Income Distribution and Labour Market in Latin America in Times of Economic Growth

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Paper Prepared for the IARIW-IBGE Conference
on Income, Wealth and Well-Being in Latin America

Rio de Janeiro, Brazil, September 11-14, 2013

Session 10: Income Distribution in Latin America

Time: Friday, September 13, 2:00-3:30

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Abstract

The high rhythm of economic growth experienced by Latin America between 2003 and 2008 has had a positive impact on social and labor market indicators. This has become evident through the dynamic creation of employment, the reduction of unemployment and the fall of income inequality and poverty. However, even in this positive context the region continues to exhibit important shortcomings in the labor market. The most evident are high levels of unemployment, precariousness and informality. Along with this, Latin America is still one of the most unequal regions in the world.

This paper aims to provide an in-depth analysis of labor and income inequality dynamics in Latin America in the new millennium. In particular, we seek to identify the factors behind the changes observed in the distribution of family incomes, evaluating the role played by labor incomes *vis a vis* other non-labor income sources. Also, given the significance of labor incomes in total incomes, the analysis will address a distinctive feature of labor markets in the region: the phenomenon of labor informality, by studying its characteristics and distributive impacts.

Introduction[1]

The high rhythm of economic growth experienced by Latin America between 2003 and 2008 has had a positive impact on labor market and social indicators. This has become evident through the dynamic creation of employment and the reduction of unemployment, inequality, poverty and extreme poverty.

However, the region continues to exhibit important deficits in the labor market such as high unemployment, underemployment, occupational precariousness and informality. Around 8% of the active population was unemployed, while 50% of workers were informal in 2009. At the same time, non-wage earners represent a significant share of total employment (about 30%), much higher than that observed in developed countries. Most of them are non-professional own-account and belong to the informal sector. However, there are important differences across countries. For instance, in Chile and Argentina the proportion of independent workers is about 25% whereas this value reaches 40% or more in Bolivia, the Dominican Republic, Colombia, Honduras and Nicaragua (ILO, 2010a). Within this context, certain groups of workers (among them, the less skilled, women, youth and ethnic minorities) experience the most unfavorable conditions.

These outcomes are mostly linked to three structural characteristics in the region: (1) high income inequality, both at labor and family levels. The persistence of high levels of income concentration is a distinctive characteristic of Latin America, making it one of the most unequal continents in the world;[2] (2) very low systemic competitiveness and productivity, and high productive heterogeneity;[3] and (3) scarce protection for workers and their families because of the narrow scope of contributory-based social security and the insufficient development of other non-contributory schemes. At the same time, other aspects such as income segmentation and discrimination are combined with significant wage gaps between different educational levels, thus resulting in high levels of income concentration. This is how the labor market with its characteristics, together with the distribution of labor incomes play a significant role in household welfare dynamics in the region.

This paper aims to provide an in-depth analysis of labor market dynamics as well as family and labor income inequality in Latin America in the new millennium. In particular, we seek to identify the factors behind the changes observed in the distribution of family incomes in these countries, evaluating the role played by labor market incomes *vis a vis* other non-labor income sources. On the other hand, given the relevance of labor incomes in total incomes, the analysis will address on one of the relevant aspects of labor markets in the region: labor informality, by studying its characteristics and distributive impacts.

The relevance of this study is based, on the one hand, on the fact that both informality and inequality declined in several Latin American countries, which in many cases is in stark contrast to the dynamics observed in the 1990s decade. It seems therefore of particular importance to conduct an in-depth analysis of the factors that have allowed for these improvements, as well as their impacts and interrelations. On the other hand, as it was already mentioned, the region as a whole continues to exhibit extremely high levels of labor precariousness and inequality, which imposes serious limits to the improvement of welfare among the population.[4] Lastly, although there is a significant number of studies that focus on the role played by returns to education in the dynamics of income distribution during the 1990s and the 2000s decades, there

[1] Some parts of this document have been taken from Keifman and Maurizio (2012) "Changes in Labour Market Conditions and Policies: Their Impact on Wage Inequality during the Last Decade", WIDER Working Paper 2012/14, which was written under the project "The New Policy Model, Inequality and Poverty in Latin America: Evidence from the Last Decade and Prospects for the Future", directed by Giovanni Andrea Cornia.
[2] ECLAC (2010a).
[3] Infante (2009).
[4] For further details about the quality of employment in Latin America, see, for instance, Weller and Roethlisberger (2011).

are less studies that focus on the interrelations between labor informality and inequality. Hence, the comparative analysis of these dimensions between countries with heterogeneous characteristics in the region seems quite relevant to study the dynamics of income distribution and its related factors in a phase of steady economic growth with improvements in the most important macroeconomic and labor market indicators.

The document follows with a brief description of the macroeconomic dynamics in Latin America during the recent period. Section 2 analyzes the current employment structure in the region, focusing on the importance of informality and own-account occupations. It also presents the analysis of labor income inequality within each group of workers and the wage gaps associated with informality. Section 3 studies the evolution of both informality and wage inequality in order to evaluate to what extent these two factors have been interrelated. Section 4 focuses on the distribution of family incomes and presents evidence to assess the contribution that labor market and other income sources have made to reducing inequality in Latin America in the new millennium. Section 5 concludes.

1. Macroeconomic performance in Latin America in the new millennium

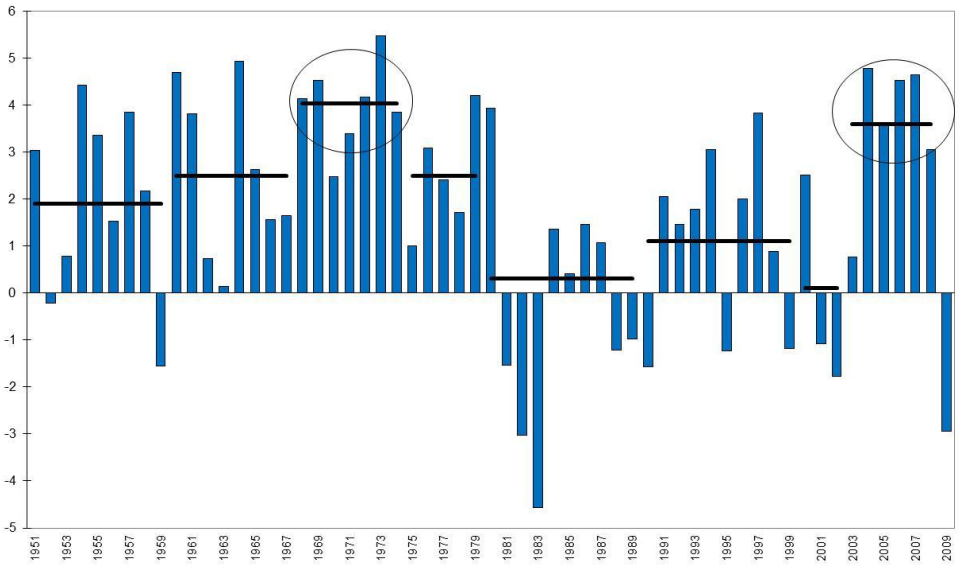
Latin America experienced a highly positive economic cycle in the first years of the 2000s decade. The commodity price boom and the renewal of capital inflows to the region characterized this period. At the same time, according to Damill and Frenkel (2012), a significant number of countries in the region adopted managed floating regimes so as to prevent currency appreciation and maintain competitive real exchange rates. In particular, the high real exchange rate values of the 2002-2008 period, compared to the 1990s decade, were mainly a result of the currency depreciations that took place at the beginning of the period, after which a clear trend of real exchange rate appreciation followed.

From 2003 to 2008 Latin America experienced six years of sustained growth. During this period, GDP per capita increased at an annual average rate of 3.6% (weighted average), a dynamic whose only precedent in terms of intensity and duration in the region dates from the late sixties to the mid-seventies (Graph 1).

This growth, unlike other expansion experiences in Latin America, was accompanied by fiscal and trade surpluses. The current account surplus in the balance of payments was linked to an improvement in terms of trade in some countries, and in others, to an increase in remittances. This favorable situation allowed Central Banks to accumulate international reserves. On the other hand, the improvement in public accounts was reflected in primary surplus increases and in the elimination of the operational deficit in 2006-2007, which translated into a better public debt profile in these countries. In particular, public debt of the non-financial public sector decreased from 47.3% of GDP to 30.8% between 2000 and 2008.

These positive trends in fiscal accounts were associated with an increase in fiscal revenues together with relatively constant expenditure levels in terms of GDP from 2001 to 2006. From then on, the expansion of primary surpluses has been made possible thanks to an increase in revenues, which has surpassed the growth of public spending. From 2001 to 2008 the tax burden of the central government (including social security contributions) in the Latin American countries raised 2.4 percentage points (pp) in terms of GDP. As a consequence of these developments, Latin America experienced five years of primary surplus from 2004 to 2008 reaching the maximum values in 2006 and 2007 where it represented 2.2% of GDP (simple average). The joint analysis of current and fiscal accounts shows that while in 1998 nine out of ten countries in Latin America exhibited twin deficits, seven out of the ten countries registered twin surpluses in 2007 (Damill and Frenkel, 2012).

Graph 1
Per capita GDP growth rate in Latin America: 1951-2009
(%)



Source: Authors' elaboration based on ECLAC (2010a)

The 2008 international crisis put an end to this path of economic growth with improvements in the *fundamentals.* Apart from a fall in foreign trade (expressed through a drop in export prices and volumes), in remittances and international credit, domestic demand was also less dynamic. However, although in 2009 GDP fell by around 1.9% (3% of GDP per capita), recovery has been faster than in the previous crises.

This high economic growth experienced before the international crisis has also had a positive impact on social and labor market indicators. This was made evident through the creation of jobs, the reduction of unemployment, an increase in the number of formal jobs and a slight recovery in average wages. Employment rates increased from 52.3% to 55% between 2003 and 2008. During this period, the regional unemployment rate decreased from 11.4% to 7.5%. However, the region still shows significant deficits in the labor dimension expressed by high levels of unemployment, underemployment, informality, precariousness, inequality and low average wages. The lack of sufficient job creation is even worse when taking into account the very low unemployment protection that portrays the region.

