

The impact of the Bolsa Família Program on the duration of formal employment for low income individuals

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This article uses microdata from the Unified Registry of Social Programs (CadUnico) and the Annual Social Information Report (Rais) to examine the duration of employment for families receiving benefits from the *Bolsa Família* Program. To achieve this goal, Cox proportional hazard models were used to estimate the job duration for beneficiaries and non-beneficiaries of the program using a database of more than three million people. The findings indicate that the risk of leaving work among beneficiaries of the *Bolsa Família* Program is 7% to 10% lower than the risk for non-beneficiaries. Parametric models were also adjusted to verify robustness, producing results equivalent to those of the Cox model. In all cases, participation in the program was observed through a covariate that varies over time, extracted directly from the program's payment records.

Keywords: employment; labor supply; duration analysis; proportional hazard; *Bolsa Família*.

Os efeitos do Programa Bolsa Família sobre a duração do emprego formal dos indivíduos de baixa renda

Neste artigo utilizamos microdados do Cadastro Único combinados com dados da Relação Anual de Informações Sociais (Rais) para examinar a duração do emprego entre indivíduos de famílias beneficiárias do Programa *Bolsa Família*. Para tanto, estimamos modelos de riscos proporcionais de Cox para comparar a duração no emprego entre beneficiários e não beneficiários do programa utilizando uma base de dados com mais de três milhões de indivíduos pertencentes a famílias de baixa renda. Os resultados sugerem que o risco de desligamento do emprego para os beneficiários do Programa *Bolsa Família* é entre 7% a 10% menor do que para os não beneficiários. Modelos paramétricos também foram ajustados para verificação de robustez, produzindo resultados equivalentes aos do modelo de Cox. Em todos os casos, a participação no programa foi observada por meio de uma covariável variando no tempo, extraída diretamente das folhas de pagamento do programa.

Palavras-chave: emprego; oferta de trabalho; análise de duração; riscos proporcionais; bolsa família.

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Los efectos del Programa Bolsa Familia sobre la duración del empleo formal de los individuos de bajos ingresos

En este artículo utilizamos microdatos del registro nacional de personas pobres (Cadastró Único) combinados con datos de la Relación Anual de Informaciones Sociales (Rais) para examinar la duración del empleo entre individuos de familias beneficiadas por el Programa *Bolsa Família*. Por lo tanto, se estima un modelo de riesgos proporcionales de Cox para comparar la duración del empleo entre beneficiarios y no beneficiarios del programa, utilizando una base de datos con más de tres millones de individuos pertenecientes a familias de bajos recursos. Los resultados sugieren que el riesgo de extinción de empleo para los beneficiarios del Programa *Bolsa Família* es entre un 7% y un 10% inferior a la de los no usuarios. Modelos paramétricos también fueron ajustados para verificación de robustez, produciendo resultados equivalentes a los del modelo de Cox. En todos los casos, la participación en el programa fue observada a través de una covariable variando en el tiempo, extraída directamente de la nómina del programa.

Palabras clave: empleo; oferta de trabajo; análisis de duración; riesgos proporcionales; Bolsa Família.

1. INTRODUCTION

According to the International Labor Organization (ILO), work is the fundamental path to climbing out of poverty, overcoming inequality and social exclusion, and is one of the most direct ways in which economic development can help population well-being. The formal labour market, along with keeping families out of poverty, can also offer access to rights and warranties for workers, and social security. The precarious position of low income workers in the formal labour market ends up aggravating income volatility and high job turnover, which characterize this portion of the population.

Within this context, it is important to understand the participation dynamic of economically vulnerable members of the population in the formal labour market. The accumulation of this type of knowledge may suggest the implementation of reforms to the current social protection system in a way that guarantee the promotion of population well-being and its adequacy to a variety of socio-economic realities and stages of life.

It is expected that a program based on monetary transfers may lead to a reduction in employment, since it reduces economic necessity to work (income effect). Associated with this is the fact that programs focused on low income public may discourage formal employment, given that the eligibility criterion based on family income may imply a decrease in the number of employed family members in order to avoid exceeding the established income ceiling. This supposed accommodation has been treated in the literature as *work-disincentive effect*.

On the other hand, the fact that a cash transfer program is conditioned on school attendance would lead to an increase in the amount of time allocated to school by children and a decrease in time spent on other activities such as work and leisure. Once there is reduction in the time children spend working, adults should supply substitution for this work.

From the point of view of economic theory, therefore, the effect of a conditional transfer program on beneficiary labour supply is ambiguous. Besides the effects depend on individual preferences, the analyses should take into account the various members of the family, who have conflicting budgetary restrictions. Thus, this is an eminently empirical question. A more detailed discussion of the limitations of a microeconomic analysis in the evaluation of the impact of conditional cash transfer programs is presented by Oliveira and Soares (2012).

Various empirical strategies can be employed to investigate the effect of a cash transfer program on employment. Ideally, it would be desirable to have an experimental model in which the attribution of the benefit is randomized, or in other words, the treatment is randomly attributed to a fraction of the eligible population (the treatment group). If the selection of the individuals receiving the benefit is random, the treatment and control groups, if sufficiently large, should have uniformly similar characteristics. In this case, any differences observed in the results can be attributed to the effects of participating in this program.

Unfortunately, this context is very rare in social science studies. The eligibility criterion for the *Bolsa Família* Program is fundamentally based on family *per capita* income (as declared in the Federal Government's Unified Registry of Social Programs), which does not correspond to a randomized experimental model. This one is a typical observational study, which requires non-experimental methods. Generally, studies based on these methods use individual data to control for the differences between treatment and control groups, typically using measures that depend on a series of observable individual characteristics.

The current study is dedicated to specifying a particular regression model to identify the effect of the *Bolsa Família* Program on the duration of employment in the formal labour market, an approach that has not yet been explored in publications on this subject. Among other techniques, the characterization of the beneficiary's status in the program is determined by a covariate that varies over time, making it possible to identify the months that a family was effectively benefitting from the program and the months that it was not. This study also uses a broad data set: i) the Federal Government's Unified Registry of Social Programs (CadUnico) managed by the Ministry of Social Development and the Fight against Hunger, considered to be a census of the low income population of Brazil, containing approximately 80 million observations; ii) the Annual Social Information Report (Rais), prepared by the Ministry of Labor and Employment, which offers information about the entire universe of formal workers in Brazil and containing around 50 million observations/year; and iii) the payment records for the *Bolsa Família* Program (BFP), which include data for every month since its inception in 2004 and cover approximately 21 million families which in 2011 were or had been beneficiaries of the program.

The purpose of this study is therefore to compare the participation of BFP beneficiaries in the formal labour market with non-beneficiaries listed in the Unified Registry. This article is structured in the following manner: section 2 briefly describes the *Bolsa Família* Program and the employment conditions in Brazil as well as the relevant literature about the subject; section 3 describes the database used and the methodology employed; in section 4 the findings of the study are presented and discussed, and conclusions are presented in section 5.

