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Labor Mobility, Informality and Wage Inequality in Brazil

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Abstract

Occupational mobility and its impacts on urban Brazilian workers' wages are analyzed in this paper. Data show high labor mobility in Brazil, especially among workers in the informal sector. The greater mobility of informal workers does not necessarily imply better wage trajectories and, further, workers' mobility is restricted by labor market segmentation. Differences in upward job movements mean that informal labor receives low wages for longer periods over a working life, leading to important consequences for income differentials in Brazil.

Key words: occupational mobility, informality, wages, inequality, Brazil.
JEL Classification: J62.

Introduction

In recent years, the ways workers change jobs and the effect of mobility on wage inequality are topics that have garnered growing interest, motivated mainly by increasingly significant flexible labor relationships, by changes in the state's role as a labor arbitrator, and by growing socioeconomic inequality. An important body of theoretical and empirical work has emerged regarding the determinants of labor flows among sectors and jobs, focusing mainly on theoretical approaches regarding "human capital" and "segmented markets."

Nonetheless, the role that occupational mobility plays in wages and workers' socioeconomic status is still uncertain. On the one hand, evidence exists that changing jobs produces a loss of human capital invested in specific skills

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(Le Grand and Tahlin, 2002). Empirical literature also underscores that job changes among workers can be a way to exit precarious labor situations and obtain greater wage equality (Holzer, Lane, and Vilhuber, 2003). On the other hand, in heterogeneous labor markets with high levels of informality, such as in Latin American, there is a shortage of empirical studies that focus on the relationship between mobility, wages, and socioeconomic conditions.

This article aims to contribute to the debate by analyzing the determinants of occupational and socioeconomic mobility among Brazilian workers, and by reviewing the impact of mobility on the wage differential among formal and informal sectors during the 1990s, a period of important institutional changes and shifts in the profile of the Brazilian workforce. Labor legislation was broadly flexibilized, encouraging the proliferation of atypical labor contracts (Cardoso, 2001). From the perspective of labor supply, the period saw a steep rise in formal skills and the massive influx of women to paid jobs (Menezes-Filho, 2001; Schmit and Ribeiro, 2003).

It is, therefore, pertinent to analyze the ways in which labor changed jobs and socioeconomic segments during the 1990s. The main results of this study indicate that workers who change occupations can improve their socioeconomic position, particularly those who hold formal job contracts. There is, however, a sizable group of workers who are permanently tied to low-productivity posts, with less upward socioeconomic mobility, a situation that helps perpetuate wage inequality. Therefore, policies aimed at creating jobs and leveling wages should consider not only current wages but also the fact that workers might in the future step up the job ladder.

The importance of these findings is underscored by comparing studies undertaken in other countries that reveal that the occupational-change function is a way out of precarious job situations (Holzer, Lane, and Vilhuber, 2003), although those same results also show that occupational segmentation reduces the positive effects of mobility.[1] Abundant literature exists regarding the role that job structure has on the inequality of the Brazilian labor market, but there are few analyses that focus on the role of job structure on future wage and socioeconomic status. Similarly, the findings here are novel within empirical literature in that they focus on the role of occupational segmentation on workers' future socioeconomic status, and not just on the current wage and inequality

[1] An example of research along these lines is Maltseva (2005).

levels. The differences of upward socioeconomic mobility imply that certain segments of the labor force, mainly women and workers with informal contracts, receive lower wages over a longer period of their life cycles, thus contributing to perpetual wage inequality.

Following this introduction, this paper consists of four additional sections. In section two we summarize pertinent theoretical and empirical discussions. Section three analyzes the impacts of mobility on Brazilian workers' socioeconomic status. Section four discusses the effects of mobility on wage differentials among formal and informal workers, and we conclude with final considerations.

Empirical review

In general, job changes among workers can be explained by means of two theoretical approaches. On the one hand, the *occupation-specific capital* approach argues that part of the investment made in human capital is financed by companies in an effort to increase labor productivity in a specific task, while it is the worker, or the state, that finances his/her own general education. In this regard, job seniority or on-the-job experience transforms labor into an almost fixed component of the occupation, while replacement of the worker entails costs for training new hires (Mincer and Jovanovic, 1979).

Research along this line has shown that workers with a higher formal skill level have a higher occupational-mobility rate, given that this type of human capital can be put to use more easily in other activities; further, seniority reduces incentives for mobility (Kambouroy and Manovskii, 2004). Similarly, findings suggest that as workers age (for some authors, a proxy for job experience), there is a lower probability of occupational changes (Booth and Francesconi, 1999), occupational change leads to a loss of investment in human capital (Le Grand and Tahlin, 2002), and mobility can accelerate the rate of wage increases (García Pérez and Sanz, 2005).

On the other hand, models in line with the theory of *segmented labor markets* emphasize that the existence of groups of workers with greater difficulties of being reassigned and of more restricted mobility is evidence of the scarce freedom workers face deciding whether or not to undertake an occupational change and in which direction movement should take place. Thus, access to jobs with higher wages is limited to certain types of workers, independently of

skills obtained due to, among other factors, discrimination and segmentation in the labor market (Doreinger and Piore, 1971).

