

Labour market and turnover in the industrial employment in the Brazilian Northeast region

Luís Abel da Silva Filho^a

Abstract

Recent economic growth has played in settings marked labor relations, especially in scenarios of late capitalism. The disruption in the Brazilian labor market was the result of the offensive of capital over labor, in a context of economic growth with unemployment and high turnover rates. Therefore, this article aims to analyze the turnover of the industrial labor market in the Northeast. This scenario is strongly characterized by the national restructuring process, especially as a receiver of economic activity/work intensive. Methodologically, it resorts to a literature review and empirical methods are added to the construction of indicators of turnover. The time frame covers the years 2001 and 2010, with the data source to the Annual Social Information and the General Register of Employed and Unemployed of the Ministry of Labor and Employment. The main results show that there are high rates of unfair dismissal, and a high proportion of workers who leave their jobs in less than a year. In addition, turnover is more pronounced in construction and agriculture. However, when the selection is made for the sectors of manufacturing industry, mechanical industry, footwear and food industries have high rates of turnover, compared with the other. Regarding the turnover rate according to demographic and socioeconomic characteristics, it is more pronounced for the male labor force, the very young and the young, less educated and in jobs with earnings of up to one minimum wage.

Key words: job market, turnover, Northeast.

JEL Classification: J00, J7.

Resumen

El crecimiento económico reciente ha configurado ajustes acentuados en las relaciones laborales, especialmente en escenarios de capitalismo tardío. La ruptura en el mercado de trabajo brasileño fue el resultado de la ofensiva del capital sobre el trabajo, en un contexto de crecimiento económico con tasas de desempleo y de alta rotación. Por lo tanto, este artículo tiene como objetivo analizar el volumen de negocios en el mercado

Manuscript received on January 15th, 2015; accepted on January 1st, 2016.

a Department of Economics of the Universidade Regional do Cariri (URCA, Brazil). Correspondence: abeleconomia@hotmail.com.

de trabajo industrial del noreste. Este escenario está fuertemente caracterizado por el proceso de reestructuración nacional, especialmente como un receptor de la actividad económica/trabajo intensivo. Metodológicamente, se recurre a una revisión de la literatura y se añaden métodos empíricos para la construcción de indicadores de volumen de negocios. El marco de tiempo abarca los años 2001 y 2010, con la fuente de datos de la Información Anual Social y el Registro General de Empleados y Desempleados del Ministerio de Trabajo y Empleo. Los principales resultados muestran que hay un alto índice de despido injustificado, y una alta proporción de trabajadores que dejan sus puestos de trabajo en menos de un año. Además, la rotación es más pronunciada en la construcción y la agricultura. Sin embargo, cuando se realiza la selección de los sectores de la industria manufacturera, la industria mecánica y la de calzado y alimentos tienen altas tasas de rotación en comparación con las demás. En cuanto a la tasa de rotación, de acuerdo a las características demográficas y socioeconómicas, es más pronunciada para la fuerza de trabajo masculina, los muy jóvenes y los jóvenes, menos educados y en puestos de trabajo con ingresos de hasta un salario mínimo.

Palabras clave: mercado de trabajo; volumen de negocios; noreste.

INITIAL CONSIDERATIONS

The transformations in production relations in the 1990s were responsible for an intense debate about the settings and the rotation of the Brazilian labor market. The main hypotheses guided raised the debate about the turnover to the characteristics inherent to the new procedures introduced, in the midst of production restructuring (Dedecca, 1998, 2005; Pochmann, 1998, 1999, 2001). Therefore, would the turnover be in the labor market, a result of new forms of production prevailing in the country?

It is known therefore that experienced economic settings around the world before the economic liberalization and the expansion of neoliberal process actions, sharply marked relations of production and labor (Silva Filho and Queiroz, 2010; Silva Filho and Clementino, 2011). In developing nations the impacts of such actions were exceedingly intense. The productive restructuring in Brazil led to a series of market actions that guided production system under precarious conditions for the workforce.

New forms of contracts were implemented in the Brazilian economy. The deregulation of the labor market was appreciated under different dimensions. It diverges in the national literature the thought that guides the actions of capital over labor. On one hand, there are those who advocate a deregulated labor market and reduced state participation guides production to market demand without

excessive damage to the capitalist (Jatobá and Andrade, 1993; Bivar, 1993); on the other and following the line that guides this study, those who argue that deregulation of the labor market has managed to excessive manpower losses, before too much of the freedom enjoyed by capitalists and the limited possibilities of the workforce in building links enduring employment (Pochmann, 1999; Dedecca, 2005). Such discussion took strong participation on the agenda that guided the literature on the Brazilian labor market of the 1990s.

Moreover, the high turnover in the labor market in those years was observed with considerable vehemence (Cacciamali, 1992; Amadeo *et al.*, 1993; Carvalho and Feijó, 1993; Baltar and Proni, 1995; Gonzaga, 1996; Corseuil *et al.*, 2002b). It was registered still high incidence of precarious work, with new records of contracts in ways never seen before in the country (Neves and Pedrosa, 2007). The part time contract, without a formal contract, and the high incidence of overtime, won high dimension in labor relations.

The productive restructuring, still guided by industrial decentralization in search of market and cheap labor, and tax incentives, this led to the broadening of northeastern industrial park, especially with industrial activities/work intensive. The absence of active unions in the region, besides hand cheap and disciplined labor, allowed the expansion of industrialization in the Northeast and greatly massified the workforce in light of the current production model in Brazil. Additionally, the relationship of employment contract they entered the 2000s with a strong focus of turnover and precarious work.