2. FIELD CONTEXT

2.1 THE BOLSA FAMÍLIA PROGRAM

The *Bolsa Família* Program (BFP) was instituted by the Brazilian federal government through Law nº 10,836 on January 9, 2004. According to the Ministry of Social Development and the Fight against

Hunger (MDS), the BFP is a direct cash transfer program that benefits families in poverty or extreme poverty. In 2011, poverty was characterized as family monthly per capita income between R\$ 70 and R\$ 140, and extreme poverty was characterized as family monthly per capita income of less than R\$ 70.

To participate in the program a family needs to be characterized by either extreme poverty, or poverty with the additional requirement of having pregnant or nursing mothers or children between the ages of 0 and 17.

In addition, the program requires at least 85% school attendance from children between six and 15, and younger children have to be taken regularly to health units to keep them up to date with their vaccinations. The conditions and complementary activities associated with the program constitute long-term objectives about the construction of human capital aimed at interrupting the generational transmission of poverty (Britto, 2005; Lindert et al. 2007).

With regard to the impact of cash transfer programs in general, Marshall and Hill (2014) reviewed the literature and observed effects in terms of an increase in school attendance, and consequent increase in female labour supply. By directing transfer of resources to the mother, rather than to the father, these programs produce higher levels of well-being for the children, and also contribute to the empowerment of female beneficiaries who take on more relevant role in decision-making of the household (Britto, 2005). The reduction of child labor is also considered consensus for conditional cash transfer programs (De Hoop and Rosati, 2014).

There is also considerable consensus on the positive impact of the *Bolsa Família* Program on school attendance (Araújo et al., 2010; Oliveira and Soares, 2012; Soares et al., 2010; Chitolina et al., 2016; and Ferro et al., 2010). However, Oliveira and partners (2007) found that the BFP did not impact child vaccination. Since the program has led to greater consciousness about the need to access public health services for obtaining child immunization, through the conditions imposed, the absence of this impact suggests obstacles on the supply of these services (Soares et al., 2010).

Britto (2005) also points two other collateral effects: i) incentives for the civil registry, since official documents are needed for the mothers to collect the benefit; and ii) greater access to the financial system, since the beneficiaries receive the magnetic card transfers from individual bank accounts., since official documents are necessary for mothers to receive the benefit; and ii) greater access to the financial system, because the beneficiaries receive these transfers through magnetic cards of individual bank accounts.

Oliveira and Soares (2012) compiled a list of various articles that focus on investigating a possible *work-disincentive*. The study summarizes results of articles about employment for the population that benefits from conditional cash transfer programs, based on various national studies. Employment is measured through three prisms: participation in the work force, working hours and efforts to obtain employment. The study concludes that

conditional cash transfer programs have little impact on the labour market, and some of the impact they do have — such as reducing the number of working hours for mothers and increasing the chances of obtaining a job for certain groups — are positive or not necessarily bad. It can be stated, based on a large amount of evidence, that there is no empirical support to sustain the *work-disincentive hypothesis*. [Oliveira and Soares, 2012:30]

In addition to Oliveira and Soares (2012), a range of other studies indicate that there is no significant effect of the Bolsa Família on the labor supply of adult relatives, either from the statistical point of view or from the degree of magnitude (Ferro et al., 2010; Chitolina et al., 2016; Foguel and Barros, 2010; Soares, 2012). Most of the findings are related to the reduction of the number of working hours, especially by mothers and women.

Using data from the National Household Survey (PNAD), Tavares (2010) studied the BFP's effect on employment among mothers, a group that theoretically should be more affected by receiving the benefit, given that they have a greater reserve salary due to domestic care and time dedicated to children.

The author finds an income effect associated with the value of the benefit (the greater the transfer received, the lower the mother's engagement in the labor market) and a substitution effect (mothers increase their labour supply to compensate the reduction of labour supply by the children, who increases school attendance). This result is in line with Teixeira's study (2010), which concludes that the benefit values are not large enough to generate an income effect capable of overriding the substitution effect.

The propensity of beneficiaries to transfer their activities to the informal labour market has been analyzed by Barbosa and Corseuil (2014). They also use PNAD data, but unlike the previous works which use the *propensity score matching methodology*, they use regression discontinuity analysis and conclude that the program does not affect the decision whether to enter the formal or the informal labour market.

However, De Brauw and partners (2015) found different result concluding that, even though there is no effect on the total number of working hours for the household, the program causes a "substantial" reallocation of working hours from the formal to the informal market. They argue that this change may be induced by the use of income records in the formal market to verify whether the eligibility criterion is being met. Soares and Ribas (2011) found a reduction in the participation in the formal labour market by beneficiaries in large cities and report a decrease in the number of hours worked by beneficiaries in poor areas, even though the benefit tends to encourage greater participation in the formal labour market by other members of the household.

In terms of the effects of cash transfer programs on employment in other Latin American countries, the empirical results are, roughly speaking, similar to those seen in Brazil. The work of Skoufias and Di Maro (2008) about the Progresá do México concludes that in general the program does not have a significant effect on the participation rate of beneficiaries in the labour market. They identify exceptions for specific groups: men between the ages of 35 and 54 significantly increased their participation, even though of small magnitude, and women between the ages of 45 and 54 reduced their participation at the beginning of the program. On the other hand, it could not be stated that beneficiaries spent more time on leisure activities. Parker and Skoufias (2000) present similar results.

The most recent work of Alzúa and partners (2013) on conditional income programs in Mexico, Nicaragua and Honduras reports comparable results in these three countries, which indicates that the effects of these programs on the labour market were slightly negative, in general, but small and not statistically significant. The results of Gonzalez-Rozada and Pinto (2011) and Barrientos and

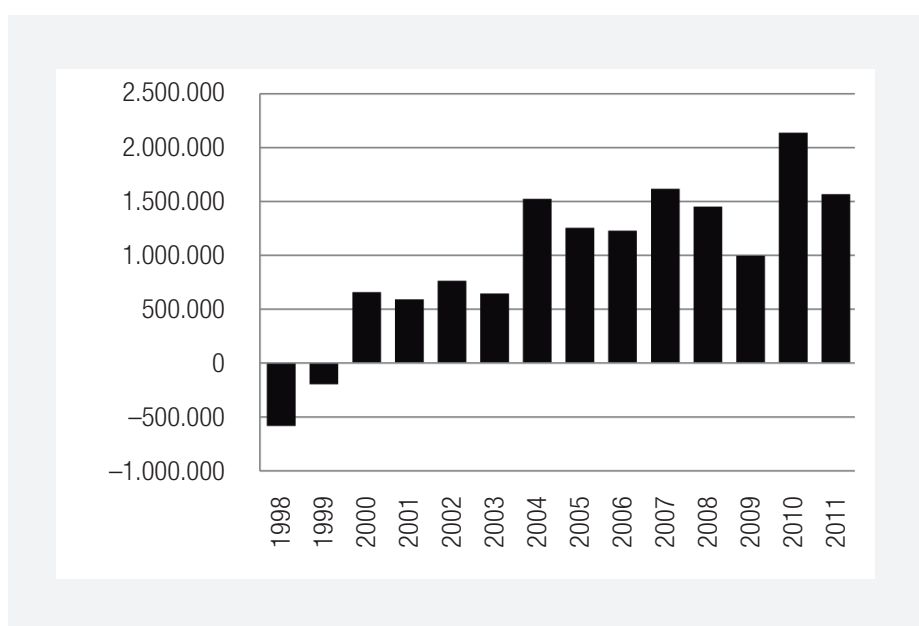
Villa (2013) for Ecuador and Colombia indicate an increase in participation in the former and a null effect in the latter.