Empirical research has turned up evidence regarding this line of analysis and has established, for example, that women have greater problems exiting low-income occupations (Holzer, Lane, and Vilhuber, 2003). In terms of the effect of mobility on wages, some authors have found a positive relationship between occupation change and higher wages, while contributing to lowering wage differentials among groups of workers; they also argue that occupational segmentation limits the benefits of mobility, especially for women (Fitzenberg and Kunze, 2005).

Analyses of the Brazilian case also report evidence that corroborates aspects of both theoretical approaches. Research on the effect of specific human capital in Brazil concludes that seniority within a company reduces the chance of leaving a job and that, given the costs of laying off workers, this effect is more pronounced among Brazil's formal-sector workers. In addition, these studies conclude that occupational mobility is higher among workers with a higher educational level (See, for example, Orellano and Picchetti (2001); Menezes-Filho, (2004).

Other analyses, however, detect significant differences in the pattern of occupational mobility depending on several factors in the labor market, especially those related to discrimination based on gender, race, age, or educational level (Oliveira and Machado, 2000). Also, mobility among persons of color does not always lead to improvements *vis-à-vis* their initial situation, and these workers tend to remain within more precarious categories, which deepen racial gaps in the Brazilian labor market (Pinto and Neri, 2000). Specifically regarding the informal labor market, Bosch and Maloney (2010) compare changes between formal and informal labor contracts in Brazil, Argentina, and Mexico, while Ruesga (2000) analyzes the case of Spain.

Summarizing, occupational mobility in Brazil seems to be a function of human capital and of elements in the segmentation of the labor market itself. Further, the effect of occupational mobility on the socioeconomic status corresponding to each occupation and on future wages of the Brazilian worker is still not clear. Evidence is still lacking in this area. In an effort to provide further information in order to analyze Brazil's situation empirically, in the next sections we examine occupational and socioeconomic mobility of employed workers and its effects on wage differences among formal and informal workers.

The determinants of occupational mobility

Our analysis of occupational mobility among Brazilian workers is based on data obtained from the *Pesquisa Mensal de Emprego* (PME) [Monthly Employment Survey][2] of the *Instituto Brasileiro de Geografia e Estatística* [Brazilian Institute of Geography and Statistics] (IBGE, 2001). The PME allows comparisons of individuals' job situations at two moments in time separated by a one-year interval. It is thus possible to observe if a worker is employed in a job that is different from the original or continues at the same post. To identify jobs, the PME uses a baseline classification at the three-digit level, for a total of 390 jobs, with concepts that are not necessarily linked to a worker's professional training, but rather are tied to the post, function, profession, or trade undertaken by the individual.

We use information exclusively about workers who were employed at the two moments of the survey, in other words, those who became unemployed were not considered for the estimations done herein. Further, the survey is restricted to employed workers between the ages of 18 and 65, classified as *employees*, and complete information is available regarding hours worked and wages. As control variables, various personal and labor market characteristics were used: a dichotomous variable for gender; age, post seniority (estimated by the number of moths the workers has been at the same job, varying between one to four months or more), and the worker's education (represented by three dummy variables: unskilled, semi-skilled, and skilled); a set of dummy variables for the branches of activity; the unemployment rate by year, and a series of dummy variables representing six metropolitan regions. Formal workers are characterized by having a registered labor contract in the worker's standard document, known as the *carteira de trabalho*.[3] Informal workers, on the other hand, lack this document.

A period of analysis between 1990 and 2001 is considered. The PME's structure in the form of a rotating panel design, with households entering and exiting

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[2] The PME is undertaken in six metropolitan regions of Brazil: Belo Horizonte (MG), Porto Alegre (RS), Recife (PE), Rio de Janeiro (RJ), Salvador (BA) y São Paulo (SP).

[3] The document *Carteira de Trabalho e Previdência Social*, established in 1932, confirms and recognizes workers and guarantees access to some of the principal labor rights. The document can be employed as a standard contract and is a requisite for most labor relationships in Brazil (with the exception of public officials and military personnel, absent from the survey). A formal worker is considered to be working in the private sector and subject to the laws pertaining to this document.

the sample in accordance to an established timeline, allows us to investigate worker mobility in two-year intervals (1990-1991; 1992-1993;…; 2000-2001).[4] Monetary values are expressed in real 2006 dollars, as proposed by Corseuil and Foguel (2002).

Since the sample contains only workers who remained employed during the two years considered, the rate of occupational mobility is defined by the percentage of persons who in the second year say they are employed at a different job than in the first year. Table 1 summarizes the sample's main occupational-mobility rates, taking the period's mean as the baseline.