These issues are studied in detail in the following sections. First, we analyze the current employment composition in Latin America, putting special emphasis on the importance of informality and its relationships with wage gaps and labor income inequality. Then follows a study of the dynamic behavior of these variables in the region during the last decade.

2. Employment composition, informality and wage gaps in Latin America: an overview[5]

2.1 Employment composition: informality in the Latin American labor markets

[5] Annex I presents the information sources employed in this and the following sections. Given the available information, the analysis will be focused on urban labor markets exclusively.

Labor informality is one of the categories of analysis that most contributes to the characterization of labor conditions in Latin America. There are at least two different approaches with different associated concepts of labor informality, as shown next:

Approach	Related concepts
Productive	Informal Sector (IS)/Formal Sector (FS). Employment in the IS/Employment in the FS
Legal	Informal Employment (informal workers)/Formal Employment (formal workers)

The concept of the *informal sector* (IS) emerged in the early 1970s, in the International Labor Organization's documents for African countries (ILO, 1972). It was then developed in Latin America by the Regional Employment Program for Latin America and the Caribbean ("PREALC" for its acronym in Spanish), with the objective of explaining the growth of wide sectors of the population that were not able to participate in the processes of productive modernization through a formal labor market. Under this "productive approach", informality reflects the inability of these economies to generate sufficient employment in the formal sector in comparison to the growth of the labor force. The IS is usually associated with small productive units with low levels of productivity and where the aim is rather survival than accumulation. Jobs generated in this sector constitute *employment in the informal sector* (EIS).

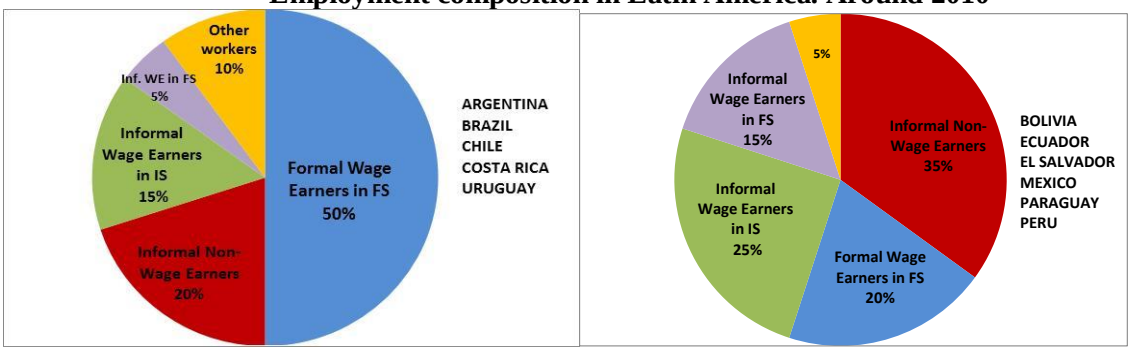
Along with this "productive approach"-based concept, *informal employment* (IE) is another concept that has been proposed in recent years. Based on a "legal approach", IE refers to a different dimension of informality because it focuses directly on job conditions. In particular, this approach associates informality with the evasion of labor regulations, defining IE as the employment of workers not covered by labor legislation.

In this section both the "productive approach" and the "legal approach" will be considered so as to present a general outlook of the importance and characteristics of IE and EIS, and the interrelation between them. Annex I presents the strategy to measure informality from these two approaches. It also explains why, based on the information available, it is only possible to make this double classification for the case of wage-earners.

As it can be observed in Graph 2, two sets of countries with different employment structures can be identified. The first group is comprised of Argentina, Brazil, Chile, Costa Rica and Uruguay, and the second group is made up of Bolivia, Ecuador, El Salvador, Mexico, Paraguay and Peru. In the first group, formal wage-earners in the formal sector constitute the biggest group, representing 50% of total urban employment, followed by informal non-wage earners, who represent around 20%.

Informal non-wage earners constitute the biggest group in the second set of countries, representing more than one-third of total employment. They are mostly non-professional own-account workers. On the other hand, formal wage-earners in the formal sector represent only 20% of total employment, 30 percentage points less than the first group of countries. Lastly, informal wage-earners (both in formal and informal sectors) constitute another group of significant magnitude in the second group of countries, representing 40% of total employment, two times more than in the first group.

Graph 2
Employment composition in Latin America. Around 2010

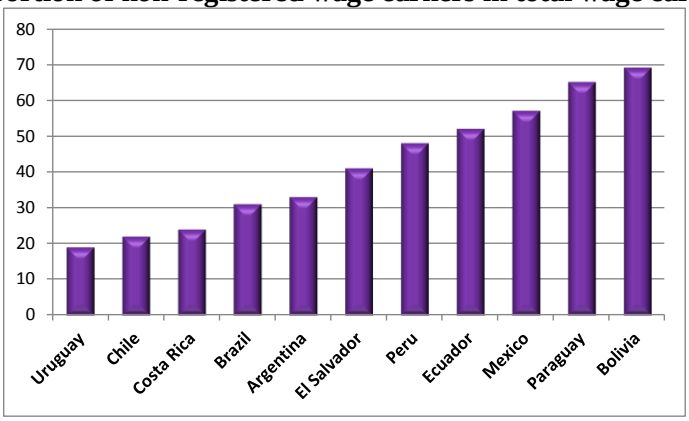


Source: Authors' elaboration based on Household Surveys

This initial overview shows a significant degree of heterogeneity among the employment structures of the countries in the region. It also shows that despite these important differences between the countries, employment in the informal sector and informal employment represent more than a third of total workers in the all countries under study (Table 1 in Annex II). Bolivia and Paraguay are placed in one extreme, where EIS (including domestic service workers) represents about 65% of the employed workforce whereas IE (including informal domestic service workers) reaches 80% of total workers. On the other extreme, in Chile, Uruguay and Costa Rica these figures fall to 34% and 40%. In all cases (with the only exception of Uruguay) IE is higher than EIS.

Different categories that arise from the double classification of informality also indicate important discrepancies among countries. For example, the larger participation of informal non-wage earners stands out in Peru, Bolivia, Ecuador, El Salvador and Paraguay, where they represent approximately one third of total employment. With the exception of El Salvador, in the rest of the cases, informal non-wage earners constitute the biggest group of workers. In Argentina, Brazil, Chile, Costa Rica and Uruguay, on the contrary, about half of total workers are formal wage earners in the formal sector. Finally, the percentage of non-registered wage earners in total wage earners is very high in all countries, ranging from a minimum of 19% in Uruguay to a maximum of 69% in Bolivia (Graph 3).

Graph 3
Proportion of non-registered wage earners in total wage earners



Source: Authors' elaboration based on Household Surveys

This general overview emphasizes the importance of the informal sector, informal employment and non-registered wage earners in the occupational structure in all countries analyzed. Besides, independent

workers comprise between 25% and 40% of the labor force in the region. Informality and independent work clearly narrow the scope of labor institutions and labor market policies.

At the same time, there is a close correlation between being a non-registered wage earner and a worker in the informal sector (Table 2). This suggests the precarious character of the jobs generated in the informal sector where, probably, the combination of low productivity and non-fulfillment of labor regulation derive in low wages. However, it is important to point out that between 30% and 60% of non-registered wage earners work in the formal sector, that is to say, in establishments with more than five employees, a fact which suggests that there is scope to significantly reduce the levels of labor precariousness in the region.

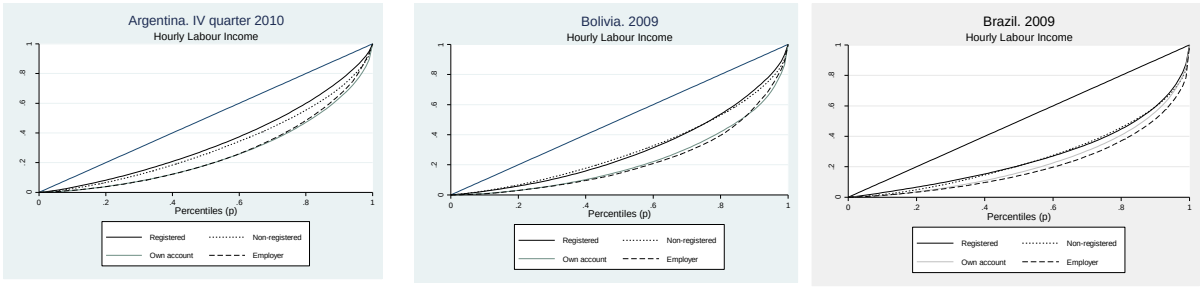
As for the composition of informality in terms of different attributes, some common patterns arise (Table 3). The less educated, the young and women[6] are overrepresented in the group of informal workers. This differential structure suggests *a priori* that informal workers will have lower average incomes than formal workers because they have a vector of personal characteristics that are usually less remunerated; that is to say, there is a "composition effect" against the informal. Below we analyze to what extent this panorama is also accompanied by differences in the returns obtained by *formal* and *informal* workers for each of the characteristics considered.