Finally Cepal (2014), in a survey of studies in a variety of countries such as Argentina, Brazil, Chile, Honduras, Mexico, Nicaragua and Paraguay, did not find empirical evidence of the existence of disincentives created by these programs in terms of the labor inclusion of the beneficiaries.

2.2 JOB DURATION

From 2000 on, the Brazilian labour market was marked by a net increase in formal employment according to the data from the General Employment and Unemployment Registry (Caged). As illustrated in graph 1, during the two year period of 1998-99 more jobs were lost than created in the formal Brazilian economy, with 389 thousand people losing their jobs. However, in the 2000s, net job creation was positive in all years, and improved substantially by the end of the decade. In 2000's, 658 thousand new formal jobs were created in Brazil, while in 2008 almost 1.5 million jobs were created, and in 2011 almost 1.6 million jobs were created.

GRAPH 1 EVOLUTION OF NET FORMAL JOB CREATION (1998-2011)



Source: Elaborated by the authors based on data from the Ministry of Labor and Employment — General Registry of Employment and Unemployment (Caged).

As pointed out by Menezes-Filho and Picchetti (2000) in relation to unemployment, the duration of employment is as important (and less studied) than the existence of employment. That means, in other words, that the time that workers remain on a job and how this duration depends on the

worker's characteristics. Jobs of short duration affect retirement for low wage workers, given that they have more difficulty in requesting and proving the benefits that they are entitled to due to time of service, because of constant changes in employment and periods of unemployment or informal employment (Além et al., 1998).

Since retirement benefits are conceded in general based on time of service to people who have had stable jobs or who have rarely changed jobs during their professional lives (Além et al., 1998), the duration of formal employment serves as a measure of the quality of employment which affects the well-being of the worker.

In this respect, Giambiagi and Afonso (2009) emphasize that retirement by age in Brazil has lower average benefits than retirement based on time of contribution. These authors observe that in December 2008 14,453,455 retirement benefits were issued, with 7,500,092 (51.9%) of these being based on age, 2,835,391 (19.6%) based on disability and 4,117,972 (28.5%) based on time of contribution. The average values of the benefits for disability and age were R\$ 552.01 and R\$ 432.97 respectively, while the average value of benefits based on time of contribution was R\$ 1.058.93.

3. METHODOLOGY AND DATABASE DESCRIPTION

The data used in this work comes from three main sources: the Unified Registry (CadUnico), the Annual Social Information Report (Rais) and the *Bolsa Família* Program (BFP) payment records.

The CadUnico is an instrument of the Ministry of Social Development and the Fight against Hunger (MDS) which identifies and characterizes low income families, which are understood to be those with a monthly income up to half minimum wage per person or total monthly income of up to three minimum wages. To be eligible for benefits from federal government social programs like the BFP, recipients must be registered in the CadUnico.

RAIS, on the other hand, is an annual data collection instrument, which is the responsibility of the Ministry of Labor and Employment, used in the public management of the labor sector. All companies are required to deliver the Rais declaration, whether they have employees or not, and this includes public and individual companies, administrative bodies directly or indirectly administered by federal, state or municipal governments, foundations and rural employers.

To construct this database, we considered all individuals between the ages of 16 and 65 who were admitted to their jobs in 2008 and were registered in the CadUnico (as of December 2011). For individuals with more than one formal job, we used only the main one (with the largest salary). These jobs were accompanied for up to four years, using the information from Rais for 2009, 2010 and 2011. For cases in which the job ended for any reason before December 2011, the individual was no longer followed. Thus, only one job per individual was followed and re-entries were not observed.

This procedure resulted in more than 3 million observations. Even though there was data from 2008 to 2011, only the most recent information (from the date of termination of employment) was kept in the registers. Differently, the presence of the individuals on the BFP was monthly verified. The relevance of considering the receiving of the benefit as a variable that varies over time will become clearer after the discussions in Subsections 3.1 and 3.2.

3.1 DESCRIPTIVE ANALYSIS

The data for each individual refers to the year in which the job terminated, or 2011 for those cases in which the individual was still employed. As shown in table 1, 60% of the individuals were men, 87% resided in urban areas, for 24% this was their first job, 7% were union members and 47% were beneficiaries of the BFP in December 2011. The average age was 33 and each worker had an average of 1.89 children, with 1.18 being the average of children under the age of 18. These individuals remained at the job for 13 months on average and just 18% were still employed on December 2011, and thus these observations are considered censored.

TABLE 1 DESCRIPTIVE STATISTICS FOR QUANTITATIVE AND DICHOTOMOUS VARIABLES

Variable	N	Average	Std Deviation	Minimum	Maximum
Age	3,012,384	33.26	9.87	16	68
Male	3,012,384	0.60	0.49	0	1
Income_percap	3,012,384	89.88	63.42	0	311
Children	3,012,384	1.89	1.41	0	28
Minors	3,012,384	1.18	1.23	0	12
Salary	2,988,028	616.78	4,249.12	0	3,934,232
Location	3,007,901	0.87	0.33	0	1
First_job	3,012,384	0.24	0.42	0	1
UnionMember	3,012,379	0.071	0.26	0	1
BFP_2011	3,012,384	0.47	0.50	0	1
Job_duration	3,012,384	12.99	13.06	0	48
Censored	3,012,384	0.18	0.39	0	1

Source: Elaborated by the authors.

Note: The data for each individual refers to the year in which the job ended or 2011, if the individual still had this job; *Age* in years; *Male*: 1- yes, 0- no; *Income_percap* indicates family monthly per capita income in Brazilian Reais, self-declared; *Children* indicates the number of children; *minors* the number of children under 18 years of age; *salary* is the average annual salary for the year in which the job ended or 2011, if the individual still had this job, with values corrected by the consumer price index (INPC) for December 2011; *Location*: 1- urban, 0- rural; *First_job*: 1- first job, 0- no; *UnionMember*: 1- yes, 0- no; *BFP_2011*: 1- program beneficiary as of December 2011, 0- no; *Job_duration* indicates the duration of the job in months; *Censored*: 1- still had this job as of December 2011, 0- didn't.

Family monthly per capita income, which is self-declared in the CadUnico, was approximately 90 reais on average, which is in line with the program eligibility criteria for the year 2011, namely, below R\$ 140.00. The values for individual monthly salaries obtained from the Rais database were corrected by the INPC consumer price index for December 2011. The average salary was calculated for the year in which the job ended, or for those who still were working at this job, the year 2011. The averages and standard deviations found for the 3 million individuals were R\$ 616.78 and R\$ 4,249.12

respectively. The largest observed salary, close to 4 million reais, suggests that attention should be paid to outliers for this variable as discussed later on in this section. Table 2 presents the descriptive statistics for polychotomous category variables. Note that 45% of the jobs were in the country’s Southeast, followed by 23% in the Northeast, 18% in the South, 8.3% in the Central-West and 5.7% in the North.

