

The University of Manchester  
Brooks World  
Poverty Institute

MANCHESTER  
1824

***Labour informality in Latin America: the case  
of Argentina, Chile, Brazil and Peru***

**<sup>1</sup> Universidad Nacional de  
General Sarmiento and  
CONICET,  
Argentina**

**rmaurizi@ungs.edu.ar**

**Brooks World Poverty  
Institute  
ISBN : 978-1-907247-64-4**

***Roxana Maurizio*<sup>1</sup>**

**April 2012**

**BWPI Working Paper 165**

*Creating and sharing knowledge to help end poverty*

[www.manchester.ac.uk/bwpi](http://www.manchester.ac.uk/bwpi)

## **Abstract**

Analysis of labour informality is very relevant in Latin America. More than half of all workers in the region are employed in informal activities, mainly as own-account workers or wage earners in small enterprises. A similar percentage of people work in jobs not registered in the social security system. The aim of this paper is to analyse two important aspects related to informality from a comparative point of view. The first is the association of informality, labour precariousness and income segmentation. The second is the relationship between informality and poverty. In order to conduct this study, four countries were selected – Argentina, Brazil, Chile and Peru – whose informal sectors and informal employment are significantly different from each other. Data used in this paper come from household surveys with the most recent available information.

**Keywords:** labour informality, income segmentation, Latin America, poverty, social protection

**Roxana Maurizio** is a researcher at the Universidad Nacional de General Sarmiento and CONICET, Argentina.

## **Acknowledgements**

A previous version of this paper was presented at The Informal Sector and Informal Employment Conference, 6-7 May 2010, Hanoi. I would like to thank Luis Beccaria, Aureo de Paula and participants of this conference for their thoughtful comments and also Ana Laura Fernández and Paula Monsalvo for their valuable collaboration.

## **Introduction**

Latin America continues to be characterised by high inequality and poverty. A highly precarious labour market in the context of a very limited social protection system lies behind this situation. In turn, the meagre coverage of unemployment insurance compels individuals who do not have a job in the formal sector to quickly resort to other labour alternatives, such as precarious jobs or own-account activities, since they are not able to undertake an extensive job search.

At the same time, given the lack of an extended social protection system, a strong link between the individuals' labour situation and the poverty situation of the households to which they belong is verified. In fact, poor labour insertion – in terms of the amount of working hours and the quality of the job – constitutes the '*working poor*' phenomenon that prevails in Latin American countries, suggesting that having a job is no reassurance against poverty.

Hence, in a region with a high incidence of informality, precariousness and poverty, it is relevant to analyse how these phenomena relate to each other. This paper aims at analysing two aspects associated with informality from a comparative point of view. The first one is the association between informality and income segmentation. The second is the relationship between informality and poverty and, especially, the direct and indirect mechanisms through which this association is verified.

Four Latin American countries were selected whose labour informality differs significantly one from another in size and characteristics. On the one hand, Argentina and Chile, whose informal sectors are relatively small in the Latin American context; on the other hand, Brazil and Peru, where the opposite is verified. Data used in this paper come from household surveys with the most recent available information. The study is the first to analyse the links between informality, segmentation and poverty in Latin America from a comparative perspective.

The document follows with a review of different conceptual frameworks on informality and income segmentation. Section 2 details the alternative criteria for measuring informality, as well as the estimation methods used. Section 3 describes the sources of information. Section 4 presents an initial outlook on informality incidence and its characteristics in the countries selected. The two following sections show the econometric results: in Section 5 those related to the existence of labour income gaps associated with informality; in Section 6 those related to the independent impact of the latter on poverty incidence. Finally, Section 7 presents the conclusions.

## **1. Informality, income segmentation and poverty: some theoretical issues**

### **1.1 Employment in the informal sector and informal employment**

Labour informality is one of the categories of analysis that has greatly contributed to the characterization of labour conditions in Latin America. There are at least two different approaches with different associated conceptualisations related to labour informality, as shown below:

Approach	Related concepts
Productive	Informal sector / formal sector. Employment in the IS/ employment in the FS
Labour	Informal employment (informal workers)/formal employment (formal workers)

The concept of *informal sector* (IS) emerged in the early 1970s, in the International Labour 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 labour 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 labour force. The IS is usually associated with small productive units with low levels of productivity and where the aim is survival more than accumulation. Jobs generated in this sector constitute *employment in the informal sector* (EIS).

Along with this conceptualisation based on a 'productive approach', *informal employment* (IE) is another concept that has developed in more recent years. Based on a 'labour 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 labour regulations, defining IE as that of workers not covered by labour legislation.

In this paper, both the 'productive approach' and the 'labour approach' will be considered, so as to identify the distinctive characteristics of each dimension and the interrelation between them.

## 1.2 Informality and income segmentation

The concept of income segmentation is used here to refer to labour 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 paper evaluates whether two workers with equal personal attributes obtain different remunerations because one works in the *formal sector* (FS) and the other in the IS. The same reasoning is applied to labour income differentials between IE and formal employment (FE).

Informality defined according to any of the two approaches – productive and labour – is consistent with both situations with and without income segmentation. In the latter case, for example, under the 'productive approach' it could be argued that were there no restrictions, the excess of labour 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 'labour 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 labour 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 labour mobility or other restrictions generated by labour 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-fulfilment 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 Groisman, 2008). 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 labour turnover, or to encourage higher work efforts.<sup>1</sup> 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 labour 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 'labour approach', it could be said that the fulfilment of labour norms not only affects total labour 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 labour legislation or unions, while others with equal attributes are not.

Lastly, if the two approaches overlap and the non-fulfilment of labour 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 labour institutions, such as the minimum wage.

On the workers' side, an important condition for these results to manifest is the presence of a deficit in the creation of formal jobs or within the formal sector, which makes them accept lower remunerations or more precarious working conditions. This behaviour is, in turn, encouraged by the lack or weakness of social protection mechanisms. To a greater or lesser extent, this is the case in Latin American countries.

---

<sup>1</sup> Stiglitz (1981); Shapiro and Stiglitz (1984).

### **1.3 Informality and poverty**

It is possible to identify a relationship between informality and poverty that may or may not be mediated by segmentation. In the former case, as long as segmentation implies that certain workers are not able to obtain sufficient remuneration to meet the needs of the households they belong to, informality will constitute an independent factor related to the households' poverty situation.

The case without segmentation associated with informality may occur when the situation of poverty is a result of workers not being able to obtain sufficient remunerations in any of the two circumstances, formality and informality, due to some personal characteristics. But, if these characteristics are more frequent in informal than in formal workers (or in the IS than FS), then this different composition of employment would mean that informal workers (EIS) would be obtaining, on average, lower remunerations than formal workers (EFS) and would thus face a higher probability of falling into poverty. This could be identified as a 'composition effect'. As mentioned by Beccaria and Groisman (2008), this could be the case of low-skilled workers, who obtain low wages regardless of being informal or formal, if they are overrepresented in the informal sector and/or within informal occupations.

By taking all these different arguments into account, this document aims at evaluating the presence of possible associations between informality, segmentation and poverty in four Latin American countries.

