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**Labor Supply in Brazil: an Analysis of the Second Job in the
Urban and Rural Areas**

Priscila Casari

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Labor Supply in Brazil: an Analysis of the Second Job in the Urban and Rural Areas

Priscila Casari¹
Universidade Federal de Goiás

RESUMO

O objetivo desse artigo é estimar a oferta de trabalho no Mercado secundário, dadas as características socioeconômicas dos trabalhadores e as características do emprego como a heterogeneidade e estabilidade. Para tanto, os dados utilizados são da PNAD (2008). A população estudada é formada por trabalhadores com um ou dois empregos e a oferta de trabalho é estimada por meio de um Tobit. Os resultados indicam que a restrição de tempo, a heterogeneidade entre as ocupações e a estabilidade contribuem para o aumento da oferta de trabalho tanto nas áreas urbanas quanto rurais. Ainda, há evidências de que a renda do trabalho principal não é suficiente, mesmo para trabalhadores com mais escolaridade.

Palavras-chave: segundo emprego, oferta de trabalho, tobit

ABSTRACT

The aim of this paper is to estimate the labor supply in the secondary market, given the socioeconomic characteristics of workers and job characteristics such as heterogeneity and stability. Therefore, data used is PNAD (2008). The population studied is workers with one or two jobs and the labor supply is estimated by a Tobit model. The results indicate that the time constraint, the heterogeneity in occupations and stability contribute to the increase in labor supply in the secondary job market in both urban and rural areas. Moreover, there is evidence that income from the main job is insufficient even for workers with more schooling.

Key-words: second job, labor supply, tobit

¹ Universidade Federal de Goiás. E-mail: pricasari@gmail.com

1 Introduction

In Brazil, many workers with different occupations seek a second job because they need to supplement their income. According to the 2008 National Household Sample Survey (PNAD), about 6.5 million people had more than one job in urban areas and 1.9 million in rural areas, this represents 4.2% of workers employed in urban areas and 5.6 % in rural areas.

Labor in urban and rural areas is very different. In rural areas, income per hour is less than a half than in urban areas. Also, Mattei (2008) argues that the traditional farm employment doesn't guarantee enough income anymore and this leads to the pluriactivity and off-farm employment between the people who live in rural areas.

In both, urban and rural areas, the moonlighters are different from others workers, have a higher educational level and are slightly older. They work fewer hours in their first job and receive an income per hour that is almost the one in the main occupation.

The labor supply in the Brazilian secondary job market has not been studied. The only studies are Menezes and Carrera-Fernandez (2001) and (2003), researching a second occupation in the Metropolitan Region of Salvador - BA, where 8.7% of employed persons had more than one job in early 2000.

Labor supply in the secondary market depends on several factors: limiting the number of hours in main job (Shishko; Rostk, 1976); stability in the first job (BELL, HART WRIGHT, 1997 apud WU; Baimbridge, ZHU, 2008), and the heterogeneity among the various jobs (CONWAY, KIMMEL, 1998).

Stability is important because job insecurity increases labor supply, so the second job can act as a hedge against unemployment. And the heterogeneity reflects the decisions of workers who do not necessarily have financial benefits of work, such as credentials and pleasure, or seek a second job to supplement their income.

This article attempts to estimate the labor supply in the secondary market in the urban and rural areas, given the socioeconomic characteristics of workers and job characteristics such as heterogeneity and stability. It is expected, thus contributing to the understanding of the phenomenon of second jobs in Brazil.

This paper is divided into five sections besides this introduction. The next section presents evidence about the second job in Brazil and other countries; the third section, the theoretical model; the fourth section presents the methodology; results are in fifth section; and, finally, the concluding remarks.

2 Empirical evidence of the second job

There is little evidence on the second job to Brazil and even to other developing countries. The following summarizes the main research and its results.

Menezes and Carrera-Fernandez (2001) and (2003) researches the second occupation in the Metropolitan Region of Salvador - BA. In the first article, the authors explore the structure of remuneration and the dual character of the second occupation. The education level of workers influences their income and the second job occurs both between individuals with higher education and among the less educated. Thus, the second job is not just related to poverty, but also to the inability in providing familiar revenue in the desired standards of living.