TABLE 2 DESCRIPTIVE STATISTICS FOR POLYCHOTOMOUS VARIABLES

Variable	N	Category	Average	Std-Deviation
Race	2,843,787	White	0.39	0.49
		Yellow	0.0027	0.052
		Indigenous	0.0034	0.058
		Brown	0.51	0.50
		Black	0.10	0.29
Education	2,313,213	No Education	0.072	0.26
		Incomplete Primary	0.58	0.49
		Complete Primary	0.14	0.35
		Incomplete Secondary	0.14	0.35
		Complete Secondary	0.055	0.23
		Incomplete Higher or More	0.0089	0.094
Region	3,012,384	Northeast	0.23	0.42
		North	0.057	0.23
		Central-West	0.083	0.28
		Southeast	0.45	0.50
		South	0.18	0.39
Size_city	3,012,384	(0, 10 thou]	0.089	0.29
		(10 thou, 100 thou]	0.42	0.49
		(100 thou, 1 million]	0.34	0.47
		(1 million, +]	0.15	0.36
Size_establishment	3,012,384	(0, 10]	0.16	0.37
		(10, 100]	0.35	0.48
		(100, 1000]	0.29	0.46
		(1000, 10000]	0.17	0.38
		(10000, +]	0.018	0.13

Continue

Variable	N	Category	Average	Std-Deviation
CBO	3,012,384	Farming and Fishing	0.16	0.36
		Industry — Generalists	0.33	0.47
		Industry — Operators	0.051	0.22
		Maintenance & Repair	0.023	0.15
		Services, Commerce	0.28	0.45
		Administrative Services	0.11	0.32
		Mid-Level Technicians	0.030	0.17
		Others	0.020	0.14
CNAE	3,012,250	Public Administration	0.037	0.19
		Agriculture and Livestock	0.14	0.34
		Administrative Activities	0.10	0.31
		Vehicle Sales and Repair	0.21	0.41
		Contracting	0.13	0.33
		Industry	0.20	0.40
		Others	0.18	0.38
Reason_failure	2,465,298	Retirement	0.00038	0.019
		Death	0.0018	0.042
		Term. w. j. c. in. Employee	0.0016	0.040
		Term. w. j. c. in. Employer	0.015	0.12
		Term. w/o j. c. in. Employee	0.18	0.39
		Term. w/o j. c. in. Employer	0.57	0.49
		Transfer	0.020	0.14
		End of Contract	0.20	0.40
		Others	0.00021	0.014

Source: Elaborated by the authors.

Note: *Size_city* provides the number of inhabitants of the employer city; *Size_establishment* provides the number of employees at the employer establishment; *CBO*: Brazilian Occupation Classification; *CNAE*: National Classification of Economic Activity; *Reason_failure* provides the reason for the job's ending (failure). *Term. w. j.c. in. Employee* means termination with just cause initiated by the employee, *Term. w. j.c. in. Employer* means termination with just cause initiated by the employer, *Term. w/o j.c. in. Employee* means termination without just cause initiated by the employee, *Term. w/o j.c. in. Employer* means termination without just cause initiated by the employer.

An initial comparative examination between the groups of interest, beneficiaries and non-beneficiaries BFP, is presented in table 3. It is important to note that these groups have been determined by an indicator variable of presence in the program on a specific date (December 2011). Not surprisingly, all of the differences are statistically significant, given the large number of observations on both groups.

It should be emphasized, however, that the magnitude of these differences is very small, except for the variables that are related to the criterion for granting the benefit: *per capita* income, salary and number of children. As expected, beneficiaries of the program have lower salaries and more children and therefore lower family per capita income. Obviously, it will be important to control for these characteristics when seeking to measure the specific effect of the BFP on job duration in order to eliminate endogeneity.

TABLE 3 COMPARISON BETWEEN BENEFICIARIES AND NON-BENEFICIARIES OF THE BOLSA FAMÍLIA PROGRAM

Variable	Non-Beneficiary	Beneficiary
Age	32.78	33.77***
Male	0.605	0.597***
Income_percap	107.30	70.32***
Children	1.58	2.24***
Minors	0.77	1.64***
Salary	638.25	592.70***
Urban_area	0.869	0.873***
First_job	0.238	0.235***
UnionMember	0.069	0.073***
Job_duration	13.96	11.77***
N	1,592,012	1,420,372

Source: Elaborated by the authors.

Note: Average values of variables for BFP non-beneficiaries and beneficiaries in December 2011. Reference p-value for t-test of differences between means: ***<0.01.

Some evidence about the *work-disincentive effect* is suggested by the two months longer job duration found for non-beneficiaries. However, this preliminary analysis carries a problem that should be noted: the fact that an individual was a beneficiary of the BFP in December 2011 does not mean that this individual was a beneficiary at the end of his or her job (see table 1 which shows that only 18% of the individuals maintained their jobs until this date).

Therefore, the comparison of job duration is not valid given that the allocation of the individuals in these groups is not random and the job duration variable is censored (that is, the job is only followed until December 2011 and we do not know what happens afterwards) and the participation in the program is analyzed at a fixed moment in time. Thus, to achieve a correct specification, the model will have to overcome these three obstacles.

Table 4 shows that 42.5% of the surveyed individuals remained in the program from the moment they entered. We may also observe that roughly a third of the individuals were members of the pro-

gram at some point in time, but after leaving the program they did not return. Only 6.78% of the sample is comprised of individuals who returned to receive benefits from the program after having left it at some previous moment.

TABLE 4 BFP ENTRANCE AND EXIT DYNAMICS

Entered and never left	42.53%
Left and never returned	33.06%
Never were BFP beneficiaries	17.64%
Left and later returned	6.78%

Source: Elaborated by the authors.

Another relevant question in evaluating the impact of the BFP has to do with the individuals who are considered for the program. Even though the concession of the benefits is based on family per capita income and having pregnant women or children in the family, these facts are not sufficient to guarantee staying or even entering the program. Even though a family may be eligible according to the BFP criteria, it must have an updated registration in the CadUnico in order to be considered.

Table 5 corroborates this analysis by showing that, among individuals who satisfied the BFP selection criteria in December 2011, only 43% received the benefit. The reasons for this can be diverse: receiving the benefit is not immediate after registration; CadUnico data can be out of date; the family could have been eliminated at some point during the auditing process, or may not have fulfilled one of the conditions or may have declared incompatible income.

TABLE 5 CONSIDERED AND ELIGIBLE

BFP Criteria	BFP in 12/2011		Total
	No	Yes	
Satisfy	972,875 43%	1,294,108 57%	2,266,983 100%
Do not satisfy	619,137 83%	126,264 17%	745,401 100%
Total	1,592,012 53%	1,420,372 47%	3,012,384 100%

Source: Elaborated by the authors.

Note: Those with per capita income below R\$ 70.00, or those with per capita income below R\$ 140.00 and who also have one child of minor age within the family.