If on one hand, the turnover in the Brazilian labor market has been interpreted by theoretical construction that stands as a result of precarious and structural conditions of the economy in the face of a strong restructuring process has gone through the Brazilian economy; on the other, this phenomenon has been interpreted as resulting from greater opportunities aspects of the country's labor force to seek better jobs in macroeconomic environment favorable to the creation of more jobs.

Faced with such framework, this article aims to assess the turnover in the northeastern industrial labor market at the beginning and end of the first decade of the 21st century's. It is understood in this context, that the increased supply of labor, given the improvement in the macroeconomic performance of the country, is a determinant to change employment by the labor force, which thus behaves in search of better conditions and better opportunities in the industrial labor market in the Northeast. Industrial sector was selected, because it is

characterized as work/intensive (even with sharp modernization in sectors) and demonstrate significant share of textile and footwear sectors in the region. The time frame covers the years 2001 and 2010, with data from the Annual Report of Social Information (RAIS) [Relação Anual de Informações Sociais] and the General Register of Employed and Unemployed (CAGED) [Cadastro Geral de Empregados e Desempregados] of the Ministry of Labour and Employment (MTE) [Ministério do Trabalho e Emprego].

To achieve the objectives proposed by the study, the article is structured as follows: In these initial considerations, in the second section, it talks about turnover in the Brazilian Northeast and labor market; in the third section, weaves themselves some methodological considerations used to quantify in the labor market; then some preliminary results will be presented on the turnover; in the fifth section, address the rates of admission, dismissal, turnover and creation (destruction) of net jobs in the Northeast Region, Second socioeconomic and demographic characteristics of the workforce; and, finally, it weaves some concluding remarks.

CONSIDERATIONS SELECTIVITY AND TURNOVER IN THE LABOR MARKET

Some empirical evidence on the labor market in Latin America show high traces of discrimination in the workforce in the movement input in hiring methods and length of stay in the workforce in employment. The vulnerability of young, elderly, nonwhites, with little schooling and women is greatly accentuated in relation to other groups in the labor market (Márquez and Pagés, 1998; Freije, 2001; Corbacho, 2002; Funkhouser, 1996; Marcoullier, Ruiz de Castilla, and Woodruff, 1997). Low-wage jobs without records in portfolio are more inclined to turnover and make them more evident to the groups mentioned. These records show that the casualization of jobs, as well as turnover, is supported by the minority unrelated to social inclusion policies of this labor market social groups.

In Brazil, several findings confirm the results widely disseminated in Latin America, where discrimination in the labor market is ratified according to social groups. Non-whites, young, elderly and women make up part of the labor force more vulnerable to the actions of capitalist production and are most affected by unemployment, unregistered employment and occupations of lower social projection, being still affected by low wages, occupying the same job with the

same characteristics as those occupied by the other (Bruschini and Puppini, 2004; Bruschini, 2007; Silva Filho, 2011; Miro and Suliano, 2010; Silva Filho and Amon-Há, 2011).

These findings allow us to analyze the labor market taking into account the socioeconomic and demographic characteristics of the workforce. Empirical evidence in the Brazilian labor market demonstrated, in the late twentieth century and early twenty-first century, various forms of discrimination in the labor market and high rates of exclusion of labor that did not fit into previously established standards in the hiring industrial system. The previous experience of professionals ensured higher standards of competition for jobs in the labor market, excluding the very young and those with no professional experience.

Therefore, the selectivity in the labor market has enabled different relationships in terms of hiring labor and allowed the exclusion of minority social groups for years in Brazil. In the 1990s, it was believed that the country was an unemployed population contingent that would be oblivious to the effects of economic growth in the face of low fitness to established patterns and the advances of globalization in the light of the neoliberal system. This logic of capitalist accumulation a large part of the workforce of the country would be inflating the statistics of unemployment, given the exclusion imposed by the production model implemented.

It would therefore be the national productive restructuring an inherent advances of global capitalism phenomenon in all its aspects. In this advanced production relations with the workforce with little schooling technology scenario; low level of accumulated experience; very young and uneducated elderly would be less favored in the results of economic growth through increased productivity of now registered in the country. Thus, the “unemployed” part of the national workforce was exactly these social groups.

Furthermore, turnover was more pronounced for the more replaceable working force on the market. By that logic, they would also be the most affected in the labor market. Thus, the movement of incoming and outgoing would accentuate the relations of production costs in Brazil with both the workforce and for business activities. The costs would be both economic and social benefits to part of the workforce with the socioeconomic and demographic profile established.

But empirical studies such as the Corseuil *et al.* (2013) show that turnover for young people in the Brazilian labor market is markedly high, which, in

the understanding of the authors, it takes significant problems regarding the acquisition of experiences in the labor market, implying also in the non-profit productivity in the future wages of young Brazilian population. That way the effects in the long term, the turnover in the country's labor market for young people, ceases to be a structural issue and becomes a matter of macroeconomic effects in labor relations, which can be conditioned by several factors, among them the expansion of job opportunities in a favorable macroeconomic context. However, this does not resolve the negative effects of turnover.

In what refers to the creation and destruction of jobs in Brazil, according to the geographical region, Corseuil *et al.* (2002a) show that between 1997 and 1998, higher turnover rates were concentrated in the North and Midwest Brazil. The results may contain the specificity of the agricultural sector which has substantial turnover rates in Brazil's labor market due to the high seasonal character of production. The structural issue of regional economic activities, labor intensive activities have the highest turnover rates in Brazil, according to the mentioned study.

