TRANSITIONS TO FORMALITY AND REDUCTION IN INEQUALITY. THE CASE OF URBAN SALARIED WORKERS IN ARGENTINA AND BRAZIL IN THE 2000S

Abstract

Although inequality and labour informality are still distinctive characteristics of Argentina and Brazil, during the last decade the two countries have been successful in reversing the negative trends of the 1990s. This paper presents a comparative analysis of the labour formalization process that took place in Argentina and Brazil during the 2000s, through a study of the flows towards labour formality, the causes behind them and the interrelations of this process with the changes occurred in labour institutions and with the reduction in income inequality. The study contributes to two debates. The first one refers to the role of labour market flexibilization in employment formalization. The second one is related to the reduction of income inequality. Most of the literature places emphasis on the evolution of the returns to education. This study complements this approach by analysing the contribution of formalization to the reduction of inequality in these countries. The results show that labour formalization has reached all the categories of workers, has been concomitant with real minimum wage increases, and has had equalizing effects.

INTRODUCTION

Inequality and informality are still characteristics of Latin American economies. However, over the past decade the region has exhibited positive labour market and income distribution trends. In this context, the cases of Argentina and Brazil are particularly outstanding because both countries have made important progress in working conditions, thus reversing the 1990s trend of increasing informality and precariousness. Also, the two countries have experienced a significant reduction in wage inequality.

This improvement in labour market indicators is certainly relevant considering that around 80 per cent of household incomes are obtained in the labour market. Therefore, the generation and distribution of family incomes are highly determined by the dynamics of employment and wages.[1]

The objective of this study is to conduct an in-depth analysis of the dynamic aspects of labour formalization, i.e. inflows to a formal job, in Argentina and Brazil during the past decade. In particular, we aim to find out if this process took place for all groups of workers or if some of them were particularly benefited by these dynamics. The study also discusses the causes of this improvement in labour conditions. Finally, it also looks into the interrelations between formalization and the evolution of labour income inequality.

This paper contributes to two current debates regarding formality and inequality. The first one is concerned with labour market flexibility and the role of labour institutions in labour formalization. In particular, it is argued that these institutions and regulations cause informality and have negative effects on the output-employment elasticity. Given that both Argentina and Brazil have experienced a significant process of labour formalization that has been concomitant with an acceleration of employment growth and a remarkable increase in the real minimum wage, it is important to discuss the validity of these arguments in the light of this evidence.

[1] Beccaria *et al.* (2012), Lustig and Gasparini (2011), Soares (2006), Keifman and Maurizio (2012), Cornia (2012).

The second debate is related to the reduction of labour income inequality in Latin America. Most of the recent literature places emphasis on the role played by returns to education. However, given the abovementioned improvement in labour conditions in the two countries, it seems relevant to assess to what extent this factor also played a role in the recent decline of inequality.

Although there are studies that describe the characteristics of the reduction of informality in each of these countries, most of them are static approaches based on cross-section data.[2] This study takes some steps forward by: (1) conducting an analysis of the occupational flows associated with labour formalization; (2) comparing the two countries; (3) linking labour formalization with income inequality reduction.

The document follows with a description of the data and methodology, after which the analysis of the evolution of informality and inequality in Latin America in general and in Argentina and Brazil, in particular, is presented. The following section evaluates the intensity and anatomy of labour formalization. After that, the document discusses the factors associated with this process. The last section analyses the relationship between formalization and income distribution in both countries.

DATA AND METHODOLOGY

Data

Data used in this paper come from regular household surveys carried out by the national statistical institutes of each country. The period under analysis is 2003-11, the years for which comparable data sets can be constructed for both countries. Although the surveys are not longitudinal, their rotating panel sample allows drawing flow data from them, i.e. a selected household is interviewed in successive moments in time.

For Argentina, the data source is the *Encuesta Permanente de Hogares* (EPH). Micro-data are available for 31 urban areas and the survey provides quarterly data. Households

[2] Among the scarce recent studies on labour mobility associated with informality in Argentina and Brazil are Bertranou *et al.* (2013), Bosch and Maloney (2010), Corseuil and Foguel (2012), Maurizio (2011).

are interviewed in two successive quarters, stay out of the sample in the two following quarters and are interviewed again for two more quarters. Therefore, the transitions that are susceptible of being analysed are those that occur between two yearly observations or between two successive quarters.

For Brazil, the *Pesquisa Mensal de Emprego* (PME) was used. It covers six major urban areas and provides monthly information. Households are observed during four consecutive months, stay out of the sample for eight months and are interviewed again for another four months, allowing the construction of monthly, quarterly, and yearly panel data.

Therefore, panels of individuals that were interviewed during two successive quarters were built for both countries. In order to have enough observations, quarterly panels for the entire 2003-11 period have been pooled, so that the results represent averages for the period.

Apart from using the panel structure of the sample, this study also resorts to retrospective information. Specifically, all workers are asked about how long she/he has been at her/his present job,[3] information that makes it possible to build the variable 'tenure'. This variable is used to identify whether a person employed both in *t* and in *t+1* remained in the same job or moved to another one. When employed individuals inform having a tenure of more than three months in the second wave, it is considered that the person did not change jobs between the two observations.[4]

Those individuals with incomplete information and showing inconsistencies regarding job tenure and other personal or occupational variables were removed from the sample.

