECONOMETRICS RESULTS: ACCOUNTING FOR THE ROLE OF LABOUR FORMALIZATION AND OTHER FACTORS IN WAGE INEQUALITY DECLINE

Table 7 presents the results of the decomposition of changes in the three indicators of hourly wages inequality: the log p50/p10 ratio, log p90/p50 ratio, and the Gini coefficient. As explained before, the first stage of this decomposition has to do with the aggregate composition and return effects, while the second stage allows assessing the contribution of different characteristics to each of the two effects considered.[21] We are particularly interested in the distributive role of labour formalization. However, considering the focus on education in previous studies, this dimension will also be analysed here.

[Insert Table 7 here]

Aggregate decomposition

The first stage of the decomposition shows that, in all the countries, the changes in returns to the observed variables was the only factor explaining the decline in wage inequality. Indeed, the changes in the composition of wage-earning employment ('composition effect') were not statistically significant in Argentina, Ecuador and Peru and, in fact, were unequalizing in Brazil.

The importance of the 'return effect' is shown in Figure 3, where the decreasing impact of the changes in the premia to the personal and job characteristics along the wage distribution is clearly observed, which contrasts with the constant effect (or an increasing one in Brazil) of changes in the occupational structure.

[Insert Figure 3 here]

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[21] Before carrying out the decomposition exercise, a balance test was performed to check for the absence of statistically significant differences between the actual final and the reweighted initial (counterfactual) distributions of characteristics. No statistically significant differences in any of the considered attributes were found. These results are available upon request.

Detailed decomposition: composition effect

In order to have a better understanding of the composition effect, Table 8 shows the changes in the occupational structure of each country. It is evident that the above-analysed increase in the formality rate was statistically significant in all the four countries. Likewise, in all the countries, the share of workers with incomplete secondary education or less dropped while that of workers bearing the following two levels of education increased. In particular, in Argentina and Ecuador, it was the share of workers with complete secondary education that grew more intensely, while in Brazil and Peru the increasing trend was observed with more intensity in the workers with tertiary education. The well-known increase in female employment is also found here (except in Argentina). Finally, all the countries saw a decline in youth employment and an increase in old-age employment.

[Insert Table 8 here]

Focusing on the distributive impact of the formalization process and considering the Gini coefficient, an inequality-reducing effect can be observed in Argentina, Brazil and Ecuador; however, this trend was unequalizing in Peru (Table 7). As mentioned before, the relevance of growing formal employment in the decline of inequality has not been especially stressed in the literature studying the evolution of inequality in these countries during the 2000s. These results show that labour formalization had a positive effect not only in terms of average income, but also in terms of equality in the first three countries.

When analysing in more detail the impact of this process throughout the wage scale, its intensity is observed to be similar in the upper and lower part of the distribution in Argentina, whereas in Brazil it was more intense in the lower part. In Ecuador and Peru, the impact on the Gini index is the net result of two opposite effects: an equalizing impact in the upper part and an unequalizing impact in the lower part of the distribution.

Figure 4 shows the effects of formalization, and education, on the different percentiles of the distribution. In Argentina, the impact of the increase in formality is monotonously

decreasing at approximately the same rate throughout the entire distribution. In Brazil, the fall is particularly significant in the first part of the distribution, while the decreasing impact weakens in the second part. However, beyond these differences, these two cases contrast with Ecuador and Peru, where the effect of the formalization process is increasing in the first half of the distribution and then it is decreasing; in Ecuador, the fall is intense over the last third.

[Insert Figure 4 here]

These results are affected by the behaviour of the return to formality along the wage distribution. Table 9 presents the results of the RIF regressions across percentiles. In Argentina and Brazil, these returns decrease according to the wage level; that is, the gap between formal and informal workers is wider in the bottom tale of distribution. In this way, *ceteris paribus*, the impact of the increase in the share of formal workers is higher among the lowest wages than among the highest, with equalizing consequences on distribution.