In the second article, Menezes and Carrera-Fernandez (2003) show the determinants of the second occupation. The number of hours in the main job, the first occupation wage, and males had negative impacts on the likelihood of the second occupation, while the number of hours in additional work, being head of the family and employee had positive effects. Education, age, color and stability were not significant.

Other evidences are found, in general, for developed countries: Poland (BEDI, 1998), USA (Averett, 2001), Canada (FRIESEN, 2002), Russia (GUARIGLIA, Kim, 2004), United Kingdom (Böheim, Taylor, 2004) and Germany (HEINECK; SCHWARZE, 2004). Tanzania (THEISEN, 2006) is the only developing country in which the second job has been studied.

Bedi (1998) investigated the role of wage differentials between the public and private sectors to explain the industry's choice and the decision to offer employment in the secondary market. Their results indicate that there is a large gap between the public and private and these differences are crucial to the industry's choice. Also, the probability of having a second job is greater among individuals with higher education because of largest wage differential.

Averett (2001) focused on gender as a possible explanation for the second job in the USA. However, the factors that lead to labor supply in the secondary market are the same for men and women. 93% of the gender wage differential is not explained by their characteristics, there is little relation between human capital and the second job wage.

The impact of the regulation of working hours and payment for overtime in various provinces in Canada was studied by Friesen (2002). The major incidence of second jobs and higher wages is found in places where the working day is shorter. Thus, the author could conclude that the restriction of the number of working hours does not lead to greater distribution of work.

In Russia, Guariglia and Kim (2004) found evidence that the second job functions as a mechanism of self-insurance that can be used as well as savings in order to smooth consumption in times of fluctuations in income.

The dynamics of second job in the UK was investigated by Böheim and Taylor (2004) and Heineck and Schwarze (2004). The first authors concluded that the second job is persistent over time, about 10% of workers kept their multiple jobs during the period studied. Negative financial shocks increase labor supply in the secondary market, but the second job does not smooth the labor supply over time and heterogeneity in job characteristics was more important than the time constraint to determine the labor supply.

Heineck and Schwarze (2004) compared the United Kingdom to Germany. According to the study, countries have the same pattern, but in Germany, the probability of having a second job between individuals who would like to work more hours is higher.

Finally, the only work abroad on a non-European and less developed is Theisen (2006), to Tanzania. In town, most workers would like to work more hours, forming a contingent of people willing to offer labor force in the secondary market. The author assesses the labor supply in the informal sector, once the individual has his main employment in the formal market. Participation in the informal secondary market is inversely correlated with income and directly to age.

These findings, although quite diverse and obtained for various countries and not necessarily be repeated in other regions, contributes to the analysis of the second job.

3 Model of labor supply in the secondary market

The person who has two or more jobs is part of a secondary labor market. The theoretical model for this job was initially developed by Shishko and Rostker (1976). Figure 1 shows a set of indifference curves for combinations of leisure and income. Point A is the maximum income and point B, the maximum possible for leisure time. The line AB is the rate at which leisure is exchanged for income in the labor market.

