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**Article**

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# Public versus private sector: Do workers' behave differently?

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## Abstract

It has been widely assumed in the literature that public sector organization operates in a different way compared to private sector organization. This paper intends to contribute to develop further this issue by investigating whether the relationship between worker efforts differs significantly both in the public and in the private sector. By drawing on data from the Monthly Employment Survey (PME), Brazil 2003–2012, and proxies for worker effort (unpaid overtime work and absences), it was observed, initially, significant differences between worker's profiles depending on the sector they are employed. In turn, the estimation results of the dynamic panel models confirm that the level of worker effort alters according to their switches from one sector to another in the labor market. Briefly, public sector workers do not tend to do unpaid overtime work comparable to those in private sector, and they are more likely to be absent at work.

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## Resumo

Na literatura econômica brasileira tem sido amplamente difundido que o setor público funciona de forma diferente em comparação com o setor privado. Este artigo pretende contribuir para desenvolver ainda mais este problema, investigando se a relação entre os esforços despendidos pelos trabalhadores difere significativamente entre o setor público e o setor privado. Tendo como base de dados a Pesquisa Mensal de Emprego (PME), Brasil 2003–2012, e proxies para o esforço de trabalho (horas extras não pagas e ausências), observaram-se, inicialmente, diferenças significativas entre os perfis do trabalhador, dependendo do setor em que estão empregados. Por sua vez, os resultados da estimação dos modelos de painéis dinâmicos confirmam que o nível de esforço do trabalhador se modifica de acordo com a mudança ocupacional de um setor para outro no mercado de trabalho. Resumidamente, os trabalhadores do setor público não tendem a trabalhar horas adicionais não remuneradas comparativamente aos do setor privado, além de ser mais propenso a faltas no emprego.

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*Palavras-chave:* Mudança de setor; Esforço; Mercado de trabalho; Setor Público; Setor Privado

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## 1. Introduction

Over the last years, dynamics in labor market have been one of the main objects of research. Literature on labor economics includes many researches concerning job shifts and the differences and similarities between the public and private sectors. However only a few of them pay attention to sector switchers, which demonstrates the lack of empirical research regarding public and private differences concerning the aforementioned dynamics.

Articles on sector switchers rely on many different matters to describe arguments about the change, such as: the environmental and historical differences between both sectors (Su and Bozeman, 2009; Bozeman and Ponomariov, 2009); the difference in incentive and motivation (Rainey and Chun, 2005); levels of formalization (Buchanan, 1975); and salary and job security (Rainey and Bozeman, 2000; Boyne, 2002; Ichino and Riphahn, 2004; Engellandt and Riphahn, 2005; Rainey and Chun, 2005; Bradley et al., 2007). According to Bozeman and Ponomariov (2009), one of the reasons for such a reduced systematic research is due to the few available databasis. Most databasis have not focused on sector switchers or job histories, and when such variables are included it is difficult (because of the means by which data are aggregated) to relate sector-switching patterns to motivation, attitude, or outcome variables.

Sector switchers as those workers who are moving from the private to the public sector or vice versa. Recent studies have indicated that workers switch sectors for many reasons. One reason is related to the occupation's characteristics (Kaufman and Spilerman, 1982; Su and Bozeman, 2009) and to the wish to work in a specific sector (Eisenberger et al., 1986), and to personal values (Cohen, 1993).

Despite the obvious importance of understanding the relationship of sector switching to career advancement it is crucial to point out that workers switch jobs for many and particular reasons. There are literally hundreds of studies regarding job-seeking behavior, job motivation, turnover (Karl and Sutton, 1998), and, at the end of the day there is a plethora of reasons that cause the job switching. In addition to the multiple motivations for job change and turnover, it is also important to note that turnover is sometimes viewed as an independent variable, especially in relation to impacts on organizational performance (e.g., Kacmar et al., 2006).

In this paper, however, the key issue is to analyze whether workers in the private sector employment provide more effort compared to workers in the public sector employment and, if so, investigate whether this additional effort is due to unobservable factors which determine the selection into private sector employment. Therefore, the focus is not necessarily on the reasons why job shifts occur but whether it causes a change in individual behavior.

For this reason, this study seems to counterbalance the lack of attention on empirical research regarding the public-private distinction devoted to the individual, since most studies focus on environments and organizational attributes, rather than on the individual employees.

Having said that, this paper emphasizes the worker's effort on the employees' workplace beyond the argument that if workers employed in public or private sectors are fundamentally different in terms of efforts than the organizations shall be different as well. As said by Boyne (2002), public and private organizations are widely believed to differ in a variety of important aspects among them, undoubtedly, their employees. As highlighted by Kjeldsen and Jacobsen (2013), an interconnection between organizational and employee is an essential characteristic for the organization's success.

Within this context, this paper seeks to address a topic seldomly explored: the relationship between work effort and sector switch. The importance of this relationship is strongly related to the level of efficiency and productivity in firms, either public or private. Although many other features contribute to efficiency and productivity, job performance is viewed as the most influential one, and job performance itself has been seen as a function of workers effort (Mitchell, 1982). According to Boyne (2002), while in private organizations owners have a direct monetary incentive to monitor and control worker behavior, in the public sector monitoring is considered as a 'public good' where managers have little to gain from expending effort on this activity which leads to lower efficiency.

With that in mind and based on literature cited throughout and in the Brazilian labor market characteristics, I investigate the hypothesis that private sector workers develop a higher level of effort compared to public sector ones. I adopt this hypothesis based on many studies (Baldwin, 1984; Goulet and Frank, 2002; Lyons et al., 2006; Buelens and Van Den Broeck, 2007; Baarspul and Wilderom, 2012) and on the Brazilian labor market characteristics (Foguel et al., 2000; Gonzaga et al., 2003). This argument is established on previous studies that have shown statistical significant difference between private and public sector employees, which, in general, indicates lower organizational commitment among public sector employees (Lyons et al., 2006; Buelens and Van Den Broeck, 2007), although authors such as

Perry and Wise (1990) and Kjeldsen highlight the motivation of public sector, in the sense that while being in the public sector workers develop an intrinsic motivation of contributing to the social welfare, with basically what is public.