2.2 Informality and within inequality

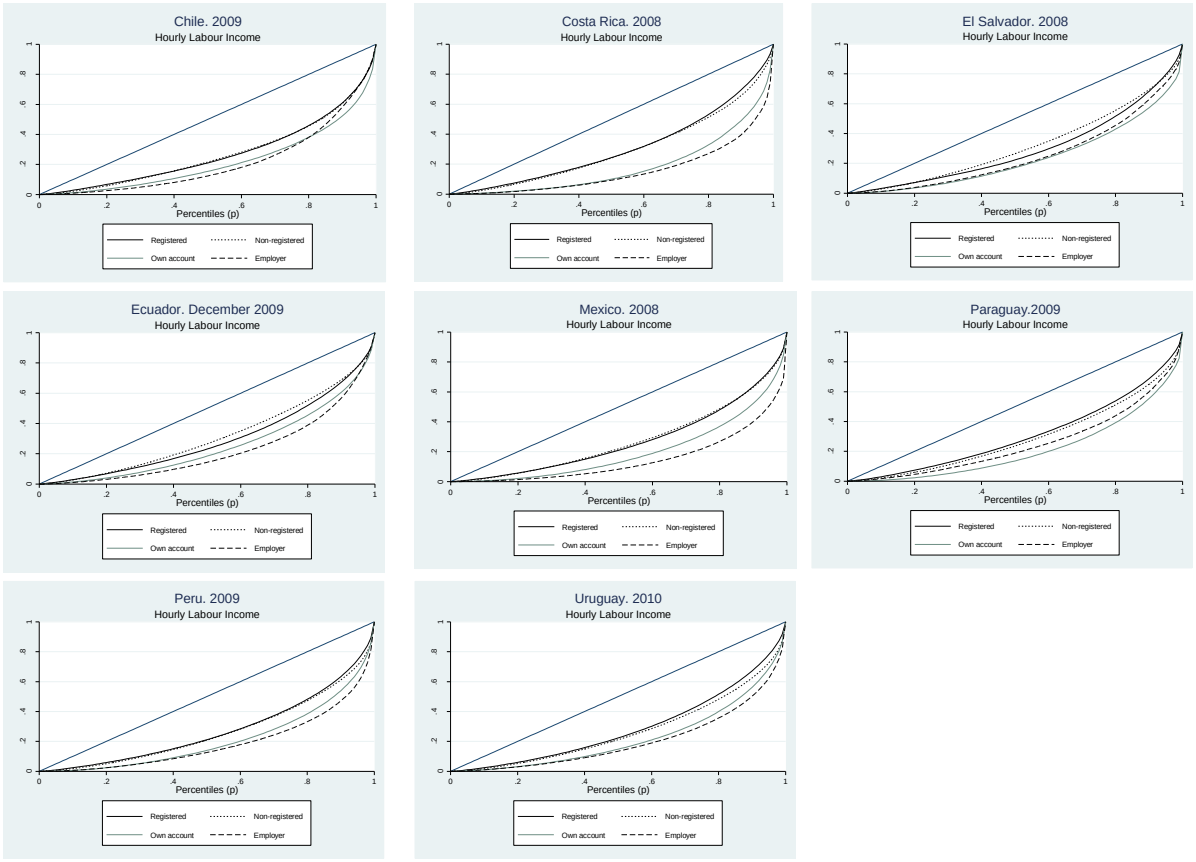
One significant aspect to consider when assessing the interrelations between employment structures and the distribution of labor income is the degree of inequality within each group of workers. The Lorenz curves illustrate this point. In all countries, non-wage earners –both own-account worker and employers- show a higher level of labor income gap than wage earners as a whole.

Furthermore, according to these graphs, registered wage earners are the most homogenous group in Argentina, Uruguay and Paraguay. In Brazil, Chile, Costa Rica and Peru, though the Lorenz curves of registered wage earners show no dominance compared with non-registered wage earners, the Gini coefficients confirm that in these countries they too are more homogenous than all other employed people. The exceptions are Bolivia, Mexico (where both groups of salaried workers have the same intra-group inequality), Ecuador and El Salvador (where the wage gap among non-registered workers is smaller than it is among formal workers). Therefore, formality seems to be associated with a lower spread in labor incomes in many countries under study, which implies that it is crucial to take into account the advances in formalization processes made in recent years in the analysis of distributive changes.

Graph 4
Lorenz Curves of Hourly Labor Income



[6] The exceptions are Argentina, Brazil, Mexico and Uruguay where informality is quite balanced between sexes.



Source: Authors' elaboration based on Household Surveys

2.3 Where are formal / informal workers located within the labor income distribution?

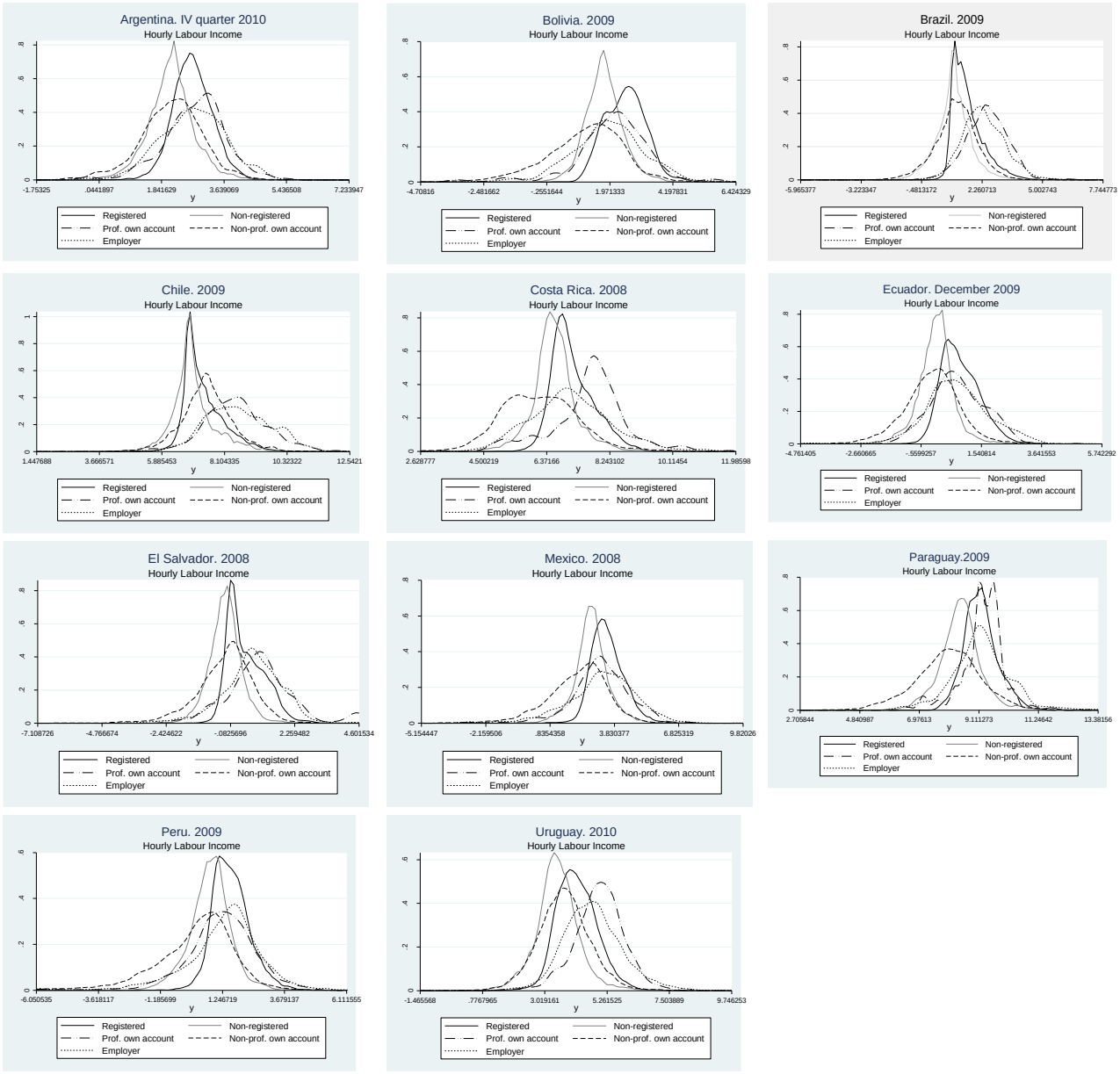
A second dimension that links informality to income inequality is the relative position of each group of workers within the labor income distribution. Graph 5 shows the non-parametric kernel density functions of the log of hourly wages.

Four clear facts arise from this graph. First, with the only exception of Mexico and Costa Rica, non-registered wage earners (informal workers) have the lowest average hourly wages. However, it is important to point out that in most cases, non-professional own account workers have the highest left tail in the income distribution; but, since, at the same time, they exhibit a wider range of values (higher intra-group inequality), the average income end up being higher than that of informal wage earners. In Mexico and Costa Rica, non-professional own account workers constitute, as a whole, the poorest group. Second, employers are placed in the other extreme of the income distribution. The only exceptions of this pattern are Argentina and El Salvador, where professional own- account workers are the group with the highest average labor income. Third, the leftward position of the distribution of non-registered wage earners in comparison to registered wage earners is verified in all countries considered. Finally, in all countries but Chile, registered wage earners are located in the middle of the labor income distribution, with higher wages than non-registered and non-professional own account workers but with lower wages than professional own account and employers.

Therefore, the significant wage gap among salaried workers (who represent the majority of employment, even in those countries with a high proportion of non-wage earners) is an important stylized fact in the region, together with the prevalence of very high labor informality. However, so far we cannot claim that

these differentials necessarily reflect a labor segmentation phenomenon associated with informality, since they might be fully explained by the worker´s personal attributes and the characteristics of the job. This topic is addressed below.

Graph 5
Kernel density functions
Hourly labor income



Source: Authors' elaboration based on Household Surveys

2.4 To what extent do wage gaps associated with informality reflect income segmentation?

The concept of income segmentation is used here to refer to labor income differentials that are not explained by the workers' individual attributes. That is to say, income gaps associated with certain characteristics of the job. In particular, this section evaluates whether two salaried workers with equal

personal attributes obtain different remunerations because one is a formal worker and the other one is an informal worker.

Informality defined according to any of the two approaches – productive and legal – is consistent with both situations with and without income segmentation. For example, under the "productive approach" it could be argued that if there were no restrictions, the excess of labor that cannot enter the formal sector and thus goes to the informal sector with its lower levels of productivity, would cause a global fall in wages, both in the formal and informal sectors. In the "legal approach", informality without segmentation could take place if formal and informal wage earners ended up receiving equal net remunerations, even when in the second case the employers face additional costs related to labor regulations.

On the contrary, there are other arguments that account for the existence of income segmentation associated with informality, even when there are no restrictions on labor mobility or other restrictions generated by labor institutions. One of them states that small firms – typical of the informal sector – usually operate with lower productivity levels, and therefore pay lower average remunerations. Likewise, the non-fulfillment of tax obligations could make the firms work with lower levels of efficiency and productivity, which would once again result in lower wages for informal workers than those obtained by formal workers (Beccaria and Maurizio, 2011). However, the mere existence of productivity differentials is not sufficient to produce wage segmentation. Therefore, it is necessary to explain why the equalizing forces of the market do not operate and why some companies – those with higher productivity – pay higher wages than the rest.