Table 1
Occupational mobility rates by type of job
(mean of the period, percentages)

	Total	*Formal*	*Informal*
Total	38.7	37.8	42.2
Men	41.0	39.6	46.5
Women	34.7	34.3	35.8
Unskilled	33.7	32.5	37.1
Semi-skilled	40.8	39.8	45.1
Skilled	40.2	39.7	42.8
Industry	44.9	44.8	45.3
Civil construction	43.3	37.3	54.4
Trade	39.9	37.7	48.8
Services	34.6	33.8	37.4
Other sectors	45.3	41.5	47.8
São Paulo	40.9	40.4	42.6
Recife	40.2	38.4	44.6
Salvador	42.1	41.5	44.0
Belo Horizonte	38.9	37.8	43.7
Rio de Janeiro	37.1	36.4	39.4
Porto Alegre	34.5	33.3	39.9

Source: Compiled by the authors based on data from PME.

Informal workers change jobs more frequently than formal workers in the metropolitan areas of the country and among all of the demographic cohorts considered. The existence of a labor relationship registered in the *carteira de trabalho* (formal contract), has meant increasing layoff costs for companies in

[4] For details regarding the PME rotation system, see, for example, IBGE (2001).

Brazil; companies face increasing severance-pay costs that are proportional to workers' time of service, a fact that helps explain the role of seniority in job stability. Workers without a formal contract tend to change employer more easily, and thus change occupations more frequently as well. This phenomenon increased notably in 1994, after a series of changes in the law that contributed to the rise of several atypical types of contract, outsourcing part of the company's labor force (Chahad, 2002).

Further, data show that formal workers tend to change jobs within the same activity sector, as revealed by the fact that just 25% of the workers in this group change to jobs in other branches of activity, while among informal workers the percentage is 42%. This means that in the formal segment knowledge acquired on the job is put to better use in equivalent activities within the same sector. Informal activities, however, given their greater occupational flexibility, lose more specific human capital through inter-sectoral movements.

The rate of mobility is higher among workers with intermediate and higher-level skills, which would seem to indicate that investment in formal education makes for more flexible movements of these workers when compared to unskilled workers. Industry has the highest occupational mobility rate among workers with a *carteira de trabalho*, while informal workers move the most, in relative terms, within civil construction. Historically, Brazilian industry is characterized by a larger percentage of formal wage labor, even taking into account the general decreases seen in the proportion of workers with a *cartiera de trabalho* during the nineties. A reduction of formal employment in industry might explain in part the greater occupational mobility among formal workers in this sector (due to a composition effect.)

With regard to the metropolitan areas considered here, the differences in the rates of occupational mobility seem quite small; only the Porto Alegre region, with the lowest rate, stands out. The labor market in Brazil's southern region is characterized by lower rates of informality and higher income indicators than the other regions. Thus labor is less flexible in quantitative terms in Porto Alegre, accounting for lower occupational mobility.

Nonetheless, greater occupational mobility among informal workers does not mean necessarily that they can improve their socioeconomic situation. In other words, the flexibility that is linked to informal workers' mobility can only lead to job changes, but not modifications of their socioeconomic condition.

To analyze this impact, we can investigate the outcome of workers who change occupations by using PME's stratification of the original jobs. One pos-

sibility is to use Januzzi's classification (2000), based on variables such as the average level of education and wages for each job, thus establishing a hierarchy of activities in five socioeconomic categories (high, high-middle, middle, low-middle, and low). This is not a "job prestige" scale, but rather a socioeconomic scale, very similar to the ones used in studies that analyze the general population's social stratification. In other words, by considering these categories, we can construct a hierarchy of how society values each type of activity. This classification does not refer to a concrete situation of workers *per se*, but rather references the social and economic conditions of each job. A summary of the main jobs within each category is shown in Table 2.

Table **2**
Socioeconomic categories and typical occupations

Socioeconomic category	*Some typical occupations*
1. High	Occupations with the highest wages and skills: doctor, engineer, university professor, managers, etc.
2. High-middle	"Petite-bourgeoisie" or skilled technicians: accountants and administrators, industrial foremen, elementary and secondary school teachers.
3. Middle	High turnover and significant insecurity: plumbers, mechanics, installers of electrical equipment, cashiers.
4. Low-middle	Working class: jobs in the food or textile industries, brick mason, painters, waiters.
5. Low	Jobs with high insecurity, urban, low-status jobs: brick-mason's helper, clothes washer, domestic workers, and garbage collectors.

Source: Jannuzzi (2000).

This typology allows us to see labor flows by original job and socioeconomic outcome one year later. Thus we can develop an output-flow matrix, as shown in Table 3. To prepare this table, we used only information regarding workers who changed occupations during the period, so that, for example, we can say that among workers in the high category that changed jobs, 33.4% changed to an occupation within the same category, while 44.5% stepped down to a job in the high-middle segment.

This matrix demonstrates that stepping up to occupations that offer better opportunities is a lengthy process, given that very few workers can move upward more than one socioeconomic category. Naturally, the amount of time between data (just a year between each survey), interferes in this result, but the values

obtained are consistent with analyses on social mobility among generations, from parents to offspring, and among moments in an individual's productive lifespan that span greater periods of time (Januzzi, 2000).