Then, a better understanding of work effort is essential to describe efficiency and productivity in both public and private sectors. For this reason, among others, I expect to gain insights from the study of those who are “sector switchers,” moving from private to public sector. In order to do so, I use proxies for effort such as unpaid overtime work (workers who are working longer hours than spelled out in their contract) and absence rate.

For this reason, this article aims to contribute to the literature by focusing on straightforward and easy to understand proxies for effort levels based on workers’ behavior and by using a longitudinal data (from the Monthly Employment Survey, PME—Pesquisa Mensal de Emprego, Brazil, 2003–2012) unlike most cited articles, which focus on psychological concepts and uses only cross-sectional data collected through surveys. Finally, although the use of these proxies may contain flaws, it is the most convenient and useful analytic tool in the literature.<sup>1</sup>

## 2. Job shift and worker’s effort: theory and evidence from the literature

### 2.1. Theory: worker effort

The human capital model emphasizes the decision to shift jobs is based on the utility function of the individual. The turnover decisions are guided by the net present discounted value of the individual, that is, the benefits minus the costs of job switch. Therefore, workers move if their net gain is positive. Moreover, since individuals differ in their personal discount rates and in personnel costs and benefits, it can be concluded that some workers are much more likely to shift than others are.

According to Ehrenberg and Smith (2012), in a competitive labor market, job turnover is commonly and persistent and arises partly because employees differ in their abilities and firms differ in working conditions. With respect to employees, although the economics in theory typically assumes that payment is the key factor of benefits determining workers’ job choices, many scholars who discuss the public administration argue that money is less important than non-pecuniary benefits (Karl and Sutton, 1998; Rainey, 1982), than job security (Houston, 2000; Lewis and Frank, 2002) and than the level of incentive and motivation (Rainey and Chun, 2005; Lipset and Scheneider, 1983).

The benefits from all these variables cited above will imply in the intensity of employees’ dedication – worker’s effort – to the firm. However, according to Foster and Rosenzweig (1994) the amount of an input supplied by a worker will depend directly on the extent to which that input is rewarded; in turn, it will depend on the degree of monitoring.<sup>2</sup> This is due to the moral hazard played by many contractual relationships between employer and employee.

Considering human resource management as a form of managing the relationship between employer and employee in order to enable an organization to achieve its goals, the agents, both employer and employees, should take into consideration all the factors that maximize their management process. The occurrence of failures in the management process occurs when cooperation parties (employer, the principal, and employee, the agent) differ in attitudes. This is due to agency problems (Fama, 1980) which could be minimized by maintaining effective operation of the firm’s governance, including the costs of structure and organizational coordination – (for agency costs, see Jensen and Meckling, 1976) – such as, employee recruitment, monitoring expenditures and incentive payment; variables which are positively related to performance of all organizational effectiveness and efficiency.

A large theoretical literature has been emphasizing that firms use many different mechanisms in order to guide appropriate actions by an employee (Prendergas, 1999). This is based on the premises of agency theory that employee (agent) is effort averse, what leads firms (principal) to design contracts in order to induce employees to operate in a better level of effort.

In the sense of human resource management, worker effort can be seen as the individual relating to the organization (organization commitment). Therefore, another important issue is that firms must also design contracts to affect the

<sup>1</sup> Similar indicators were used by Jimeno and Cortes (1996) and Engellandt and Riphahn (2005) in case of unpaid overtime hours, and Booth et al. (2002) and Engellandt and Riphahn (2005) for absences.

<sup>2</sup> The expectancy theory developed by Vroom (1964) holds that the decision to act in a certain way results from a conscious decision by an individual based on his perception that a certain level of effort is required to achieve a desired outcome. Therefore, the degree to which rewards satisfy the personal goals of each worker is determined individually.

type of workers that they hire since the intensity of employees' dedication to work organization depends on employees' perceptions of the organization's commitment to them.

Among the various conceptual definitions of organization commitment in the literature, [Goulet and Frank \(2002\)](#) define as a pattern of behaviors a set of behavioral intentions and a motivating force or an attitude. This is one of the reasons why conclusions regarding organizational commitment are so controversial ([Buelens and Van Den Broeck, 2007](#); [Goulet and Frank, 2002](#)) and should be carefully drawn ([Baarspul and Wilderom, 2012](#)).

## 2.2. Sector switch: public and private sector

[Rainey and Chun \(2005\)](#) stated that people who work in the public sector have lower level of incentive and motivation than those in the private sector. This could be an explanation to [Lipset and Schneider's \(1983\)](#) argument that governments operate less efficiently and effectively than markets. [Perry and Porter \(1982\)](#) rely on the difficult of public agencies to instill employees with a sense of personal significance. According to them the main reason is related to the difficulty public employees develop while observing any link between the success of the organizations and their contributions.

The discussion on the differences between public and private sectors' employees has been investigated by a large number of authors by means of a wide variation in method ([Rainey and Chun, 2005](#); [Rainey and Bozeman, 2000](#); [Su and Bozeman, 2009](#)). An overview of the major studies that examined the public-private differences has mainly focused on organizational attributes rather than on the individual employees. To [Baarspul and Wilderom \(2012\)](#) only few empirical findings regarding the public-private distinction devoted to the individual have been studied to this day.

Studies concerning worker's effort have long been a central topic for researchers because of the increase in productivity appears to be almost entirely attributed to increases in worker's effort. Many theories and approaches<sup>3</sup> were developed in order to explain the nature of employees' motivation, and others were conducted in an attempt to discover whether public sector employees have different motivation than their private sector counterparts. Furthermore, according to [Wright \(2001\)](#), many researches have emphasized that the interaction of environmental and personal forces influences individual motivation.