One hypothesis is based on the Efficiency Wages theory, which states that employers may decide to pay wages above the market reference as an instrument to reduce labor turnover, or to encourage higher work efforts.[7] Income segmentation could arise if firms in the formal sector use this mechanism more often than firms in the informal sector. At the same time, the existence of internal labor markets within the firms of the formal sector can isolate workers from external competition, especially the more educated workers, thus creating a wage gap with informal workers.

In addition, under the "legal approach", it could be said that the fulfillment of labor norms not only affects total labor costs but also the net wages paid to workers. The impact of minimum wages, collective bargaining and unions on wage structure are examples of the latter. Therefore, an additional source of wage segmentation may be the fact that certain workers are protected by labor legislation or unions, while others with equal attributes are not.

Lastly, if the two approaches overlap and the non-fulfillment of labor legislation is greater in informal firms, the mentioned factors will complement each other to explain the presence of segmentation. For example, one worker with certain personal attributes working in a small firm could receive a lower wage than another worker with equal characteristics working in a larger firm, both due to lower productivity levels and because the small firm faces, in general, less union pressure or does not abide by labor institutions, such as the minimum wage.

However, an important condition to obtain these results is the presence of a deficit in the creation of formal jobs, which makes workers accept lower remunerations or more precarious working conditions. This behavior is, in turn, encouraged by the lack or weakness of social protection mechanisms. To a greater or lesser extent, this is the case of Latin American countries.

To estimate income gaps associated with informality, several parametric and non-parametric methods were performed in order to give greater robustness to the results. Each of these methods is described in

[7] Shapiro and Stiglitz (1984).

detail in Annex I. Due to space reasons this section will only present and discuss wage gaps associated with informality according to the "legal approach", computed for the group of wage-earners exclusively.

Table 4 shows the results of selectivity-corrected wage equations estimated by Heckman's two-step procedure. These figures correspond to the coefficients of the dummy variables that identify informality in the income equations. The dependent variable is the log of hourly wages. A statistically significant and important "penalty" due to informality is verified in all countries, suggesting the presence of income segmentation. The magnitude varies across them, however. Specifically, the gap of the hourly log wage between informal and formal workers is above 40% in Argentina and Ecuador, greater than 30% in Uruguay and above 20% in the other countries.

OLS estimates the effects of the covariates only in the center of the conditional distribution. For this reason it is of interest to know, additionally, the impact of the covariates along the whole conditional income distribution. Therefore, Quantile Regression method is applied to hourly labor incomes. The estimated coefficients of informality are shown in Tables 5 and they reveal that the gap associated with informality is not constant across the income distribution and larger at the lower extreme. This pattern could suggest the impact of certain labor institutions, such as the minimum wage.

The implementation of the Oaxaca-Blinder decomposition to hourly wage equations estimates (corrected by bias selection) of formal and informal workers, yields very interesting findings reported in Table 6. First, in all cases the total difference of mean incomes is significantly larger than that found using OLS. Second, when this difference is decomposed into three components, namely, the "Endowments effects" (which arises from the differences in the vector of characteristics of each group), the "Coefficient effects" (which comes from the differences in the returns to those attributes, and the "Interaction effect", in all cases the "Coefficient effect" is statistically significant and negative. Therefore, the segmentation hypothesis is verified again thus indicating that, given equal attributes, an informal worker (a non-registered wage earner) gets a lower wage than a similar formal worker (a registered wage earner).

Additionally, the "Endowments effect" is also significant and negative. This effect is, in most cases (with the exception of Argentina and Chile) the factor explaining the larger proportion of the income gap. This reflects the fact that formal workers have a vector of characteristics that is more favorable than that of informal workers, as described in the previous section. Specifically, it has been shown that the *formal* have more human capital and lower proportion of women –who are usually discriminated against in the labor market and thus receive lower wages than men with similar attributes-. Therefore, total labor income gaps between the *formal* and the *informal* are explained not only because the former have a more favorable endowment vector, but also because the returns to their attributes are higher than those of the *informal*.

Finally, non-parametric estimates based on the matching estimator method (Table 7) are consistent with previous results and confirm again the existence of a "penalty" for informality. In particular, the parameter of interest –the Average Treatment Effect on the Treated (ATT)- is significant and negative in all cases.

Therefore, the different estimates (parametric and non-parametric) point to the existence of significant income gaps in favor of formality that are not explained by differences in the observed attributes of workers. This leads to the conclusion that there is income segmentation associated with informality in all countries analyzed.

The question arises as to which factors explain the differences in magnitude of the income gaps across countries. One hypothesis might relate these results to the role of labor institutions such as, the minimum wage, collective bargaining or unions. Additionally, these results might be affected by variables that are not observable and, thus, not included in the estimates. For example, there might be non-monetary

advantages that compensate for the lower wages of informality, making these jobs more attractive to certain individuals.[8] But, given the close link between informality and poverty found in Latin American countries[9], the arguments suggesting that informality is a voluntary choice is not likely to apply to all workers. On the contrary, the high levels of unemployment and labor precariousness experienced by these countries suggest that the insertion in informality could be the only choice for a big group of people, especially considering the already mentioned very low coverage levels of non-contributory social protection systems in the region.

3. Labor market dynamics: informality and wage inequality reduction

Although labor informality continues to be one of the region's distinctive characteristics, its incidence has fallen in a significant number of countries, especially during the last decade. As it follows we seek to assess the effects that this improvement might have had on the distribution of labor incomes.

It should be pointed out that this is not intended to be an exhaustive analysis of all the dimensions that might have played a role in the evolution of labor incomes and their distribution; rather, the analysis focuses on one of the factors that might have contributed to the distributive dynamics among other possible variables like educational inequality and returns to education,[10] gender wage discrimination or the effects of certain labor institutions. However, the impacts of the recent evolution of informality on labor income distribution have not been studied in depth in the region yet.

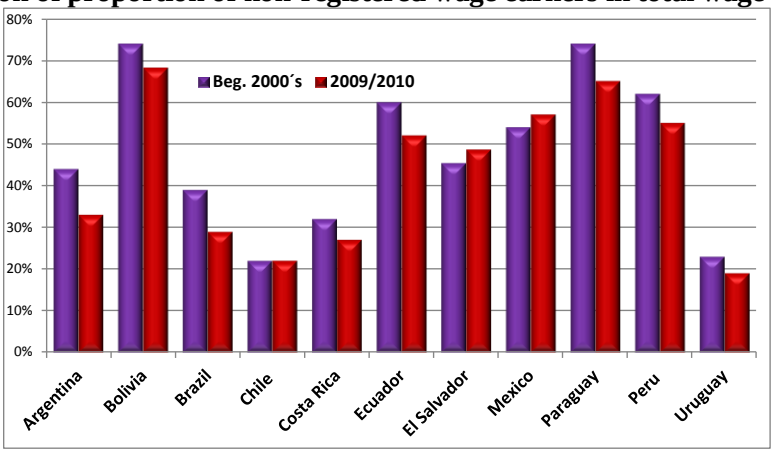
With this aim, the dynamics of wage inequality and informality are presented next. After that follows an analysis of the evolution of informality-related wage gaps, both average wage gaps and wage differentials along the labor income distribution. Finally, the Theil index decomposition is presented, which allows assessing whether, and to what extent, the process of formalization has contributed to the reduction of inequality in the countries under study.[11]

3.1 Dynamics of wage inequality and labor informality

As it can be observed in Graph 6, eight out of the eleven countries under study have experienced a reduction in the proportion of non-registered wage earners in total wage earners between the beginning and the end of the 2000s decade. The exceptions are Chile, where this proportion remained constant, and El Salvador and Mexico, where informality continued growing. This general reduction of informality is in stark contrast with the experiences of most of these countries during the 1990s decade. Such reductions were more intense in the cases of Argentina and Brazil, where the proportion of informal workers fell about 11 percentage points. In the latter country, the process of wage employment formalization had already started in the mid-1990s, whereas in the case of Argentina it begun after the change in the macroeconomic regime that took place in 2002.

[8] This hypothesis is proposed by Maloney (2004) or Arias and Khamis (2008), among others.
[9] See, for instance, Beccaria and Groisman (2008), Beccaria *et al*. (2011), Devicienti *et al*. (2009), Maurizio (2012).
[10] A recent analysis on this topic for Latin America is presented in Cruces *et al.* (2011).
[11] An important characteristic of the Theil index is that it can be decomposed in an additive way into two effects. The first one –the between effect– captures the differences between the average values of the groups considered. The second one –the within effect– captures the variability within each group. Then, in dynamic terms, the index can be further decomposed into a third effect: the composition effect, which measures the distributive impacts of the changes in the relative participation of each worker category.

Graph 6
Evolution of proportion of non-registered wage earners in total wage earners



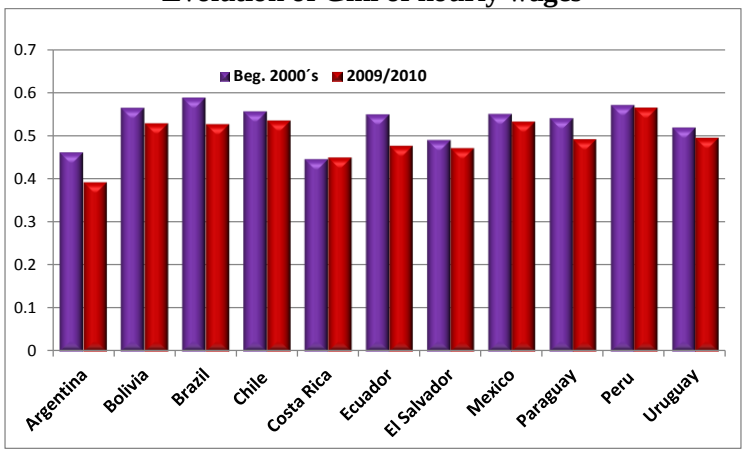
Source: Authors' elaboration based on Household Surveys

To provide a comprehensive discussion of the factors that enabled the process of employment formalization is beyond the scope of this document. However, there are at least three that should be mentioned: (1) fast economic growth; (2) simplification and reduction of taxes for micro/small enterprises (for instance, the program SIMPLES in Brazil); and (3) improvements in labor inspection (National Plan for Labor Regulation in Argentina, for example). Nevertheless, given that some of these processes had already been present in some countries during the 1990s –although in an isolated manner- with no positive effects on labor formalization, it is possible to think that all of these factors need to act jointly in a context of steady growth and employment creation in order to produce positive results regarding informality.