We should also remember the fact that family per capita income is self-declared, which means that there can be fraud and families outside the defined scope that are being considered. The MDS seeks to minimize the incidence of these cases through periodic audits in which salaries reported by the Rais database are used to evaluate the trustworthiness of the reported values. However, there is a considerable gap in this process, because the Rais database is made available only two years later. In addition, due to the fact that a large proportion of the Brazilian economy is informal, many of the individuals who have signed up omit the portion of their income that can't be audited in order to qualify for the benefit (Soares et al., 2010).

The salary reported by the Rais database is provided by the employer rather than the employee. Of the 3 million individuals in the sample, only 97 cases registered a salary above 10 thousand reais, of which 17 were above 50 thousand reais and just 9 above 100 thousand reais. There are three possible explanations for the presence of these observations in the database: i) registration error, which is very probable in the case of a salary of 4 million reais; ii) fraud, given that the CadUnico is self-reported; or iii) individuals who later prospered, because the CadUnico database does not eliminate the individuals who were once registered in the database.

Low salaries have also been observed. Around 790 thousand records had salaries below 450 reais, which is less than the national minimum wage corrected by the consumer price index (INPC) for any of the years considered as shown in table 6. This could be related to registration errors, temporary absences or reduced workdays. Provisional Measure nº 2,164-41 of August 24, 2001 governs the regime of part-time employment. Article 58-A, which was incorporated into the Consolidation of Work Laws (CLT), considers part-time employment that which does not exceed 25 hours per week, and its first paragraph establishes that: "the salary to be paid to employees under a part-time regime will be proportional to the workday performed by workers who perform the same functions in a full-time capacity."

TABLE 6 BRAZILIAN MONTHLY MINIMUM WAGE (R\$ CORRECTED BY THE INPC)

Year	Jan. 1	Dec. 2011
2008	380	476
2009	415	488
2010	510	576
2011	510	541

Source: Elaborated by the authors.

To deal with high as well as low salaries in the database, the values have been separated into 10 classes of salary (table 7). In the main filter used in the estimates which are presented in Section 4, we use the 40% of the records that make up the most central classes of salaries, Classes 4 through 7 in table 7.

TABLE 7 SEPARATION INTO 10 CLASSES OF SALARY

Class	Average	Class	Average
1	202.19	6	587.32
2	373.30	7	649.56
3	450.58	8	734.37
4	497.40	9	868.46
5	539.92	10	1,390.35

Source: Elaborated by the authors.

It should be noted that this filter, in addition to analyzing only the more homogeneous salaries, disconsiders high salaries and those below the minimum wage.

3.2 SURVIVAL ANALYSIS

Survival analysis is a group of statistical procedures used to analyze data in which the variable of interest is the time until a given event. In the survival nomenclature, when the event occurs, “failure” is said to have been observed. If, on the other hand, the event of interest does not occur during the time under analysis, it is said that the information is “censored.” For this study the analyzed variable is the job duration and the event of interest is the termination (exit) of this job. The job durations for those who remained employed as of December 2011 are censored.

Considering a random variable t , with probability density $f(t)$ and accumulated distribution $F(t)$, the *survival function* is defined by

$$S(t) = 1 - F(t) = P(T > t)$$

and the *hazard function* is

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{P(t \leq T < t + \Delta t | T \geq t)}{\Delta t} = \frac{f(t)}{1 - F(t)} = \frac{f(t)}{S(t)}$$

While the survival function indicates the probability of remaining on the job for longer than a specific time, the hazard function is a rate that represents the potential of a job to terminate at a determined instant, given that it has lasted up until that date.

The survival function $S(t)$ can be estimated using the Kaplan-Meier method. This estimator orders the failure times and calculates the probability of surviving for each interval of time, taking into consideration only individuals at risk. Thus, this estimator deals with the issue of “censorship.” This is a nonparametric procedure, because it does not impose a theoretical model for the failures (or censorship) observed in the sample. However, this method does not permit estimating of the

collective effects of a group of covariates on job duration. To do this, other methods are needed to incorporate the explanatory variables into the model.

The most common method is called the *Cox proportional hazards model*. The formula of the hazard function is

$$h(t, \mathbf{X}) = h_0(t) e^{\sum_{i=1}^p \beta_i X_i},$$

where $\mathbf{X} = (X_1, X_2, \dots, X_p)$ is the vector of explanatory variables and $h_0(t)$ is the so-called baseline hazard function, common to all individuals. Thus, this model considers that individual characteristics determine the hazard for each element in the sample together with a hazard multiple common to all individuals. By not specifying function $h_0(t)$, this methodology is called semiparametric. In contrast, parametric models are those in which the functional formula of $h_0(t)$ is completely specified, except for the values of unknown parameters. For example, the Weibull hazard function is given by , where and .

One of the main reasons for the popularity of the Cox model is that even though the baseline hazard function is not specified, it obtains good estimates of regression coefficients. That is, the model is robust in the sense that the results of the Cox model are close to results of the correctly specified parametric model (Kleinbaum and Klein, 2006). It should be noted that the hazard function involves the product of two functions, the baseline hazard ($h_0(t)$), which is a function of t but not of \mathbf{X} , and the exponential function ($e^{\sum \beta_i X_i}$), which is a function of \mathbf{X} but not of t . This is why the \mathbf{X} characteristics are called time-invariant.

The hazard function considering covariates that vary over time may be expressed as

$$h(t, \mathbf{X}(t)) = \lim_{\Delta t \rightarrow 0} \frac{P(t \leq T < t + \Delta t | T \geq t, \mathbf{X}(t + \Delta t))}{\Delta t}$$

A detailed discussion of the existence of this limit can be found in Lancaster (1992). But, according to Wooldridge (2010), a sufficient condition occurs when $\mathbf{X}(t)$ assumes constant values during time intervals such as days, weeks or months. In this study the *bfp* variable assumes values of 1 (for beneficiaries) or 0 (for non-beneficiaries), for time intervals of at least a month (the period between payments).

The Cox model can be extended for covariates that vary over time:

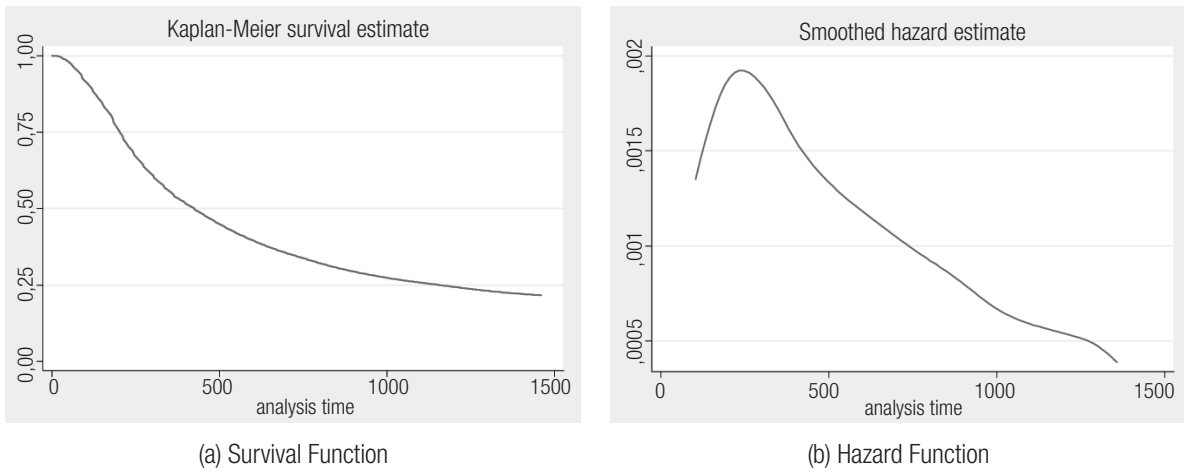
$$h(t, \mathbf{X}(t)) = h_0(t) e^{\sum_{i=1}^p \beta_i X_i(t)}.$$

According to Kleinbaum and Klein (2006), an important assumption of the extended Cox model is that the effect of a variant variable over time on the survival probability at time t depends on the value of this variable at the same instant of time, and not its past or future value. It seems reasonable that the decision to leave or not to leave a job at each instant is influenced by whether this individual is a BFP beneficiary at that moment, and not whether he or she has been a beneficiary in the past or is expected to be one in the future.