To [Ichino and Riphahn \(2004\)](#) and [Engellandt and Riphahn \(2005\)](#) the difference in the degree of job security in both sectors is higher, suggesting that the amount of workers who are diligent in performing their activities varies according to the sector. For these authors, the results indicate that the lower the risk of job loss the lower is the worker's effort. The worker's behavior is consistent with the hypothesis of the agency theory, which argues that the employees and the principal (employers) have different attitudes towards risk, therefore each worker will adopt the strategy that maximizes their long-term benefits. According to [Adams \(1965\)](#) employees compare themselves to other employees both within and outside their organization, so if the ratio of his or her outcomes to inputs is perceived as less than the ratio of outcomes to inputs for others, the employee may feel underrewarded.

[Balchin and Wooden \(1995\)](#) suggest that because employees in the public sector may feel more secure about their future, they may be relatively less fearful of being dismissed for excessively work absences and thus may be skip work more often. According to [Baldwin \(1984\)](#), public sector employees are often stereotyped as lazy, self-serving, and misguided. Probably, this worker's stereotype is due to the dissemination of the low organization commitment that ends up attracting accommodated and risk adverse workers ([Bellante and Link, 1981](#)). Although, it has been claimed that human resource management in the public sector has been shifted towards the practices adopted by private firms, in some countries it takes a little longer and the process is slower. According to [Osborne and Gaebler \(1992\)](#) the beginning of the process takes place apart from the moment in which public managers are encouraged to become less bureaucratic.

For [Vandenheuvel \(1994\)](#), it is quite feasible that the milieu that exists within the public sector differs from the one that exists in the private sector in terms of rules. In line with the focus of this paper, [Riphahn and Thalmaier \(2001\)](#) and [Ichino and Riphahn \(2004\)](#) found that workers in the German public sector, who were subject to very high degrees of employment protection, had absence rates of 6.7% compared to only 4.3% for those in the public sector who were not covered by the extended protection. [Jimeno and Cortes \(1996\)](#) investigated the effect of low employment protection on absenteeism and found that those without employment protection display significantly higher levels of effort compared to the workers in permanently safe contracts. And [Buelens and Van Den Broeck \(2007\)](#) concluded that public sector

<sup>3</sup> See, for instance, Expectancy Theory ([Vroom, 1964](#)), Equity Theory ([Adams, 1965](#)) and Goal—Setting Theory ([Locke, 1968](#)).

workers reported significantly less working hours and showed to be less unconditionally committed to work compared to private sector employees.

It is widespread in the literature that workers who are sector switchers are different from others with respect to a number of attitudinal, human capital, and life circumstance variables. According to [Bozeman and Ponomariov \(2009\)](#), changing sector of employment involves barriers (possible specific public sector certification requirements, perceived differences in organizational cultures, importance of different credentials), which tends to discourage sector changes. Then, those workers who do switch sectors are probably the ones who are seeking to change and to have substantial credentials and market demand for their services.

In a comprehensive study, [Engellandt and Riphahn \(2005\)](#) analyze work absence and overtime work as measures of worker effort for temporary jobholders in Switzerland and show that the level of absenteeism does not vary between temporary and permanent workers. However, there is a significant difference with respect to overtime work. [Booth et al. \(2002\)](#) also draw on the use of the number of weekly hours of unpaid overtime usually taken as a proxy for worker's effort in the UK. The results show that overtime work increases the probability of switching to permanent jobs for female temporary workers.

### 3. Methodology and data

#### 3.1. Empirical model and hypothesis

In order to interpret the mechanism that explain the differences in behavior between public and private employees, I run the random effects probit model (RE probit model) and the Chamberlain's correlate random effects (CRE) probit model (Chamberlain's model).

The initial idea was that the unobserved heterogeneity is a random variable uncorrelated with the regressors, and then the random effects model was applied. However, if unobservable individual characteristics (such as ability or laziness) are correlated with the regressors (for instance, sector choice), the probit model proposed by [Mundlak \(1978\)](#) and [Chamberlain \(1980\)](#) is the most suitable since it assumes a functional form for the unobserved individual characteristics, relaxing the restriction of the independence between unobserved effects and the observed covariates. The Chamberlain's model add as additional explanatory variables the within-group means of all the covariates which should capture the correlation between the unobserved heterogeneity and the covariates that renders the RE probit model inconsistent.<sup>4</sup>

The variables of interest ( $Y_{it}$ ) are measures of worker's effort. In order to control the composition effect, control variables that aim to capture the socioeconomic conditions of workers as well as the labor market characteristics are employed.

Therefore, the first equation is estimated as follows:

$$Y_{it} = \alpha_0 + \alpha_1 Sector_{it} + \alpha_2 Background_{it} + \alpha_3 LMarket_{it} + c_i + u_{it} \quad (1)$$

$Y_{it}$  measures worker's effort (binary variable for the proxies used);  $\alpha$ 's are the parameters and represent both the socio-economics and labor market characteristics;  $c_i$  represents an unobservable individual characteristics fixed in time;  $i$  refers to the individual and  $t$  reports the period.  $u_{it}$  are the error terms.

In sequence, it is analyzed whether the effect of sector employment upon workers effort varies according to gender and year. Therefore, it is added into the Eq. (1) a dummy interaction between gender and sector of employment and (2) a dummy interaction between sector and year, in order to verify if behavioral differences between public and private workers can vary in time.

Finally, I will test whether the workers change their effort level when their workplace is moving from private to public sector. In that case, one must pay higher attention since the estimation can be biased in case unobserved factors are interfering with the determination of worker's groups profile. That is the reason why the method proposed by [Mundlak \(1978\)](#) and [Chamberlain \(1980\)](#) was adopted.