Approach and methodology

In this study the 'legal approach' to informality is adopted. This approach associates informality with the evasion of labour regulations, defining *Informal Employment* as the

[3] The terms job and occupation are used interchangeably.
[4] Further consistency analyses were carried out in order to ensure that this criterion was correctly applied.

group of wage earners not covered by labour legislation.[5]

When putting this approach into practice, we seek to make the formal wage-earners identification criterion comparable, which does not necessarily imply the same empirical implementation in each country given that household surveys capture this dimension in different ways. In Argentina, a wage earner is considered a formal worker if his/her employer makes payroll deductions to pay social security contributions. In Brazil, a wage earner is considered as registered if he/she has signed a labour contract.[6]

The decision of identifying 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 between the two countries. As for the former, it is in itself relevant to analyse the anatomy of formalization through looking at entries to a salaried formal job and at the reasons behind the decision of employers to register employees, and in particular, a certain subgroup of those workers. In this regard, incorporating the formalization of non-wage earners into the analysis would make it difficult to identify the particularities of the process for the case of salaried workers. On the other hand, the surveys employed do not allow identifying the registration condition for non-wage earners, and hence the formal/informal classification can only be made for wage earning jobs.

Analysis of occupational flows[7]

The formalization process can take place through two channels: (1) *in situ* formalization –i.e. a worker becomes formal maintaining the same occupation between *t* and *t+1*–, and (2) transitions to a formal occupation coming from a labour status other than a formal job (informal or independent job, unemployment or inactivity).

[5] See Hussmanns (2004).
[6] These are the two definitions usually employed to identify formal labour relationships in the two countries under the legal approach.
[7] In the dynamic analysis, measurement errors may cause spurious transitions between, for example, formality and informality. However, given that the registration condition is a major feature of any job, it is reasonable to assume that workers are well informed on this regard, thus minimizing the probability of misclassification.

In order to analyse the contribution of the different groups of workers to the formalization through the second 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:

f_{ij} indicates the 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 into a formal job after leaving the initial state $-P\left(E_j \middle| E_i\right)-$:

$$P\left(E_{ij}\right) = P\left(E_j \middle| E_i\right) P(E_i)$$

This decomposition allows evaluating to what extent transitions to formality of given groups of individuals are more 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.

Wage gap estimates and decomposition of changes in wage inequality

Wage equations are estimated to assess the evolution of wage gaps associated with informality. To do this, both the Heckman´s Two Step and the Unconditional Quantile Regression (UQR) methods are employed. The former allows estimating the effects of the covariates only in the mean wage; the latter, proposed by Firpo *et al.* (2009), allows estimating the impact of covariates in different quantiles of the wage distribution The concept behind this extension is the so-called Recentered Influence Function (RIF) originally used to approximate the change of a given statistic due to outlier data. However, it becomes relevant in the context of this study because one of its properties is that its expected value is equal to the statistic of interest.

In order to assess to what extent the process of formalization has contributed to the reduction of labour income inequality we employ the decomposition method proposed by Firpo, Fortin and Lemieux (FFL, 2011), which allows extending the well-known Oaxaca-Blinder approach to decompose changes in distributive statistics between a 'composition effect' and a 'returns effect'. The composition effect measures the contribution of modifications in the structure of characteristics to changes in inequality, while maintaining returns constant. The returns effect measures the distributional effects of changes in returns while holding the structure of covariates unchanged. To do this, the method consists of two different stages: 1) the estimate of aggregate composition and return effects, employing a reweighting methodology[8]; and 2) the disaggregation of those effects into the individual contribution of each attribute by using RIF regressions for each inequality indicator.

In this study we aim to quantify the distributive impacts of labour formalization (composition effect), through measuring the effect of changes in this covariate on the Gini index and on different percentiles of hourly wages.

THE EVOLUTION OF INFORMALITY AND INEQUALITY IN LATIN AMERICA: THE OUTSTANDING PERFORMANCE OF ARGENTINA AND BRAZIL

[8] This reweighting methodology allows us to estimate what would have the wage distribution observed in $T = 0$ been, had the distribution of characteristics observed in $T = 1$ been present in $T = 0$, ir order to estimate the composition effect. The return effect results from the difference between the total change in the inequality indicator and the composition effect.

Although labour informality continues to be one of the region's distinctive characteristics, its incidence has fallen in a significant number of countries, especially over the past decade. As it can be observed in Figure 1, eight out of eleven countries have gone through a reduction in the proportion of non-registered wage earners in total wage earners during the 2000s decade. In parallel to this process, the region has also experienced a generalized reduction in labour income concentration.

Argentina and Brazil stand out when it comes to these positive dynamics. In particular, the participation of formal jobs in total employment increased 11 percentage points (p.p.) in Argentina and 10 p.p. in Brazil between 2003 and 2011. In the latter country, this process had already started in the mid-1990s, whereas in Argentina it begun after the change in the macroeconomic regime that took place in 2002.

This strong process of labour formalization has to be evaluated even more positively because it 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. In fact, the number of this type of jobs rose by almost 60 per cent in Argentina between 2003 and 2011, while total employment increased by 22 per cent. In Brazil, these numbers are 43 per cent and 20 per cent, respectively (Figure 2).