## **2. Approach and methodology**

### **2.1 Measurement of informality**

The ILO's 15th and 17th International Conference of Labour Statisticians (ICLS) have established the classification criteria for formal and informal workers. According to the 'productive approach', the 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 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, as mentioned, the IE is defined as the occupational group for which labour regulations are not fulfilled: non-registered wage earners, and own-account workers and employers that do not fulfill their tax obligations.

Also on the ILO's recommendation, 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 FS being, simultaneously, part of the EIS or the 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.

The following chart details the classification of workers taking both approaches into account:

	<b>Formal employment</b>	<b>Informal employment</b>
<b>Employment in the formal sector</b>	- Formal wage earners (registered wage earners) in the FS - Formal non-wage earners	- Informal wage earners (non-registered wage earners) in the FS
<b>Employment in the informal sector</b>	- Formal wage earners (registered wage earners) in the IS	- Informal wage earners (non-registered wage earners) in the IS - Informal non-wage earners - Unpaid family workers

## 2.2. Absolute poverty line approach to poverty identification

The absolute poverty line approach to identify poverty is used in this paper following each country's official methodology, with the exception of Peru. Specifically, a household is classified as poor if its total monetary income – as measured in the household survey – is below an absolute poverty line that takes the household's size and composition into account.<sup>2</sup> In Peru, instead, official poverty is calculated based on the comparison between the poverty line and the total expenditures of the household. In this case, in order to apply the methodology explained below, a new household poverty status comparing total income with the poverty line was built.

<sup>2</sup> The value of a normative food basket satisfies nutritional requirements considering the consumption pattern of a 'reference population'. The overall poverty line is computed by multiplying the value of the normative food basket by the inverse of the Engel coefficient observed in the reference population. These poverty lines were built following the approach by Orshansky (1965) for the USA, which was later on generalized for Latin America by ECLAC (1991). The value of the poverty line is regularly updated according to the variation of food basket prices and the changes experienced by the food/non-food consumer price ratio.

## 2.3 Methodology

The analysis conducted in this paper is structured in two major parts. In the first, the objective is to estimate income gaps associated with informality. Under the hypothesis of segmentation related to informality, workers in the IS and/or informal workers should be receiving lower wages than workers with similar personal characteristics working in the FS or as formal workers, respectively. In the second part, the aim is to evaluate to what extent the income segmentation associated with informality is an independent factor related to poverty.

To do this, several parametric and non-parametric methods were performed, in order to give greater robustness to the results. Each of these methods is described in detail below.

### ***Income gap, informality and segmentation***

1. First, average wage gaps between the IE (EIS) and the FE (EFS) are estimated by using Mincer Equations by OLS regression. This is the most common approach when analysing the effect of one independent variable on labour 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)<sup>3</sup> 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.<sup>4</sup>

3. From the estimates of wage equations, the Oaxaca-Blinder Decomposition Method allows the decomposition of average income gaps between formal and informal workers (or of the FS and IS) 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 (or worker of the FS) gets a higher wage than an informal worker (or worker of the IS). These estimates are also corrected by the sample selection bias.

4. Another way to measure segmentation associated with informality is through individual wage gaps between formal and informal workers. In this case, income segmentation is measured by considering the difference between an informal worker's income and the income he/she would obtain if he/she worked formally (i.e. counterfactual income of the informal worker). In order to calculate the latter, the first step is to estimate wage equations for formal workers and then apply

---

<sup>3</sup> Koenker and Bassett (1978).

<sup>4</sup> Tannuri-Pianto and Pianto (2002) apply a similar procedure for Brazil.



the resulting parameters to each informal worker taking his/her characteristics into account. These parameters are estimated by OLS. Once the wage gap is obtained for each informal worker, it is possible to obtain the distribution of this variable and estimate not only the mean value but also other indicators with appropriate properties for the analysis of discrimination and segmentation.<sup>5</sup> The individual gap is obtained as follows:

$$Gap_{ij} = \frac{e_{ij} - w_{ij}}{e_{ij}} \quad [1]$$

where  $e_{ij}$  is the counterfactual estimate of the  $j$ -th individual's income as if he was formal, whereas  $w_{ij}$  is the estimated wage for the informal worker based on the parameters estimated for informal workers.

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

$$\theta_{ATT} = E(\tau | D = 1) = E[Y(1) | D = 1] - E[Y(0) | D = 1] \quad [2]$$

where  $E[Y(1) | D = 1]$  is the expected value for the treated group, given that it was under treatment, and  $E[Y(0) | D = 1]$  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,<sup>6</sup> 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 analysing, the IE (and the EIS) is considered as being the treated group, whereas the FE (and the EFS) is 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:

$$ATT = \frac{1}{N_n} \sum_{i \in n} \left( w_i - \sum_{j \in f} \kappa_{ij} w_j \right) \quad [3]$$

<sup>5</sup> Del Río *et al.* (2006) applied the individual gap method to estimate wage discrimination between men and women in Spain.

<sup>6</sup> Developed by Rosenbaum and Rubin (1983).

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

### ***Informality and poverty***

As mentioned, one of the objectives of this study is to evaluate to what extent the income segmentation associated with informality is a relevant factor to explain the poverty situation of households.

Hence, after estimating the wage gaps associated with informality, the independent impact of informality on poverty is computed. In order to do so, microsimulation exercises that simulate what poverty rate would result if the IE received the same remuneration as the formal workers (or if the EIS were paid as the EFS) were performed. A counterfactual total family income is calculated by multiplying the actual monthly remuneration of informal workers by the value of the ratio between the estimated income of a formal worker and that of an informal worker with equal attributes.<sup>7</sup> It is assumed that the rest of the family incomes remain constant. Finally, the counterfactual total family income is compared to the poverty line value in order to estimate what the poverty would be in the absence of segmentation due to informality.

### **3. Source of information**

Data used in this paper come from the regular household surveys of each country considered. For each case, the most recent microdata base available was used:

- Argentina. Encuesta Permanente de Hogares (EPH). Second semester 2006.
- Brazil. Pesquisa Nacional por Amostra de Domicílios (PNAD). 2006.
- Chile. Encuesta de Caracterización Socioeconómica Nacional (CASEN). 2006.
- Peru. Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza (ENAH). 2007.

As mentioned above, non-registered employees are those wage earners not covered by labour legislation. The empirical identification of the wage earners' registration condition in each of these countries was based on the availability of information derived from these databases. 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 to be registered if he/she has signed a labour contract. In Peru, registered workers are those who are affiliated to a pension system.

---

<sup>7</sup> The estimated labour incomes are those previously obtained by OLS.

Given the strong heterogeneity between urban and rural labour markets and due to the fact that the Argentine household survey only covers urban areas, this paper will concentrate only on this zone.

#### 4. Overview of informality in four Latin American countries

The aim of this section is to present a general outlook of the importance and characteristics of IE and EIS in each of the four countries under study. Table 1 shows that employment in the informal sector and informal employment represent more than a third of total workers in these countries. Peru is placed at one extreme, where EIS (including domestic workers) represents 56 percent of the employed workforce, whereas IE (including informal domestic workers) reaches 67 percent of total workers. At the other extreme, in Chile these figures fall to 35 percent and 38 percent, respectively.