[Engellandt and Riphahn \(2005\)](#) warn about two possible sources of endogeneity. The first one is related to the fact that workers in private sector may be "positively selected" because of low motivation since they accept the conditions

<sup>4</sup> For a review, see [Mundlak \(1978\)](#), [Chamberlain \(1980\)](#) and [Cameron and Trivedi \(2009\)](#).

imposed basically in reference to job security. The second one, on the other hand, is about the fact that workers in private sector may be “positively selected” because they have low risk aversion to accept an employment with less job security because they expect better job options in the future. Thus, in case the unobserved factors cause a selection of workers in private sector, for instance, it is worth investigating whether these impacts are generating endogeneity. In this context, in the case that private sector shows a change in worker’s effort, this hypothesis must be investigated by adding into the model variables that describe the indicator that identifies whether the worker employed in the public sector at time  $t$  was permanently employed in the private sector in the previous period ( $t - 1$ ).

For the purpose above, the Eqs. (2) and (3) are determined by:

$$Y_{it} = \alpha_1 + \alpha_2 \text{Private}_{it} + \alpha_3 \text{Private}_{t-1} \text{Public}_t + \alpha_k \text{Background}_{it} + \alpha_j \text{LMarket}_{it} + c_i + u_{it} \quad (2)$$

$$Y_{it} = \alpha_1 + \alpha_2 \text{Private}_{t-1} \text{Private}_t + \alpha_3 \text{Private}_{t-1} \text{Public}_t + \alpha_k \text{Background}_{it} + \alpha_j \text{LMarket}_{it} + c_i + u_{it} \quad (3)$$

The estimated equations will test the following hypothesis (H) adopted in this study:

**H.** Private sector workers have a higher effort level compared to public sector ones.

This hypothesis is based on the assumption that the public sector in Brazil is known for low commitment. Thus, the intention is equate this stereotype, unfortunately so widespread in Brazil, with the reality by assuming that the public sector in Brazil attracts workers with a “fitting” attitude.

In order to do so, the significance of the estimated coefficients  $\alpha_2$ – $\alpha_4$  will confirm whether workers change their effort level when their workplace is changing from private to public sector. The analysis will be made in a comparative way between the estimated coefficients of workers who did job switch and those who remained in the same sector. If the coefficients were significant there would be strong indications that worker’s effort varies according to the sector of employment.

As said by [Bradley et al. \(2007\)](#) it is up to the worker to determine his/her level of satisfaction on the job, based on the comparison between the marginal benefit and the marginal cost of job (sector) switch. Therefore, taking into account the arguments that the lower the risk of job loss the lower the work effort will be. This was proposed by [Ichino and Riphahn \(2004\)](#) and [Engellandt and Riphahn \(2005\)](#), it is expected that the estimated coefficients would be significant in order to ratify that the worker acts strategically; in general, those who switched to public sector jobs display less effort when this change occurs.

### 3.2. Data

For the empirical analysis I draw on data from the Monthly Employment Survey (PME) conducted by the Brazilian Institute of Geography and Statistics (IBGE) between 2003 and 2012. The PME provides a representative sample of the Brazilian labor market above the age of 10 years old and covers six main Brazilian metropolitan regions (RMR—Recife; RMSA—Salvador; RMBH—Belo Horizonte; RMRJ—Rio de Janeiro; RMSP—São Paulo; and RMPA—Porto Alegre). The data collection methodology followed a rotation scheme and a monthly household panel structure, in which each panel was surveyed for 4 consecutive months, then removed from the sample by 8 months and then reinserted for another 4 months, then permanently from the sample. For the purpose pursued in this article, and based on household identification code, I built a database consisting of only two interviews of all workers: first interview,  $t = 1$  (the initial interview), and second interview,  $t = 2$  (12 months after the first interview). Therefore, any given worker, according to our methodology, will be present in only 2 years.

The variables included in our study capture the socio-demographic information, job characteristics and measures of worker’s effort. The methodology used in this study was similar to the one used by [Jimeno and Cortes \(1996\)](#), [Booth et al. \(2002\)](#) and [Engellandt and Riphahn \(2005\)](#), considered as indicators of effort variables most commonly used in the literature, adapted to the reality of the Brazilian labor market database.<sup>5</sup> These are: gender, age, schooling level, private sector, temporary job, job tenure, proxies for effort and dummies for each metropolitan region.

<sup>5</sup> Although it is an important criterion in incentive formation, payment issues were excluded from the analysis—similar to the studies cited. The Brazilian labor market, especially in the public sector, is still fairly regulated by the Government so salary does not necessarily reflect worker productivity and effort.

Table 1  
Summary statistics: sample in percentage 2003–2012.

Variables	Private sector	Public sector	Mean differences
Man	0.6248	0.4586	0.1662 <sup>***</sup>
Aged 16–25	0.2312	0.0959	0.1352 <sup>***</sup>
Aged 26–54	0.4463	0.3373	0.1090 <sup>***</sup>
Aged 55+	0.3224	0.5666	–0.2442 <sup>***</sup>
Head of family	0.4885	0.5283	–0.0398 <sup>***</sup>
White	0.5661	0.6024	–0.0363 <sup>***</sup>
Schooling 0–3 years	0.0410	0.0128	0.0282 <sup>***</sup>
Schooling 4–7 years	0.1677	0.0557	0.1120 <sup>***</sup>
Schooling 8–10 years	0.1742	0.0756	0.0986 <sup>***</sup>
School 11+ years	0.6169	0.8557	–0.2389 <sup>***</sup>
Tenure (months)	30.5959	70.2498	–39.6539 <sup>***</sup>
Temporary contracts	0.0277	0.0641	–0.0364 <sup>***</sup>
Unpaid overtime work	0.0442	0.0351	0.0090 <sup>***</sup>
Absence	0.0144	0.0370	0.0226 <sup>***</sup>
RMR <sup>a</sup>	0.0586	0.0888	–0.0302 <sup>***</sup>
RMSA <sup>a</sup>	0.0790	0.1002	–0.0212 <sup>***</sup>
RMBH <sup>a</sup>	0.1827	0.2043	–0.0217 <sup>***</sup>
RMRJ <sup>a</sup>	0.2668	0.2772	–0.0104 <sup>***</sup>
RMSP <sup>a</sup>	0.2528	0.1674	0.0853 <sup>***</sup>
RMPA <sup>a</sup>	0.1598	0.1617	–0.0019 <sup>***</sup>
Total (obs.)	201,524	53,598	–

Source: Monthly Employment Survey.