A DYNAMIC PERSPECTIVE: THE INTENSITY OF FLOWS TO AND FROM A FORMAL JOB

Starting with the dynamic approach, entry and exit rates to and from formality will be estimated in order to assess the importance of these movements in the evolution of formality. Two indicators will be employed. In Alternative A, formality entry rates are calculated as the proportion of non-formal individuals (non-registered wage earners, non-wage earners, unemployed and inactives) in *t* that become formal in *t+1*. Exit rates are computed as the proportion of formal workers in *t* that become non-formal in *t+1*. Alternative B is based on the total number of observations: entry rates are calculated as the quotient between the number of individuals entering into formality and the total number of individuals in both observations. The same criterion is applied to estimate exit rates. Then, the difference between the two rates indicates the net formal job

creation.

In Argentina, entry rates increase throughout the whole period, while exit rates show an initial growth followed by a slight reduction (Figure 3). If entry and exit rates are calculated considering all the individuals (Alternative B), the difference between them remains fairly constant until 2008. The growing trend exhibited by exit rates in a period of strong employment generation stands out. As it can be seen in the graph, at the beginning of the period around 2.3 per cent of the population was entering into formality, while 1.7 per cent was exiting that state. Towards 2011, these figures became 3.1 per cent and 3 per cent, respectively. However, entry rates remained above exit rates throughout the whole period, thus resulting in the net increase of formal jobs already shown.

In Brazil, the growing trend of entry rates and the declining trend of exit rates throughout the period is more evident (Alternative A). In Alternative B, a relatively constant net result is observed, with a rate of approximately 3.5 per cent of the population entering into formality and 3 per cent exiting that state at the beginning of the period, and rates of 4 per cent and 3.5 per cent, respectively towards 2011 (Figure 3)

Considering that the period under study is characterised by a tendency towards labour formalization, in what follows the analysis will be exclusively focused on flows into formality. However, the analysis of exit rates from formal jobs is certainly also relevant. Future studies should look further into this aspect.

THE ANATOMY OF THE LABOUR FORMALIZATION PROCESS

This section characterises individuals that entered into formality. As shown in Table 1, around 60 per cent of new formal workers in Argentina became formal employees in the same job, 9 per cent came from a non-formal job (non-registered wage earning jobs or non-wage earning occupations), and the remaining 31 per cent came from unemployment or inactivity in almost equal parts. In Brazil, a similar process is observed, with percentages of 54, 10 and 36, respectively. At the same time, wage earners that were not registered in the social security system in the first observation

explain about 50 per cent of the total number of formalization episodes in the two countries.

The high proportion of *in situ* formalization is a striking finding. Below we discuss the public policies that could have generated the appropriate conditions for this process to take place. In turn, transits from unemployment and inactivity could be associated with the strong process of employment creation exhibited by the two countries along this period.

In situ formalization

Table 2 presents for different groups of workers: (1) the formality rate in 2003 (initial percentage of formal wage earners in total employment), (2) probability of becoming a formal worker between two successive quarters during the 2003-2011 period (percentage of non-formal workers in *t* that became formal in *t+1*), and (3) the contribution of each group of workers to the *in situ* formalization process.

The table shows two important results. First, formalization reached all the categories of workers. Second, the groups of workers that presented a relatively higher formality rate at the beginning of the period benefited more intensely by this process.

In particular, both the formality rate in 2003 and the speed of the formalization process grow with the educational level in the two countries: workers with a university degree have a probability of becoming formal about three times higher than individuals with incomplete secondary education. However, given that workers with intermediate educational level –i.e. complete secondary and incomplete tertiary education– constitute the largest group of non-formal workers, they made the highest contribution to this process.

Regarding gender, although men and women exhibited similar formality rates in 2003, men have been more intensely benefited by this process than women. Also, given their numeric majority, they have also made the highest contribution to formalization.

An inverted U shape is found for the relationship between formalization and age: prime-age people faced the highest probability of becoming formal in the same job during the period. They explained more than one half of total transitions to formality in both countries.

A positive relationship is found between the probability of becoming formal and the size of the firm in both countries[9]. As a result, the initial differences between the formality rates of large and small companies rose. In this regard, in 2011, 60 per cent of informal workers in Argentina and 50 per cent in Brazil belonged to microenterprises. These findings call for specific public policies to foster formalization processes in this type of firms.

Full-time workers exhibited the highest probabilities of becoming formal, followed by the over-employed and then by part-time workers. Again, this situation tended to deepen the formality-rate gaps observed at the beginning of the period between these groups of workers.

Regarding the sector of activity, both the initial formality rates and the probabilities of formalization show the same behaviour. In particular, workers in the public sector face the highest probabilities of becoming formal both in Argentina and Brazil, while workers in construction, trade, and domestic services face the lowest. When it comes to the particular situation of domestic services, it can be seen that despite the application of specific measures that aimed to promote the formalization of workers (which are described below), this sector continues to exhibit very high informality rates. In 2011, only 17 per cent and 39 per cent of workers in this sector were formal in Argentina and Brazil, respectively. This calls for increased efforts to enforce labour regulations and reduce the high degree of labour precariousness that still prevails in these activities. Moreover, reducing informality in these activities is a crucial prerequisite to increase formality in the labour market as a whole given that both in Argentina and Brazil around one quarter of non-registered salaried employment is concentrated in this sector.

[9] It was not possible to compare directly the variable 'size of the firm' in Argentina and Brazil because the original variable is built considering different intervals in each country's survey.