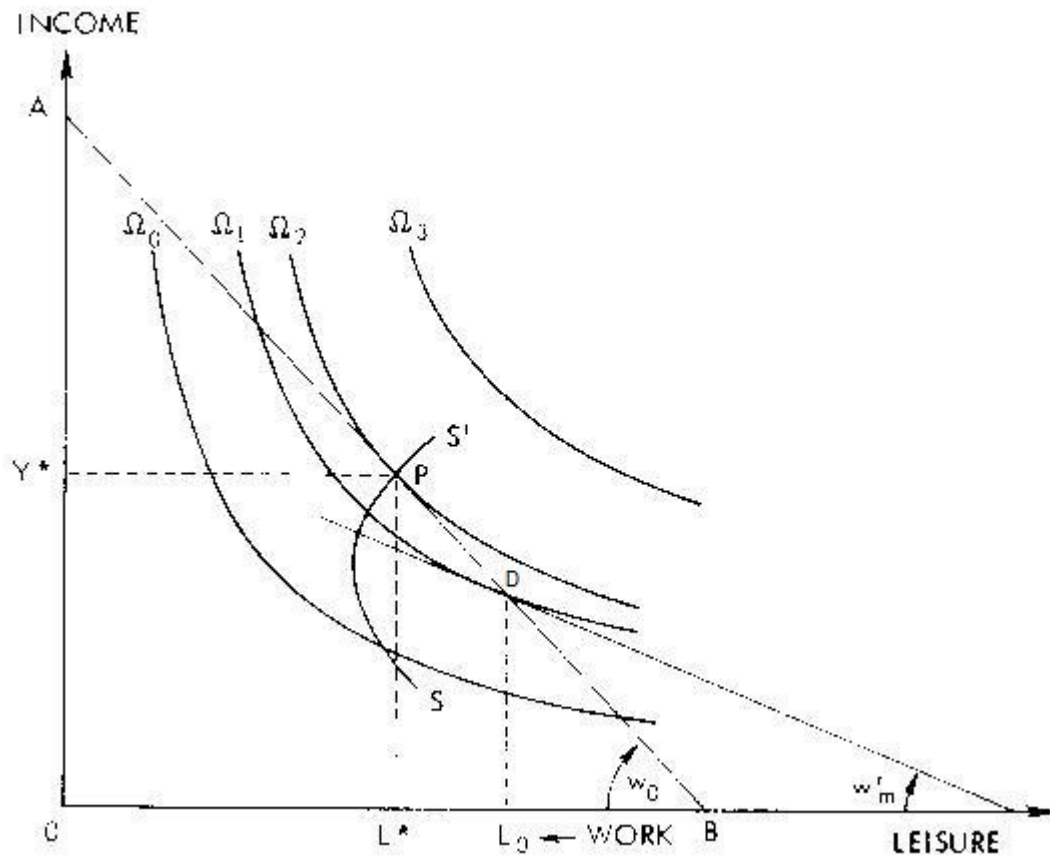


Figure 1. Utility maximization in income and leisure with and without restricting hours worked in the primary job
Source: Shishko and Rostker (1976)

In order to maximize utility, the individual chooses the number of hours for which the wage is equal to the marginal rate of substitution between leisure and work, point P, and the curve SS' is the supply of individual work.

But if there are restrictions on the number of hours worked in first job, for example h_1 , while the individual would like to work $h^* - h_1$ additional hours, then the person is in point D.

Thus, the problem of utility maximization depends on restriction of consumption and time. If the utility function of a representative individual is:

$$U = U(C, L)$$

where C is consumption and L, leisure.

Each individual supplies h_1 working hours and receive w_1 pay in your main job. In second job, the number of hours and wages are h_2 and w_2 . There are two restrictions, consumption and time:

$$C = h_1 w_1 + h_2 w_2 + Y'$$

$$T = h_1 + h_2 + L$$

where Y' is the non labor income and T, the total time available.

For the first order conditions:

$$w_1 = w_2 = \frac{\frac{\partial U}{\partial L}}{\frac{\partial U}{\partial C}} = 0$$

If $w_2 > \frac{\frac{\partial U}{\partial L}}{\frac{\partial U}{\partial C}}$, the number of hours worked in the second job increases, and if

$w_2 < \frac{\frac{\partial U}{\partial L}}{\frac{\partial U}{\partial C}}$, the number of hours decreases. The same occurs with the first job.

In the long-run equilibrium $w_1 = w_2$, but if $w_2 > w_1$, the individual may work more hours in second jobs than originally wanted. In case w_2 is between w'_m and w_1 , the total hours worked in the additional employment will be less than the desired number of hours in main job. And if $w_2 < w_1$, the most important reason for there second job is the restriction of hours in main job.

To Lundborg (1995), individuals who have amenities associated with your main job are more likely to have a second job. The amenities are related to the compensation of wage differentials, so that even if the salary is below that which the individual could receive, the worker tends to not leave the job because benefits from the amenities. This usually happens with artists, who benefit from activities that can show their talent, or manual workers, they can keep their tradition.

Bell, Hart and Wright (1997 apud WU; BAIMBRIDGE, ZHU, 2008) claim that job insecurity increases labor supply in the secondary market, so the second job can act as a hedge against unemployment.