Orellano and Pazello (2006), using panel data methodology for the years of the 1990s, note that the state of São Paulo, southeastern Brazil, the turnover by industry firm size is caused, among others factors not observed, the unemployment rate in aggregate levels, the higher is the unemployment the lower is the turnover; and the larger the aggregate employment level, the greater the lower is the turnover. That is, there was a direct relationship between turnover and job opportunity in the industry of São Paulo year 1990. By this view, more job opportunities in the state industry, more turnovers, given by the greater movement in and out of the workforce in search of better working conditions.

Converging with the conclusions of Orellano and Pazello (2006), Silva Filho (2012) shows that in the late 2000s, the regions most developed of Brazil (Southeast and South) had the highest turnover rates in the formal labor market between 2008 and 2010, differing therefore of the study of Corseuil *et al.* (2002a) to the end of the 1990s. That is, the more opportunity to work more labor mobility from one job to another. The regions of lower employment opportunities have consequently lower entry movement of the workforce in the formal sector of the economy.

Silva Filho (2012) also emphasizes that there is a strong sectoral and regional influence on the turnover of the Brazilian labor market in the 2000s. The Midwest region and southern Brazil they have in agriculture (farming and

ranching) a significant share of other economic activities, tend to have high rates of turnover, since activities, especially agricultural, show significantly high temporary work in their production process. Furthermore, other economic activities, especially industry, has greater union control in the process of hiring and firing of the workforce, in the more developed regions.

But it is worth noting that, as the biggest opportunity of employment is concentrated in the most economically developed regions (East and South), turnover rates in these are superior, since the dynamics of “more job opportunity, greater input motion and output” stands out in the economic environment of 2000. In other words, the economic conditions both in terms of stagnation for growth, presents conflicting results with regard to turnover in the Brazilian labor market, highlighting the sector concerned and regional phenomenon.

In regions of lower economic dynamics these characteristics are even more pronounced. In the case of the Northeast, and in their states alone, some findings confirm wage discrimination by race/color (Miro and Suliano, 2010), higher rates of unemployment for nonwhites and women (Silva Filho and Amon-Há, 2011) and higher incidence of precarious employment for women, young and old (Silva Filho and Clementino, 2011) and greater informality in employment for non-whites, young and elderly women (Silva Filho, 2011; Silva Filho and Clementino, 2011).

Moreover, the absence of a control action of labor relations in the region implies the free offering, and labor demand in the market, determining therefore the specific dynamics of employment fluctuations in the northeastern formal labor market. Moreover, it is worth noting that the industry maintains the largest union control, with respect to the process of hiring and firing labor. It is for this reason that this study is justified.

In these aspects, the following section discusses the methodological procedures used in the study, seeking to address the socioeconomic and demographic characteristics of the turnover, with the aim of partially ratify the literature taken as a guide of the work.

METHODOLOGICAL NOTES

Regional Northeast description

The Northeast region is economically the poorest in Brazil. Composed of nine states, which most of them are among the poorest in the country, its economic

development rates are markedly lower and persist, despite a relative improvement framework registered over the 2000s composed of the States of Maranhao, Piaui, Ceara, Rio Grande do Norte, Paraiba, Pernambuco, Alagoas, Sergipe and Bahia, the Northeast holds 13% of the Gross Domestic Product (GDP) of Brazil (average for the last 40 years) (IBGE, 2013).

The estimates of IBGE (2010) was that the region had 53.59 million people, approximately 1/4 of the population. That same year, the Northeast held 12.7% of the industrial production units in Brazil, given the still high industrial concentration in the Southeast and South regions, which hold approximately 80% of the country's industries, according to a study of Silva Filho (2012).

Figure 1
Map of Brazil and its Federative Units, featured in the Northeast



Source: Instituto Brasileiro de Geografia e Estatística (IBGE), Territorial Division of Brazil, 2015.

Description of empirical treatment and the database

The discussion about the turnover in the Brazilian labor market is treated under the same terms, but under different dimensions of analysis. There is divergence in the economic literature about the phenomenon; on the one hand defend as a result of the recent economic dynamics driven by neo-capitalism; other context, turnover is the result of state intervention in the labor market laws “encourage” the abandonment of jobs, before rights acquired by labor and ensured the Consolidation of Labor Laws (CLT) [Consolidação das Leis do Trabalho].

Following the theoretical assumptions that guarantee be turnover in the labor result of the global dynamics of the capitalist market, this article takes as instruments already adopted by the Pazello, Bivar, and Gonzaga (2000) Corseuil *et al.* (2002a) and Orellano and Pazello (2006). These works use only aggregate data of economic activities and do not give due attention to socioeconomic and demographic factors as determinative and often determined by the turnover process in the Brazilian labor market. What distinguishes the work cited here is that addresses the turnover as the movement in and out of the labor force in the labor market, and to evaluate the turnover by socioeconomic and demographic characteristics of the tickets and college graduates in northeastern industry in the period of time.

To calculate the indicators of turnover, we use data from the RAIS (stock occupied at the beginning of the time period and at the end of the period) and the CAGED (number of admitted and off in the period) and the databases of the MTE. The averaging of the stock at the beginning of the period of time and give yourself to the years 2000-2001 and 2009-2010, and the analysis is for the years 2001 and 2010.

Considering the turnover as the input motion (admission) and the movement of output (firing) of the labor force and its influence on the total stock of employees in the industry of the Northeast, has the following expression:

$$R_{it} = \left[\frac{\sum(A_{it} + D_{it})}{(L_{cit} + L_{fit})/2} \right] \quad [1]$$

Where R_{it} is the turnover in the industrial labor market in the Northeast at the time in question; A_{it} is the number of workers hired by the industry under study

time; D_{it} is the number of off industrial workers in certain period of time; L_{cit} is the total industrial workforce at the beginning of the period of time allowed for the study; L_{fit} is the total industrial workforce at the end of the period taken for the calculation of turnover.