Finally, *in situ* formalization has shown a positive relationship with tenure in Argentina. This means that employers have preferred to take out of informality those employees that had worked for a longer period of time in the same job. In Brazil, even though there are no clear signs of this type of behaviour, workers with higher tenure also faced a higher probability of becoming formal in the same position than the rest.

To sum up, even though the process of formalization in the same job took place for all groups of workers under analysis, the rhythm of this process has not been homogenous across the groups. Prime-aged workers, men, with higher skills, working full-time, in larger companies and with higher tenure have been particularly benefited by this improvement in the working conditions. This has tended to widen the initial formality gap observed between individuals defined according to these categories.

Since we consider that labour informality is mainly a result of a decision made by the employer[10] and given that, as it was shown above, a great deal of the formalization process took place through the *in situ* formalization of informal wage earners, it seems important to identify the factors that may have induced employers to favour the workers that presented a 'better' vector of characteristics.

On the one hand, based on the Efficiency Wage theory it is possible to say that the growth of vacancies can increase the voluntary turnover of employees in the search of better employment opportunities, causing a higher number of exits that can result in greater costs for the employers. Then, the higher the level of investment made by the employer in specific training of the employee, the greater the costs incurred when they exit the firm. Also, these costs tend to increase with tenure. Moreover, since the educational level is often highly correlated with the qualifications of the position and given the complementary nature often found between specific and general human capital, the most educated workers are the ones usually involved in training activities. Then, employers want to retain them, and even more as they become more experienced in their jobs. One way to do so is by offering them better working conditions, for example, through formalization. This might therefore contribute to explain why employees with higher educational level and tenure have been preferred to go through

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

the process of *in situ* formalization.

On the other hand, the tightening of controls on the labour legislation might have increased the potential costs of noncompliance. Given that these costs increase with the wage, this might have been an additional reason explaining the greater formalization rate of those with higher educational level and tenure. Finally, the greater intensity of formalization within large companies might have also been explained by the fact that controls are generally tighter in this type of companies.

Individuals entering into a formal job

The second channel of labour formalization deals with the entries into formal occupations coming from a labour status different from a job registered in the social security system. Table 3 presents the results of the decomposition detailed above. Column I shows the stock of non-formal individuals in the first observation (S_i), column II the probability of exit from this initial state ($P(E_i)$), column III the conditional probability of transiting to a formal job ($P(E_j|E_i)$), column IV the entry rate to a formal job ($P(E_{ij})$), and column V the contribution of each group to the formalization process, mediated by a change of occupation or labour status (f_{ij}/F_j).

In the two countries, the major contribution to new formal jobs comes from individuals who were inactive, unemployed or non-registered wage earners (in that order) in the first observation. In the case of inactive individuals, the high contribution derives mainly from the fact that they represent a relatively large group. On the contrary, the group of the unemployed, although numerically smaller, exhibits higher exit rates from that state and higher conditional probabilities of transiting to formality after exiting unemployment. Although non-registered wage earners constitute a larger group in comparison with the unemployed, they present a lower entry rate to formal employment, both because of higher retention rates in informality and lower conditional probabilities.

These relatively higher exit rates from unemployment and, therefore, the relatively shorter duration of these episodes compared to those of employment are expected,

especially in countries with low coverage of unemployment assistance. This is because in the search of incomes for subsistence individuals tend to quickly accept any labour opportunity that arises. However, it is noteworthy that after exiting the initial state, informal wage earners present lower probabilities of transiting to formality than the unemployed. This evidence is particularly relevant because it is related to the discussion of 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 network, which would provide them with better information on job vacancies. Both factors would result in informal workers having higher probabilities of transiting to formality than the unemployed. However, the results found show that the opposite is true, which could be suggesting that informality produces a greater *scarring* effect than unemployment. It could also be a result of a composition effect, given that the lack of unemployment insurance in developing countries means that the individuals that remain unemployed are, at least in part, those that can afford to continue in the search for a better job, for instance, a formal job. This is certainly a matter that needs to be addressed in future studies.

In both countries those individuals with intermediate educational level contributes to a larger extent to the transitions between non-formality and formality, as in the case of *in situ* formalization. The relatively smaller contribution made by workers with university education to these transitions is explained by their smaller number, but also by the relatively lower probability of exiting the initial job faced by this group. Nevertheless, once they have exited a non-formal job they have a significantly higher conditional probability of entering into a formal job. In short, education contributes both to a higher stability in the initial occupation (even when not monotonically) and, especially, to a higher conditional probability of transiting to a formal job once the initial state has been left. As it was already mentioned, workers with higher education usually receive greater specific 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 have better credentials to obtain a formal job once they have left the initial informal position.

As in the case of formalization in the same occupation, men present relatively higher entry rates to formal jobs. This is mostly explained by the fact that they face relatively

higher conditional probabilities of transiting to formality after leaving the initial state. This goes in line with the results found in the international literature which suggest that women suffer greater difficulties to obtain a formal job than men.[11]

In the two countries, prime-age workers made the greatest contribution to inflows towards formality. However, whereas in Argentina these workers presented an entry rate to formal jobs similar to that of younger workers, in Brazil the rate was significantly higher for the latter group of workers. In both cases, the importance of young workers in these flows is mainly explained by the greater instability of their initial positions, since once they exit their jobs they face lower probabilities of entering into a new formal job than prime-age workers.