Table **3**
Output-flow matrix by labor contract
(period average, percentages)

			Category in the second year					
			High	*High-middle*	*Middle*	*Low-middle*	*Low*	*Total*
Formal	Category in the first year	High	33.4	44.5	17.7	4.2	0.2	100.0
		High-middle	17.9	30.1	41.0	10.6	0.5	100.0
		Middle	4.1	25.4	42.8	25.8	2.0	100.0
		Low-middle	1.1	7.6	30.8	51.7	8.9	100.0
		Low	0.4	3.7	13.9	74.3	7.7	100.0
		Total	8.4	22.1	36.1	29.8	3.7	100.0
			Category in the second year					
			High	*High-middle*	*Middle*	*Low-middle*	*Low*	*Total*
Informal	Category in the second year	High	29.0	41.5	18.8	10.2	0.6	100.0
		High-middle	20.6	25.0	36.5	16.5	1.4	100.0
		Middle	3.4	18.9	41.0	32.6	4.1	100.0
		Low-middle	2.5	7.8	28.6	45.3	15.8	100.0
		Low	0.2	2.1	15.7	75.9	6.2	100.0
		Total	6.4	13.8	29.9	42.3	7.7	100.0

Source: Compiled by the authors based on data from PME.

From the output-flow matrix we can also see that informal workers have greater difficulty leaving jobs with lower socioeconomic status. On average, 69% of workers who changed jobs in the informal sector remained employed in the low and low-middle categories, while formal-sector workers had a 62% continuity rate. Breaking these figures down by gender, informal women workers had the least favorable outcome: among those who changed jobs, only 23% were able to find a job in the three highest categories. The rate among informal-sector males was 36 percent.

An analysis of the labor flow in the previous table indicates that three types of socioeconomic markets or segments exist in Brazil. The first segment consists of the two highest categories (high and high-middle), which recruit and exchange workers from one to the other, accesses to which seems to be more

restrictive to the remaining categories. The two lowest categories (low-middle and low) make up what would be Brazil's secondary labor market, involving low prestige jobs, lower skills, and greater vulnerability due to changes in the economic cycle, as well as few opportunities to access higher-level jobs. The middle category is a labor market of transition jobs, since worker outflow to other categories is very significant. Formal workers show the most upward mobility among these segments, while job changes of informal labor tend to reproduce the segmented nature of the Brazilian labor market, insofar as changes occur largely within the same socioeconomic segment.

Thus, we consider *upward mobility* to be job changes to higher socioeconomic segments (low to middle and high; middle to high), and *downward mobility* to be those toward lower categories (high-middle to low; middle to low). Socioeconomic *immobility* is defined as remaining within the same larger segment.

To better understand the determinants of worker flows among the three large socioeconomic segments, Table 4 shows results of estimating logit models in terms of observing a worker changing socioeconomic segments. In other words, the model estimates the probability that a dichotomous variable will be equal to 1, which represents job changes involving shifts in socioeconomic segments. A variable value of 0 represents job immobility. Further, in terms of the middle segment, where there are upward and downward movements, we use a multinomial logit model, an extension of the logit form for multiple results. As explanatory variables of socioeconomic mobility we use gender binaries, branches of activity and those relating to metropolitan regions, in addition to seniority in the same job and the unemployment rate for each year of the period being studied.

In spite of their higher occupational-mobility rate, results show that men have less downward movements along the socioeconomic scale. Thus outward movement from lower level jobs is higher among male workers, especially within the formal labor market, revealing that women in informal positions face significant restrictions as they try to move to a higher socioeconomic status. Among explanatory variables with similar signs we have human capital, age, and seniority, with the latter being the most significant in terms of restricting mobility among differing labor-market segments. Formation of specific human-capital stock seems to be recycled within the same socioeconomic group, thus restricting outward movements from the lower job categories. In terms of age, in spite of its relatively low impact, the model developed here seems to

TABLE 4
Socioeconomic mobility
(Marginal effects**)