<sup>\*\*\*</sup> Indicates statistical significance level 1%.

<sup>a</sup> RMR—Metropolitan region of Recife; RMSA—Metropolitan region of Salvador; RMBH—Metropolitan region of Belo Horizonte; RMRJ—Metropolitan region of Rio de Janeiro; RMSP—Metropolitan region of São Paulo; and RMPA—Metropolitan region of Porto Alegre.

The dummies variables used to measure worker's effort seek to demonstrate indications of employee's behavior in the job. Unpaid overtime work and absence are variables commonly used in the literature about job effort and indicate the effort performed by the employee (Jimeno and Cortes, 1996; Engellandt and Riphahn, 2005). According to Booth et al. (2002) there is a positive correlation between a worker's efforts as measured by the number of unpaid hours of overtime work. Engellandt and Riphahn (2005) pointed out the difference in absence among workers, according to their jobs.

The econometrics model will be estimated for each of the two effort proxies described above. All two variables are binary and indicate, respectively, the workers who are working less than 40 h a week and would like to work additional hours, and the second refers to absence in work for at least one hour during the reference week of the survey. Absence is actually an indicator of absenteeism and it was considered when employee is misses work by unexplained reasons.

After carrying out all the procedure in the database, considering only workers employed and excluding missing cases and employees aged below 16 and over 70 years, I came to a final sample of 255,122 observations (201,524 from private sector and 53,598 from public sector).

#### 4. Descriptive analysis

In this section, I present a summary descriptive analysis related to the sample. The summary statistics for the sample are shown in Table 1. Initially, it is important to highlight that this analysis is restricted to workers who had a job in their first interview, aged 18–65 and who were followed one year after (after 12 months). At the end of the follow-up, part of the respondents was still employed in the same sector, whereas the other part changed the sector of employment. Those who became either unemployed or economically inactive (out of labor force) were excluded.

It is important to highlight that the data are from the Brazilian labor market, which has, among the developing countries, one of the highest worker turnover rates. Although the Brazilian labor market is more regulated compared to other developing countries, its legislation contributes to further increase the turnover rates, causing a reverse effect to what it is intended. Traditionally, Brazilian legislation requires that employers must give notice to their employees in



the case of dismissal (one month prior to dismissal), and pay a monetary compensation to a worker dismissed without just cause (50% of the amount of Length of Service Guarantee Fund—FGTS). Such costs may even modify worker behavior, encouraging him/her to induce his/her own dismissal. According to [Macedo \(1985\)](#), [Amadeo and Camargo \(1996\)](#), and [Barros et al. \(1999\)](#) this practice is well established and has resulted in negative effects on the part of workers behavior, giving them significant incentives to induce their own dismissal (fake dismissal).

Given all the caution and methodology the database requires, out of 255,122 workers, 150,510 (62.5%) are men and 201,524 (75.5%) employed in the private sector, as it can be seen in [Table 1](#). The largest number of public sector workers can be explained by the stronger stability of employment (job security) in this sector since I considered two consecutive interviews (1 year interval). Moreover, turnover in the private sector makes many workers become unemployed, which means that they were excluded from the analysis.

Regarding the variable gender, it is observed that man's participation is higher in the private sector (62.5%) and lower in the public sector (45.8) compared to women. [Gornick and Jacobs \(1988\)](#) have discussed about women been much more likely to be employed in the public sector. The possible reasons for this are associated to job security and income, which is more accentuated in females because of their double work journey.

With respect to the age variable, it can be observed that younger workers (16–25 years) have stronger participation in private sector jobs, while older workers (aged 55+) tend to occupy jobs in the public sector. Probably, this is due to the particular characteristic of young and older workers, which is associated with their life cycle in the labor market. Young workers are more likely to change their jobs compared to older ones, in order to gain professional experience and to find a better job. Moreover, it is widespread in the literature that young workers have lower cost. This explains why the heads of households, responsible for the financial family income, have a significantly higher percentage in the public sector.

In terms of the schooling variable, the results seem to indicate that the public sector requires a higher level of schooling than the private sector. Although in both sectors workers with higher levels (schooling 11+ years) are the majority (61.6% in private sector and 85.5% in public sector), it is the public sector that concentrates the largest share of educated workers.

Another important feature between private and public sector is the difference observed in tenure, which is considerably higher in public sector (70.2 months against 30.5 in private sector). This is probably related to the different characteristics common in public and private sectors in Brazil ([Barros et al., 1999](#); [Foguel et al., 2000](#)), especially to the fact that public sector is more attractive to security-seeking employees ([Gonzaga et al., 2003](#)). So, the rate of dismissal in public sector is much lower than in the private one, and layoffs are quite uncommon, and consequently the tenure is much higher in the public sector.

In respect to the variables used as a proxy for effort – unpaid overtime work and absence –, the former (unpaid overtime work) has a higher percentage of workers employed in the private sector, while the latter has a higher percentage in the public sector.

The justification for this last result may be related to the fact that accounting for absences in the private sector is done in a more rigorous way by the companies than in the public sector, where the allowance of absences is most common. Thus, it is possible that the worker absence of the public sector is underestimated.

Finally, in order to enhance the analysis of the differences between private and public sector worker's effort it was performed the two-sample test for the difference of means whose results for each variables are displayed in the third column (0.0090 and  $-0.0226$ , respectively for unpaid overtime work and absence).

For [Bradley et al. \(2007\)](#), the risk effect in employment loss and promotion opportunities have different intensity among workers, according to the sector occupancy. Therefore, the information contained in [Table 1](#) confirms the predetermined hypotheses since the private sector workers had effort indicators (unpaid overtime work and absence), on average, higher than those from the public sector.