**Table 1. Share of informality in the urban labour market 2006-07**

<b>Categories</b>	<b>ARGENTINA</b>	<b>PERU</b>	<b>BRAZIL</b>	<b>CHILE</b>
Formal non-wage earners	4.4	5.6	2.8	3.7
Informal non-wage earners	21.6	31.1	22.6	20.6
Formal wage earners in FS	38.4	24.8	36.2	51.8
Informal wage earners in FS	10.4	13.5	10.3	9.1
Formal wage earners in IS	3.8	2.2	5.6	4.0
Informal wage earners in IS	10.6	10.7	8.7	3.8
Formal domestic service	0.8	0.6	2.5	2.3
Informal domestic service	8.7	5.0	6.4	3.9
Unpaid familiar workers	1.3	6.4	4.9	0.9
<b>Total Employment</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Employment in the Informal Sector (includes domestic services)	<b>46.8</b>	<b>56.1</b>	<b>50.6</b>	<b>35.4</b>
Employment in the Informal Sector (excludes domestic services)	<b>37.3</b>	<b>50.5</b>	<b>41.8</b>	<b>29.3</b>
Informal Employment (includes informal domestic services)	<b>52.6</b>	<b>66.8</b>	<b>52.9</b>	<b>38.3</b>
% Informal wage-earners in the total wage earners	<b>40.8</b>	<b>51.5</b>	<b>36.5</b>	<b>22.4</b>

Source: Author's elaboration based on data from Household Surveys.

In all cases IE is higher than EIS. If domestic service is excluded, the reduction of the relative importance of EIS is bigger in Argentina – due to the higher proportion of these activities in total employment – than in other countries. The difference between Argentina-Chile on one side and Brazil-Peru on the other becomes, thus, more evident.

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, where they represent approximately one-third of total employment. In Chile, half of the total workers are formal wage earners in the formal sector, while that figure diminishes to around 40 percent in Argentina and Brazil (although they still represent the majority) and to 25 percent in Peru. In all countries the most important groups are informal non-wage earners (due to the importance of independent workers) and formal wage earners of the formal sector. Formal

wage earners in the informal sector and formal non-wage earners are of little importance in all cases.

Nevertheless, beyond these differences, this general overview shows the importance that the informal sector, informal employment and wage earners not registered in the social security system have in the occupational structure in all countries analysed.

As for the composition of informality in terms of different attributes, some common patterns arise (Table A.1). In all cases a very high proportion of workers who have not finished secondary school is observed among informal workers (for example, it reaches 69 percent in Brazil). The incidence of low skilled workers in the informal sector is even higher. The opposite situation is verified among formal workers and workers of the formal sector. A similar scenario arises if the analysis is restricted to the group of wage earners. For example, in Brazil workers without a secondary education represent almost 70 percent of total non-registered wage earners (40 percent among registered) while that figure drops to four percent for workers with a university degree (16 percent of registered wage earners).

Women have a higher proportion in informality than in total occupation. This is particularly evident for the case of Peru, where while they concentrate almost one half of IE and EIS, their share decreases to 37 percent and 39 percent of FE and EFS, respectively. In Argentina and Brazil, although the general bias of women to informality is also observed, differences in the distribution of IE and EIS between men and women are less important than in the two remaining countries. If the analysis is restricted to wage earners, the differences in occupational insertion according to gender widen. However, given the strong predominance of men in the labour markets in these countries, they are the majority in informality in almost all cases, even though their 'specific informality rate' is lower than that of women (Table A.1).

It is also observed that the share of young workers and the elderly is higher in IE and EIS (except for the case of the elderly in Peru) than in total employment. In the case of the young, these findings intensify among wage earners, since their share in non-registered jobs more than doubles that corresponding to jobs registered in the social security system. On the contrary, this divergence decreases if the composition of the formal and informal sectors is observed. The opposite occurs with the elderly, where the differences in favour of the informal sector are clearly higher than those observed between FE and IE. This is in part explained by the higher incidence of independent workers among adult workers (Table A.1).

Additionally, the importance of IE and EIS varies across industries. In general, informality has a higher relative incidence in commercial activities, construction and domestic service, while the contrary is verified in the case of manufacturing, the public sector, financial services and – to a lesser extent – personal services. A similar picture arises among wage earners, where the former three industries concentrate more than 60 percent of informal activities in Argentina and Brazil or around 50 percent in Peru and Chile (Table A.1).

It is also relevant to point out the close correlation between being a non-registered wage earner and a worker in the informal sector (Table 2). Approximately 45 percent of the total non-registered

wage earners work in the informal sector in Chile and Peru, whereas this figure increases to 65 percent and 68 percent in Argentina and Brazil, respectively. On the other hand, more than half of wage earners in the informal sector in Chile are not registered in the social security system, reaching almost 90 percent in Peru. This suggests the precarious character of the jobs generated in the informal sector where, probably, the combination of low productivity and non-fulfilment of labour regulation results in low wages.

**Table 2. Employment in the informal sector and non-registered wage earners**

	ARGENTINA						PERU					
	Registered		Non-registered		Total	Registered		Non-registered		Total		
Formal Sector	78.7	89.3	21.3	35.2	100	67.2	58.3	92.0	41.7	53.6	100	70.8
Informal Sector	19.4	10.7	80.6	64.8	100	32.8	12.3	8.0	87.7	46.4	100	29.2
Total		100		100	100		100		100	100	100	100

	BRAZIL						CHILE					
	Registered		Non-registered		Total	Registered		Non-registered		Total		
Formal Sector	85.1	82.6	14.9	31.9	100	66.8	84.4	88.4	15.6	54.4	100	80.5
Informal Sector	36.0	17.4	64.0	68.1	100	33.2	45.9	11.7	54.1	45.6	100	19.5
Total		100		100	100		100		100	100	100	100

Source: Author's elaboration based on data from Household Surveys.

Finally, there is a positive correlation between informality and poverty. The incidence of poverty among workers in informal jobs or the informal sector is between two and five times that observed among formal workers. This leads to the fact that, for example, around one-third of informal workers are poor in Argentina and Brazil, while only five percent and ten percent of formal workers are in that situation, respectively (Table A.1).

Therefore, the results presented in this section allow us to conclude that informal workers (also workers in the informal sector and non-registered wage earners) have – on average – a lower educational level than formal workers, they show a higher presence of young people and women, and are more prevalent than formal workers in commercial activities, construction and domestic service. This differential structure suggests *a priori* that *informals*<sup>8</sup> will have lower average incomes than formals because these workers have a vector of personal characteristics that are usually less remunerated; that is to say, there is a 'composition effect' against *informals*. The next section analyses to what extent the wage gaps are explained, also, by differences in the returns obtained by *formals* and *informals* for each of the considered characteristics.

## 5. Empirical evidence about informality and income segmentation

The results obtained from the parametric and non-parametric methods detailed in Section 2.3 are presented in this section. In particular, Table 3 shows the income gaps obtained from OLS method for all workers. These figures correspond to the dummy variables that identify informality – IE and EIS – in the income equations. Dependent variable is, alternatively, the log of monthly or hourly incomes. The complete regressions are shown in Table A.2.

<sup>8</sup> *Informals* refers both to IE and EIS. In a similar way, *formals* is used to refer to the group of FE and EFS.