		Downward from higher		Upward from middle		Downward from middle		Upward from lower	
		Marginal effect	Standard deviation	Marginal effect	Standard deviation	Marginal effect	Standard deviation	Marginal effect	Standard deviation
Formal	Sex	–0.0338*	0.0106	–0.1921*	0.0094	0.1361*	0.0083	0.1751*	0.0098
	Age	–0.0061*	0.0005	0.0007*	0.0004	0.0013*	0.0004	–0.0042*	0.0004
	Seniority	–0.0094*	0.0041	0.0022	0.0031	0.0066*	0.0030	–0.0158*	0.0037
	Civil construction	0.0748*	0.0308	0.0489*	0.0238	0.0315	0.0204	–0.1248*	0.0156
	Trade	0.0876*	0.0166	0.0664*	0.0129	–0.0409*	0.0110	0.1496*	0.0191
	Services	–0.0306*	0.0115	0.1331*	0.0101	–0.0064	0.0093	0.0016	0.0106
	Unemployment	–0.0023	0.0036	–0.0092*	0.0029	–0.0051*	0.0029	0.0049	0.0035
	Recife	0.0909*	0.0209	–0.0638*	0.0152	0.0364*	0.0174	–0.1272*	0.0156
	Salvador	0.1134*	0.0177	–0.0608*	0.0130	0.0627*	0.0154	–0.0743*	0.0157
	Belo Horizonte	0.1060*	0.0141	–0.0376*	0.0107	0.0044	0.0113	–0.0485*	0.0134
	Rio de Janeiro	0.0686*	0.0154	–0.0512*	0.0116	0.0450*	0.0132	–0.0709*	0.0142
	Porto Alegre	0.0675*	0.0158	–0.0416*	0.0117	0.0174	0.0127	–0.0618*	0.0144
	Observations	10 571		13 702				11 245	
	R^2	0.0225		0.0338				0.0436	
	Wald X^2	312.31		965.89				620.77	

TABLE 4, continuation...

		Downward from higher		Upward from middle		Downward from middle		Upward from lower	
		Marginal effect	Standard deviation	Marginal effect	Standard deviation	Marginal effect	Standard deviation	Marginal effect	Standard deviation
Informal	Sex	–0.0401*	0.0237	–0.1946*	0.0197	0.0838*	0.0204	0.1643*	0.0137
	Age	–0.0055*	0.0010	0.0023*	0.0007	0.0010	0.0008	–0.0047*	0.0006
	Seniority	–0.0099	0.0093	–0.0038	0.0065	–0.0036	0.0077	–0.0050	0.0052
	Civil construction	–0.1572*	0.0732	–0.0171	0.0504	0.1712*	0.0582	–0.1478*	0.0177
	Trade	0.0794*	0.0354	0.0227	0.0256	0.0034	0.0283	0.0998*	0.0298
	Services	–0.1109*	0.0278	0.0786*	0.0224	–0.0229	0.0261	0.0068	0.0187
	Unemployment	–0.0120	0.0081	–0.0001	0.0059	–0.0165*	0.0071	–0.0191*	0.0047
	Recife	0.0499	0.0407	–0.0566*	0.0243	0.0822*	0.0340	–0.0962*	0.0197
	Salvador	0.1007*	0.0406	–0.1004*	0.0217	0.1972*	0.0338	–0.0750*	0.0200
	Belo Horizonte	0.0130	0.0325	–0.0178	0.0227	0.0206	0.0288	–0.0079	0.0190
	Rio de Janeiro	0.0737*	0.0324	–0.0503*	0.0225	0.1085*	0.0308	–0.0153	0.0191
	Porto Alegre	0.0556	0.0350	–0.0367	0.0241	0.0817*	0.0322	–0.0120	0.0216
	Observations	2 160		2 788				5 713	
	R^2	0.0302		0.0252				0.0532	
	Wald X^2	87.74		219.04				367.60	

Note: */ 5% significance level. **/ Evaluated with the mean of the distribution.
Source: Compiled by the authors based on data from PME.

indicate that older individuals, who are likely to have achieved a high degree of stability in their profession, change to jobs that are more horizontally similar, without significantly changing their social standing.

Taking industry as a reference point, jobs in trade offer the best possibilities of exiting a low socioeconomic condition, while civil construction leads to both stasis and downward movement toward the lower segment. The unemployment rate reduces upward movements and can be a proxy of the environment of uncertainty or as a risk factor, revealing not only the difficulties faced in finding a new job, but also the problems of finding job opportunities that are at least similar to those existing in the original job (Cho and Keum, 2004).

In general, variables that encourage exiting the lowest segment, such as gender and trade-based activities, have a greater effect on workers with a contract, *i.e.*, they are under greater institutional control. Likewise, factors such as age and unemployment are more important in limiting access of informal workers to jobs with better wages and lower insecurity. Since wages are already lower for informal labor, this is a perverse socioeconomic trajectory, which also greatly affects wage levels, as discussed in the following section.

Occupational mobility and wages

Building on results discussed previously, this section explores the impact of occupational mobility on formal and informal workers' wages. We note that some authors argue that permanent workers and those who change jobs are not random samples; rather, these movements are determined endogenously in the labor market in response to, for example, segmentation. Skewed results may arise if we do not consider this connection (Davia, 2003).

One of the methods proposed by empirical literature to consider this matter is the treatment of skewness in selecting samples of individuals, initially proposed by Heckman (1976), and later extended to numerous applications. One of these extensions has to do with treatment-effects models that consider the probability of belonging to each group in an endogenous manner. Following the structure proposed by one of these extensions,[5] the method calls for estimating a two-stage model. The first stage determines the probability of upward or downward movement, using the logit models from the previous

[5] Specifically, Budría and Pereira (2004).

section. Based on these relationships, we derived the so-called Mill's ratios for each of the possible results of occupational mobility, and these new variables are included in the wage equations.