In parallel to this process, the region has also experienced a generalized reduction in labor income concentration. As it can be seen in Graph 7, the Gini index fell in all the countries with the only exception of Costa Rica. Again, Argentina and Brazil, and also Ecuador, stand out regarding these positive dynamics. Like before, in the case of Brazil, this decreasing trend had already started in the mid-1990s, although it was intensified as from 2002. In the case of Argentina, the turning point is in 2003.

As it follows we present some exercises that attempt to put in relation all of these processes that took place in the region during the last decade.

Graph 7
Evolution of Gini of hourly wages



Source: Authors' elaboration based on Household Surveys

3.2 Evolution of informality-related wage gaps

Table 8 presents average wage gaps (calculated for the group of wage-earners exclusively) for a group of six countries in two moments of time: at the beginning and at the end of 2000s decade. It also shows the evolution of wage gaps along the unconditional income distribution, based on the methodology proposed by Firpo *et al.* (2009), which allows identifying the differential impacts of informality on different parts of the distribution. In particular, the method employed by these authors –*Unconditional Quantile Regression Method*- allows estimating the effect of different explanatory variables such as the formal/informal condition of the worker on the different percentiles of the unconditional income distribution.[12] The method is based on regressions in which the dependent variable is a transformation –the so-called *Recentered Influence Function*- of the outcome variable under study, and the covariates are those usually included in this type of studies.

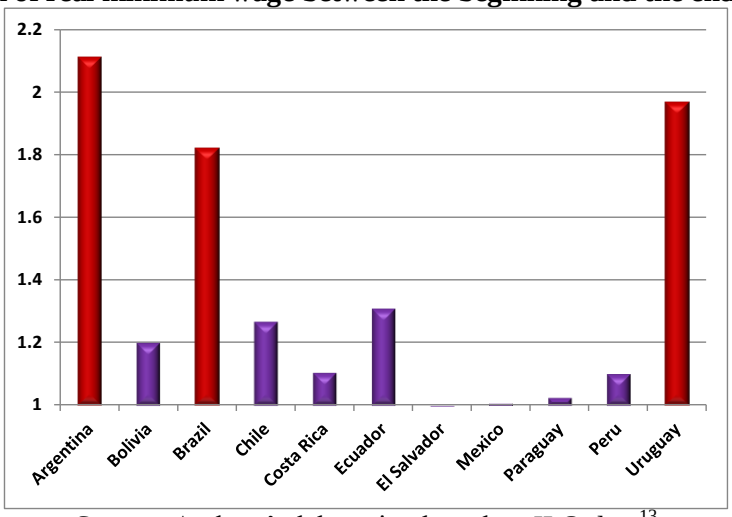
As it can be observed in the table, in Brazil, Uruguay, Chile and Paraguay the average gap related to informality decreased. The contrary happened in Argentina and Mexico. However, the average wage gaps do not necessarily represent the behavior of gaps along different parts of the wage distribution. For instance, in the cases of Argentina, Brazil and Uruguay, the hourly income gaps between formal and informal workers at the lower part of the distribution widened, while the opposite took place in the upper tail. On the other hand, no changes were observed in the lowest 10th percentile of the distribution in Paraguay. On the contrary, in Chile the informality-related wage gaps narrowed along the whole distribution. In Mexico, a non-monotonic behavior is observed.

The increase of informality wage penalties is a source of wage dispersion and it is therefore a fundamental aspect to be considered in the distributive analyses. Moreover, it is also relevant to try to identify the factors behind the behavior of wage gaps in the lower part of the distribution. Even though a detailed study of this matter is beyond the scope of this document, we mention one factor (among others) that could be related to such dynamics, which is the evolution of the real minimum wage during recent years.

In particular, as it can be observed in Graph 8, the three countries in which the informality gap widened for the lowest percentiles –Argentina, Brazil and Uruguay- are those where the real minimum wage recovered more intensely during the last decade. On the contrary, in Paraguay the real minimum wage remained fairly constant along the period. Hence, it could be argued that as the minimum wage becomes biding exclusively for formal workers at the lower part of the distribution, it could generate a wider wage gap between the workers that are subject to such labor institutions and those who are not (informal workers). Keifman and Maurizio (2012) find that the recovery of the minimum wage in Argentina, Brazil and Uruguay during the recent period had a positive and significant impact on income distribution, explained by a reduction of inequality at the lower tail of the distribution. However, this does not seem to be the case for Chile and Mexico, where other factors might have also played a role. In the first case, the recovery of the minimum wage (although with less intensity than in the three former countries) was verified together with a reduction in wage gaps across the entire distribution, including the first 10th percentile; in Mexico the stability in the real minimum wage was accompanied by a widening of the penalty at the lower tail of the wage distribution. Therefore, further studies need to be conducted to provide robustness to this hypothesis and to find other factors associated with informality-related wage gaps along the wage distribution.

[12] This is substantially different from the Quantile Regression Method, which estimates the impact of a covariate on the cuantiles of the conditional income distribution.

Graph 8
Evolution of real minimum wage between the beginning and the end of 2000s



Source: Authors' elaboration based on ILO data[13]

3.3 Assessing the distributional impact of labor formalization: a decomposition exercise

Lastly, Table 9 presents the results of the Theil-index dynamic decomposition for this group of six countries. In all the four cases in which informality decreased (Argentina, Brazil, Uruguay and Paraguay), this contributed to the reduction of inequality, which is manifested as a positive sign in the "composition effect". On the other hand, both in Chile, where the proportion of non-registered wage earners remained constant, and in Mexico, where informality actually increased during the period under analysis, the composition effect had a negative contribution to the reduction of inequality.

The "between effect" is negative in Argentina, reflecting the widening of the informality-related wage gap. The contrary is observed for Brazil, Chile and Uruguay, all countries in which the average gap decreased. Mexico and Paraguay do not follow this regularity. It is important to take into account that contrary to the parametric and non-parametric analyses of wage gaps, in the Theil decomposition the "between effect" measures the average wage differential between formal and informal workers without controlling for other covariates. In all cases, however, the most important contribution came from the reduction of inequality within each of the two groups of workers ("within effect").

It is therefore possible to conclude that the increase in the participation of registered wage-earners in total employment has been a very positive phenomenon not only because it has extended the social security system coverage, but also because it has had equalizing effects on the distribution of labor incomes. On the other hand, the greater income homogeneity within this group of workers could also be a result of the relatively higher dynamism shown by both minimum wages and collective bargaining in some of these countries during the last decade.

4. Dynamics of family income inequality in Latin America: the role of the labor market and other factors

[13] Base Única de Salarios Mínimos de América Latina y el Caribe.

Previous sections showed the improvements in labor market indicators during the period of economic growth in Latin America. In this section we intent to quantify the contribution of labor incomes *vis a vis* other non-labor income sources to reducing inequality in Latin America during recent years.

To this end, we carry out decompositions of the changes in the Gini of per capita family income (PCFI)[14] by different sources of income, making a distinction between labor market sources, pensions, government transfers (cash transfers to households with children are the most important in this group) and other sources of monetary income. Furthermore, given the importance of the registered and non-registered wage earners and nonwage earners for the structure of employment and labor incomes, the labor source was subdivided accordingly. The periods chosen for these exercises are related to the fall in inequality in each case.

Before doing that, Table 10 reports the shares of each source in PCFI at the beginning and the end of each series. Labor incomes explain between 70% and 80% of households' total income, a fact that allows us to predict, at least partly, that this source will be responsible for a significant part of distributive changes in the region. In addition, the importance of incomes from registered jobs and their variation in time is closely associated with what happened with formality in these countries in recent years. The significant growth of this source of income stands out in Argentina, Brazil and also Paraguay. Pension benefits are another relevant source in countries such as Argentina, Brazil and Uruguay. This result is associated with the high coverage of contributive and non-contributive pension systems in these nations (Rofman and Lucchetti, 2006).[15] On the other hand, incomes from government transfers explain, on average, a very small percentage of family incomes, despite the development of this sort of social protection scheme in the region.

Graph 9 presents the results of the decompositions of the variation of Gini coefficients by the same income sources. Changes in labor income are in all cases the single most important factor in the fall of Gini coefficients, explaining from 44% of the change in Chile up to 73% of the fall in Argentina. On the other hand, government transfers explain between 20% and 30% of the changes in Mexico, Brazil and Chile. This result comes from the extension of transfers programs to households with children like *Oportunidades* in Mexico and *Bolsa Familia* in Brazil.[16] In Argentina, however, this source does not explain the fall in inequality. Note that the *Programa Jefas y Jefes de Hogares Desocupados* peaked in 2003, while *Asignación Universal por Hijo* 2010 reaches a similar number of households.[17] This does not imply that these programs are not focused on lower incomes households (in fact, the correlation between this source and total family income is negative) but that they not contribute significantly to the dynamics of inequality.

In turn, (contributive and non-contributive) pensions have significant explanatory power in Argentina, Uruguay and Chile. This is related, as mentioned, to the extension of pension coverage to the elderly carried out through contributive and non-contributive pillars in these countries.

[14] The decomposition by source at each moment follows the methodology of Lerman and Yitzhaki (1985). The dynamic decomposition, that is to say, the computation of the contribution of each source to the change in inequality in each period follows a methodology used by Helfand *et al* (2009), Milanovic (1998) and Soares (2006).