And Conway and Kimmel (1998) develop a model that includes heterogeneity in employment as one of the determinants of labor supply in the secondary market. Different jobs, in general, are not perfect substitutes. Also wages and the utility lost due to lower leisure time may not reflect the costs and benefits of work. For example, the first job can accredit the individual to receive a higher wage in the second or the employee may have a lower pay in second job, but take more pleasure in his work. So when there is nonpecuniary benefits, the optimizing behavior may lead to an equilibrium with two jobs.

4 Methodology

In order to estimate the labor supply in the secondary market, data from the National Household Sample Survey (PNAD 2008) is used. The population studied is workers with one or two jobs, people with three or more jobs do not participate in the study because there is no data on their occupation.

Initially, the characteristics of jobs and employees are described. These features are:

- Two jobs: dummy equal to 1 for people who have two jobs and 0 for those who have a job;
- Hours of work 1: number of hours worked per month in the first job;
- Hours of work 2: number of hours worked per month in the second job;
- Income per hour 1: income, per hour, in the first job;
- Income per hour 2: income, per hour, in the second job;
- Non labor income: the individual's total income minus earned income at work;
- Heterogeneity: dummy equal to 1 for heterogeneous occupations and 0 for the others, the heterogeneity was established by considering the first two levels of aggregation in the PNAD Job Code;
- Stability: number of months that the individual has been working in his main job;
- North, Northeast, Southeast, South and Midwest: dummies for regions of Brazil;
- Age: age measured in years;
- Male: dummy equal to 1 for men and 0 for women;
- White: dummy equal to 1 for white and 0 for others;
- Schooling: years of schooling;
- No education, 1 to 3 years, 4 to 7 years, 8 to 10 years, 11 to 14 years and 15 or more years: dummies for educational levels.

Descriptive statistics are made for the population, workers with one and two jobs and the difference between the averages is tested by the statistic t .

Then, the wage of the second job and heterogeneity are estimated. The simulations are needed because these variables exist only for those with two jobs, but when the individual decides to offer its labor force in the secondary market, he already has a preference for occupation and income expectation.

For earnings, a least squares regression is estimated for those who have two jobs, so the wages of second jobs is provided for those who have only one job. To the predicted values, a random term with mean 0 and standard error σ^2 is added.

The dummy heterogeneity of occupations is simulated from a logit for individuals who have two jobs. The probability of heterogeneity is estimated for those who have a job and then is transformed into a dummy, keeping constant the proportion of heterogeneous jobs, which is 0.6370 in the urban area and 0.7519 in the countryside. To do so, the cutoff points are 0.71905 and 0.69881 for the urban and rural areas, respectively and the determination of the cutoff value is²:

$$Heterogeneity = \begin{cases} 1, & \text{if } prob \geq \text{cutoff point} \\ 0, & \text{if } prob < \text{cutoff point} \end{cases}$$

Finally, the labor supply is estimated by a Tobit, as shown below:

$$Y = \begin{cases} Y, & \text{if } Y > 0 \\ 0, & \text{if } Y \leq 0 \end{cases}$$

$$Y = \max(0, X\beta + \epsilon)$$

Y is labor supply in the secondary market, it depends on the vector X of characteristics of the job and the workers, and then takes the value 0 for all who have a job and is the number of hours supplied for those who have more than one job. In this way, this model is suitable for censored samples, which is clearly the case for the second job.

All the statistics and estimations are made separately for workers residing in urban areas and workers residing in rural areas and a LR test is applied to validate this separation.

² More information about this methodology can be found in Sharma (1996, c.10).

5 Results

In this section, descriptive statistics and the estimation of labor supply are presented. Tables 1 and 2 show some characteristics of work and employment of workers in urban and rural areas.