Wage equations use real hourly dollar wages obtained by the worker in the second period, *i.e.*, after having changed jobs. As explanatory variables we use the standard factors of a wage equation and a set of binary variables that express workers' socioeconomic mobility. Further, we include binary variables relative to the years studied here, and variables of interaction between mobility and educational level. Wage equations also contain so-called "lambda" variables that correspond to the Mill's ratio effect.

The result of the estimated equations for workers in the formal and informal segments, by original socioeconomic group, is shown in Tables 5 and 6. In general, estimations are coherent with the results of previous research that used Mincer equations to determine individual income for the Brazilian case.[6]

Age and education have increasing marginal returns with respect to wages as long as we consider the jobs of the higher socioeconomic segments, particularly among formal workers, indicating that human capital brings in higher wages for these workers. The lowest return for the most skilled workers in the lowest segments also seems to point to the existence of demand for skilled labor in sectors where technical needs could be met by workers with the lowest skill level, *i.e.*, reflecting the *de facto* existence of a certain degree of over-qualification among this group of workers (Machado, Oliveira, and Carvalho, 2003).

Among sectoral variables, the model uses industry as a dummy reference; as compared to industry, other sectors have a lower wage level. The regional dummies use São Paulo as a reference and are incorporated to consider the spatial differences in wage distribution. Regions in the country's northeast (Recife and Salvador) have the greatest difficulty generating high-level wage incomes.

Finally, the effect of occupational mobility is expressed by a set of dummy variables that represent outward movements in each of the three large socioeconomic segments,[7] in addition to a series of variables of interaction between

[6] For a review of the results as applied to Brazil, see, for example, Corseuil (2002).

[7] In other words, from the high segment, workers can only move down or remain in the same segment. From the middle segment, workers can move upward, downward, or not change segment. From the bottom segment, it is possible to move upward socioeconomically or remain within the same segment. The reference dummy is always taken as socioeconomic immobility.

Table **5**
Wage equations by socioeconomic segment
(formal workers)

	High		**Middle**		**Low**	
	Coefficient	*Standard deviation*	*Coeficiente*	*Standard deviation*	*Coeficiente*	*Standard deviation*
Sex	0.3300*	0.0217	0.4299*	0.0749	0.1213*	0.0372
Age	0.0867*	0.0055	0.0632*	0.0033	0.0567*	0.0031
Age 2	–0.0008*	0.0001	–0.0006*	0.0000	–0.0006*	0.0000
Semi-skilled	0.5199*	0.0455	0.2076*	0.0177	0.0894*	0.0124
Skilled	1.1257*	0.0456	0.5986*	0.0365	0.8602*	0.1514
Civil construction	–0.0437	0.0511	0.0389	0.0388	–0.0520	0.0324
Trade	–0.2350*	0.0479	–0.2369*	0.0257	–0.3319*	0.0356
Services	–0.0321	0.0212	–0.0199	0.0545	–0.1364*	0.0115
1992-1993	–0.0103	0.0250	–0.0368*	0.0202	–0.0445*	0.0184
1994-1995	0.0965*	0.0218	0.0739*	0.0172	0.0773*	0.0166
1996-1997	0.1893*	0.0220	0.1905*	0.0175	0.1514*	0.0173
1998-1999	0.1431*	0.0216	0.1307*	0.0245	0.1523*	0.0172
2000-2001	0.0657*	0.0205	0.0664*	0.0222	0.1444*	0.0167
Recife	–0.6856*	0.0532	–0.6202*	0.0321	–0.6028*	0.0324
Salvador	–0.5364*	0.0619	–0.4936*	0.0324	–0.5153*	0.0237
Belo Horizonte	–0.3118*	0.0550	–0.3544*	0.0197	–0.3764*	0.0177
Rio de Janeiro	–0.4696*	0.0376	–0.3422*	0.0264	–0.2972*	0.0223
Porto Alegre	–0.2880*	0.0364	–0.2545*	0.0210	–0.2344*	0.0207
Upward movement			0.5417*	0.2832	1.0602*	0.2071
Downward movement	0.2245	0.5139	–1.2783*	0.2620		
Semi-skilled upward* movement			0.1152*	0.0389	0.0720*	0.0222
Skilled upward* movement			0.2235*	0.0532	0.2399	0.1652
Semi-skilled downward* movement	–0.0671	0.0529	–0.0539*	0.0251		
Skilled downward* movement	–0.1482*	0.0568	0.2183*	0.0997		
Lambda upward movement			–0.1850	0.1695	–0.4954*	0.1263
Lambda downward movement	–0.3803	0.3168	0.6245*	0.1608		
Independent term	–1.5541*	0.3372	–0.8890*	0.1258	–1.3642*	0.1063
Observations	10 571		13 702		11 245	
R2	0.4903		0.3907		0.3257	
F	488.77		342.38		232.90	

Note: */ Significant at a 5% level
Source: Compiled by the authors with data from PME.