To measure the rate of creation and destruction of jobs, it is necessary to use the following expression:

$$TC = \left[\frac{\sum_{i=1}^n (L_{ait} - L_{dit})}{\bar{L}_{it}} \right], \text{ for the service sector, such that } L_{ait} > L_{dit} \quad [2]$$

The rate of destruction of jobs in the sector defined here assumes the following formula:

$$TD = \left[\frac{\sum_{i=1}^n |(L_{dit} - L_{ait})|}{\bar{L}_{it}} \right] = \left[\sum_{i=1}^n -\frac{(L_{ait} - L_{dit})}{\bar{L}_{it}} \right] \quad [3]$$

for the industrial sector, in which $L_{dit} > L_{ait}$

Therefore, we have that $(L_{ait} - L_{dit}) = (A_{it} - D_{it})$, which is the difference between the number of accepted and the number of off in the industry for a period of time. Following the method of analysis, the rate of net creation of jobs can be inferred as follows:

$$TCL = \left[\sum_{i=1}^n \frac{((L_{dit} - L_{ait}))}{\bar{L}_{it}} \right] = TC - TD \quad [4]$$

From the foregoing method, we obtain the rate of creation (destruction) of net jobs, admission, discharge and rate of turnover in the industry of the Northeast.

The comprehension discussed here is that the turnover in the industrial labor market in the Northeast becomes detrimental to the performance of the workforce with regard to future salary productivity, since they cannot settle any

longer in jobs and provide better labor productivity performance and remuneration. However, it also results in greater opportunities for working, before a picture of relative improvement of Brazil's macroeconomic performance and from its effects on regional scale.

PRELIMINARY NOTES SELECTIVITY AND TURNOVER IN THE LABOR MARKET

The phenomenon of turnover in the Brazilian labor market not limited to the troubled period of enthronement of neoliberal ideology. The 2000s signal the persistence of ties troubled labor relations led by strong movement in and out of the labor force in different sectors of economic activity in the country. Additionally, the types of movement of labor in the labor market have many different dimensions.

What we have, in fact, is the strong movement led by the flow of manpower into rotational movement in the labor market. In the Northeast Region, the data in Table 1 show that reduced the share of admitted for first job when compared to the year 2000 (14.50%) to 2010 (12.77%). This implies the reduction of opportunities in context relative to the strength of beginner work in industry in the region. However, it is relevant to note that in the analyzed interval, the share of admitted for first job out of 74 041 in 2000 to 116 593 in 2010, showing a growth rate of 57.47% in the period.

In the case of admission for reemployment, which indicates, in part, the rotational movement in the labor market, data show that in 2000, 183 846 workers were occupied equivalent to 36.00% of the unbundled movement related to the movement of entry into the industry. In 2010, 350 302 were registered bonds under the same conditions, representing a growth rate of 90.54%. In this respect, it is seen that the movement for admission in northeastern industry converges with the strong dynamics of entry and exit from the labor force in the same job.

Regarding the type of firing, with unfair dismissal action led to layoffs in the Northeast Region in 2000. For this framework, the 182 893 workers were fired without cause, equivalent to 35.91% of the unbundled movement. In 2010, records a relative decrease to 29.42%. However, 268 623 industrial workers left their jobs without cause in the Northeast. This shows the strong action of the high capital and ease it takes to hire and fire manpower in the Brazilian

labor market (Pochmann, 1999; Dedecca, 1998; Antunes, 2005), especially the Northeast, in contracting the workforce only adjustment of production and no apparent cost to the employer at the time of dismissal.

The dismissals for fair cause occupied little space in the type of movement of the labor force in 2000 and in 2010. Relatively speaking, occupied 1.21% in the first, and 0.77% in the last observed year. Regarding the firing request amounts in absolute terms and in percentage terms. In 2000, 31 056 (6.08) Northeastern industrial workers leave their jobs on request. In 2010, 62 039 were registered workers leaving their jobs under the same conditions. The percentage growth of this form of output of industrial employment was 99.76% in the period. This result may reflect better opportunities in the labor market in the region, which gives the larger labor force opportunities for insertion into other economic activities.

Table 1
Number of employees hired and off by type of disaggregated movement in the industry in the Northeast, 2000-2010

Type of disaggregated movement	2000		2010		Variation % 2000-2010
	<i>Absolute numbers</i>	%	<i>Absolute numbers</i>	%	
Admission for first job	74 041	14.50	116 593	12.77	57.47
Admission for re-employment	183 846	36.00	350 302	38.36	90.54
Admission for reintegration	14 128	2.77	628	0.07	-95.55
Shutdown dismissal without cause	182 893	35.81	268 623	29.42	46.87
Shutdown dismissal with cause	6 193	1.21	6 991	0.77	12.89
Shutdown on demand	31 056	6.08	62 039	6.79	99.76
Shutdown retirement	1 041	0.20	498	0.05	-52.16
Shutdown death	870	0.17	1 456	0.16	67.36
Termination with ending of contract	-	-	69 480	7.61	0.00
Fixed term contract work	-	-	19 676	2.15	0.00
Fixed term ending of contract work	-	-	16 793	1.84	0.00
Shutdown transfer	16 615	3.25	-	-	-100.00
Total	510 683	100.00	913 079	100.00	78.80

Source: prepared by the author based on data from RAIS, Ministry of Labor and Employment.

Other types both admission and shutdown occupy relatively low participation in the type of movement in the industrial labor market in the Northeast. What we have, in fact, is structured from the perspective of the shares between employer

and hired, when you register, especially from the perspective of the shutdown, the strong relationship of domain of industrial capitalism in the region, given the fact admissions without labor market cause still be a remarkable phenomenon in the northeastern industrial employment.