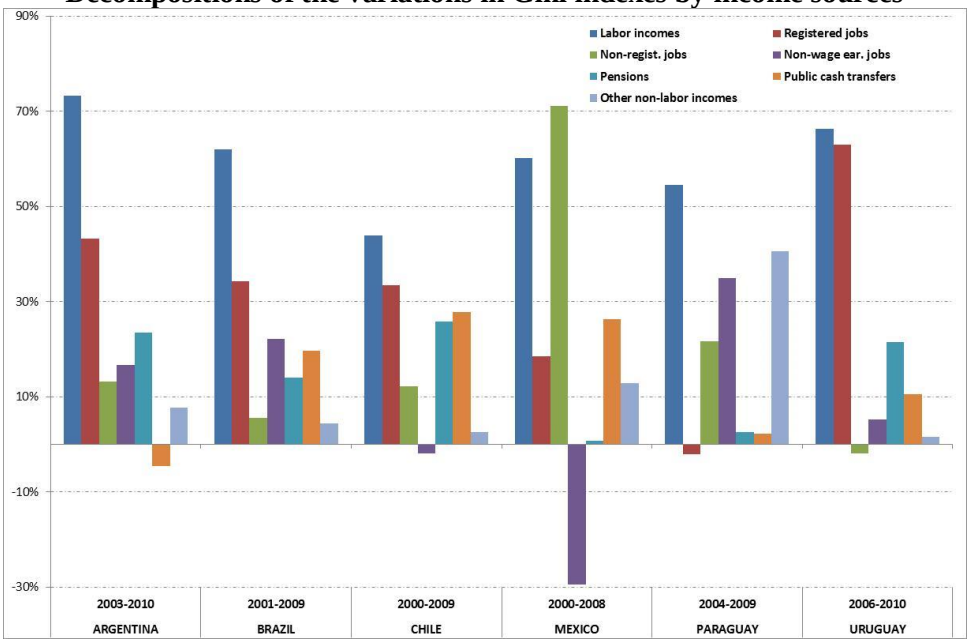
[15] Other studies addressing this topic are, for example, Titelman *et al.* (2009), Rofman *et al.* (2010), Cetrángolo and Grushka (2008),

[16] For a more detail about this kind of cash transfers in Latin America see, for example, Bertranou and Maurizio (2012), Gasparini and Cruces (2010), ILO-IPEC (2007), ILO (2007), Maurizio and Vázquez (2012), Medeiros *et al.* (2008), Perez Ribas *et al.* (2008), The World Bank (2009), Villatoro (2008).

[17] It is possible, however, that the impact of AUH could be underestimated given the fact that the EPH does not ask about this source directly. Instead, it has to be identified indirectly from the household income. A similar strategy was implemented on PNAD to identify Bolsa Escola in 2001 and Bolsa Familia in 2009.

At the same time, the contribution of formalization to reducing inequality in countries such as Uruguay, Argentina o Brazil has been very important, between 3 (Argentina) and 6 (Brazil) times the contribution from informal wages, or like in Uruguay where this source explain all the improvement from labor incomes. In Chile too, formal incomes were important in this period. In fact, in all four cases (Argentina, Brazil, Chile and Uruguay) incomes from formal sources are the main determinant of the distributive improvement. This could corroborate the conjecture that formalization has been one of the major drivers for progress in improving income equality figures. In contrast, incomes from non-registered workers explain most of what happened to labor incomes in México, a fact related the continued growth of informality.

Graph 9
Decompositions of the variations in Gini indexes by income sources



Source: Authors' elaboration based on Household Surveys

These results are consistent with those found by ECLAC (2010a and 2010b), where the improvements in income distribution are linked mostly to the positive dynamics of the labor market and to a lesser extent to the cash transfers received by households and to demographic changes such as reduced dependency ratio. Also, the relative importance of the labor market in reducing inequality and poverty are explained, although with different intensity depending on the country, both by increases in labor income and growth in employment levels (Cecchini and Uthoff, 2007).

Lustig and Gasparini (2011) conclude that the improvement in the distribution of income that took place during the last decade in the region seems to be associated with the reduction in education wage premium and with more progressive social policies, particularly the extension of conditional cash transfer programs. Smaller wage gaps, in turn, seem to be associated with better macroeconomic performance with stronger employment generation, greater coverage of basic education, fewer impacts of the unequalizing-type of the 1990s' reforms, and with some labor institutions being reactivated.

Trujillo and Villafañe (2011) corroborate the importance of labor incomes in changes of household income distribution in Argentina during the period 2004-2008. This is explained both because labor incomes represent a high percentage of total family incomes and because the labor market experienced substantial improvements from 2003 onwards. Likewise, the authors find that since that year the dynamic

of wages for formal salaried workers has been the main factor contributing to the reduction of labor income concentration. Incomes from pension also constituted another important source of income contributing to the decreased in inequality. Finally, although other income transfer policies have been progressive, they have had less importance than labor incomes.

Similarly, for Brazil, Soares (2006) finds that three quarters of the reduction in family income inequality between 1995 and 2004 is explained by the decline in the concentration of labor income, while transfer programs such as *Bolsa Familia* explain the remaining quarter. Paes de Barros et al. (2010) find that public transfers, both contributive and non-contributive, explain about one half of the fall in inequality in this country during the 2001-2007 period: 30% correspond to incomes coming from the social security system, 10% to Bolsa Familia and the same percentage to the BPC program. Finally, Amarante *et al.* (2011) find that the increase in inequality in Uruguay during the 1990s was associated with the opening of the economy in a context of absence of centralized wage-setting mechanisms, minimum wage decline and lack of social protection schemes. The reduction of inequality, which started later in this country than in other countries of the region, also seems to be explained by a combination of higher employment levels, minimum wage recovery, progressive tax changes, reductions in the returns to education and the implementation of household transfer programs.[18]

5. Concluding remarks

During the 2003-2008 period, before the impacts of the international crisis, the region as a whole experienced six years of high and stable economic growth that allowed for an improvement in labor and social indicators: higher levels of employment, and lower levels of unemployment, labor informality, inequality and poverty. Nevertheless, these improvements were insufficient to substantially modify two distinctive characteristics of the region: high levels of labor precariousness (which is strongly related to informality) and income concentration.

The high-income inequality that characterizes Latin America is associated to both the concentration in the primary income distribution and the existence of scarce social protection systems. This is partly because these systems are largely based on contributory social security mechanisms, which usually cover a limited part of the population that is either linked, or weakly attached to formal employment.

This study has provided an analysis of both labor and family incomes dynamics in a significant group of Latin American countries during the new millennium. In particular, it identified the factors associated with the changes occurred in the family income distribution, assessing the role played by both labor and non-labor income sources. With regard to the labor market, the study focused on labor informality, its characteristics and its distributive impacts. In this regard, it complements other papers that analyze other dimensions associated with wage inequality such as educational inequality and returns to education, gender wage discrimination or the distributive impacts of labor institutions.

The empirical analyses confirm the relevance of labor market incomes in total household incomes. This is why this source of income has been quite significant in the reduction of inequality in the period under study. In countries like Argentina, Brazil or Uruguay, incomes from pensions have also contributed to this reduction, a phenomenon that was at least in part associated with the greater coverage levels provided by the introduction of non-contributory or semi-contributive programs. Lastly, in Mexico and Brazil, the conditional cash transfer programs to households with children have also had an equalizing effect.

[18] Other studies that analyze the recent distributive dynamics in the region as a whole or in particular countries are López-Calva and Lustig (2010), Cornia (2012), Contreras and Ffrench-Davis (2012), Keifman and Maurizio (2012).

With regard to the labor market, the reduction in both the incidence of labor informality and inequality has been quite widespread throughout the region, although with different intensities for each country. Given that in many cases these dynamics are in stark contrast to those of the 1990s decade, the in-depth study of the factors that have allowed for these improvements, as well as of their impacts and interrelations seems of particular importance.

In this regard, the results confirm a positive effect of employment formalization on labor income distribution, even when in some countries –like Argentina and Brazil- this came along with a widening of wage gaps between formal and informal workers in the lower tail of the distribution. One hypothesis, which should be further investigated, relates these findings to the performance of certain labor institutions, like the minimum wage and the collective bargaining, which have recovered significantly in these countries.

However, despite these important progresses, the huge differences that still persist in the region's working conditions require permanent action in the field of primary income distribution as a means to reduce inequality. In this context, progress in employment formalization and the strengthening of labor institutions are essential processes to allow jobs to become an effective mechanism to overcome inequality and poverty and achieve social protection. At the same time, it is needed to complement these polices with the development of a comprehensive social protection system grounded in universal rights, based not only on traditional social insurance pillars but also on non-contributory components.

Finally, all these policies should be framed within a long-term economic development strategy built on the basis of an integrated productive structure leading to high efficiency, systemic competitiveness and increasing labor demand. Productive convergence within a framework of high productivity standards is a necessary condition for sustained growth, employment promotion and wage increase throughout time.

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ANNEX I

1. Sources of information

Microdata used in this paper come from the regular household surveys of each country under study.

- Argentina. *Encuesta Permanente de Hogares (EPH).*
- Bolivia. *Encuesta de Hogares.*
- Brazil. *Pesquisa Nacional por Amostra de Domicilios (PNAD).*
- Chile. *Encuesta de Caracterización Socioeconómica Nacional (CASEN).*
- Costa Rica. *Encuesta de Hogares de Propósitos Múltiples.*
- Ecuador. *Encuesta Nacional de Empleo, Desempleo y Subempleo* (ENEMDU)
- El Salvador. *Encuesta de Hogares de Propósitos Múltiples.*
- Mexico. *Encuesta de Ingresos y Gastos de los Hogares.*
- Paraguay. *Encuesta Permanente de Hogares.*
- Peru. *Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza (ENAHO).*
- Uruguay. *Encuesta Continua de Hogares.*

2. Measurement of informality

The ILO's 15th and 17th International Conference of Labor Statistics (ICLS) have established the classification criteria for formal and informal workers. According to the "productive approach", the employment in the informal sector (EIS) is defined as the group of workers employed in small productive units that are not legally registered as firms, use a reduced amount of capital and make limited use of technology.