Table 6
Wage equations by socioeconomic segments
(Informal workers)

	High		Middle		Low	
	Coefficient	*Standard deviation*	*Coeficiente*	*Standard deviation*	*Coeficiente*	*Standard deviation*
Sexo	0.2429*	0.0562	0.2052*	0.0351	0.0161	0.0689
Age	0.0342*	0.0111	0.0470*	0.0070	0.0472*	0.0047
Age 2	–0.0003*	0.0001	–0.0005*	0.0001	–0.0005*	0.0001
Semi-skilled	0.3895*	0.1138	0.2187*	0.0448	0.1080*	0.0179
Skilled	0.9218*	0.1140	0.6387*	0.1207	0.2384	0.1739
Civil construction	–0.0821	0.2171	–0.1187	0.2405	0.0644	0.0684
Trade	–0.0097	0.1011	–0.0883*	0.0405	–0.1212*	0.0536
Services	–0.1719*	0.1341	–0.0614	0.0375	–0.0223	0.0234
1992-1993	–0.2625*	0.0724	–0.0709	0.0625	–0.0577*	0.0334
1994-1995	0.0976	0.0644	0.1827*	0.0507	0.1032*	0.0276
1996-1997	0.0994	0.0606	0.2519*	0.0543	0.2426*	0.0279
1998-1999	0.0237	0.0747	0.2307*	0.0970	0.2879*	0.0368
2000-2001	0.0292	0.0701	0.1873*	0.0879	0.1991*	0.0331
Recife	–0.5097*	0.0831	–0.7437*	0.0848	–0.6194*	0.0474
Salvador	–0.4082*	0.1310	–0.7873*	0.2063	–0.5571*	0.0384
Belo Horizonte	–0.2192*	0.0482	–0.3202*	0.0388	–0.3283*	0.0236
Rio de Janeiro	–0.2933*	0.0913	–0.3894*	0.1183	–0.2942*	0.0244
Porto Alegre	–0.1711*	0.0736	–0.2813*	0.0939	–0.1645*	0.0272
Upward movement			0.2792*	0.0925	1.1281*	0.4018
Downward movement	–1.7563	1.1813	0.6206	0.8760		
Semi-skilled upward* movement			0.1011	0.0995	0.0608	0.0378
Skilled upward* movement			0.1586	0.1623	0.9376*	0.1898
Semi-skilled downward* movement	0.0436	0.1265	–0.0612	0.0585		
Skilled downward* movement	0.1069	0.1344	–0.0903	0.2826		
Lambda upward movement			–0.0035	0.0384	–0.5652*	0.2408
Lambda downward movement	0.7287	0.7277	–0.4742	0.5438		
Independent term	0.4714	0.9035	–1.1936*	0.3148	–1.4143*	0.1977
Observations	2 160		2 788		5 713	
R2	0.4339		0.3448		0.2835	
F	83.89		51.96		96.36	

Note: */ Significant at a 5% level.
Source: Compiled by the authors with data from PME.

these dummies and workers' skills. In most cases, occupational movements are significant and show that upward change entails higher future wages, while downward movement implies lower wages, thus corroborating previous findings for Brazil, especially in the work of Oliveira and Machado (2000). The variables of interaction between the type of mobility and skills allow us to observe the marginal impact by more specific groups. Socioeconomic upward movement is more pronounced among the more skilled workers who are able to climb up from occupations in the middle socioeconomic level.

Further, the marginal returns of mobility on wages are not consistent among formal and informal workers in each segment. The formal workers that most benefit are those who are able to move upward from mid-level jobs, while among informal workers those with greater advantage exit from jobs at the lowest segment. Yet, as previously noted, socioeconomic upward movement is more restricted for informal labor, due to barriers that make up the segmentation of the labor market. Together, these differences can, *ceteris paribus*, widen wage differences among the two groups and, as we analyze herein, occupational mobility can affect wages of formal and informal workers in two different ways: by the number of workers who manage to change socioeconomic segment, especially in an upward direction, and by the wage return derived from such a change.

A useful way to separate these two impacts and the differences between formal and informal wages is to use decomposition as suggested by Oaxaca (1973). The method divides the wage difference among the two groups in a part that is explained by the number of productive or personal factors that each worker possesses, and in a part that is not explained, due to the presence of uncontrolled factors. Positive signs in the explained part indicate that the wage difference among the two groups could be reduced if these two sets of workers were equally talented in each factor. Similarly, the positive unexplained part indicates that equality would be achieved if no differences existed in the marginal returns. Considering occupational mobility as a factor for wage increases, a positive effect in the unexplained part reflects differences in the premium in wage terms that is obtained by having changed jobs.

These results are summarized in Table 7, where we observe how wage differences among formal and informal workers of high-level jobs are explained mainly by uncontrolled factors, in other words, by differences that exist among wage returns for each component of the equation. In the other two segments (middle and low), the differences are explained by the fact that formal workers

possess a greater average stock of productive factors, such as education, and a more favorable distribution towards more profitable jobs.