Regarding to the time spent on the job, some empirical results show low participation in the workforce in lasting relationships. The results show that a large part of the Brazilian labor leaves their jobs in less than a year. Such participation is accentuated even more when we observe the interval occupied by less than three years. In the Northeast, Silva Filho and Queiroz (2011) observed the evolution of the occupied residence of formal jobs and found that in 1990, 28.2% of employed left their jobs in less than a year. The percentage increased, and in 2000, as in 2008, there were records of 35.8% of the formal busy that left their jobs under the same conditions.

The results found by Silva Filho and Queiroz (2011) confirm the hypothesis of the percentage increase of employed persons who left their jobs in less than a year, also observed by Corseuil *et al.* (2002b). Furthermore, the results found by Silva Filho and Queiroz (2011) also show that, for occupied by more than one and less than two years, the percentage rose from 1990 to 2008. What we have is though the time series presented by the authors identifies concentration of workers within the time periods in employment of shorter duration and percentage reduction of those who spent more than five years in the same job.

Reducing the time spent in employment can be interpreted as reducing the opportunity to build a career in labor and develop lasting relationships at work. On the one hand employers do not feel encouraged to offer professional training to the worker, in view of the high possibility of them off of their companies; secondly, the bonds of work are losing consistency with regard to the creation of opportunity of the rise of worker within the same unit. Hence it is interpreted that the shorter stay of workers in the same job is detrimental to both the contractor and for the contractor.

Thus, it is possible to observe in Table 2 that there is high turnover in the formal manufacturing employment in the Northeast. In addition, there are reports of increased participation of busy staying for less time in employment. When one takes into consideration the year 2001, the records accuse 35.69% of formally employed in industrial activity in the region, which leave their jobs in less than a year. Moreover, in 2010 this share rises to 37.41%. These results

demonstrate the persistence of the phenomenon in the northeastern labor market over the years.

Table 2
Number of formal jobs according to the time spent in the industry
in the Northeast, 2001-2010

The time spent in the job	2001		2010	
	<i>Absolute numbers</i>	%	<i>Absolute numbers</i>	%
Less than 1 year	242 424	35.69	436 251	37.41
More than 1 and less than 2	114 654	16.88	190 713	16.35
More than 2 and less than 5	149 839	22.06	267 004	22.89
More than 5 and less than 10	78 635	11.58	153 290	13.14
10 or more years	93 621	13.78	118 626	10.17
{Not classified}	113	0.02	395	0.03
Total	679 286	100.00	1 166 279	100.00

Source: prepared by the author based on the RAIS, Ministry of Labor and Employment.

In addition, for those who spent more than one and less than two years in the same job, log reduction is relative small, namely: 18.88% in 2001 from 16.35% in 2010, then that is observed more than 50.00% of the workforce employed in the industry in the Northeast left their posts to work in less than two years. Furthermore, amounts to relative share of the first to the last year analyzed. Given the above, the data confirm the strong trend of turnover; on the one hand, which may result from the absence of union of employment protection policies, and the constant pursuit of the workforce for better insertion conditions in work stations with higher wage guarantees and/or better opportunities to develop their labor actions in new activities, as the most economically dynamic regions according to Silva Filho (2012), are those with the highest turnover rates. In other words, there are more opportunities to work and exchange of employment becomes a matter of choice of the worker.

On the other hand, the generation of jobs in sectors such as construction and agriculture, with markedly seasonal activities, perpetuates the strong movement in and out by sector, and this implies in the total turnover of the formal labor market presented here.

Following the above, the following section presents the rates of admission, dismissal, turnover and net creation of jobs, seeking to interpret the phenomenon from the perspective of selectivity in the labor market.

**ADDITIONAL INFORMATION ABOUT THE TURNOVER
IN THE INDUSTRIAL LABOR MARKET IN THE NORTHEAST**

This section analyzes the turnover in the labor market from the set of information about the rate of job creation, destruction and creation (destruction) of net positions of formal jobs in the Northeast. The data in Table 3 show that the construction industry had the highest turnover rate driven by both the input motion (1.11) and the output (1.09) in the sector. Then, with the agricultural turnover rate of 1.50 in 2001 was distinguished. It's appropriate to emphasize that these are the sectors of economic activity with higher incidence of precarious work and with a large proportion of the population in the region converged with the profile of jobs. Thus, turnover could result from large supply of labor and the ease of her entering the labor market in these segments.

The lowest turnover rate was observed in public administration (0.01). Moreover, the mining industry had low turnover compared to other sectors of economic activity, classified here. It should be added, though, that only industrial utilities showed a negative rate of creation (destruction) in 2001 (-0.01). This year, the rate of net job creation in all sectors totaled 0.02 and is therefore very low.

Table 3
Turnover in formal employment in the Northeast
by sector of economic activity, 2001-2010

IBGE sector	2001				2010			
	Rate creation	Rate of destruction	Turnover rate	Rate net creation	Rate creation	Rate of destruction	Turnover rate	Rate net creation
Mineral extractive	0.31	0.26	0.57	0.05	0.24	0.16	0.40	0.08
Manufacturing industry	0.46	0.44	0.90	0.03	0.45	0.40	0.85	0.05
Industrial utilities	0.13	0.14	0.27	-0.02	0.20	0.17	0.36	0.03
Civil construction	1.11	1.09	2.20	0.01	1.06	0.87	1.93	0.19
Trade	0.45	0.41	0.86	0.04	0.43	0.37	0.80	0.07
Services	0.38	0.33	0.71	0.05	0.39	0.32	0.71	0.06
Public administration	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Agricultural, plant extraction, hunting and fishing	0.76	0.74	1.50	0.02	0.86	0.84	1.70	0.03
{Not classified}	26.32	15.21	41.53	11.11	0.00	0.00	0.00	0.00
Total	0.31	0.29	0.61	0.02	0.34	0.29	0.62	0.05

Source: prepared by the author based on data from the RAIS, Ministry of Labor and Employment.