**Table 3. Labour income gaps. Mincer equations by OLS**

	<b>Argentina</b>	<b>Peru</b>	<b>Brazil</b>	<b>Chile</b>
<b>IE/FE</b>				
Monthly wages	<b>-0.655***</b> [0.00733]	<b>-0.324***</b> [0.0181]	<b>-0.245***</b> [0.00374]	<b>-0.103***</b> [0.00465]
Hourly wages	<b>-0.517***</b> [0.00676]	<b>-0.258***</b> [0.0177]	<b>-0.200***</b> [0.00382]	<b>-0.0140***</b> [0.00468]
<b>EIS/EFS</b>				
Monthly wages	<b>-0.486***</b> [0.00798]	<b>-0.390***</b> [0.0175]	<b>-0.179***</b> [0.00405]	<b>-0.0109**</b> [0.00479]
Hourly wages	<b>-0.387***</b> [0.00725]	<b>-0.298***</b> [0.0171]	<b>-0.135***</b> [0.00413]	<b>0.0724***</b> [0.00480]

Standard errors in brackets

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

Source: Author's elaboration based on data from Household Surveys.

A statistically significant 'penalty' due to informality is verified in the four countries, both for being an informal worker (IE) and for being employed in the informal sector (EIS). The gaps are wider between monthly incomes than between hourly incomes. This indicates that informal workers obtain lower remunerations, not only because of a lower income per hour, but also because they work fewer hours. Beyond this general picture, the magnitude of the gap is clearly different across countries. Specifically, the gap of monthly labour income between IE and FE is near 66 percent in Argentina, 32 percent in Peru, 25 percent in Brazil and 10 percent in Chile.

The labour income gaps are also statistically significant if the comparison is made between workers of the informal and formal sectors. However, except for Peru, a narrower gap is observed in this case, indicating that informality measured through the labour relationship (IE) seems to be more important than informality measured through the 'productive approach' (EIS). In this case, the 'penalty' of monthly labour income is 48 percent in Argentina, 39 percent in Peru, 18 percent in Brazil and one percent in Chile. In the latter case, the gap between EIS and EFS seems to arise only because of the difference in the working hours, because for the hourly income the gap reverts its sign.

As mentioned above, OLS estimates the effects of the covariates only in the centre 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. To do that, QR are applied both to monthly and hourly labour incomes. The results shown in Tables A.3 and Graph A.1<sup>9</sup> suggest that the gap associated with informality is not constant through income distribution, but it is wider in the lower extreme. What is more, in Chile and Brazil the difference reverses at the top of the conditional distribution. This result is verified for both monthly and hourly incomes.

Very interesting findings arise from the decomposition of the differences of monthly incomes obtained applying the Oaxaca-Blinder procedure for both approaches of informality (Table 4).

<sup>9</sup> Only coefficients of informality are shown.

**Table 4. Oaxaca-Blinder decomposition monthly income**

	Argentina		Peru		Brazil		Chile	
	IE/FE	EIS/EFS	IE/FE	EIS/EFS	IE/FE	EIS/EFS	IE/FE	EIS/EFS
Difference	-1.019*** [0.00765]	-0.848*** [0.00829]	-0.900*** [0.0151]	-0.855*** [0.0151]	-0.476*** [0.00440]	-0.678*** [0.00451]	-0.350*** [0.00562]	-0.262*** [0.00542]
Endowments	-0.335*** [0.00683]	-0.322*** [0.0335]	-0.417*** [0.0186]	-0.480*** [0.0377]	-0.207*** [0.00344]	-0.367*** [0.00405]	-0.229*** [0.00324]	-0.214*** [0.00352]
Coefficients	<b>-0.544***</b> [0.0125]	<b>-0.296***</b> [0.0516]	<b>-0.279***</b> [0.0222]	<b>-0.313</b> [0.306]	<b>-0.162***</b> [0.00411]	<b>-0.160***</b> [0.0351]	<b>-0.100***</b> [0.00611]	<b>-0.0643***</b> [0.00575]
Interaction	-0.140*** [0.0123]	-0.230*** [0.0610]	-0.204*** [0.0253]	-0.0627 [0.308]	-0.106*** [0.00375]	-0.151*** [0.0351]	-0.0207*** [0.00467]	0.0163*** [0.00435]

Standard errors in brackets

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Source: Author's elaboration based on data from Household Surveys.

First, in all cases, the total difference of mean incomes is significantly larger than that found using OLS and QR. Second, when this difference is decomposed in the three above-mentioned components, 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 (or a worker in the informal sector) receives a lower wage than a similar formal worker (or a worker in the formal sector). However, in all cases (with the exception of Chile when comparing the FS and the IS) the wage gap seems to be smaller than that obtained through the value of the dummy for informality in the OLS regressions.

Third, the 'endowments effect' also proves to be significant and negative. This effect is, in most cases, the factor explaining the highest proportion of the income gap. This reflects the fact that formal workers (workers in the formal sector) have a more favourable vector of characteristics than that of informal workers (workers in the informal sector), as described in the previous section. Specifically, it has been shown that *formals* have more human capital and a lower proportion of women – who are usually discriminated against in the labour market and thus receive lower wages than men with similar attributes. Thus, total labour income gaps between *formals* and *informals* are explained not only because the former have a more favourable endowment vector, but also because the returns to their attributes are higher than those of *informals*.

The estimation of the average income gaps also confirms that informality has a negative independent effect on monthly labour incomes. As shown in Table 5, the gap between informal and formal workers is -0.7 percent in Argentina, -0.64 percent in Peru, -0.29 percent in Brazil and -0.11 percent in Chile.

**Table 5. Average of individual income gaps monthly income**

	Argentina	Peru	Brazil	Chile
<b>IE/FE</b>	-0.7044***	-0.6355***	-0.2884***	-0.1092***
<b>EIS/EFS</b>	-0.3551***	-1.0035***	-0.2911***	-0.0395***

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Source: Author's elaboration based on data from Household Surveys.

Finally, the non-parametric estimates based on the matching estimator method (Table 6) are consistent with previous results and confirm again the existence of a 'penalty' for informality.

Specifically, the value of the ATT is significant and negative in all cases, even when the magnitude of the differences tends to be larger than those found with the previous methods.

**Table 6. Matching estimator method monthly income**

	<b>Argentina</b>	<b>Peru</b>	<b>Brazil</b>	<b>Chile</b>
Informal Employment	<b>-0.759***</b> [0.00819]	<b>-0.666***</b> [0.00968]	<b>-0.416***</b> [0.000713]	<b>-0.147***</b> [0.00326]
Informal Sector	<b>-0.287***</b> [0.0414]	<b>-0.560***</b> [0.00809]	<b>-0.301***</b> [0.00225]	<b>-0.0296***</b> [0.000947]

Standard errors in brackets

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

Source: Author's elaboration based on data from Household Surveys.

Also, in line with previous results, income gaps seem to be more important in Argentina and Peru than in Brazil and Chile. This is an important result, because it does not seem to be completely related to the size of informality. In particular, even if it is possible to think that the wider wage gap in Peru and the lower wage gap in Chile would account for a direct relationship between the relative weight of informality and the magnitude of the wage gap, this does not seem to be the case in Argentina and Brazil. The share of the informal sector is very similar in both these countries, but the penalty is significantly higher in Argentina than in Brazil.