The higher occupational instability among young workers has been broadly studied in the international literature and, in particular, in Latin America.[12] This instability could be associated with (1) the participation of these group in other activities that compete with work, like study; (2) the fact that young people are at an early stage of their labour career, in which important movements occur in the search of a better job; (3) the fact that they have low tenure, a factor that also contributes to greater instability. On the other hand, the relatively smaller flows of young workers to formal occupations might be a result of them choosing to work in informal positions that have other convenient characteristics. On the contrary, they could be a result of an occupational segregation phenomenon against this group.

Individuals that were working in large companies in the initial observation faced the highest probability of transiting to a formal job. In Argentina, this is the result of both lower exit rates (greater job stability) and higher conditional probabilities of transiting to a formal job. In Brazil only the latter behaviour is observed. Hence, in both countries, non-formal workers from large companies exhibit the highest probabilities of getting a new formal job after leaving the initial occupation. It is worth mentioning that a significant part of this group of workers that went through formalization transited to another large company. Therefore, these transitions might be associated with the fact

[11] See, for instance, Blau *et al.* (2002).
[12] Cunningham and Salvagno (2011).

that formality rates are higher in this type of firms compared to the rest. Also, 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 for which workers coming from large companies might be considered more convenient by future employers to occupy a formal position.

Finally, unlike the process of *in situ* formalization, both in Argentina and Brazil, workers with lower tenure have made the greatest contribution to the flows between non-formality and formality. This owes to two reasons: on the one hand, a longer duration on the job reduces exit rates[13]; on the other hand, the conditional probability of entering formality decreases as tenure increases. This pattern is really striking because it means that workers with lower tenure have greater chances of entering into a formal job once they have abandoned their initial informal occupation. Going back to the *scarring* 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.[14]

FORMALIZATION, BUSINESS CYCLE AND PUBLIC POLICIES

Considering that the upward trend of formal employment in Argentina and Brazil is not explained by an increase in the participation of those groups of workers with higher formality rates in total employment, but it has rather been mostly associated with rises in employment registration *across-the-board*, the question that arises is which were the causes of this process in both countries? Even though providing an exhaustive assessment of each cause is beyond the scope of this document, as it follows we present theoretical arguments and empirical evidence on some causal factors,.

Business cycle

[13] Evidence for this negative relationship between the latter variables is commonly found in the international literature.

[14] All these descriptive results were confirmed by Cox duration models that estimate the independent effect of different covariates on both the probability of exiting any other state that is not a formal job and the conditional probability of entering into formality.

The business cycle is a relevant factor to be considered when analysing the causes of the decline in labour inequality observed in Argentina and Brazil during the past decade. As it can be observed in Figure 4, formalization took place in a period of high and sustained economic growth and decreasing unemployment, particularly in the 2003-2008 period, when average annual growth rates were 8.5 per cent and 4.2 per cent for Argentina and Brazil respectively. This is in stark contrast with the trends observed in the nineties, when the unemployment rate and informality grew. There are theoretical arguments on both the demand and supply sides of the labour market that account for the countercyclical nature of informality.

On the one hand, the functioning of the labour market becomes more foreseeable as a result of sustained economic growth, thus favouring the growth of long term contracts. In this context, formalization becomes more feasible. On the other hand, a process of sustained labour demand growth might also lower the expected probability of layoffs and consequently the probability of employers having to face the relatively higher costs of firing a formal worker compared to firing an informal one. Hence, the incentives to informality associated with the relatively lower costs of staff reductions in downward phases of the business cycle are reduced. In this context, employers can benefit from the positive effects of long term labour relations: productivity increases as a result of the intensification of training activities and higher levels of job engagement.

Bosch and Esteban-Pretel (2009) evaluate the role of the economic cycle in informality from a two-sector search and matching model where firms can choose between hiring formal or informal workers. In the former case, firms can fully take advantage of the productivity of the matching by facing the cost of complying with labour regulations. In the latter case, firms avoid these costs but they can be penalized if they are caught. Like in the traditional matching models, vacancies grow in the expansion phase of the cycle and therefore the number of matches between firms and workers also increase. The model also predicts that firms engage more intensely in formal contracts during booms, since this type of contracts allows them to further benefit from the increase in productivity. Both effects boost entry rates to formal jobs. Moreover, the rate of job destruction –both formal and informal- decreases and unemployment falls accordingly. The authors verify these predictions for the 1983-2001 period in Brazil. Under a similar

perspective, Boeri and Garibaldi (2007) use a two-sector formal/informal model to predict a positive correlation between unemployment and informality.

Corsueil and Foguel (2012) also find a procyclical behaviour of formality. They model transitions between formality and informality and also between those states and unemployment in the expansion phases of the cycle. The reservation wage of the unemployed is assumed to be lower than that of informal workers. Hence, when the pool of unemployed is large, firms can obtain workers from the pool at low wages. Initially, workers find jobs in small and less productive firms with higher probability since they are greater in quantity than large, formal firms. Firms are also assumed to offer either formal (in the case of large firms) or informal (in the case of small firms) jobs. Hence, employment in small firms rises at the initial stage of the recovery phase. However, workers continue to look for better jobs among formal firms given the higher wages they offer. Consequently, as unemployment falls in the expansion phase of the cycle the probability of transiting from informality to formality increases and the share of formal workers grows. This prediction is verified for Brazil during the 2003-2008 period.