However, given that household surveys do not inquire in depth into the characteristics of the firms, the ILO suggests adopting a measurement criterion based on the combination of occupational categories, occupation groups defined according to job qualifications, and the size of the firm. In this way, it is possible to identify the two major components of the informal sector (IS): (1) family units comprised of own-account workers and family workers; and (2) microenterprises made up of employers and wage-earners in establishments of less than five employees. In the case of independent workers, only those with no professional skills are considered as part of the IS, as an operational way to leave only independent workers with low productivity in this sector. Finally, the public sector is excluded from the IS.

On the other hand, the informal employment (IE) is defined as the occupational group for which labor regulations are not fulfilled: non-registered wage earners, and own-account workers and employers that do not fulfill their tax obligations.

However, given the lack of enough information from household surveys, in the case of independent workers, their formal/informal character is directly determined by the characteristics of their enterprises: informal own-account and employers are those working in enterprises of the IS. Therefore, the classification of workers according to whether they belong to the IS or the formal sector (FS) being, simultaneously, part of the EIS or the employment in the formal sector (EFS) is more interesting in the case of wage earners given that for non-wage earners both classifications coincide. Finally, unpaid family workers are considered simultaneously as a part of IE and of the EIS.

Additionally, the empirical identification of the wage earners' registration condition in each of these countries was based on the availability of information derived from these data-bases. In Argentina, a wage earner is considered as registered in the social security system if his/her employer pays social security contributions. In Chile and Brazil, a wage earner is considered as registered if he/she has signed a labor

contract. In Bolivia, Costa Rica, El Salvador, Mexico, Paraguay, Peru and Uruguay registered workers are those who are affiliated to a pension system. Finally, in Ecuador registered a wage earner is considered as registered if she/he receives social insurance.

3. Measurement of income segmentation associated with informality

With the aim of assessing to what extent informality has independent explanatory power on wage setting – wage segmentation hypothesis- several parametric and non-parametric methods will be employed in order to provide robustness to the results obtained. These methods are discussed next.

1. First, average wage gaps between formal and informal workers are estimated by using Mincer Equations by OLS regression. This is the most common approach when analyzing the effect of one independent variable on labor income, while controlling for the rest of the covariates. In the case that matters in this study, the coefficient of the variable that identifies informality quantifies its independent impact on wage determination. The estimates are corrected for the sample selection bias using Heckman Two Step Estimator.

2. OLS estimates the effects of the covariates only at the central part of the conditional distribution. However, it is relevant to identify the impact of the covariates along the entire conditional distribution of income. To do that, Quantile Regression Model (QR) is applied, from which it is possible to evaluate whether wage gaps remain constant, grow or decrease along the conditional distribution. These estimates are also corrected by the sample selection bias.

3. From the estimate of wage equations, the Oaxaca-Blinder Decomposition Method allows the decomposition of average income gaps between formal and informal workers into three effects: the "Endowments effects", which is the part of the differential derived from the differences in the vector of characteristics of each group; the "Coefficient effects", which corresponds to the differences in the returns to those attributes; and the "Interaction effect". The segmentation hypothesis is verified if the second effect is statistically significant and positive, thus indicating that, given equal attributes, a formal worker gets a higher wage than an informal worker. These estimates are also corrected by the sample selection bias.

4. Finally, the Matching Estimator Method is used as a non-parametric way to estimate the impact of informality on labor income. The parameter of interest is the Average Treatment Effect on the Treated (ATT), which is defined as:

$$\theta_{ATT} = E(\tau \mid D=1) = E[Y(1) \mid D=1] - E[Y(0) \mid D=1] \quad [1]$$

where $E[Y(1) \mid D=1]$ is the expected value for the treated group, given that it was under treatment, and $E[Y(0) \mid D=1]$ is the expected value for the treated group had it not been treated.

Given that this counterfactual situation is not observed, it is necessary to resort to an alternative method in order to estimate the ATT. The most accurate way to identify what would have happened to the group under treatment had it not been treated, is to consider the situation of the non-treated individuals with equal (or similar) characteristics (control group).

One of the methods used to build the control group is the Propensity Score Matching Estimator, in which the propensity score of participation for the whole sample is estimated and the individuals of the treated group and the control group with similar scores are matched. In the case we are analyzing, informal workers constitute the treated group, whereas formal workers constitute the control group.

There are different ways to determine which individuals in the control group will be the counterpart of the group under treatment. One way, used here, is the Kernel Estimator, in which the outcome of the treated individual is associated with a matched outcome given by a kernel-weighted average of the outcome of all non-treated individuals. The ATT is estimated as follows:

$$ATT = \frac{1}{N_n} \sum_{i \in n} \left(w_i - \sum_{j \in f} \kappa_{ij} w_j \right) \quad [2]$$

where w_i and w_j indicate the wage of each formal and informal worker, respectively, κ_{ij} is the Kernel and N_n is the quantity of informal workers.

ANNEX II. Tables

Table 1
Employment composition: share of informality in Latin American countries

Categories	Argentina	Bolivia	Brazil	Chile	Costa Rica	Ecuador	El Salvador	Mexico	Paraguay	Peru	Uruguay
Formal non-wage earners	5%	3%	2%	5%	4%	3%	2%	4%	3%	6%	4%
Informal non-wage earners	18%	36%	23%	21%	21%	30%	29%	16%	31%	31%	21%
Formal wage earners in FS	45%	15%	43%	51%	51%	26%	34%	30%	19%	27%	52%
Informal wage earners in FS	9%	16%	9%	9%	7%	14%	8%	20%	15%	12%	4%
Formal wage earners in IS	5%	0%	5%	4%	5%	2%	2%	3%	2%	2%	4%
Informal wage earners in IS	10%	16%	8%	4%	7%	14%	13%	19%	16%	10%	5%
Formal domestic service	1%	0%	2%	2%	1%	1%	0%	0%	0%	0%	4%
Informal domestic service	6%	3%	6%	3%	4%	3%	4%	5%	9%	4%	5%
Unpaid familiar workers	1%	10%	2%	0%	1%	6%	7%	4%	5%	6%	1%
Total Employment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Employment in the Informal Sector (includes domestic services)	41%	65%	46%	34%	39%	57%	56%	46%	63%	55%	40%
Informal Employment (includes informal domestic services)	44%	81%	47%	38%	40%	68%	62%	63%	76%	64%	36%
% Informal wage-earners in the total wage earners	33%	69%	31%	22%	24%	52%	41%	57%	65%	48%	19%

Source: Authors' elaboration based on Household Surveys

Table 2
Registered and non-registered wage earners in the formal and informal sectors

	Formal Sector	Informal Sector	Formal Sector	Informal Sector
Argentina	88.0	12.0	37.6	62.4
Bolivia	96.9	3.1	46.2	53.8
Brazil	84.6	15.4	38.4	61.6
Chile	89.1	10.9	57.7	42.3
Costa Rica	90.1	9.9	39.1	60.9
Ecuador	91.9	8.1	43.4	56.6
El Salvador	94.9	5.1	32.2	67.8
Mexico	91.7	8.3	45.7	54.3
Paraguay	90.7	9.3	37.3	62.7
Peru	91.5	8.5	45.4	54.6
Uruguay	86.5	13.5	29.0	71.0

Source: Authors' elaboration based on Household Surveys

Table 3
Characteristics of formal and informal workers

Characteristics	Argentina			Bolivia			Brazil		
	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total
Men	58%	60%	59%	61%	54%	55%	57%	56%	56%
Years of education (avg.)	13.9	11.1	12.6	14.3	9.1	10.1	11.2	8.4	9.9
Age (avg.)	39.7	39.7	39.7	39.9	35.8	36.5	36.2	38.0	37.0

Characteristics	Chile			Costa Rica			Ecuador		
	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total
Men	61%	56%	59%	59%	57%	58%	60%	58%	58%
Years of education (avg.)	13.4	11.0	12.6	11.2	8.2	10.0	13.5	9.0	10.4
Age (avg.)	39.7	43.0	40.9	36.3	39.7	37.7	40.0	39.7	39.8

Characteristics	El Salvador			Mexico			Paraguay		
	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total
Men	58%	51%	54%	60%	60%	60%	64%	56%	58%
Years of education (avg.)	11.8	6.5	8.5	11.8	8.2	9.5	13.1	8.9	9.9
Age (avg.)	36.1	38.3	37.5	37.3	37.4	37.4	37.0	36.3	36.5

Characteristics	Peru			Uruguay		
	Formal	Informal	Total	Formal	Informal	Total
Men	63%	50%	55%	54%	54%	54%
Years of education (avg.)	15.1	10.6	12.2	12.0	9.3	11.0
Age (avg.)	39.8	37.5	38.3	39.9	42.7	40.9

Source: Authors' elaboration based on Household Surveys

Table 4
Heckman two-step estimator

Argentina 2010	Bolivia 2009	Brazil 2009	Chile 2009	Costa Rica 2008	Ecuador 2009
-0.423***	-0.267***	-0.280***	-0.257***	-0.206***	-0.412***
[0.0100]	[0.0318]	[0.00392]	[0.00519]	[0.0134]	[0.0124]

El Salvador 2008	Mexico 2008	Paraguay 2009	Peru 2009	Uruguay 2010
-0.210***	-0.260***	-0.275***	-0.246***	-0.325***
[0.0114]	[0.00801]	[0.0276]	[0.0135]	[0.00873]

Standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' elaboration based on Household Surveys