Table 7
Oaxaca decomposition of wage differentials among formal and informal workers

	High		Middle		Low	
	Explained	*Not explained*	*Explained*	*Not explained*	*Explained*	*Not explained*
Total	0.0329	0.2280*	0.2615*	0.0137	0.1324*	0.0864*
Upward movement	-	-	0.0387*	0.0587	0.0680*	–0.0208
Downward movement	–0.0083	0.9528	0.1134*	–0.6954*	-	-
Semi-skilled upward* movement	-	-	0.0051*	0.0024	0.0029*	0.0023
Skilled upward* movement	-	-	0.0048*	0.0026	–0.0016	–0.0128*
Semi-skilled downward* movement	0.0010	–0.0368	0.0032*	0.0018	-	-
Skilled downward* movement	0.0012	–0.0217*	0.0001	0.0014	-	-

Note: */ Significant at a 5% level.
Source: Compiled by the authors with data from PME.

In Table 7, the effects of the mobility variables are also decomposed, allowing us to observe how this factor helps create a wage differential among the two types of labor. The signs of the explained component leads us to conclude that the wage difference between formal and informal workers can also be explained by the socioeconomic mobility factor, *i.e.*, by the percentage of workers who change segments. In other words, one of the explanations for the existence of a wage gap between formal and informal labor is that within this latter segment there are greater difficulties in exiting low socioeconomic-status jobs. Also, this effect is especially significant for semi-skilled workers, while the most skilled in the informal sector have non-observable characteristics that help reduce their wage gap with respect to formal workers.

This is equivalent to saying that the lower wage level associated with informal labor, in terms of the socioeconomic mobility factor, is due to the effect of barriers created by occupational segmentation. Informal workers earn less, among other reasons, because they are over-represented in jobs at the lowest technical level and, therefore, at the lowest output (productivity) level. The differences

in the probability of upward socioeconomic mobility imply that informal labor receives low wages during a longer period of time of the working life cycle. It also means that the greater flexibility of informal labor does not guarantee an increase in worker wellbeing. It is therefore troublesome to note the quality of job reassignment of specific groups of workers, such as women or informal segment workers, since it demonstrates the existence of important inequities in the structure and dynamic of the Brazilian labor market.

In this sense, public policies that could be adopted in Brazil in order to reduce disadvantages of specific groups of workers would have to begin with a baseline knowledge of the labor situation and the ways labor transitions, taking into account its methods and degrees of occupational reassignment and the quality of job mobility. Further, such policies should consider not only current wage levels but also the possibilities of professional and socioeconomic advancement throughout a worker's life cycle (Monsueto, 2008, Monsueto, Bichara, and Cunha, 2014). The creation of jobs concentrated in posts or in sectors with little chance of future access to jobs of greater status, far from promoting a level field of opportunities, could make current barriers in the Brazilian labor market more difficult to surmount.

Final considerations

This paper endeavored to evaluate urban Brazil's occupational mobility (understood as workers changing a job post either within or outside a company), and the relationship of mobility to the jobs' socioeconomic status and to wages of formal and informal segments. Our point of departure is the analysis developed by the two most widely applied theoretical approaches in economic literature that deal with the matter at hand.

Analysis of PME data reveals the existence of different effects among varying types of general or specific human capital. It also points to the existence of factors that encourage occupational change towards activities associated with a higher socioeconomic level, such as those in which a formal labor contract exists. Further, among informal workers, occupational mobility seems to reproduce rather rigid labor-market segmentation, which restricts the outward flow from jobs with low-wage levels and high labor-relation instability to jobs in higher-wage categories.

These results show that the two theoretical approaches used here, *i.e.*, *specific human capital* and *internal labor markets*, focus on occupational mobility as a way of understanding the efficient behavior of the labor market. On the one hand, mobility can be a way to exit precarious job situations. On the other, the degree of reassignments from one job to another of specific groups of workers (such as women or informal-sector workers), makes it clear that important inequities exist in terms of the Brazilian labor-market structure and dynamics. One of the effects of this differential reassignment is that informal workers remain longer in low-wage jobs during their working years, thus helping to perpetuate a wage gap.

The exercise undertaken herein contributes to a better understanding of occupational mobility by combining analysis with a higher level of job disaggregation than what previous investigations have done. In Brazil's case, by typifying jobs, we can evaluate the relationship of occupational mobility with the jobs' socioeconomic status. Taking into account that occupational insertion is one of the main determinants of income levels of the working population, the rate and direction with which workers are reassigned to job posts tends to have a strong impact on how income is distributed in the country.

Furthermore, by comparing formal and informal workers, we see the need to undertake new research that will analyze the role institutions play in job assignment. Individuals without institutional protection are the most flexible, but such flexibility does not mean that they will improve their socioeconomic situation throughout their working years; rather, there is an ongoing reproduction of labor-market segmentation. Finally, the existence of barriers to mobility demonstrates the need to consider not only current wages in the fight against inequality, but also the possibility that occupational change can create opportunities for future professional and socioeconomic advancement.

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