[Insert Table 9 here]

In Ecuador and Peru this behaviour is not monotonous: returns first increase until p40 and then they fall. This fact contributes to explain, on the one hand, why the formalization process in Ecuador and Peru has been unequalizing in the first half of the distribution, but equalizing in its upper part. However, the less intense growth in the returns to formality in the first part of the distribution and the most intense fall in the second part in Ecuador in comparison with Peru explains why the formalization process was equalizing in the former country while the opposite effect is found in the latter.

These results on the evolution of returns to formality along income distribution in the different countries under analysis have not been previously discussed in the literature and it is a subject deserving further research. In principle, the behaviour shown in Argentina and Brazil is the one expected when considering that minimum wages influence more –tend to raise more– the lower formal wages. The reason why formal / informal earnings gap is narrow in the initial deciles, and then widens in Ecuador and Peru is not evident. In these countries the minimum wage coverage is similar to that of

the other two (i.e. very low proportion of formal workers with earning below the minimum wage). One feature worth exploring concerns the coverage of collective bargaining as, in principle, wages that are negotiated tend to be higher than those that are not. Precisely, the proportion of workers whose wages are bargained by this institution is larger in Argentina and Brazil than in Ecuador and Peru (Benyto and Orsatti, 2015). In the last two countries, negotiations mainly take place in medium and large firms, with wages generally placed in the middle and upper part of the earnings distribution; hence, this factor could help explain the above mentioned behaviour of formality returns in the two Andean nations. However, this is a point that needs further in-detail assessment.

As mentioned before, together with formalization of the labour market, the increase in workers' schooling level is another important process in the four countries studied. The change was unequalizing for the four countries; this was in line with the previous results found in Latin America. This effect is mostly concentrated on the upper part of the distribution (Table 7). Figure 4 shows the behaviour of the education upgrading trend along the wage distribution, which again is associated with the behaviour of returns to education: all the countries show a growing trend along the distribution, thus indicating that the premium to skill is higher in the upper tail than in the lower one (Table 9).

The rest of variables included in these econometric exercises have lower and heterogeneous impacts along the distribution and across countries.

Detailed decomposition: returns effect

Even when the main aim of this paper is the assessment of the impact of formalization on wage distribution, we have also considered the effect of this process through the behaviour of the premium to this labour characteristic. Indeed, the changes in the returns to formality were not significant at a global level (measured by the Gini index) in any country. However, when analysing the effect throughout the distribution, each country presents a different situation. In Argentina it had an inequality – reducing effect in the upper part of the distribution, while in Ecuador and Peru, this positive impact is observed in the lower part. However, in Ecuador this effect was accompanied by an opposite (unequalizing) impact in the upper tail of distribution, both effects offsetting

each other. In Brazil the changes in premia to formality contributed to widening the dispersion among low wages (Table 7).

Changes in returns to education, as measured by the Gini coefficient, contributed significantly to the decline in inequality in Argentina, but to an increase in Ecuador. The impact in Argentina, however, was not homogeneous along the distribution since this equalizing effect is concentrated in the upper part of the distribution (Table 7). In Brazil, on the contrary, the fall in the premium to education was verified in the lower tail of the distribution. In Peru, this dimension was not significant to explain the fall in wage inequality.

FINAL REMARKS

Since the 2000s an increasing trend towards formality has been observed in several developing countries around the world. This paper analysed the characteristics and distributive impacts of the dynamics of labour formality among employees in four Latin American countries -Argentina, Brazil, Ecuador and Peru- during the 2000s.

Labour formalization had equalizing effects in Argentina, Brazil and Ecuador, but it was unequalizing in Peru. As most of the literature focuses on the distributive impacts of the returns to education, this paper is intended as a complement to this approach by adding another relevant dimension to the study of income distribution in Latin America.

Notwithstanding the strong process of formalization in this region, these labour markets still exhibit a high degree of labour precariousness. To a certain extent, this is associated with the countries' productive structures, where a very high proportion of enterprises have low productivity and competitiveness levels that constrain the improvement of working conditions. Therefore, in order to secure the trends of employment generation with labour formalization, as well as the consolidation of labour institutions, productive policies aiming at enhancing high efficiency and systemic competitiveness need to be continuously strengthened within a long-term economic development strategy.

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