4. RESULTS

Graph 2 presents the estimated survival and hazard functions for the non-parametric Kaplan-Meier model. The average job duration was 597 days (20 months) with a median value of 424 days (14 months), which indicates that half of the individuals lost or left their jobs after less than a year and two months of work.

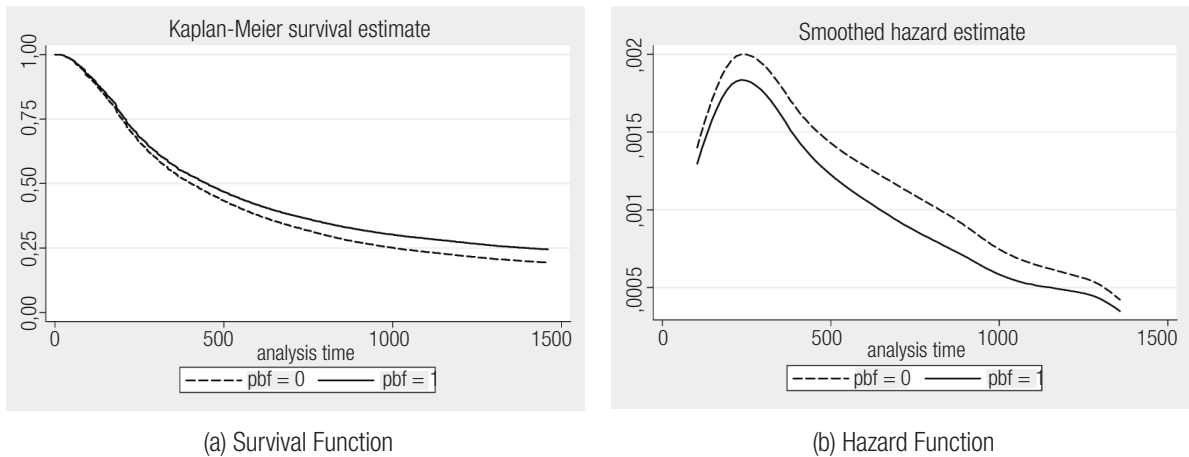
GRAPH 2 KAPLAN-MEIER CURVES



Source: Elaborated by the authors.

Graph 3 shows the survival and hazard functions for beneficiaries ($bfp=1$) and non-beneficiaries ($bfp=0$) of the BFP. Note that the survival rate of beneficiaries is greater than that of non-beneficiaries. It should be noted that this variable indicates that their presence in the BFP varies over time.

GRAPH 3 KAPLAN-MEIER CURVES FOR BFP BENEFICIARIES AND NON-BENEFICIARIES



Source: Elaborated by the authors.

In this initial examination related to the Kaplan-Meier curves, the sample used was for all those admitted in 2008 who remained at their jobs through the end of 2011 or were terminated (for just cause or without just cause and by the initiative of the employee or the initiative of the employer) and which had remuneration that falls within salary classes 4 through 7, as shown in table 7. Thus the sample included 1,007,315 individuals, of which 771,634 presented failure (termination of employment) and the other 235,681 individuals remained at their jobs until December 2011 (censored data).

The Cox model is used to quantify the effect of the time-dependent BFP presence covariate on job duration, controlling for other factors which are time-invariant. According to the discussion conducted in Section 3.2, this constitutes the main result of this article. This specification manages to overcome the obstacles presented in Section 3.1, because the survival models consider the issue of censure and the BFP entrance and exit dynamics and controls for the differences between groups in terms of various individual characteristics. The sample size makes it possible to include several controls, which favors our identification hypothesis: that the control for observable characteristics is sufficient to eliminate endogeneity.

Table 8 presents the estimated hazard ratios for the five models in which the collected sample was altered. The idea of altering the sample makes it possible to increase the robustness of the results, to the extent that the estimates converge.

TABLE 8 COX HAZARD REGRESSION RATIOS FOR JOB DURATION

	(1)	(2)	(3)	(4)	(5)
BFP	0.923***	0.929***	0.898***	0.904***	0.913***
Age	0.991***	0.993***	0.995***	0.996***	0.996***
Male	1.234***	1.214***	1.214***	1.196***	1.027***
Salary	0.997***	0.997***	0.997***	0.997***	0.999***
Income_percap	0.999***	0.999***	0.999***	0.999***	0.999***
Children	0.976***	0.976***	0.981***	0.979***	0.985***
Minors	1.033***	1.035***	1.031***	1.032***	1.022***
First_job	0.902***	0.928***	0.897***	0.908***	0.926***
UnionMember	0.918***	0.863***	0.960***	0.916***	0.891***
Location	1.097***	1.096***	1.096***	1.092***	1.095***
Race (ref.: Black)					
Yellow	1.142*	1.133**	0.994	1.018	1.018
White	1.087***	1.092***	1.076***	1.074***	1.037***
Indigenous	1.059	1.256***	1.146***	1.210***	1.265***
Brown	1.018	1.042***	1.027***	1.029***	1.012***