In 2010, the dynamics of turnover in the labor market shows high rates in construction and agriculture. However, it is relevant to note that reduced the turnover rate of the first (1.93) and (1.70) amounted to the second sector emphasized when comparing 2001 to 2010. Moreover, the construction was responsible for the highest rate of net creation of jobs (0.19), showing the superiority of motion input in relation to output. The good results for the sector were derived from expansion of regional infrastructure, implemented by the works and Growth Acceleration Plan (PAC) [Programa de Aceleração do Crescimento] and the increase in the supply of housing credit program led by “My House, My Life” from the Federal Government.

It is worth mentioning that reduced turnover rates in the mining industry and commerce. Additionally, there was net rate of creation of formal jobs in the Northeast of 0.05. Superior result to that observed in 2001 (0.02). What we can infer from the table, is the sharp turnover in the formal labor market in the Northeast. However, one should take into account that the input motion is greater than the output in almost all sectors. The exception were the industrial utilities in 2001 (−0.01).

Within industry, the data in Table 4 contain the turnover by industry. Records show the highest turnover rates in the mechanical industry (1.07), food and beverages (1.06) and in the footwear industry (1.04). What is observed is that these are segments of the manufacturing industry in the region of large representation in the Northeast Industrial Park, especially the food and the footwear. In addition, the segments work/not allow more intensive level of aggregate human capital formation, with low level of qualification of labor, caused a greater turnover given the ease of substitution in the labor market. Moreover, as they are sectors that pay in the worst salary ranges, changing jobs is markedly high, since there is work option for this socioeconomic group, in the context of macroeconomic dynamics of growth and income distribution on a regional scale, as it is recorded in the 2000s in the region.

Besides the high turnover in the segments mentioned, it is of significant importance measure the sectors of the manufacturing industry that sported negative rate of creation (destruction) net. Among them stood out: wood and furniture (−0.01); textile industry (−0.02); and industrial utilities (−0.01). In these sectors the rate of destruction of jobs were higher than those for admission. With that, there were burns of jobs in 2001. Additionally, it is observed that, in 2001, turnover in northeastern industry hit rate of 0.83.

Table 4
Turnover in formal employment in the Northeast
according to the industrial segment, 2001-2010

Industrial segment	2001				2010			
	Rate creation	Rate of destruction	Turnover rate	Rate net creation	Rate creation	Rate of destruction	Turnover rate	Rate net creation
Mineral extraction	0.31	0.26	0.57	0.05	0.24	0.16	0.40	0.08
Production non metallic mineral	0.39	0.38	0.77	0.02	0.51	0.42	0.93	0.10
Metallurgical industry	0.37	0.29	0.66	0.08	0.47	0.38	0.85	0.09
Mechanical industry	0.59	0.48	1.07	0.10	0.71	0.62	1.34	0.09
Electrical and communication	0.50	0.32	0.82	0.18	0.39	0.31	0.70	0.08
Material transport	0.54	0.31	0.85	0.22	0.35	0.22	0.57	0.13
Wood and furniture	0.40	0.41	0.82	-0.01	0.43	0.34	0.77	0.08
Paper and printing	0.32	0.28	0.60	0.04	0.35	0.29	0.63	0.06
Rubber, smoke, leather	0.40	0.35	0.75	0.05	0.42	0.33	0.75	0.09
Chemical industry	0.33	0.32	0.65	0.01	0.28	0.23	0.51	0.04
Textile industry	0.40	0.42	0.82	-0.02	0.39	0.32	0.71	0.07
Footwear industry	0.57	0.48	1.04	0.09	0.35	0.27	0.63	0.08
Food and beverage	0.54	0.52	1.06	0.02	0.56	0.54	1.10	0.02
Public utility service	0.13	0.14	0.27	-0.02	0.20	0.17	0.36	0.03
Total	0.43	0.41	0.83	0.02	0.43	0.37	0.80	0.05

Source: prepared by the author based on data from the RAIS, Ministry of Labor and Employment.

In 2010, there were therefore some changes in production structures and the labor market. However, it is, however, noting that reduced the turnover rate in manufacturing employment in the region. Some sectors of the manufacturing industry increased their turnover rates, such as the non-metallic mineral products industry, metallurgical industry paper and printing and industrial utilities. On the other hand, other sectors reduced, in relative terms, turnover rates, and the end result of this phenomenon was that fell turnover rates in the manufacturing industry of the Northeast, in the comparison of 2001 with 2010.

TURNOVER IN MANUFACTURING EMPLOYMENT IN THE NORTHEAST ACCORDING TO DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS OF THE WORKFORCE

The discussion of selectivity in the labor market gains theoretical scope in several studies, especially in developing countries. In Brazil, there is relative academic research that confirms the phenomenon in high range. With regard to the selectivity by sex, studies show higher unemployment rates for women (Silva Filho, 2011; Silva Filho and Amon-Há, 2011), with most of them employed in the informal labor market. However, there are many studies that prove high participation of women in the labor market, due to the need for financial independence or circumstance of heading households because of father absence, and the need to supplement family income (Leone, 2003; Arraes, Queiroz, and Alves, 2008; Silva Filho and Queiroz, 2009; Silva Filho and Queiroz, 2010; Leone and Baltar, 2010).