Table 5
Quantile regressions

	q10	q25	q50	q75	q90
Argentina	-0.582***	-0.489***	-0.395***	-0.319***	-0.267***
	[0.0511]	[0.0268]	[0.0198]	[0.00187]	[0.00432]
Bolivia	-0.280***	-0.291***	-0.243***	-0.226***	-0.265***
	[0.0286]	[0.00213]	[0.0562]	[0.0272]	[0.0220]
Brazil	-0.651***	-0.348***	-0.231***	-0.181***	-0.136***
	[0.00117]	[0.00357]	[0.00149]	[0.000627]	[0.00724]
Chile	-0.477***	-0.261***	-0.134***	-0.121***	-0.126***
	[0.0173]	[0.00607]	[0.00440]	[0.00848]	[0.00654]
Costa Rica	-0.313***	-0.235***	-0.182***	-0.146***	-0.108***
	[0.0152]	[0.0108]	[0.00886]	[0.00706]	[0.0266]
Ecuador	-0.547***	-0.432***	-0.356***	-0.323***	-0.317***
	[0.0251]	[0.0107]	[0.00275]	[0.00658]	[0.0174]
El Salvador	-0.356***	-0.256***	-0.176***	-0.157***	-0.140**
	[0.0209]	[0.00676]	[0.0106]	[0.0191]	[0.0612]
Mexico	-0.361***	-0.263***	-0.223***	-0.219***	-0.191***
	[0.0132]	[0.00336]	[0.00172]	[0.000227]	[0.00656]
Paraguay	-0.379***	-0.308***	-0.230***	-0.224***	-0.199***
	[0.0534]	[0.0625]	[0.0302]	[0.00854]	[0.0589]
Peru	-0.276***	-0.224***	-0.231***	-0.234***	-0.256***
	[0.0127]	[0.00248]	[0.00745]	[0.0117]	[0.00316]
Uruguay	-0.564***	-0.380***	-0.285***	-0.215***	-0.169***
	[0.0134]	[0.000716]	[0.000109]	[0.00819]	[0.0111]

Source: Authors' elaboration based on Household Surveys

Table 6
Oaxaca-Blinder decomposition

	Argentina 2010	Bolivia 2009	Brazil 2009	Chile 2009	Costa Rica 2008	Ecuador 2009
Difference	-0.753***	-0.773***	-0.606***	-0.388***	-0.528***	-0.896***
	[0.0106]	[0.0300]	[0.00459]	[0.00623]	[0.0115]	[0.0106]
Endowments	-0.284***	-0.488***	-0.391***	-0.174***	-0.301***	-0.415***
	[0.0151]	[0.0324]	[0.00494]	[0.00568]	[0.0189]	[0.0165]
Coefficients	**-0.375*** **	**-0.218*** **	**-0.343*** **	**-0.247*** **	**-0.234*** **	**-0.382*** **
	[0.0122]	[0.0658]	[0.00455]	[0.00556]	[0.0126]	[0.0178]
Interaction	-0.0948***	-0.0669	0.128***	0.0332***	0.00665	-0.0993***
	[0.0163]	[0.0679]	[0.00491]	[0.00498]	[0.0197]	[0.0222]

	El Salvador 2008	Mexico 2008	Paraguay 2009	Peru 2009	Uruguay 2010
Difference	-0.670***	-0.583***	-0.761***	-0.818***	-0.712***
	[0.0104]	[0.00805]	[0.0247]	[0.0118]	[0.00982]
Endowments	-0.448***	-0.339***	-0.529***	-0.610***	-0.369***
	[0.0176]	[0.00774]	[0.0311]	[0.0148]	[0.0559]
Coefficients	**-0.282*** **	**-0.334*** **	**-0.454*** **	**-0.359*** **	**-0.321*** **
	[0.0184]	[0.0146]	[0.0961]	[0.0182]	[0.0100]
Interaction	0.0601**	0.0903***	0.221**	0.150***	-0.0218
	[0.0235]	[0.0145]	[0.0982]	[0.0203]	[0.0560]

Standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' elaboration based on Household Surveys

Table 7
Matching Estimator Method

Argentina 2010	Bolivia 2009	Brazil 2009	Chile 2009	Costa Rica 2008	Ecuador 2009
-0.349***	-0.231**	-0.392***	-0.266***	-0.211***	-0.414***
[0.0479]	[0.0909]	[0.000888]	[0.00639]	[0.00361]	[0.0327]

El Salvador 2008	Mexico 2008	Paraguay 2009	Peru 2009	Uruguay 2010
-0.268***	-0.316***	-0.465***	-0.279***	-0.370***
[0.000785]	[0.00913]	[0.0400]	[0.0454]	[0.0196]

Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' elaboration based on Household Surveys

Table 8
Informality-related average wage gaps and wage gaps in different percentiles of the unconditional labor income distribution

	OLS	q10	q20	q30	q40	q50	q60	q70	q80	q90
ARGENTINA										
2010	-0.438***	-0.633***	-0.754***	-0.716***	-0.626***	-0.512***	-0.374***	-0.278***	-0.159***	-0.0711***
	[0.0131]	[0.0164]	[0.0161]	[0.0161]	[0.0142]	[0.0230]	[0.0140]	[0.0102]	[0.0116]	[0.0197]
2003	-0.428***	-0.390***	-0.403***	-0.282***	-0.661***	-0.799***	-0.640***	-0.504***	-0.336***	-0.197***
	[0.0111]	[0.0241]	[0.0226]	[0.0240]	[0.0399]	[0.0243]	[0.0257]	[0.00297]	[0.0309]	[0.0222]
BRAZIL										
2009	-0.281***	-0.932***	-0.296***	-0.227***	-0.239***	-0.180***	-0.145***	-0.117***	-0.128***	-0.122***
	[0.00412]	[0.00856]	[0.00466]	[0.00508]	[0.00426]	[0.00570]	[0.00423]	[0.00559]	[0.0160]	[0.0107]
2001	-0.319***	-0.698***	-0.345***	-0.370***	-0.319***	-0.273***	-0.221***	-0.202***	-0.176***	-0.147***
	[0.00470]	[0.0185]	[0.00929]	[0.00739]	[0.00479]	[0.00920]	[0.00525]	[0.0118]	[0.0113]	[0.0165]
CHILE										
2009	-0.216***	-0.500***	-0.216***	-0.137***	-0.106***	-0.125***	-0.136***	-0.124***	-0.124***	-0.0551***
	[0.00644]	[0.0372]	[0.0179]	[0.00718]	[0.00345]	[0.00474]	[0.00855]	[0.00671]	[0.0168]	[0.0101]
2000	-0.270***	-0.626***	-0.375***	-0.249***	-0.212***	-0.218***	-0.202***	-0.168***	-0.121***	-0.0673***
	[0.00702]	[0.0197]	[0.0172]	[0.00602]	[0.0101]	[0.0155]	[0.00508]	[0.00503]	[0.00737]	[0.0162]
MEXICO										
2008	-0.197***	-0.265***	-0.270***	-0.274***	-0.258***	-0.261***	-0.276***	-0.221***	-0.194***	-0.115***
	[0.00872]	[0.0167]	[0.0124]	[0.0144]	[0.0111]	[0.00481]	[0.0165]	[0.00996]	[0.0138]	[0.0265]
2000	-0.161***	-0.195***	-0.262***	-0.318***	-0.311***	-0.283***	-0.245***	-0.197***	-0.0986***	0.0618*
	[0.0163]	[0.0237]	[0.0243]	[0.0152]	[0.0272]	[0.0204]	[0.0197]	[0.0272]	[0.0346]	[0.0359]
PARAGUAY										
2009	-0.163***	0.00137	-0.165***	-0.197***	-0.257***	-0.314***	-0.291***	-0.367***	-0.284***	-0.121
	[0.0286]	[0.0336]	[0.0301]	[0.0525]	[0.0307]	[0.0417]	[0.0412]	[0.0678]	[0.0424]	[0.0955]
2004	-0.212***	0.0284	-0.121***	-0.227***	-0.303***	-0.417***	-0.461***	-0.532***	-0.357***	-0.0542
	[0.0257]	[0.0337]	[0.0186]	[0.0180]	[0.0356]	[0.0392]	[0.0540]	[0.0690]	[0.0670]	[0.143]
URUGUAY										
2010	-0.248***	-0.690***	-0.524***	-0.420***	-0.317***	-0.207***	-0.106***	-0.0191	0.0546***	0.144***
	[0.0111]	[0.0178]	[0.0189]	[0.00931]	[0.0101]	[0.0109]	[0.0180]	[0.0219]	[0.0112]	[0.0191]
2006	-0.349***	-0.674***	-0.600***	-0.541***	-0.447***	-0.351***	-0.269***	-0.211***	-0.130***	-0.0288***
	[0.00751]	[0.0115]	[0.00648]	[0.0131]	[0.0158]	[0.0109]	[0.0102]	[0.0123]	[0.0153]	[0.00326]

Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' elaboration based on Household Surveys

Table 9
Theil- index dynamic decomposition

	Variation of Theil Index	Effects (%)			
		Between	Within	Composition	Total
ARGENTINA (2003-2010)	-0.092	-19.4	89.8	29.6	100
BRAZIL (2001-2009)	-0.087	10.2	85.0	4.8	100
CHILE (2000-2009)	-0.013	63.7	42.8	-6.5	100
MEXICO (2000-2008)	-0.019	14.5	104.3	-18.8	100
PARAGUAY (2004-2009)	-0.010	-13.4	90.2	23.2	100
URUGUAY (2006-2009)	-0.030	4.4	70.7	24.9	100

Source: Authors' elaboration based on Household Surveys

Table 10
Household per capita income by source in Latin America
Selected countries and years

	ARGENTINA		BRAZIL		CHILE		MEXICO		PARAGUAY		URUGUAY	
Income sources	**2003**	**2010**	**2001**	**2009**	**2000**	**2009**	**2000**	**2008**	**2004**	**2009**	**2006**	**2010**
Total labor income	**78%**	**81%**	**78%**	**76%**	**79%**	**83%**	**86%**	**85%**	**81%**	**83%**	**68%**	**70%**
Registered wage earning jobs	44%	52%	39%	42%	43%	44%	38%	36%	18%	25%	44%	46%
Non- registered wage earning jobs	14%	12%	11%	10%	5%	9%	24%	28%	28%	28%	4%	4%
Non-wage earning jobs	19%	17%	28%	24%	31%	30%	24%	20%	35%	29%	20%	20%
Pensions	**13%**	**14%**	**19%**	**20%**	**8%**	**7%**	**5%**	**6%**	**5%**	**6%**	**22%**	**20%**
Public cash transfers	**2%**	**1%**	**0%**	**1%**	**1%**	**2%**	**1%**	**2%**	**0%**	**0%**	**1%**	**2%**
Other non-labor incomes	**7%**	**4%**	**3%**	**2%**	**12%**	**7%**	**8%**	**7%**	**14%**	**11%**	**8%**	**8%**

Source: Authors' elaboration based on Household Surveys