As said by [Vandenheuevel \(1994\)](#), it is commonly held that people working in the public sector are more likely to be absent from work than their counterparts in the private sector. One possible explanation is found in [Kriegler and Wooden \(1990\)](#), who state that employees in larger workplaces are more likely to be absent suggesting that absence in larger workplaces, as public firms, may have less effect on output and thus generate less concern among management. Furthermore, the Brazilian private sector is composed of micro and small sized firms (approximately 99% of the total) that are responsible for around 70% of employment in the sector. This could be another relevant explanation for low absence rates in the private sector.

Table 2  
Random effects and Chamberlain's RE probit models for worker's effort. 2003–2012.

Variables	Unpaid overtime		Absence	
	RE probit Coef.	Chamberlain's RE probit Coef.	RE probit Coef.	Chamberlain's RE probit Coef.
Private sector	0.0223 (0.0678)	−0.0040 (0.0840)	−0.5141*** (0.0721)	−0.2231** (0.0966)
Men	0.1807*** (0.0133)	0.1820*** (0.0134)	−0.3225*** (0.0201)	−0.3176*** (0.0202)
Head of family	0.1192*** (0.0139)	0.1165*** (0.0141)	0.1225*** (0.0208)	0.1045*** (0.0211)
White	−0.0051 (0.0125)	0.0048 (0.0267)	0.0324* (0.0194)	−0.0496 (0.0396)
Aged 16–25	−0.0772*** (0.0169)	0.0847 (0.0602)	−0.2004*** (0.0283)	−0.0261 (0.1001)
Aged 55+	−0.0446*** (0.0134)	−0.0611 (0.0611)	0.0447* (0.0201)	−0.1642* (0.0890)
Schooling 0–3 years	−0.0334 (0.0309)	−0.0183 (0.0691)	0.0513 (0.0508)	0.2070* (0.1118)
Schooling 11+ years	−0.0003 (0.0132)	−0.0401 (0.0420)	0.0706*** (0.0214)	0.0271 (0.0671)
Temporary contract	−0.0780** (0.0331)	0.0345 (0.0529)	−0.1315*** (0.0486)	−0.0301 (0.0765)
Job tenure (month)	0.0000 (0.0001)	0.0000 (0.0001)	0.0005*** (0.0001)	0.0001 (0.0001)
Constant	−2.6160*** (0.0685)	−2.5867*** (0.0822)	−2.3064*** (0.0731)	−2.6147*** (0.1011)
Rho	0.3343*** (0.0104)	0.3345*** (0.0104)	0.4775*** (0.0133)	0.4798*** (0.0133)
Log likelihood	−43,662.592	−43,653.518	−22,583.632	−22,547.069
Total (obs.)	255,122	255,122	255,122	255,122

Source: Monthly Employment Survey.

Standard errors in parentheses. The RE probit models include dummy variable for years, metropolitan regions (RMR, RMBH, RMRJ, RMSP, RMPA) and dummy interaction for year and sector. The Chamberlain's RE Probit model contain the same variables as the RE probit model plus additional within-group means of explanatory variables.

\* Indicate statistical significance level 10%.

\*\* Indicate statistical significance level 5%.

\*\*\* Indicate statistical significance level 1%.

## 5. Empirical results

In this section, I present the econometrics results. In order to compare the effort level of public and private sector workers, I pursued the strategy implemented by Engellandt and Riphahn (2005), using the probit estimator with random effect (random effect probit), and add the probit model proposed by Mundlak (1978) and Chamberlain (1980)—hereafter Chamberlain's model.

The analysis of empirical strategy begins with the estimation results of the random effects probit for the variables of effort—Table 2 below. The results confirm the existence of different behaviors for workers, related to the proxy absence, according to the employment sector. The coefficient for unpaid overtime work was not significant, however, the negative and significant estimated coefficient for absence (−0.5141, for RE probit model, and −0.2231, for Chamberlain's

Table 3  
Random effects and Chamberlain's RE probit models for the worker's effort by sector and gender. 2003–2012.

Variables	Unpaid overtime		Absence	
	RE probit Coef.	Chamberlain's RE probit Coef.	RE probit Coef.	Chamberlain's RE probit Coef.
Private sector	0.0477 (0.0698)	0.0234 (0.0857)	−0.5474*** (0.0739)	−0.2550*** (0.0979)
Men	0.2168*** (0.0271)	0.2181*** (0.0272)	−0.3769*** (0.0330)	−0.3728*** (0.0333)
Men*private sector	−0.0445 (0.0298)	−0.0441 (0.0298)	0.0795** (0.0383)	0.0813** (0.0384)
Men*Private sector*temporary contract	−0.0412 (0.0668)	−0.0510 (0.0671)	0.0212 (0.1171)	−0.0175 (0.1177)
Rho	0.3342*** (0.0104)	0.3345*** (0.0104)	0.4773*** (0.0132)	0.4795*** (0.0133)
Log likelihood	−43,661.248	−43,652.086	−22,581.426	−22,544.827
Total (obs.)	255,122	255,122	255,122	255,122

Source: Monthly Employment Survey.

Notes: 1. Standard errors in parentheses. 2. The models were controlled for the same covariates in [Table 2](#).

\* Indicate statistical significance level 10%.

\*\* Indicate statistical significance level 5%.

\*\*\* Indicate statistical significance level 1%.

model) indicates that, compared to the private sector workers, in the public sector the number of workers absent from their job is higher. These previous results are an indicative that the sectors are different in terms of worker's behavior.

The gender variable indicates that men have higher effort level compared to women for two proxies analysed. Moreover, the level of schooling is not important in determining unpaid overtime work proxy, but it is significant in terms of absence proxy (RE probit model).<sup>6</sup>

[Table 3](#) details the previous analysis. In this, I seek to investigate the possible difference in effort levels between workers according to their gender. The intention was to verify whether the effect of employment sector varies by gender using dummies interaction for gender, sector, type of contract (temporary job). The results display a significant difference according to sector and gender both for unpaid overtime work or absences. The significant coefficients indicate that men's effort, on average, is higher than women's.