Up to this point, the gaps have been estimated for informality defined by the two approaches ('productive approach' and 'labour approach'). However, it might be the case that both dimensions combine in the determination of labour incomes, which would make identification of the independent effect of each of them difficult. For example, the 'penalty' suffered by informal workers might be due to the fact that a large proportion of them work in the informal sector, as shown previously. In that case, low productivity – and not the labour relationship – might be the factor that determines the lower wages. It could also be that workers in the formal sector earn higher wages because there is a higher proportion of formal workers in this sector. This, in turn, could be a consequence of certain labour regulations, such as legal minimum wages or collective bargaining, which are less likely to be observed in the case of informal workers.

In order to measure the independent effect of each dimension, OLS regressions have been performed for monthly incomes, but this time incorporating all categories arising from the combination of both approaches. The baseline group is comprised of formal workers in the formal sector. As shown in Table 7, in Argentina all categories suffer a 'penalty' in relation to those workers. It is also possible to observe that the labour relationship is more relevant than the sector in the labour income differentials.



**Table 7. Labour income gaps between categories. Mincer equations by OLS monthly income**

Categories	ARGENTINA	PERU	BRAZIL	CHILE
Formal Non-wage earners	-0.2161***	-0.6887***	0.3246***	0.6556***
Informal Non-wage earners	-0.7271***	-0.6095***	-0.1422***	0.2271***
Informal wage earners in FS	-0.5730***	-0.2969***	-0.2016***	-0.2754***
Formal wage earners in IS	-0.2233***	-0.5177***	-0.1021***	-0.146***
Informal wage earners in IS	-0.8012***	-0.6703***	-0.4172***	-0.5081***

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

Source: Author's elaboration based on data from Household Surveys.

Chile and Brazil show similar results. In these countries, the gaps are also wider between formal and informal workers than between workers in the formal and the informal sectors. Anyhow, and consistently with previous results, the gaps are not as wide as in Argentina. Moreover, informal non-wage earners in Chile have higher incomes than the baseline group. Likewise, both in Chile and Brazil formal non-wage earners obtain the highest remunerations.

As in Argentina, formal workers in the formal sector in Peru obtain the highest wages. However, in the case of wage earners, the sector (formal/ informal) seems to be more important than the labour relationship. Finally, in all cases, both dimensions combine in such a way as to produce larger income differences than those corresponding to each dimension separately, with the group of informal workers in the IS obtaining the lowest incomes (when controlling for all remaining characteristics).

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

The question arising is which factors explain the differences in the magnitude of the income gap across countries and, especially, the wage gap among wage earners (registered and non-registered) in the FS. One hypothesis might relate these results to the role of labour institutions, such as minimum wage, collective bargaining or unions. Specifically, the difference between registered and non-registered wage earners could positively depend on how 'binding' these labour institutions are. As long as the minimum wage is relatively high in comparison with average wages or the bargaining power of unions is high, it could generate a wider wage gap between workers who are subject to these labour institutions and those who are not.

Additionally, these results might be affected by variables that are not observable and, thus, not included in the estimates. For example, other non-monetary advantages that compensate the lower wages of informality might exist, which make these jobs more attractive to certain individuals. But, given that a close link seems to exist between informality and poverty (as has been shown in previous section and will be verified in the following), the arguments suggesting that informality is a voluntary choice of workers is not likely to apply to all workers in the region. On the contrary, the

high levels of unemployment and labour precariousness experienced by these countries suggest that the insertion in informality could be the only choice for a big group of people.

## 6. Informality and poverty

With the aim of evaluating the independent impact of informality on poverty incidence, microsimulation exercises have been carried out. These exercises allow us to estimate a counterfactual household income that would result if family members who work as *informals* worked as *formals* (considering the two approaches of informality).

As shown in Table 8, in all cases the 'formalisation' of informal workers would imply a reduction of poverty rates. However, the size of this reduction differs across countries. The dissimilar results are related, at least in part, to the different magnitudes of the income gap between *formals* and *informals*. For example, in Argentina and Peru, where the income gap is wider, the reduction of poverty in individuals due to the formalisation of workers is also larger; in Argentina this reduction is about 34 percent. In Peru, the decrease in poverty is also significant, around 30 percent of the initial rate. But, given the fact that in these countries the initial incidence of poverty is very high, even if all workers were formal the percentage of poor people would remain high. The low impact of 'formalisation' in Chile was, in part, expected, given the fact that the informality gap is narrower. Finally, in Brazil the reduction is also important, but clearly lower than in Peru and Argentina.

**Table 8. Microsimulation of poverty reduction associated with formalisation of workers**

	Argentina	Peru	Brazil	Chile
<b>Initial poverty rate</b>	26.85	34.68	29.96	13.7
<b>Initial poverty gap</b>	0.4171	0.3792	0.4249	0.3179
<b>Contrafactual</b>				
<b>FE/IE</b>	17.81	24.44	26.35	13.12
<b>EFS/EIS</b>	22.59	20.69	26.32	13.61
<b>Reduction</b>				
<b>FE/IE</b>	-34%	-30%	-12%	-4%
<b>EFS/EIS</b>	-16%	-40%	-12%	-1%

Source: Author's elaboration based on data from Household Surveys.

In Table 8, the poverty gap was also included, given that it is likely to be another important factor, since the probability of exiting poverty depends not only on the absolute increase in the total family income after 'formalisation', but also on the initial distance to the poverty line. Brazil is the country with the higher poverty gap, which contributes, additionally, to the lower impact of 'formalisation'.

The fact that in some countries a high poverty incidence persists even when eliminating informality suggests that other factors also have an important influence on poverty. High unemployment and underemployment, low educational levels resulting in insufficient incomes even for formal workers (or workers in the formal sector), and high dependency rates are factors probably associated with

poverty as well. Additionally, low average labour income goes hand in hand with high income inequality, which also contributes to increased levels of poverty.

Lastly, it is important to mention that these microsimulations should be interpreted as *analytical* exercises, while the results should be interpreted as indicators of the relevance of informality in the incidence of poverty, because they do not show what would really happen in the absence of informality. The 'ceteris paribus' assumption behind these partial equilibrium exercises does not account for the fact that an important reduction of informality would surely be accompanied by other changes in the labour market – for example in the unemployment rate or in the average wages – that could also have an important impact on poverty levels.

## 7. Final remarks

The aim of this article was to analyse the links between informality, income segmentation and poverty from a comparative perspective in four Latin American countries: Argentina, Brazil, Chile and Peru.

The results suggest that informality (EI and EIS) is an important phenomenon in the four countries, even when its relevance is not the same in all cases. In one extreme, there is Peru, where the urban EIS explains approximately 56 percent of total employment and where IE reaches 67 percent of workers. At the other extreme, these figures fall to 35 percent and 38 percent, respectively, in Chile. At the same time, the share of non-registered wage earners is significant in all cases – even in Chile, where it represents about 22 percent of the total wage earners. In the rest of the countries this figure reaches 40-50 percent. This suggests a very high level of labour precariousness, given that the lack of registration in the social security system not only implies lower wages than other wage earners, but also a lack of other social benefits, like health insurance or future pensions.