Table 1. Job characteristics of the employed, with one or two jobs and residence in urban area

	Workers		One Job		Two Jobs		Test T: one and two jobs	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	T Stat	Prob (T > t)
Two Jobs	0.0419	0.2003						
Hours of work 1	161.5473	54.8368	162.7059	54.4676	135.5334	56.6271	39.7188	0.0000
Hours of work 2					79.3366	49.6055		
Income per hour 1	6.5873	14.0829	6.3812	13.5322	11.2226	22.7609	-27.2206	0.0000
Income per hour 2					14.6253	33.4006		
Non labor income	87.3825	566.2843	86.0049	557.3893	119.0967	741.4940	-4.5619	0.0000
Heterogeneity					0.6370	0.4809		
Stability	83.4236	104.2935	82.5257	104.0074	103.5846	108.5924	-16.1173	0.0000

Source: Prepared by author based on data from PNAD (2008)

Table 2. Job characteristics of the employed, with one or two jobs and residence in rural area

	Workers		One Job		Two Jobs		Test T: one and two jobs	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	T Stat	Prob (T > t)
Two Jobs	0,0564	0,2308						
Hours of work 1	137,0370	65,3918	137,6123	65,9627	127,2928	53,9177	6,5282	0,0000
Hours of work 2					80,1752	44,6442		
Income per hour 1	2,3178	4,6949	2,2441	4,5041	3,5786	7,1000	11,6744	0,0000
Income per hour 2					4,2257	9,1772		
Non labor income	84,3942	309,3246	86,3177	315,1075	50,4047	175,1378	4,6859	0,0000
Heterogeneity					0,7519	0,4320		
Stability	137,9010	153,0585	136,8084	153,7474	156,4083	139,6250	-5,2962	0,0000

Source: Prepared by author based on data from PNAD (2008)

In Brazil, 4.19% of workers who live in urban areas and 5.64% of those workers residents in rural areas has two jobs. In rural areas, the population has lower income and has more craft work, so the existence of two jobs can also be related to the pluriactivity³ households.

Although the magnitude of the mean is different between the two groups (urban and rural), they lead to similar conclusions. The number of working hours in main job is lower

³ Pluriactivity refers to families who work in agriculture but at list one member of the family has on off-farm employment.

among those who have two jobs, both in urban and in rural areas. This result is expected because the restriction of hours in first job is one of the main causes of moonlight.

In addition, the average hours worked in second jobs is lower than the first and the income per hour in the first job is lower than the second, suggesting that the wage for second jobs is between w_m^1 and w_1 .

Comparing people with one and two jobs, one can see that in the urban area the main job wage and the non labor income are below those obtained by the workers who have two jobs. Perhaps, the cause is the difference in schooling, which is exposed in Table 3 and 4. In rural areas, only the income from non labor is greater for those who have one job.

The heterogeneity in occupations is 63.70% in the urban area and 75.19% in rural areas. This may represent a worker's preference for an activity, or even non-cash benefits. Stability in the first job is lower among those who have only one job. This evidence differs from the expected, because the second job is also a form of protection against risks, such as, for example, losing the main job. This data can then suggest that even those who have more stability can not obtain sufficient income for their living standards desired in a single job.

Table 3. Socioeconomic characteristics of the employed, with one or two jobs and residence in urban area

	Workers		One Job		Two Jobs		Test T: one and two jobs	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	T Stat	Prob (T > t)
North	0.1150	0.3190	0.1150	0.3190	0.1138	0.3176	0.3074	0.7586
Northeast	0.2736	0.4458	0.2719	0.4450	0.3099	0.4625	-6.7914	0.0000
Southeast	0.3269	0.4691	0.3281	0.4695	0.3019	0.4591	4.4426	0.0000
South	0.1607	0.3673	0.1612	0.3677	0.1505	0.3576	2.3157	0.0206
Midwest	0.1200	0.3250	0.1208	0.3259	0.1039	0.3051	4.1492	0.0000
Age	36.9610	13.3227	36.8845	13.3936	38.6794	11.4830	-10.7489	0.0000
Male	0.5633	0.4960	0.5659	0.4956	0.5032	0.5000	10.0989	0.0000
White	0.4713	0.4992	0.4704	0.4991	0.4914	0.5000	-3.3649	0.0008
Schooling	8.6238	4.2123	8.5440	4.1884	10.4163	4.3489	-35.4981	0.0000
No education	0.0580	0.2338	0.0589	0.2355	0.0375	0.1901	7.2828	0.0000
1 to 3 years	0.0712	0.2572	0.0723	0.2589	0.0477	0.2131	7.6113	0.0000
4 to 7 years	0.2177	0.4127	0.2209	0.4149	0.1450	0.3521	14.6536	0.0000
8 to 10 years	0.1826	0.3863	0.1852	0.3884	0.1242	0.3299	12.5554	0.0000
11 to 14 years	0.3581	0.4794	0.3586	0.4796	0.3476	0.4762	1.8280	0.0676
15 or more years	0.1124	0.3159	0.1041	0.3054	0.2981	0.4574	-49.2192	0.0000