In turn, when I analyze the interaction variable men and private sector, the sign of the coefficient for unpaid proxy was insignificant at 10% level of significance. As for the absence proxy the coefficient was significant (5%) and, interestingly, its sign is reversed which means that men employed in private sector are likely to be more absent than women.

In sequence, the possible influence of unobserved factors in the profile of a particular occupational group is depicted in [Tables 4 and 5](#). The idea behind the estimations is to verify whether there is a significant difference in behavior between public and private sector when sector switches occur. This hypothesis was investigated by adding a variable describing if the worker employed in the public sector was employed in the private sector before.

As far as the estimated variables of personal and labor market characteristics are concerned, the coefficients estimated indicate that women, younger workers, workers employed in the private sector, the ones employed in smaller companies and those with less time hours tending to be more highly effort. Again, one can see that the coefficients of the variables related to education level were not statistically significant; there is therefore an intrinsic characteristic of a particular group of workers.

<sup>6</sup> The test applied for the dummies interaction variables (year and sector) suggested that behavioral differences between workers employed in private and public sectors does not change.

Table 4  
Random effects and Chamberlain's RE probit models for the probability of providing unpaid overtime work in  $t$ : dynamics effects in the private sector. 2003–2012.

Variables	RE probit Coef.	Chamberlain's RE probit Coef.	RE probit Coef.	Chamberlain's RE probit Coef.
Reference: public sector in $t - 1$ and $t$				
Private sector in $t$	-0.0092 (0.1917)	-0.0503 (0.2002)	-	-
Public sector in $t$ and private sector in $t - 1$	-0.0629 (0.0641)	-0.0820 (0.0711)	-	-
Reference: public sector in $t$				
Private sector in $t$ and $t + 1$	-	-	-0.0232* (0.0139)	-0.0228 (0.0152)
Private sector in $t$ and public sector in $t + 1$	-	-	-0.0254 (0.0603)	-0.1043 (0.0742)
Rho	0.3152*** (0.0115)	0.3155*** (0.0115)	0.3174** (0.0116)	0.3178*** (0.0116)
Log likelihood	-40,318.237	-40,309.937	-39,535.852	-39,528.66
Total (obs.)	231,092		231,092	

Source: Monthly Employment Survey.

Notes: 1. Standard errors in parentheses. 2. The models were controlled for the same covariates in Table 2.

\* Indicate statistical significance level 10%.

\*\* Indicate statistical significance level 5%.

\*\*\* Indicate statistical significance level 1%.

Table 5  
Random effects and Chamberlain's RE probit models for the probability of absence in work in  $t$ : dynamics effects in the private sector. 2003–2012.

Variables	RE probit Coef.	Chamberlain's RE probit Coef.	RE probit Coef.	Chamberlain's RE probit Coef.
Reference: public sector in $t - 1$ and $t$				
Private sector in $t$	-0.6193*** (0.1927)	-0.4201** (0.2065)	-	-
Public sector in $t$ and private sector in $t - 1$	-0.1652** (0.0799)	-0.0676 (0.0900)	-	-
Reference: public sector in $t$				
Private sector in $t$ and $t + 1$	-	-	0.0424* (0.0229)	0.0400 (0.0247)
Private sector in $t$ and public sector in $t + 1$	-	-	-0.2435*** (0.0721)	-0.0871 (0.0938)
Rho	0.4225*** (0.0181)	0.4232*** (0.0181)	0.4258*** (0.0185)	0.4267*** (0.0185)
Log likelihood	-19,042.36	-19,021.341	-18,721.525	-18,697.918
Total (obs.)	228,330		228,330	

Source: Monthly Employment Survey.

Notes: 1. Standard errors in parentheses. 2. The models were controlled for the same covariates in Table 2.

\* Indicate statistical significance level 10%.

\*\* Indicate statistical significance level 5%.

\*\*\* Indicate statistical significance level 1%.

Tables 4 and 5 provide the results for random effects models examining the impacts of sector switching on the number of employees observed. If private sector workers as a group differ from public sector employees, there should be a clear difference in behavior of those private sector workers who just became public sector workers compared to those who were public sector employed throughout. One should keep in mind that the definition of job switcher I assume is about those workers who work in the private sector ( $t$ ) and who changed to the public sector immediately before ( $t - 1$ ) the current position.

As for the analysis in Table 4, which depicts the determinants for unpaid overtime work at time  $t$ , the results presented in column 1 display that the overall private sector job is not affected by the additional control as well as the lagged indicator of prior private sector employment job. This means that sector switches' efforts do not differ significantly from that provided by other public sector workers. So, this result provides an indication against endogenous selection into private sector employment.

A possible explanation for this result could be the possibility that the level of effort among private sector employees would be driven by a group of “positively/negatively selected” workers. In order to investigate the relevance of potential “selection”, the estimate of column 2 compared worker's effort in the private sector with those that remained in the same sector and with those who switched to public sector in the subsequent period.

The results displayed in Table 4 (column 2) show an insignificant estimated coefficient of workers who did reach public job in the subsequent period (in both models), while for those who remained in the private sector the level of effort did not significantly differ from that provided by public employees, according to the Chamberlain's model.

Similar analysis was made for absence in work in period  $t$ , whose results are shown in Table 5 below. The negative coefficients of overall private sector indicate that workers employed in the public sector are more likely to be absent than those employed in the private sector. Concerning the additional control – the lagged indicator of prior private sector job – the coefficient was significant (RE probit model) which means that the level of effort displayed by workers who were previously employed in private sector jobs and who switched to the public sector significantly differ from that displayed by those employed in the public sector all the time. This result seems to indicate a behavioral strategy for those who switched to public sector jobs, displaying less effort when this change occurs, which is an evidence in favor of adverse selection. On the other hand, if is assumed correlation between the unobserved heterogeneity and the covariates (Chamberlain's model), the level of effort displayed by workers does not differ significantly, which provides a valuable signal against moral hazard in the behavior of workers who were previously employed in private sector jobs.