In all cases, informality proved to be an independent source of lower incomes, even if controlled by an extended vector of personal and job characteristics, indicating the presence of income segmentation. Additionally, the descriptive analysis and the microsimulation exercises show a positive relationship between informality and poverty. Nevertheless, it has also been shown that the elimination of informality does not allow the eradication of poverty, suggesting the presence of other factors that affect it. The high incidence of unemployment and low educational levels resulting in insufficient incomes even for formal workers (or workers in the formal sector), together with a very unequal income distribution, are also factors associated with poverty.

Therefore, these results suggest the need to carry out different public policies in order to reduce inequality and poverty, both through labour market policies and other, more universal policies. A central issue is to reduce the share of informal and precarious employment. It implies acting both at the supply side and at the demand side of the problem: i.e. stimulating the creation of formal jobs suitable for those workers and assisting them in increasing their chances of obtaining these kinds of jobs (through training and/or better employment services, for example). The level of wages also has to be considered as an objective when trying to reduce poverty, as being employed does not always ensure leaving poverty, especially due to the high incidence of informal occupations.

On the other hand, the scope and coverage of unemployment insurance in Latin America has historically been limited. Even in those few countries that do have this kind of programme, coverage rates among the unemployed are very low. Therefore, it is essential to extend some kind of unemployment assistance to those leaving non-regular jobs. However, even if extended benefits to the unemployed are implemented, households with low and unstable labour incomes will still be facing difficulties. Therefore, and in parallel with other policies, it is necessary for these countries to reinforce cash transfer programmes aimed at low income households, at least until the labour market is able to generate enough jobs with incomes that allow households to escape poverty.

If enough jobs, especially decent ones, that generate sufficient incomes, are created, and if there is unemployment insurance that supports an active job search, the need of members of poor households to quickly accept precarious and low-paid jobs will diminish, thus reducing the flows to informality. In this regard, as mentioned in Beccaria and Groisman (2008), it is more appropriate to consider informality not as a cause of poverty, but both as the manifestation of the lack of labour opportunities in the formal sector of the economy, and as the scarcity of formal jobs in countries where policies aimed at meeting situations of social deprivation are limited or non-existent.

## Bibliography

Beccaria, L. and Groisman, F. (2008). *Argentina desigual*. Universidad Nacional de General Sarmiento, Argentina. ISBN: 978-987-630-018-6.

Del Río, C., Gradín, C. and Cantó, O. (2006). 'The measurement of gender wage discrimination: the distributional approach revisited', *Society for the Study of Economic Inequality (ECINEQ), Working Paper 2006-25*.

Economic Commission for Latin America and the Caribbean (ECLAC) (1991). 'Magnitud de la pobreza en América Latina en los años ochenta', *Estudios e informes de la CEPAL*, Santiago de Chile.

ILO (1972). *Employment, Income and Equality: a Strategy for Increasing Productive Employment in Kenya*. Geneva.

Koenker, R. and Bassett, G. (1978). 'Regression quantiles', *Econometrica*, 46, 33-50.

Orshansky, M. (1965). 'Counting the poor: another look at the poverty profile', *Social Security Bulletin*, 28(1), 3-29.

Rosenbaum, P. and Rubin, D. (1983). 'The role of propensity score in observational studies for causal effects', *Biometrika*, 70.

Shapiro, C. and Stiglitz, J. (1984). 'Equilibrium unemployment as a worker discipline device', *American Economic Review*, June.

Stiglitz, J. (1981). 'Alternative theories of wage determination and unemployment: the efficiency wage model', *Discussion Papers 95*, Princeton University.

Tannuri-Pianto, M. and D. Pianto (2002). 'Formal-informal differentials in Brazil. A semi-parametric approach', paper presented at Graduate School of Economics, Getulio Vargas Foundation.



**Table A.2. Mincer equations. OLS**

Covariates	ARGENTINA				PERU			
	Informal Employment		Informal Sector		Informal Employment		Informal Sector	
	Monthly	Hourly	Monthly	Hourly	Monthly	Hourly	Monthly	Hourly
INFORMALITY	-0.655*** [-0.00733]	-0.517*** [-0.00676]	-0.486*** [-0.00798]	-0.387*** [-0.00725]	-0.324*** [-0.0181]	-0.258*** [-0.0177]	-0.390*** [-0.0175]	-0.298*** [-0.0171]
Men	0.185*** [0.00937]	0.126*** [0.00871]	0.177*** [0.00981]	0.117*** [0.00902]	0.403*** [0.0208]	0.356*** [0.0205]	0.399*** [0.0207]	0.354*** [0.0205]
Head of Household	0.0425*** [0.0103]	0.0295*** [0.00955]	0.0457*** [0.0108]	0.0315*** [0.00989]	0.147*** [0.0297]	0.0995*** [0.0293]	0.137*** [0.0296]	0.0911*** [0.0293]
Age	0.0434*** [0.00144]	0.0367*** [0.00132]	0.0548*** [0.00150]	0.0453*** [0.00136]	0.0629*** [0.00270]	0.0605*** [0.00262]	0.0688*** [0.00267]	0.0652*** [0.00260]
Age*Age	-0.000408*** [-1.69e-05]	-0.000320*** [-1.56e-05]	-0.000521*** [-1.76e-05]	-0.000405*** [-1.60e-05]	-0.000733*** [-3.18e-05]	-0.000700*** [-3.09e-05]	-0.000774*** [-3.15e-05]	-0.000732*** [-3.07e-05]
Worked hours	0.00741*** [0.000130]	-0.0135*** [0.000171]	0.00781*** [0.000136]	-0.0126*** [0.000176]	-0.404*** [0.0252]	-0.393*** [0.0247]	-0.390*** [0.0251]	-0.384*** [0.0247]
Incom. primary or less	-0.206*** [-0.0133]	-0.181*** [-0.0123]	-0.236*** [-0.0139]	-0.203*** [-0.0127]	-0.147*** [0.0299]	-0.150*** [0.0290]	-0.160*** [0.0297]	-0.160*** [0.0289]
Incomplete secondary	0.0906*** [0.0101]	0.0909*** [0.00930]	0.0941*** [0.0106]	0.0929*** [0.00962]	0.0989*** [0.0284]	0.111*** [0.0276]	0.101*** [0.0282]	0.113*** [0.0275]
Complete secondary	0.272*** [0.00975]	0.249*** [0.00895]	0.318*** [0.0102]	0.284*** [0.00923]	0.208*** [0.0271]	0.205*** [0.0263]	0.203*** [0.0270]	0.203*** [0.0263]
Incomplete univ.	0.317*** [0.0119]	0.342*** [0.0109]	0.338*** [0.0125]	0.360*** [0.0113]	0.349*** [0.0315]	0.362*** [0.0307]	0.343*** [0.0314]	0.359*** [0.0306]
Complete university	0.538*** [0.0119]	0.568*** [0.0110]	0.595*** [0.0124]	0.614*** [0.0113]	0.560*** [0.0328]	0.526*** [0.0318]	0.541*** [0.0325]	0.516*** [0.0316]
Construction	0.0159 [0.0135]	-0.0193 [0.0123]	-0.0365*** [0.0141]	-0.0572*** [0.0127]	0.184*** [0.0333]	0.147*** [0.0324]	0.219*** [0.0332]	0.174*** [0.0324]
Trade	-0.0662*** [-0.0111]	-0.0733*** [-0.0102]	-0.0640*** [-0.0117]	-0.0714*** [-0.0106]	-0.121*** [-0.0226]	-0.0771*** [-0.0219]	-0.0697*** [-0.0227]	-0.0386* [-0.0221]
Financial services	0.0487*** [0.0142]	0.0685*** [0.0131]	0.0647*** [0.0149]	0.0825*** [0.0135]	-0.00635 [-0.0283]	0.0628** [0.0275]	0.0616** [0.0285]	0.113*** [0.0278]
Transport	0.103*** [0.0154]	0.108*** [0.0142]	0.0756*** [0.0161]	0.0838*** [0.0146]	0.166*** [0.0332]	0.199*** [0.0324]	0.179*** [0.0330]	0.210*** [0.0323]
Personal services	-0.116*** [-0.0165]	0.00332 [0.0153]	-0.111*** [0.0173]	0.00969 [0.0159]	0.0507 [0.0427]	0.127*** [0.0417]	0.00536 [0.0426]	0.0935** [0.0417]
Domestic services	-0.405*** [-0.0151]	-0.199*** [-0.0139]	-0.368*** [-0.0162]	-0.160*** [-0.0147]	-0.287*** [-0.0361]	-0.223*** [-0.0349]	-0.154*** [-0.0366]	-0.122*** [-0.0355]
Public sector	0.0221* [0.0122]	0.0738*** [0.0113]	0.0663*** [0.0128]	0.111*** [0.0117]	0.321*** [0.0286]	0.210*** [0.0282]	0.272*** [0.0287]	0.173*** [0.0284]
Other	0.0419*** [0.0143]	0.0905*** [0.0132]	0.0391*** [0.0150]	0.0905*** [0.0136]	-0.129*** [0.0267]	-0.0671** [0.0261]	-0.133*** [0.0266]	-0.0709*** [0.0260]
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lambda	-0.273*** [-0.0184]	-0.249*** [-0.0170]	-0.305*** [-0.0192]	-0.272*** [-0.0176]	-0.127* [-0.0666]	-0.213*** [-0.0652]	-0.164** [-0.0664]	-0.243*** [-0.0651]
Constant	5.564*** [0.0409]	2.895*** [0.0379]	5.174*** [0.0424]	2.572*** [0.0388]	4.137*** [0.0936]	1.849*** [0.0913]	3.995*** [0.0915]	1.729*** [0.0894]
Observations	92492	91172	92492	91172	31753	31311	31753	31311