Source: Prepared by author based on data from PNAD (2008)

Table 4. Socioeconomic characteristics of the employed, with one or two jobs and residence in rural area

	Workers		One Job		Two Jobs		Test T: one and two jobs	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	T Stat	Prob (T > t)
North	0.1150	0.3190	0.1150	0.3190	0.1138	0.3176	0.3074	0.7586
Northeast	0.2736	0.4458	0.2719	0.4450	0.3099	0.4625	-6.7914	0.0000
Southeast	0.3269	0.4691	0.3281	0.4695	0.3019	0.4591	4.4426	0.0000
South	0.1607	0.3673	0.1612	0.3677	0.1505	0.3576	2.3157	0.0206
Midwest	0.1200	0.3250	0.1208	0.3259	0.1039	0.3051	4.1492	0.0000
Age	36.9610	13.3227	36.8845	13.3936	38.6794	11.4830	-10.7489	0.0000
Male	0.5633	0.4960	0.5659	0.4956	0.5032	0.5000	10.0989	0.0000
White	0.4713	0.4992	0.4704	0.4991	0.4914	0.5000	-3.3649	0.0008
Schooling	8.6238	4.2123	8.5440	4.1884	10.4163	4.3489	-35.4981	0.0000
No education	0.0580	0.2338	0.0589	0.2355	0.0375	0.1901	7.2828	0.0000
1 to 3 years	0.0712	0.2572	0.0723	0.2589	0.0477	0.2131	7.6113	0.0000
4 to 7 years	0.2177	0.4127	0.2209	0.4149	0.1450	0.3521	14.6536	0.0000
8 to 10 years	0.1826	0.3863	0.1852	0.3884	0.1242	0.3299	12.5554	0.0000
11 to 14 years	0.3581	0.4794	0.3586	0.4796	0.3476	0.4762	1.8280	0.0676
15 or more years	0.1124	0.3159	0.1041	0.3054	0.2981	0.4574	-49.2192	0.0000

Source: Prepared by author based on data from PNAD (2008)

In tables 3 and 4 there are other specific information about the characteristics of workers. The distribution of employees with one or two jobs in the regions of the country shows that in urban areas: the proportion of workers in each region is quite similar to the average urban area; and the Northeast region concentrates most share of workers with more than one job.

In rural areas, the distribution of workers with two jobs between regions indicates that there are greater differences than in the urban area. However, the majority of workers living in rural areas who has two jobs is also in the Northeast. The Northeast is one of the poorest region in the country, perhaps, is where the completion of income is more necessary.

Other characteristics are age, sex and color of the workers. Comparing them, one realizes that the people that supply work in the secondary market are, on average, two years older. There is a higher percentage of whites and a greater proportion of women in the urban area.

The average schooling is quite different in the urban area, 8.54 years and 10.42 years for those with one job and two jobs, respectively. In rural areas, the educational level is lower, just over 4.5 years and difference is much smaller, about 0.2 years.

If separated by levels, the analysis of schooling shows that at lower levels of schooling, there is a lower proportion of workers with two jobs. In the urban area, only between people with incomplete higher education or more the proportion of workers with two

jobs is greater. In rural areas, the same phenomenon occurs from 11 to 14 years of schooling - high school.

In addition, it was found that there is great heterogeneity among the occupations in the first and second job, tables 5 and 6 show how these occupations are distributed among residents in urban and rural.