Again, in order to analyze the possibility of existence of a “positively/negatively selected” high performers group, the estimations results of column 2, Table 5, compared workers effort who both do and do not reach public sector in the subsequent period. The results of the random effects model yield that those who worked before in private sector jobs still provide (significantly) more effort (less absences) than those workers from the public sector while in the Chamberlain's model the coefficient, although negative, is not significant, meaning that the level of effort provide for those who worked before in private sector jobs does not vary significantly from those employed in the public sector.

The abovementioned results deserve special attention. In a more detailed analysis, it may be concluded that job sector switch may cause change in worker's effort behavior. With regards to the work absence (Table 5), workers who came from the private sector (where, in average, workers have more effort as can be seen in column 1, Table 5) and migrated to the public sector do not differ in level of effort (absence) from those who remain employed in the public sector all the time (Chamberlain's model). This may indicate that there has been some change in effort from workers after achieving their goal, in this case, getting a job in the public service (adverse selection problem). Thus, the results support our hypothesis that private sector workers develop a higher effort level compared to those from the public sector.

Finally, similarly to Engellandt and Riphahn (2005), I performed additional test for the endogeneity of private sector jobs in order to endorse the displayed analysis. In order to investigate the potential biasing impact of considering an endogenous “private sector job” indicator on the other coefficients in my model, I reestimated the models for both proxies of effort (Table 2) excluding the private sector variable. The marginal effects of the other variables remained almost the same, which is an indicative that the private sector is not endogenous.

Moreover, unlike Engellandt and Riphahn (2005), I performed additional model (Chamberlain's model) since the results from random effects probit model may be biased if unobservable factors determine the selection into a specific group of workers (private sector or public sector) and if these are correlated with our dependent variable. This is the reason why some results differ between RE probit model and Chamberlain's model.

In sum, it does not mean that all issues have been fully exhausted. However, the results support our hypothesis and suggest that the positive correlation between private job and worker effort is not due to endogeneity into private sector workers.

## 6. Concluding remarks

This article aimed at analyzing, in a comparative way, worker's behavior in the private and public sector through proxies for effort and by drawing on data from the Monthly Employment Survey (PME) from Brazil, 2003–2012.

The article sought to examine whether there are any disadvantages in terms of effort for public sector jobs compared to private sector jobs. In order to test this hypothesis, I used RE probit model and Chamberlain's model through proxy variables, which aimed to identify efforts by workers in the situation of employment. Within this context, two variables were adopted: unpaid overtime worker (those working less than 40 h a week and would like to work additional hours) and absences (absence rate).

The results found are mostly in line with the expectations, but also raise some questions. Firstly, it is important to highlight a slight difference among groups (private sector workers and public sector workers) in terms of effort (according to unpaid overtime work and worker absence). In general, in terms of less absence at work, the results confirmed that workers employed in private sector have more effort level compared to those from the public sector. The argument for this outcome, based on the premises of agency theory, is also the one most frequently stated: people in the public sector have higher job security. Then, the estimation results seems to confirmed different behaviors among workers. With regards to the unpaid overtime variable, the estimated coefficient was not significant, however, as for absences, the estimated coefficients ( $-0.6193$  and  $-0.4201$ ) for private sector jobs indicate that workers employed in this sector have a lower absence rate compared to those in the public sector.

The question that arises is to what extent unobserved factors possibly exert influence on the determination of the effort level of a particular occupational group. The results yield by random effects probit model seems to indicate that those previously employed in the private sector and who changed to the public sector are actually more likely to provide more effort (less absence) at work than those who remain in public sector jobs. However, assuming that unobservable individual characteristics are correlate with sector choice (private or public sector employment), the effects of job switches on effort are not statistically significant (no evidence of moral hazard).

Therefore, our evidence points to two important results. Firstly, it is an indicative of the existence of different group of worker's effort, being more visible in private sector jobs, since the level of effort (absences) tends to be higher in this sector. Secondly, estimation yield by RE probit model and Chamberlains' model show that the level of effort (absence) of private sector workers who just became public sector workers is higher compared to those who were public sector employed throughout. Nonetheless, considering only the Chamberlain's model, the difference of the level of effort level between employees was not statistically significant. These results stress that the asymmetric information on employee characteristics can generate problems of adverse selection in the behavior of public employees who may have reduced their effort levels.

In conclusion, the results of this study verify, in parts, the findings about the difference between workers effort displayed by many researches. Furthermore, this study provides additional information on the relationship between unpaid overtime work and absence, as worker's effort measures, and sector switches. This information leads to a wider understanding of possible reasons for the gap between the public and private sectors in terms of worker's effort.

Given the characteristics of the Brazilian labor market, a plausible assumption is that the guarantee of employment and the consequent minimization of the risks of job loss (job security) may influence worker's accommodation; hence it decreases the level of organizational commitment in the public sector. The prediction confirms that overall private sector employees displayed stronger organizational commitment, in terms of absence at work, than the employees in the public sectors did. Therefore, a reasonable assumption is that different levels of effort may result from different worker strategies because selection processes going on in the sense that employees who want to exert little effort switch to the public sector. Therefore, low work effort could be a matter of the individual's free will, personal habit, or attitude rather than primarily the result of the organizational environment.

In conclusion, the results provide evidence that job shifts, from the private sector to public sector, cause a change in individual behavior. With all reservations made with the econometric model, specifically the issue of endogeneity, which can significantly change parameter values, this empirical diagnosis suggests that the recruitment, selection process (adverse selection) in the public sector, could be flawed.

Finally, the results provided by this study suggest a path for future research: the assessment of relative importance of differences in job security, competitive pressure and cultural identities inherent to each country as possible explanations for the variation in incidences of absence among employees in the public sector.

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