Standard errors in brackets  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A.2. Mincer equations. OLS (cont.)**

Covariates	BRAZIL				CHILE			
	Informal Employment		Informal Sector		Informal Employment		Informal Sector	
	Monthly	Hourly	Monthly	Hourly	Monthly	Hourly	Monthly	Hourly
INFORMALITY	-0.245*** [0.00374]	-0.200*** [0.00382]	-0.179*** [0.00405]	-0.135*** [0.00413]	-0.103*** [0.00465]	-0.0140*** [0.00468]	-0.0109** [0.00479]	0.0724*** [0.00480]
Men	0.278*** [0.00612]	0.278*** [0.00624]	0.274*** [0.00617]	0.275*** [0.00628]	0.254*** [0.00958]	0.240*** [0.00964]	0.252*** [0.00961]	0.241*** [0.00963]
Head of Household	0.111*** [0.00663]	0.121*** [0.00677]	0.116*** [0.00668]	0.126*** [0.00680]	0.144*** [0.00996]	0.164*** [0.0100]	0.142*** [0.00999]	0.159*** [0.0100]
Age	0.0545*** [0.000720]	0.0548*** [0.000735]	0.0581*** [0.000724]	0.0576*** [0.000737]	0.0324*** [0.000909]	0.0312*** [0.000915]	0.0333*** [0.000911]	0.0312*** [0.000913]
Age*Age	-0.000539*** [8.78e-06]	-0.000538*** [8.96e-06]	-0.000578*** [8.81e-06]	-0.000570*** [8.98e-06]	-0.000271*** [1.03e-05]	-0.000254*** [1.03e-05]	-0.000286*** [1.03e-05]	-0.000259*** [1.03e-05]
Worked hours	0.0149*** [0.000133]	-0.0166*** [0.000135]	0.0156*** [0.000133]	-0.0160*** [0.000135]	0.0711*** [0.0141]	0.0640*** [0.0142]	0.0816*** [0.0141]	0.0695*** [0.0142]
Incom. primary or less	-0.191*** [0.00575]	-0.190*** [0.00587]	-0.203*** [0.00579]	-0.199*** [0.00590]	-0.182*** [0.00706]	-0.186*** [0.00710]	-0.187*** [0.00708]	-0.187*** [0.00709]
Incomplete secondary	0.0769*** [0.00732]	0.0795*** [0.00747]	0.0743*** [0.00737]	0.0774*** [0.00751]	0.117*** [0.00762]	0.122*** [0.00766]	0.118*** [0.00764]	0.126*** [0.00766]
Complete secondary	0.286*** [0.00692]	0.285*** [0.00706]	0.303*** [0.00696]	0.300*** [0.00709]	0.314*** [0.00826]	0.319*** [0.00831]	0.324*** [0.00828]	0.327*** [0.00830]
Incomplete univ.	0.618*** [0.00896]	0.608*** [0.00915]	0.621*** [0.00903]	0.612*** [0.00920]	0.560*** [0.0123]	0.581*** [0.0124]	0.568*** [0.0124]	0.593*** [0.0124]
Complete university	1.135*** [0.0100]	1.139*** [0.0102]	1.158*** [0.0101]	1.160*** [0.0103]	1.086*** [0.0123]	1.087*** [0.0124]	1.111*** [0.0124]	1.116*** [0.0124]
Construction	0.0176** [0.00762]	-0.00590 [0.00778]	0.00380 [0.00771]	-0.0211*** [0.00786]	0.142*** [0.00810]	0.137*** [0.00815]	0.140*** [0.00812]	0.136*** [0.00814]
Trade	-0.0121** [0.00545]	0.0188*** [0.00557]	-0.0132** [0.00554]	0.0151*** [0.00564]	0.0782*** [0.00682]	0.128*** [0.00686]	0.0673*** [0.00687]	0.112*** [0.00689]
Financial services	0.0825*** [0.00721]	0.0746*** [0.00736]	0.0920*** [0.00727]	0.0820*** [0.00740]	0.170*** [0.00946]	0.218*** [0.00951]	0.162*** [0.00948]	0.211*** [0.00950]
Transport	0.123*** [0.00833]	0.162*** [0.00850]	0.118*** [0.00840]	0.156*** [0.00855]	0.198*** [0.0114]	0.213*** [0.0115]	0.208*** [0.0114]	0.215*** [0.0115]
Personal services	-0.0311*** [0.00909]	-0.0178* [0.00928]	-0.0328*** [0.00916]	-0.0188** [0.00933]	0.0127** [0.00614]	0.0374*** [0.00618]	0.0195*** [0.00616]	0.0335*** [0.00617]
Domestic services	-0.228*** [0.00762]	-0.197*** [0.00778]	-0.182*** [0.00800]	-0.166*** [0.00816]	0.247*** [0.0177]	0.300*** [0.0178]	0.264*** [0.0178]	0.316*** [0.0178]
Public sector	0.115*** [0.00674]	0.0853*** [0.00688]	0.0930*** [0.00687]	0.0706*** [0.00700]	0.152*** [0.0181]	0.170*** [0.0182]	0.171*** [0.0181]	0.186*** [0.0181]
Other	-0.219*** [0.00626]	-0.203*** [0.00639]	-0.267*** [0.00623]	-0.245*** [0.00635]	0.0558*** [0.0164]	0.0414** [0.0165]	0.0675*** [0.0164]	0.0534*** [0.0164]
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lambda	-0.0687*** [0.0159]	-0.0487*** [0.0162]	-0.0644*** [0.0160]	-0.0458*** [0.0163]	-0.0132 [0.0186]	0.00790 [0.0187]	-0.0262 [0.0187]	-0.00527 [0.0187]
Constant	4.288*** [0.0217]	1.873*** [0.0222]	4.134*** [0.0217]	1.743*** [0.0221]	10.14*** [0.0323]	7.619*** [0.0325]	10.06*** [0.0323]	7.581*** [0.0323]
Observations	274130	274130	274130	274130	193395	193395	193395	193395