Continue

	(1)	(2)	(3)	(4)	(5)
Education (ref.: Incomplete Higher or More)					
No Education	0.871***	0.842***	0.885***	0.890***	0.917***
Incomplete Primary	0.875***	0.852***	0.906***	0.908***	0.915***
Complete Primary	0.890**	0.850***	0.918***	0.912***	0.913***
Incomplete Secondary	0.896**	0.866***	0.917***	0.904***	0.896***
Complete Secondary	0.881**	0.850***	0.911***	0.907***	0.910***
Region (ref.: South)					
Central-West	0.840***	0.976*	0.863***	0.975***	0.968***
Northeast	0.460***	0.592***	0.517***	0.638***	0.736***
North	0.612***	0.745***	0.707***	0.833***	0.866***
Southeast	0.826***	0.944***	0.860***	0.975***	1.016***
Size_city (ref.: (0, 10 Thou])					
(10 Thou, 100 Thou]	1.011	1.006	1.032***	1.023***	1.057***
(100 Thou, 1 Million]	1.097***	1.044***	1.078***	1.037***	1.066***
(1 Million, +]	1.023	0.992	1.066***	1.024***	1.026***
Size_establishment (ref.: (0, 10])					
(10, 100]	1.308***	1.260***	1.267***	1.231***	1.333***
(100, 1.000]	1.386***	1.295***	1.323***	1.246***	1.390***
(1.000, 10.000]	1.487***	1.411***	1.412***	1.327***	1.472***
(10.000, +]	1.238***	1.178***	1.107***	1.112***	1.306***
CBO (ref.: Farming and Fishing)					
Industry— Generalists	0.883***	0.901***	0.880***	0.881***	0.804***
Industry — Operators	0.870***	0.821***	0.918***	0.866***	0.786***
Maintenance & Repair	0.783***	0.786***	0.836***	0.829***	0.737***
Services, Commerce	0.749***	0.762***	0.786***	0.765***	0.669***
Administrative Services	0.743***	0.747***	0.787***	0.751***	0.628***
Mid-Level Technicians	0.760***	0.764***	0.825***	0.804***	0.710***
Others	0.837***	0.822***	0.837***	0.807***	0.731***
CNAE (ref.: Public Administration)					
Agriculture, Livestock	3.041***	3.316***	3.161***	3.048***	1.994***
Administrative Activities	2.981***	3.083***	2.789***	2.656***	1.866***
Vehicle Sales & Repair	3.864***	3.681***	3.585***	3.239***	1.847***
Contracting	5.903***	5.638***	4.854***	4.418***	2.469***
Industry	3.457***	3.381***	3.385***	3.108***	1.727***

Continue

	(1)	(2)	(3)	(4)	(5)
Others	3.699***	3.474***	3.466***	3.104***	1.689***
Admission	Jan/08	Jan/08	2008	2008	2008
Classes of Salary	4 to 7	2 to 9	4 to 7	2 to 9	1 to 10
Reason for Failure	Termination	Termination	Termination	Termination	All
Num. Observations	85,663	168,565	909,291	1,766,564	2,617,064
Num. Individuals	69,537	138,370	729,786	1,432,657	2,178,741
Num. Failures	56,386	114,933	565,040	1,136,191	1,805,839
Wald chi2 (43)	11,398***	24,867***	80,857***	198,900***	146,435***

Source: Elaborated by the authors.

Note: P-value: * <0.10 , ** <0.05 , *** <0.01

In Model 1 we only considered those admitted in January 2008 with salaries falling within classes 4 to 7 who left their jobs due to termination (with or without just cause and initiated by the employee or the employer). The restriction of admission in January 2008 allows us to analyze a group in which all of the individuals were exposed to the same macroeconomic conditions since the beginning of their employment. Concentrating the analysis on more homogeneous salaries also helps guarantee that the control and treatment groups really comprise of comparable individuals.

In Model 2 the salary restriction was relaxed to include classes 2 to 9. Models 3 and 4 follow the pattern of Models 1 and 2 but take into consideration all those admitted during the year 2008. Finally, Model 5 considers the entire sample with no restrictions in terms of salary or reason for failure.

Note that the impact of the BFP, measured by the hazard ratio, varied between 0.898 and 0.929 for the various samples used. Even in the last regression, in which all the restrictions were relaxed, including the reason for failure, the finding was an intermediate value of 0.913. These results show that BFP beneficiaries had a 7% to 10% lower chance of leaving their jobs as compared to non-beneficiaries, which not only contradicts the hypothesis of a *work-disincentive* due to cash transfer but also opens the possibility that this extra income produced an incentive to remain in their jobs.

This finding of the effect for conditional cash transfers, in this case in relation to formal employment job duration, is in line with various other studies that have found evidence for increased employment for beneficiaries (Brito and Kerstenetzky, 2011; Medeiros et al., 2007; Tavares, 2010; Teixeira, 2010). The argument is that, as children spend less time at home and attend school, their parents have more time available to work.

However, this result can also be explained in a different manner that does not depend on the program's conditions, but by the benefit itself. In 2011, the average value of the benefit per family was R\$ 120.19. However small this financial benefit may seem, for a family that lives on less than 140 reais per capita (or less than 70 reais), this extra income can make a big difference to the extent that it is used to give attention to the family's dependents. This analysis is corroborated by Oliveira and partners (2007), who found that the BFP effect on the consumption of beneficiary families was related to spending on food, education and clothing for children. The increase in expenses on child clothing is similar to the impacts witnessed in cash transfer programs in Mexico and Colombia, and

is related to the perception of these families that the benefit is a bonus to be spent in the best interest of their children (Soares et al., 2010).

A simple but interesting exercise is to note (based on regression number 3 in table 8) that the risk of leaving one's job is 3.1% greater for individuals who have a minor child (hazard ratio: $e^{0.030529} = 1.031$). When we look at an individual with three minor children, as compared to an individual without minor children, there is a 9.6% greater chance of leaving one's job (hazard ratio: $e^{3 \cdot 0.030529} = 1.096$). Being a BFP beneficiary, however, is capable of nullifying this effect (hazard ratio: $1.096 \cdot 0.898 = 0.984$). In other words, suppose that an employer is choosing between a candidate who is not a BFP beneficiary and does not have a minor child and another candidate with three minor children. *Ceteris paribus*, if this other candidate with three minor children is a BFP beneficiary, he or she will have the same chances of remaining on the job as the first candidate.

In relation to the control variables, it may be noted that there is a lower risk of leaving work for residents of the Northeast, rural residents, older individuals, women, those with higher salaries, those in their first job and those working in public administration. It can also be seen that those who are black have a lower chance of leaving their work than those who declared themselves to be white. As pointed out by Menezes-Filho and partners (2008) and Garcia and Dedecca (2013), union membership is related to stability in remaining in jobs, productivity and salaries. The result for the *unionmember* variable indicates that employees who are union members are less likely to leave their jobs.

Greater risk of leaving jobs was observed for civil construction employees, for those living in the South, individuals with more than secondary education and residents of large cities, with populations ranging from 100 thousand to a million individuals. Most of these results are in line with the literature related to the duration of employment and unemployment, covering various regions of the country: Menezes-Filho and Picchetti (2000); Penido and Machado (2002); Malbouisson and Menezes (2004); Menezes and Dedecca (2006); Antigo and Machado (2006); Oliveira and Carvalho Júnior (2009); Leichsenring (2010); and Lira (2011).

In addition, we adjusted our parametric models and their estimated coefficients are shown in table 9. All of these models are in the form of accelerated failure time (AFT). In this context, a positive coefficient indicates a greater chance of survival (greater job duration). Contrary to the Cox model, where indicates the hazard ratio, in the AFT metric the quantity supplies the survival time ratio. For example, the estimated coefficient for the variable *bfp* in the Loglogistic model was 0.093. This value represents the survival time ratio of beneficiaries *versus* non-beneficiaries of $e^{0.093} = 1.097$, which means that BFP beneficiaries have job survival results which are 9.7% greater than non-beneficiaries.

According to Akaike (AIC) and Bayesian (BIC) criteria, the best adjustment comes from the Gamma function which has an estimated coefficient of 0.086, which is the most conservative effect among all the models. This value indicates that BFP beneficiaries stay in their jobs 8.95% longer than non-beneficiaries, with a 95% confidence interval of a result between 8.34% and 9.56%.