From the workers' perspective, their bargaining power and the reservation wage rise with the growth of employment and the reduction of unemployment. This can lead to an improvement in working conditions and have a positive impact on formalization. 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. They find evidence consistent with the exclusion hypothesis, which states that workers are pushed towards informal jobs given they do not have better employment opportunities. In this context, informality is countercyclical: higher unemployment induces workers to accept informal positions and earn lower salaries than formal wage earners, thus raising informality.

Incentives for formalization

Labour costs are another relevant factor in the labour demand. It is often argued that these costs should be reduced and administrative procedures to register workers should

be simplified in order to foster the creation of formal employment. In this regard, the two countries have implemented this kind of programmes aiming at creating greater incentives for formalization.

In Brazil, the programme *Simples Nacional* implemented in 1996 aimed at simplifying the procedures for registration and reducing taxes for small and micro enterprises. In turn, the *Lei do Microempreendedor Individual* (Individual Entrepreneur Law) passed in 2009 also simplified the process of registration for microenterprises with up to one employee and reduced the costs of 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 decisive in the growth of formality.

Similar to Brazil, in 2006 Argentina launched the programme *Mi Simplificación*, a registry simplification programme that establishes one single procedure for the registration of workers and employers and for the subsequent control of compliance with labour norms. Ronconi and Colina (2011) find positive although small effects on registration levels.

Another measure implemented in Argentina was the reduction of employers' contributions. In 2001, the cut applied for every new worker hired by firms that were expanding their personnel. In 2004 the reduction was restricted to firms with up to 80 employees, and later on in 2008 it was extended to all employers while the tax rate was further reduced. Castillo *et al.* (2012) evaluate the impacts of the 2008 reform and find that it contributed to sustain formal labour demand in the group of treated firms: 96.000 new jobs were created in these firms, compared to a loss of 5.000 jobs in the control group.

In 2006, the Argentine government also enabled employers of domestic workers who were paying contributions to the special regime of social security for domestic workers to deduct the sums paid as contributions from the tax base calculated to pay the income tax. Even though there are no studies evaluating the impact of this reform, the measure seems to have contributed to the increase in formality observed in the domestic work

sector. Bertranou *et al.* (2013), argues that this change might at least in part explain the increase in the number of social security registrations, which rose from 78.000 in 2005 to 280.000 in 2011. Moreover, most of the increase in registration rates took place as from 2006. In that year it grew 6 pp with respect to the previous year (Figure 5). In Brazil, a similar law was passed in 2006. But unlike the case of Argentina, the reform does not seem to have had significant positive effects on the domestic work sector (Figure 5). In this regard, Madalozzo and Bortoluzzo (2011) argue that the incentives were too low and the number of eligible employers too small. These factors could explain the differences in the reforms' results between Brazil and Argentina.

Labour inspection

Another factor associated with the reduction of informality is labour inspection. It is argued that the threat of greater controls or tougher sanctions for non-compliance with labour regulations should work as incentives for the regularization of labour relations.

However, the intensification of labour inspection may also produce the contrary effect: it could cause the destruction of informal jobs with the consequent negative effect on unemployment (Boeri and Garibaldi, 2007). From a political economy point of view, the mentioned negative effect could in turn weaken the efforts directed towards labour inspection in downward phases of the business cycle.

Following the first line of reasoning, Ashenfelter and Smith (1979) model the firms' incentives to comply with minimum wage legislation. Even though the study focuses on this labour institution, its conclusions can be extended to other labour market regulations. The model states the following equation for the expected net benefit of the firm under the condition of non-compliance with labour legislation:

$$E(\pi) = (1 - \lambda)\pi(w, r, p) + \lambda\pi(M, r, p) - \lambda D$$

where M is the wage level set by law, w is the wage that the employer would pay in the absence of the legislation, r the costs of other production factors, p the product's market price, λ the probability of being inspected and caught cheating and D the penalty faced

in such a case. Based on this, employers would engage in non-compliance if the expected net benefit of such a decision ($E(\pi)$) is higher than the known benefit of complying with the norm ($\pi(M, r, p)$):

$$E(\pi) - \pi(M, r, p) = (1 - \lambda)[\pi(w, r, p) - \pi(M, r, p)] - \lambda D > 0$$

The decision of non-compliance is positively correlated with the difference between the wage set by law and the wage level that the employer would pay in the absence of the regulation, and negatively correlated with the probability of being caught cheating and with the penalty's expected value.

Both in Argentina and Brazil, 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 the controls to detect salaried employment not registered in the social security. With this plan the Ministry of Labour recovered the national coordination role for this type of activities. Also, the technologies employed improved and the number of inspectors rose from 40 in 2003 to 470 in 2011. Out of the total number of inspections conducted during that period, an average of 28 per cent of workers was not duly registered and around 37 per cent of the latter was formalized after the inspection.

In Brazil, the strengthening of labour inspection was not associated with an increase in the number of inspectors but rather with a higher effectiveness of inspection due to the implementation of organizational changes and reforms in the structure of incentives. According to Pires (2009), in the mid-nineties a bond system was introduced for inspectors 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.