In other respects, the greater female participation in the labor market is directly related to job creation with feminine skills and the consolidation of the shares of women in the workplace. The independence of these occurs both guided in need as the desire to occupy much space in the society, which is determining its role as an active agent in the labor market. Moreover, a series of events in social life has delegated to women greater participation as agent of political and social decision (Wajnman and Perpetual, 1997; Bruschini and Lombardi, 2000; Leone, 2003; Bruschini, 2006, 2007).

What is, therefore, is the greatest desire of established social equality and still strong records of inequality between men and women, especially in the Brazilian labor market. In the Northeast, it is remarkable inequality in the labor market in relation to sex. Female participation is still markedly lower than the male in economic activities of greater social projection. In industry, women are busy sizeable minority. However, with regard to the turnover in the industry, the data in Table 5 indicate that the rates are higher for the male workers than for female.

It can be also observed that there was a considerable gap between male and female rates of turnover compared 2001 with 2010 the first year; male turnover rate was 0.84 against 0.81 of female. At last, while the turnover rate for on male workers employed in industry rose to 0.85, fell to 0.68 female. Moreover: the rate of creation (destruction) of net jobs was 0.03 for men and 0.02 for

women only in 2001; but, in 2010, the rates were reversed: 0.05 for men and 0.07 for women.

Table 5
Turnover in manufacturing employment in the Northeast
by gender, 2001-2010

Gender	2001				2010			
	Rate creation	Rate of destruction	Turnover rate	Rate net creation	Rate creation	Rate of destruction	Turnover rate	Rate net creation
Masculine	0.43	0.41	0.84	0.03	0.45	0.40	0.85	0.05
Female	0.41	0.40	0.81	0.02	0.38	0.30	0.68	0.07
Not classified	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.43	0.41	0.83	0.02	0.43	0.37	0.80	0.05

Source: prepared by the author based on data from the RAIS and CAGED, Ministry of Labor and Employment.

In view of this, it is relevant to note that despite the modest female participation in northeastern industry, women are managing to win more space; else: women's turnover in job positions in the sector is much lower than the rate observed for on male workers. Conclusion: women stay longer in their jobs and are less induced to change of occupation, then is smaller turnover.

Regarding selectivity by age group, there are many works in which there is greater vulnerability for young and old, with their greater participation in informal and precarious work stations, both in the number of developing countries as specifically in Brazil. In turn, turnover is certainly more pronounced for young's hand work, due to the greater supply of jobs for this profile, as well as the search for better employment opportunities. The data in Table 6 confirm the above, with higher turnover rates for the workforce for the first framed with old established ranges. In 2001, the highest rate was recorded for industrial workers aged 18-24 years (1.14). In addition, until 29 years the turnover rate has growing movement, dropping from other age groups.

Additionally, the case has highlighted that the rate of creation (destruction) net proved negative for the industrial workforce in the Northeast after 30 years. This result shows us that the creation of jobs for people aged over 30 years is less than the destruction of jobs to labor under the same conditions. They are therefore strong signs of selectivity into the labor market and the effects of demographic characteristics as determinants of sharp movement out of the hand of industrial work in the Northeast.

Table 6
Turnover in manufacturing employment in the Northeast
according to age group, 2001-2010

Age group	2001				2010			
	Rate creation	Rate of destruction	Turnover rate	Rate net creation	Rate creation	Rate of destruction	Turnover rate	Rate net creation
Till 17	0.57	0.31	0.88	0.25	1.42	0.56	1.98	0.86
18 to 24	0.64	0.51	1.14	0.13	0.73	0.53	1.25	0.20
25 to 29	0.48	0.47	0.95	0.01	0.46	0.42	0.87	0.04
30 to 39	0.38	0.39	0.76	-0.01	0.36	0.35	0.71	0.01
40 to 49	0.28	0.30	0.57	-0.02	0.27	0.27	0.53	0.00
50 to 64	0.23	0.28	0.50	-0.05	0.17	0.20	0.38	-0.03
65 or more	0.10	0.29	0.39	-0.19	0.08	0.22	0.30	-0.14
{Not class}	4.09	4.32	8.41	-0.23	0.00	0.00	0.00	0.00
Total	0.43	0.41	0.83	0.02	0.43	0.37	0.80	0.05

Source: prepared by the author based on data from the RAIS and CAGED, Ministry of Labor and Employment.

In 2010, the movement of the strength of youth work and youth was more intense in the Northeast industry. The turnover rate has risen enough to hand industrial work under the age of 17 years (1.98), which may reflect the apprentice program, since turnover was driven by the great movement of entry since which registered a rate of creation (destruction) of 0.86 net. Additionally, it is necessary to emphasize that the workforce aged between 18 and 24 years (1.25) also registered sharp turnover rate. Furthermore, the net creation rates were also significantly higher than that of destruction, which resulted in creation rate (destruction) of 0.20.

Even with regard to the rate of creation (destruction) is seen a movement of recoil from the destruction of jobs in industry and the creation of a breakthrough for the workforce with earlier age. While in 2001 it recorded a negative rates of creation (destruction) to hand industrial work over the age of 30 years, in 2010, records captured notify that the same phenomenon happened to the workforce over the age of 50 years (see Table 6).

Regarding turnover by level of schooling in the formal manufacturing employment in the Northeast, you can see in Table 7 high rates for labor with fewer years of schooling. The highest turnover rates in 2001 were experienced by the industrial workforce illiterate (1.08) and incomplete until the 5th year of primary school (1.01). However, the rate of creation (destruction) of net jobs was negative only for labor with schooling in the 5th full year (-0.02) and ranges from

6th to 9th grade education (-0.01). With this level of schooling, the number was less than the allowed off, thus confirming the results observed. According Amadeo *et al.* (1993), with low human capital the cost of turnover ends up being exceedingly intense to work at the expense of capital, if found in industrial employment in the Northeast.