Table 5. Percentual distribution of the workers with one or two jobs and residence in the urban area

Occupation	One Job	Two Jobs	
		First	Second
Members of the armed forces	0.89	1.24	0.04
Leaders in general	5.97	6.83	5.98
Professionals in sciences and arts	7.20	25.27	26.52
Median level technicians	8.25	12.63	12.02
Administrative workers	10.80	7.00	3.87
Service workers	22.13	20.40	19.55
Salesmen and service trade	10.85	8.47	13.07
Farmworkers	6.25	5.10	6.89
Workers in the production of industrial goods, services, repair and maintenance	27.64	13.05	12.04
Mis-defined occupations	0.02	0.00	0.02

Source: Prepared by author based on data from PNAD(2008)

Table 6. Percentual distribution of the workers with one or two jobs and residence in the rural area

Occupation	One Job	Two Jobs	
		First	Second
Members of the armed forces	0.09	0.22	0.00
Leaders in general	1.36	1.88	2.37
Professionals in sciences and arts	1.18	4.42	2.76
Median level technicians	1.92	3.04	2.44
Administrative workers	1.81	1.51	0.53
Service workers	9.87	8.06	8.61
Salesmen and service trade	3.31	3.59	7.99
Farmworkers	68.47	66.59	62.64
Workers in the production of industrial goods, services, repair and maintenance	11.99	10.69	12.65
Mis-defined occupations	0.00	0.00	0.00

Source: Prepared by author based on data from PNAD(2008)

Among people living in urban areas, the highest percentages of workers with two jobs are among the professionals in the arts and sciences, followed by service workers and salesmen. However, when comparing the proportion of workers with two jobs, they are higher among professionals in sciences and arts, salesmen and farm workers.

In rural areas, the highest percentages of workers with two jobs are among farm workers, industry and services. And the comparison of the proportion of workers with two jobs shows that they are higher among workers in industry, services, sales and leaders.

Finally, tables 7 and 8 present the estimated results for labor supply in the secondary market in urban and rural. Analysis of these results indicates that, according to the theory exposed, the signs are expected except for the stability, both in urban and rural areas.

Table 7. Marginal effects over the secondary labor supply in the urban area

Variable	Coefficient	Std. Dev.
Hours of work 1	-0.9720	0.0233 *
Income per hour 1	-0.2677	0.0662 *
Income per hour 2	1.4848	0.0723 *
Non labor income	-0.0076	0.0019 *
Heterogeneity	105.2727	3.1540 *
Stability	0.0855	0.0115 *
Northeast	-3.3034	3.4159
Southeast	-8.3913	3.5135 **
South	-12.3700	4.0931 *
Midwest	-11.5599	4.2719 *
Age	0.9787	0.1031 *
Male	-55.2120	2.7661 *
White	-6.8405	2.2765 *
Schooling	10.6082	0.3162 *
Constant	-315.1524	7.3314 *

* Significant at 1%

** Significant at 5%

Source: Prepared by author based on data from PNAD (2008)

In urban areas, an increase of one hour and R\$ 1.00⁴ in earnings per hour for the main job decrease secondary labor supply at 0.97 and 0.27 hours. The increase from R\$ 1.00 in non labor income has an effect more than twenty times lower than the yield of first employment, it makes the supply of labor falls 0.0076 hours.

The fact that the occupations are heterogeneous increases 105.27 hours and an increase of one month in the stability of workers in the main job increases the supply of 0.09 hours. Public jobs usually offer stability in Brazil and the workers who look for stability in this kind of job don't care very much about the other characteristics of the job or the pleasure the work may give, so the second job can be an alternative.

In relation to the North region, the effect of living in any other region is negative, with the largest effect found in the South. The North, as the Northeast, is a poor region of the country and moonlight can bring a supplement income.

⁴ By the time the PNAD data was collected (sep/2008), the exchange rate was US\$ 0.55 / R\$1.00.

On the characteristics of workers, an increase of one year of age increases the supply of 0.98 hours, being male causes a drop of 55.21 hours on labor supply in the secondary market, being white decreases 6.84 hours and the increase of one year of schooling has a positive impact of 10.61 hours of work. The positive impact of the schooling can be related to the capacity of doing different kinds of work, so people with more abilities tend to get and accept more jobs offers.