In fact, the number of formalized workers due to inspections increased throughout that period in both countries. In Argentina, this number rose from 17.000 in 2005 to 47.000

in 2011, with a 10 p.p. increase in the formalization rate between 2005 and 2012 (Ministry of Labour). In Brazil, these figures amounted to 268.000 in 1996 and 480.000 in 2011, implying a similar increase in the regularization rate than in Argentina (Labour Inspection Secretariat, Ministry of Labour). 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 substituted for formal employment. On the other hand, the results of Henrique de Andrade et al. (2013)'s impact evaluation in Brazil show that inspections were the only effective instrument to induce formalization, since neither higher levels of information nor monetary incentives had a significant impact on labour regularization. Ronconi (2010) also finds a positive impact of inspections on formalization in Argentina.

Policies aimed at formalization of productive establishments

Another factor usually associated with informality is the low capacity of low profit firms to pay contributions, thus reducing the chances to afford the labour costs of formal positions. In this regard, policies aimed at raising productivity levels of such companies can also contribute to labour formalization.

According to some studies conducted for Brazil, measures applied to increase the production and efficiency of small firms have contributed to labour formalization. Almeida (2008) evaluates the experience of three manufacturing clusters where small enterprises received subsidies and credit to improve their competitiveness and were also given a grace period to fulfil their tax and labour contributions. These policies proved successful in that all firms started to comply with both obligations.

Berg (2010) mentions another similar experience in the Brazilian footwear sector. In 1995 the government signed a technical cooperation agreement with the sector's business association in order to find ways to increase the profitability of firms so they could become formal enterprises and register their workers. To do so they set a grace period to comply with the law. The programme led to a significant increase in the quantity of firms registered and in the number of formal workers in the sector, which

rose from 3.121 in 1995 to 12.490 in 2005.

Labour institutions

Finally, it is also interesting to analyse the process of formalization in relation to the evolution of labour regulation in the period under study. In the debate around labour market flexibilization it is argued that tighter labour regulations are associated with higher levels of informality. Regarding the minimum wage (MW), it is stated that under the perfectly competitive labour market model, any MW level set over the market equilibrium wage will reduce employment. However, under a monopsonistic labour market, an increase in the value of the MW would not necessarily lead to a reduction in formal employment but it could rather have a neutral effect on it or even raise its levels (Manning, 2003).

Both in Argentina and Brazil the process of formalization took place in a context of high employment generation and more –not less– labour controls and regulations, including a strong recovery of the MW and collective bargaining.[15] Contrary to this, in the 1990s decade the process of flexibilization took place together with an increase of informality and a reduction of the output-employment elasticity. All of these patterns cast doubts on the arguments that call for a deeper flexibilization and deregulation of the labour market to increase labour demand and formalization.[16]

To sum up, it is important to highlight that the governments of both countries decided to implement specific measures that tended to reduce the direct and indirect costs of formality and increase the costs of non-formality, with positive consequences on employment formalization. Nevertheless, some of the policies (reduction of taxes in Argentina, for instance) were already present in these countries in the 1990s –although in an isolated manner– with no positive effects on labour formalization. Hence, it is reasonable to think that all of these factors need to act jointly in a context of steady growth and employment creation in order to succeed in curbing informality.

[15] Barbosa de Melo *et al.* (2012), Maurizio (2014).
[16] A survey of empirical studies on the effects of labour regulations on informality is presented in Kucera and Roncolato (2008).

FORMALIZATION AND INEQUALITY: A PUZZLING RELATIONSHIP

Up to this point we have shown that Argentina and Brazil have gone through similar processes of formalization. As it follows we try to assess whether these common patterns have also led to similar income distribution trends.

Evolution of within-group inequality

In the two countries, registered wage earners have exhibited lower net labour incomes dispersion than informal workers throughout the decade (Table 4). Also, while in Argentina the reduction of the Gini index was quite similar for both groups of workers, in Brazil the decline was greater for informal wage earners.

Several factors can account for this reduction of the within inequality. One of them could be related to the changes occurred in the composition of each of these groups as a result of the formalization process. In particular, the fact that within the group of non-registered wage earners those that had a 'better' vector of characteristics and were receiving the highest incomes in the group (as it will be seen below) became formal with greater intensity might have resulted in a decline of the wage dispersion within informal workers. On the other hand, the strengthening of MW might explain the reduction of wage dispersion among formal workers, and probably also among informal workers in Brazil, as it will be discussed in the following section.

Evolution of the informality-related wage gap

Table 5 presents the informality-related wage gaps along the unconditional income distribution. The dependent variable is the log of hourly wages. There is a significant penalty associated with informality in both countries in the two years considered. Also, in Argentina this gap widened at the lower part of the distribution between 2003 and 2011, while the opposite took place in the upper tail. On the contrary, in Brazil the penalty associated with informality decreased for all income deciles except for the 9^{th}.

The evolution of the real MW, among other factors, might contribute to explain these

patterns. It could be argued that if the MW becomes binding exclusively (or mostly) for formal workers at the lower part of the distribution, it may widen the wage gap between the workers that are subject to the effects of such labour institution and those who are not. However, if the MW also has an effect on the wages of informal workers (the so-called *lighthouse* effect), its recovery does not necessarily imply a widening of the wage gap between these two groups of workers. Empirical evidence suggests that while in Argentina the MW seems to affect mainly formal workers, in Brazil its impact reaches informal workers as well.[17]

On the other hand, as it was mentioned, the changes in the composition of formal and informal employment could have also widened the wage gaps between them. The following section addresses this issue.