Due to the demands related to data distribution of parametric models, the stability of the estimates demonstrates the robustness of the results. Regarding the convergence of the estimates, it should be noted that the estimated coefficient for the *bfp* variable in the exponential model using the AFT metric (0.117) corresponds to a hazard ratio of 0.889. This value is in line with the result obtained through the semiparametric Cox model (Model 3 in table 8).

TABLE 9 ESTIMATED COEFFICIENTS FOR THE PARAMETRIC MODELS

	Exponential	Weibull	Loglogistic	Lognormal	Gamma
BFP	0.117***	0.114***	0.093***	0.095***	0.086***
Age	0.006***	0.006***	0.004***	0.004***	0.003***
Male	-0.202***	-0.198***	-0.223***	-0.216***	-0.214***
Salary	0.004***	0.004***	0.004***	0.004***	0.003***
Income_percap	0.001***	0.001***	0.001***	0.001***	0.001***
Children	0.020***	0.020***	0.023***	0.022***	0.022***
Minors	-0.032***	-0.032***	-0.031***	-0.030***	-0.029***
First_job	0.109***	0.107***	0.126***	0.118***	0.115***
UnionMember	0.036***	0.036***	0.053***	0.058***	0.070***
Location	-0.094***	-0.092***	-0.108***	-0.100***	-0.096***
Race (ref.: Black)					
Yellow	0.007	0.007	0.002	0.005	0.006
White	-0.077***	-0.076***	-0.081***	-0.079***	-0.079***
Indigenous	-0.130***	-0.129***	-0.132***	-0.127***	-0.123***
Brown	-0.028***	-0.028***	-0.026***	-0.027***	-0.027***
Education (ref.: Incomplete Higher or More)					
No Education	0.126***	0.123***	0.137***	0.131***	0.130***
Incomplete Primary	0.101***	0.099***	0.124***	0.119***	0.122***
Complete Primary	0.085***	0.083***	0.115***	0.109***	0.115***
Incomplete Secondary	0.085***	0.083***	0.119***	0.113***	0.120***
Complete Secondary	0.089***	0.087***	0.135***	0.126***	0.135***
Region (ref.: South)					
Central-West	0.163***	0.161***	0.130***	0.131***	0.116***
Northeast	0.704***	0.690***	0.707***	0.691***	0.666***
North	0.378***	0.372***	0.355***	0.351***	0.329***
Southeast	0.162***	0.160***	0.143***	0.136***	0.119***
Size_city (ref.: (0, 10 Thou])					
(10 Thou, 100 Thou]	-0.037***	-0.036***	-0.023***	-0.027***	-0.025***
(100 Thou, 1 Million]	-0.087***	-0.086***	-0.066***	-0.067***	-0.061***
(1 Million ,+]	-0.078***	-0.077***	-0.055***	-0.063***	-0.060***

Continue

	Exponential	Weibull	Loglogistic	Lognormal	Gamma
Size_establishment (ref.: (0, 10])					
(10, 100]	-0.356***	-0.350***	-0.365***	-0.364***	-0.357***
(100, 1.000]	-0.108***	-0.108***	-0.045***	-0.074***	-0.069***
(1.000, 10.000]	-0.247***	-0.242***	-0.262***	-0.262***	-0.261***
(10.000, +]	-0.289***	-0.284***	-0.307***	-0.308***	-0.307***
CBO (ref.: Farming and Fishing)					
Industry — Generalists	0.123***	0.120***	0.182***	0.150***	0.148***
Industry — Operators	0.076***	0.074***	0.139***	0.115***	0.119***
Maintenance & Repair	0.168***	0.164***	0.274***	0.237***	0.243***
Services, Commerce	0.232***	0.226***	0.339***	0.308***	0.317***
Administrative Services	0.223***	0.218***	0.352***	0.315***	0.331***
MidLevel Technicians	0.182***	0.178***	0.283***	0.245***	0.250***
Others	0.168***	0.165***	0.244***	0.200***	0.200***
CNAE (ref.: Public Administration)					
Agriculture, Livestock	-1.251***	-1.219***	-1.077***	-0.960***	-0.861***
Administrative Activities	-1.107***	-1.077***	-1.011***	-0.877***	-0.793***
Vehicle Sales & Repair	-1.383***	-1.348***	-1.226***	-1.088***	-0.976***
Contracting	-1.674***	-1.633***	-1.629***	-1.449***	-1.336***
Industry	-1.327***	-1.293***	-1.131***	-0.997***	-0.877***
Others	-1.341***	-1.306***	-1.212***	-1.074***	-0.970***
Constant	5.490***	5.501***	4.773***	4.794***	4.630***
Wald chi2 (43)	84,321***	87,453***	117,348***	105,869***	91,278***
AIC	2,129,206	2,127,993	2,043,432	2,037,241	2,030,510
BIC	2,129,721	2,128,520	2,043,959	2,037,768	2,031,050

Source: Elaborated by the authors.

Note: The sample is comprised of all those admitted in 2008 who remained in their jobs through December 2011 or who terminated their contracts with or without just cause by the initiative of the employee or the employer, considering salary classes 4 through 7. The total number of observations was 909,291, with 729,786 individuals. The number of failures was 565,040. All of the models use the AFT (accelerated time failure) metric. P-value: *<0.10, **<0.05, ***<0.01.

5. CONCLUSION

This article analyzes the effect of the *Bolsa Família* Program on formal employment in the poor portion of the Brazilian population according to the Unified Registry of Social Programs (CadUnico). Based on a unique combination of data with more than 3 million individuals, we have found that *Bolsa Família* Program beneficiaries have greater chances of remaining in their jobs than non-beneficiaries.

This finding not only contradicts the hypothesis of there being a *work-disincentive* associated with the concession of this benefit, but also establishes an inverse effect, in which the financial benefit provided by the program contributes to the maintenance of employment.

In terms of public policy this is a relevant result, given that the poor population of Brazil is characterized by considerable income volatility and job turnover, which compromise present and future well-being and make it difficult to retire based on time of contribution. This study contributes to the literature and is innovative in that it analyzes the effect of cash transfer on job duration, in contrast to most studies that address this issue from the point of view of participation and the length of the workday (Oliveira and Soares, 2012; Ferro et al., 2010; Chitolina et al., 2016; Foguel and Barros, 2010; Soares, 2012; Tavares, 2010), and treat the participation in the *Bolsa Família* Program as a time-dependent variable.

Using the semiparametric Cox model, we estimate the risk of leaving one's job to be 7% to 10% less for beneficiaries as compared to non-beneficiaries. To illustrate this point, we can compare it with the effect caused by having minor children in the family, which increases the chances of the parents leaving their jobs. In the main regression, the presence of three children in the household increased the chances of leaving employment by 9.6%. However, this probability was nullified when the individual received a BFP payment. The parametric models corroborated this result, indicating that BFP beneficiaries remain in their jobs at least 9% longer than non-beneficiaries.

The described effect is supported by the financial benefit itself to the extent that it is used to take care of the family's children under the conditions imposed by the program, which requires school attendance and the children's visits to health units. Thus, the results point to the prevalence of a substitution effect over the income effect, giving the BFP a positive impact on maintaining employment.

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