Standard errors in brackets  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



**Table A.3. Mincer equations. Quantile regression**

	<b>Taus</b>				
	q10	q25	q50	q75	q90
IE Monthly	-0.977*** [0.00795]	-0.757*** [0.000253]	-0.602*** [0.0141]	-0.475*** [0.00864]	-0.364*** [0.0170]
IE Hourly	-0.795*** [0.000147]	-0.635*** [0.0116]	-0.495*** [0.00370]	-0.393*** [0.00539]	-0.292*** [0.0107]
IS Monthly	-0.651*** [0.0426]	-0.563*** [0.00303]	-0.468*** [0.0103]	-0.386*** [0.00287]	-0.293*** [0.000241]
IS Hourly	-0.560*** [0.00677]	-0.476*** [0.0111]	-0.388*** [0.00375]	-0.316*** [0.0200]	-0.239*** [0.000349]

Standard errors in brackets

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

	<b>Taus</b>				
	q10	q25	q50	q75	q90
IE Monthly	-0.494*** [0.00863]	-0.433*** [0.000660]	-0.403*** [0.0135]	-0.403*** [0.000915]	-0.440*** [0.0176]
IE Hourly	-0.445*** [0.0389]	-0.390*** [0.0149]	-0.343*** [0.0228]	-0.334*** [0.0143]	-0.352*** [0.00583]
IS Monthly	-0.724*** [0.0147]	-0.568*** [0.0195]	-0.424*** [0.00751]	-0.326*** [0.0210]	-0.272*** [0.0259]
IS Hourly	-0.644*** [0.0550]	-0.452*** [0.0424]	-0.337*** [0.00853]	-0.231*** [0.00374]	-0.162*** [0.00811]

Standard errors in brackets

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

**Table A.3. Mincer equations. Quantile regression (cont.)**

	<b>Taus</b>				
	q10	q25	q50	q75	q90
IE Monthly	-0.555*** [0.00314]	-0.354*** [0.00417]	-0.211*** [0.00957]	-0.107*** [0.00766]	-0.0241*** [0.00211]
IE Hourly	-0.489*** [0.00457]	-0.300*** [0.00410]	-0.168*** [0.00224]	-0.0632*** [0.000970]	0.0215*** [0.00663]
IS Monthly	-0.453*** [0.00300]	-0.276*** [0.00140]	-0.145*** [0.00381]	-0.0411*** [0.0123]	0.0569*** [0.0145]
IS Hourly	-0.395*** [0.00374]	-0.228*** [0.00698]	-0.108*** [0.00745]	0.0100 [0.0158]	0.117*** [0.0139]

Standard errors in brackets

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

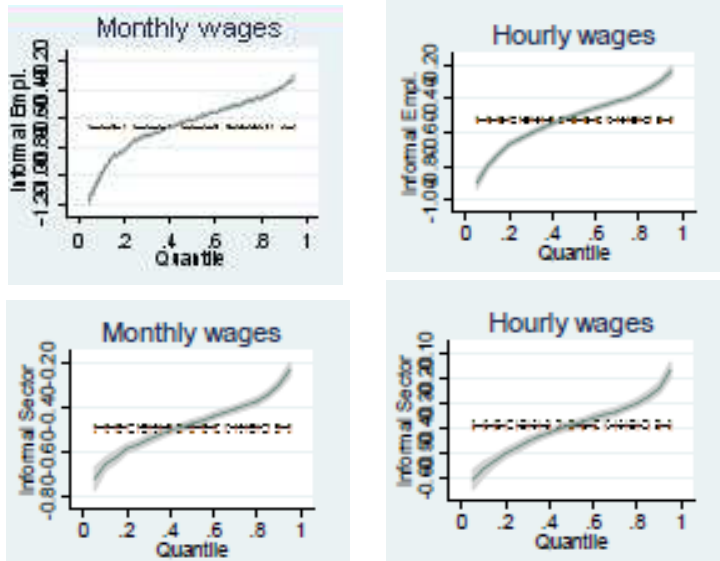
	<b>Taus</b>				
	q10	q25	q50	q75	q90
IE Monthly	-0.584*** [0.00899]	-0.318*** [0.000870]	-0.0880*** [0.000634]	0.121*** [0.00359]	0.263*** [0.00572]
IE Hourly	-0.477*** [0.00934]	-0.230*** [0.0113]	-0.0132 [0.0114]	0.207*** [0.00798]	0.368*** [0.0128]
IS Monthly	-0.363*** [0.00314]	-0.195*** [0.00939]	-0.0244*** [0.00426]	0.181*** [0.0128]	0.318*** [0.0173]
IS Hourly	-0.273*** [0.0102]	-0.125*** [0.00115]	0.0430*** [0.00390]	0.268*** [0.0101]	0.418*** [0.0192]

Standard errors in brackets

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

**Graph A. 1**  
**Income gaps associated with informality**  
**Quantile regression coefficients**

**Argentina**



**Peru**



**Graph A. 1**  
**Income gaps associated with informality**  
**Quantile regression coefficients (cont.)**

**Brazil**



**Chile**



The University of Manchester  
**Brooks World  
Poverty Institute**

MANCHESTER  
1824

**Executive Director**  
Professor David Hulme

**Research Directors**  
Professor Armando Barrientos  
Professor Rorden Wilkinson

**Contact:**

Brooks World Poverty Institute  
The University of Manchester  
Humanities Bridgeford Street Building  
Oxford Road  
Manchester  
M13 9PL  
United Kingdom

Email: [bwpi@manchester.ac.uk](mailto:bwpi@manchester.ac.uk)

[www.manchester.ac.uk/bwpi](http://www.manchester.ac.uk/bwpi)

**The Brooks World Poverty Institute (BWPI) creates and shares knowledge to help end global poverty.**

**BWPI is multidisciplinary, researching poverty in both the rich and poor worlds.**

**Our aim is to better understand why people are poor, what keeps them trapped in poverty and how they can be helped - drawing upon the very best international practice in research and policy making.**

**The Brooks World Poverty Institute is chaired by Nobel Laureate, Professor Joseph E. Stiglitz.**

[www.manchester.ac.uk/bwpi](http://www.manchester.ac.uk/bwpi)