Table 8. Marginal effects over the secondary labor supply in the rural area

Variable	Coefficient	Std. Dev.
Hours of work 1	-1.3086	0.0452 *
Income per hour 1	-2.0990	0.4104 *
Income per hour 2	2.7264	0.3503 *
Non labor income	-0.0780	0.0131 *
Heterogeneity	125.5234	5.3121 *
Stability	0.1043	0.0153 *
Northeast	-74.6386	5.2162 *
Southeast	-66.6849	6.7072 *
South	-33.6416	7.0540 *
Midwest	-79.4498	7.7569 *
Age	0.0560	0.1796
Male	37.5705	4.8419 *
White	49.0152	4.4388 *
Schooling	1.5232	0.5358 *
Constant	-86.0354	9.9574 *

* Significant at 1%

** Significant at 5%

Source: Prepared by author based on data from PNAD (2008)

In rural areas, the marginal effects follow the same pattern of the urban area, but with greater impact, except in the case of schooling. The small effect of schooling can be explained by the simpler kind of work that is executed in rural areas, thus needing fewer abilities from workers. And the greater impact of other variables may be caused by differences in the cost of living, the transformations and the modernization of the work in rural areas and other particular preferences of the workers who live in these areas.

An increase of one hour of work in the first job generates a drop of 1.30 hours of labor supply in the secondary market. And the increase of R\$ 1.00 in the main job first causes a decrease of 2.09 hours, but if the increase is in the second job wage, it leads to 2.72 hours of growth in the supply of skilled labor. The yield of non labor income also has less effect, for each increase of R\$ 1.00, the supply falls 0.07 hours. The effect is almost ten times higher in rural than in urban areas.

The heterogeneity leads to an increase of 125.52 hours on the secondary labor supply and a one-month increase in the stability of workers in the main job increases the supply of 1.52 hours.

The effect of the worker to live in any region, in relation to the North, is negative, with the greatest effect in the Midwest. The Midwest is the region where the agriculture has most developed in Brazil.

Other effects are: the white color increases by 49.01 hours and an increase in one year of schooling has an impact of 1.52 hours work, being male causes an increase of 37.57 hours on labor supply in the secondary market. The fact of men supply more hours can be explained by the fact the most jobs in the rural areas are traditionally male jobs.

Thus, labor supply secondary market, as well as in other countries, is determined by the characteristics of workers, time constraint, differences in occupations and stability in their first job.

6 Conclusions

In this study, we attempted to estimate the labor supply in the secondary market, considering the socioeconomic characteristics of workers and the job, such as heterogeneity and stability.

The results indicate that more than 4% of the employed population has two jobs, and in rural areas this percentage is greater than 5%. These workers have a higher level of education, especially in urban areas. They are little older and most live in the Northeast.

Those who have two jobs work fewer hours in the first job and receive an income per hour in the second job lower than in the first job. In the second job, they work about 80 hours and receive an hour, on average, R\$ 11.22 in urban areas and R\$ 3.56 in rural areas. Their occupations are quite heterogeneous and stability in the main job is higher among those who participate in the secondary market.

The estimation of labor supply for this market showed that the number of hours, the main job wage and the non labor income have a negative effect on the second job hours. Income from second jobs, the heterogeneity and stability, showed the opposite effect.

And among other variables, the schooling has a positive effect and indicates that even the most educated, may be looking for an alternative in the secondary market.

The estimated impacts are greater in the rural areas and this may be caused by differences in the cost of living, the changes of the work in rural areas and different preferences of the rural workers.

It is expected, thus contributing to the understanding of the phenomenon of second jobs in Brazil. Future researches can analyze others labor characteristics, the integration of the urban and rural labor markets and evaluate the effects on the second job of policies related to education, migration, seasonality in the rural labor and unemployment over the time.

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**TEXTO PARA DISCUSSÃO DO
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ECONÔMICAS DA UFG**

Coordenação

Sandro Eduardo Monsueto

Colaborador Externo

Luciano Martins Costa Póvoa – UNB

Endereço

Campus Samambaia, Prédio da FACE –
Rodovia Goiânia/Nova Veneza, km. 0 –
Caixa Postal 131, CEP 74001-970, Goiânia
– GO.

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