Transitions towards a formal job by income decile of origin and destination

Figure 6 presents the distribution of workers that became formal ordered according to the position they had in the total labour income distribution before the change. The black line represents the distribution of total formalized workers while the grey line corresponds to the distribution of informal wage earners that were formalized. The graph also shows the distribution of these informal workers ordered according to the position they had in their own income distribution before the change (in columns).

In Argentina, individuals initially located between the third and sixth deciles of the distribution experienced this type of transitions more frequently. This is verified for both total workers and for those who were informal wage-earners in the first observation. The situation is quite different in Brazil. The probability of transiting to formality shows a slight upward trend up to the second decile and then it begins to decrease as income grows. Nevertheless, if the analysis is made considering the initial position of non-registered wage earners in their own income distribution, those informal workers that were initially located in the upper part of the distribution faced higher chances of becoming formal. This situation is consistent with the fact that the process of formalization was more intense among those individuals that presented a 'better' vector

[17] Neri *et al.* (2000), Maurizio (2014).

of characteristics. The contrast between this behaviour and the one observed for the distribution of total labour incomes reflects the fact that, as a whole, informal workers are concentrated in the lower tail of the latter distribution.

Regarding the position of workers that became formal in the total labour income distribution after formalization, deciles forth to seventh in Argentina, and third to sixth in Brazil appear as the more frequent destinations (Figure 7). Also, new formal workers mostly end up in the lower tail of the distribution of registered wage earners (in columns).

Hence, in both countries those who became formal belonged to the upper deciles of the informal workers' income distribution before the change and transited to the lower deciles of the formal wage earners' distribution.[18] However, when the analysis is made considering the global income distribution (including all workers), it can be seen that formalization took place more intensely in the middle part of the distribution both in Argentina and in Brazil, while in the latter country exit flows from the lowest deciles were also important.

Therefore, as it was already mentioned, these transitions might have caused the reduction of wage dispersion observed within the group of informal workers. This does not seem to be the case of formal workers,[19] for whom the MW, among other factors, might explain the reduction of inequality observed within this group.

ASSESSING THE IMPACT OF LABOUR FORMALIZATION ON WAGE DISTRIBUTION

This final section aims at assessing the distributional impacts of labour formalization in the light of the previous results. Table 6 presents the results of the FFL decomposition of the Gini coefficient and of some percentiles of the hourly wage distribution. We seek

[18] Nevertheless, in all cases the transition towards a formal job led to an increase in the wage received.

[19] Gini indexes were calculated for both the group of formal wage-earners in the second observation and for the group of workers who were in this category in the two observations in order to evaluate the distributive impact of new formal workers. The results show a greater degree of inequality in the first case, although the differences are very little.

to quantify the impact of the increase in the proportion of formal workers on these indicators ("composition effect").[20] As it can be seen for both countries, the rise of formality had a very significant impact on inequality. In Argentina, this variable explains around 72 per cent of the total log p90/p10 ratio reduction and approximately 27 per cent of the fall in the overall Gini. In Brazil these figures are about 9 per cent in both cases.

In addition, the analysis of the effects of formalization along the income distribution shows that in both cases the equalizing effect decreased from the lowest to the highest percentiles of income.

It is therefore possible to conclude that the increase in the participation of registered wage earners in total employment has been a positive phenomenon not only because it induced higher wages and the expansion of the social security system coverage, but also because it had equalizing effects.

CONCLUDING REMARKS

Although wage inequality and labour informality are still high in Argentina and Brazil, these two variables exhibited a strong reduction during the last decade in both countries. The formalization process spread across all the categories of workers, although middle-aged men, with higher skills, working full-time, in larger companies and with higher tenure benefited more from this process. This has further widened the initial formality gaps observed between the groups of workers.

Regarding the causes of this process, this paper showed that together with the positive effect of the business cycle, there was a clear decision of both governments to implement public policies aimed at reducing the costs of formality and increasing the costs of informality, thus reinforcing the success that steady growth and employment creation had in curbing informality and promoting better working conditions.

[20] Due to space reasons, only these results are presented. The complete decomposition exercise (which includes a broad set of personal and job characteristics) is available upon request.

These positive processes took place in both countries together with the recovery of labour institutions such as the minimum wage and collective bargaining. Contrary to this, in the 1990s the process of flexibilization had taken place together with an increase of informality and a reduction of the output-employment elasticity, with more intensity in Argentina than in Brazil. Therefore, these patterns cast doubts on the arguments that call for a deeper flexibilization and deregulation of the labour market in order to increase labour demand and formalization.

The empirical analyses also confirm that labour formalization had equalizing effects. Most of the recent literature has been focused on the distributive impacts of the returns to education. This study complements this approach by proving that the improvements in the working conditions are another factor that contributes to explain the decreasing trend of inequality observed in Argentina and Brazil. These distributive impacts are expected to grow as this process of formalization continues and reaches the group of informal workers with lower incomes.

Despite the strong process of formalization, these labour markets still exhibit a high degree of labour precariousness. To a certain extent, this is associated with the countries' productive structures, where there is a very high proportion of firms with low productivity and competitiveness levels that restrains the improvement of working conditions. Therefore, in order to secure the trends of employment generation with labour formalization and the consolidation of labour institutions productive policies that promote high efficiency and systemic competitiveness need to be continuously strengthened within a long-term economic development strategy. Lastly, beyond the positive impacts that social policies might have on income redistribution, it is important to improve labour market conditions as a means to reduce primary income inequality.

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