Table 7
Turnover in manufacturing employment in the Northeast
according to years of schooling, 2001-2010

Schooling	2001				2010			
	Rate creation	Rate of destruction	Turnover rate	Rate net creation	Rate creation	Rate of destruction	Turnover rate	Rate net creation
Illiterate	0.56	0.52	1.08	0.04	0.56	0.59	1.14	-0.03
Until 5th incomplete	0.51	0.50	1.01	0.00	0.57	0.58	1.16	-0.01
5th complete	0.36	0.38	0.74	-0.02	0.42	0.46	0.88	-0.03
6th a 9 th	0.41	0.42	0.83	-0.01	0.41	0.38	0.79	0.03
Junior School complete	0.42	0.40	0.82	0.03	0.39	0.36	0.75	0.03
High School incomplete	0.44	0.40	0.84	0.04	0.43	0.36	0.79	0.07
High School complete	0.40	0.33	0.73	0.07	0.43	0.32	0.75	0.10
College incomplete	0.38	0.34	0.73	0.04	0.31	0.27	0.58	0.04
College complete	0.26	0.24	0.50	0.02	0.24	0.20	0.44	0.05
Master	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PhD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.43	0.41	0.83	0.02	0.43	0.37	0.80	0.05

Source: prepared by the author based on data from the RAIS and CAGED, Ministry of Labor and Employment.

In 2010, turnover rates intensified to the first tracks of schooling and illiterate account for high rates of turnover this year. Besides them, those with education up to the 5th grade of elementary school experience higher turnover rate (1.16). This is therefore the part of the labor force more vulnerable to market fluctuations and the most replaceable when necessary. It is appropriate to add that the graduates with education up to the full 5-year elementary school had superior records to tickets in Northeastern industrial activities. The result was the creation rates (destruction) net negative for them in 2010.

Yet it must be remembered that for the industrial workforce with more years of study turnover rates were less pronounced and the motion input was

higher than output in industrial activities in all years observed. However, it must be emphasized that education is not enough to effect maintenance jobs in condition, but it is necessary because the less educated work force is the most vulnerable to the movement of output. Moreover, education is not enough for the occupation of jobs opportunities with better projection, especially in the Northeast (Santos and Moreira, 2006).

Regarding the turnover rate of pay according to years, the data in Table 8 make us conclude it be high for manufacturing jobs with salary ranges in the first set here. In the pay range of up to 1 minimum wage, turnover was too high (2.62), having been both intense motion input as output. However, the creation of jobs was relatively high, which gave a net rate of creation (destruction) of 0.25, in the year 2001. In this range, one with remuneration of over 1 and up to 2 minimum wages also showed significant turnover (0.91), even with creation rates and destruction approximated.

What stands out with high depth is the fact that the rate of creation (destruction) tested negative net from the pay range of more than two minimum wages. It is thus seen that the market of northeastern industrial work makes clearly visible the movement of workers out of the best bands of remuneration and job opportunities arise only with more intensity in the lower pay ranges. According to Gonzaga (1996), when relating the high rate of turnover in the labor market, one should take into account the low quality of jobs, which does not allow the establishment of working links solids. This infers that the low-paid jobs in the industrial labor in the region is responsible for the high turnover rate, and is therefore convenient to create jobs in the industry with the best tracks of compensation to avoid the excessive costs of hiring and firing and maintain professional thus valuing the formation of strong bonds in the workplace.

In 2010, entries in Table 8 indicate reduction in turnover rates in manufacturing employment in the Northeast by pay range. However, the movement in and out of the workforce with average pay of up to one minimum wage was still pretty impressive. In this range, the turnover rate was 2.25, followed by a little distant range of over 1 and up to 2 minimum wages (0.79), confirming the proposed by Stiglitz (1974) and Salop (1979), which in their efficiency models argue that firms must use the salary to avoid the voluntary layoffs of workers. In this case, the low wages in Brazil, especially in the Northeast are responsible for the high turnover rates in the industry, according confirm the data. Furthermore, the rate of creation (destruction) of net jobs were negative for jobs with remuneration above two minimum wages. This performance shows

the persistence of northeastern industry in creating jobs in the lower ranges of compensation and accentuate the movement out in the other tracks.

Table 8
Turnover in manufacturing employment in the Northeast
according to the pay range, 2001-2010

Pay range average (mw)	2001				2010			
	Rate creation	Rate of destruction	Turnover rate	Rate net creation	Rate creation	Rate of destruction	Turnover rate	Rate net creation
Until 1 mw	1.44	1.19	2.62	0.25	1.41	0.84	2.25	0.56
More than 1-2 mw	0.47	0.44	0.91	0.03	0.40	0.39	0.79	0.02
More than 2-4 mw	0.21	0.25	0.46	-0.04	0.17	0.22	0.39	-0.05
More than 4-7 mw	0.15	0.18	0.33	-0.03	0.11	0.14	0.26	-0.03
More than 7-15 mw	0.15	0.17	0.32	-0.02	0.09	0.09	0.18	0.00
More than 15 mw	0.10	0.13	0.23	-0.03	0.03	0.05	0.08	-0.02
{Not classified}	0.13	0.14	0.28	-0.01	0.07	0.06	0.13	0.01
Total	0.43	0.41	0.83	0.02	0.43	0.37	0.80	0.05

Source: prepared by the author based on data from the RAIS and CAGED, Ministry of Labor and Employment.

FINAL CONSIDERATIONS

This article aimed to analyze the labor market and the turnover in industry in the Northeast in 2001 and 2010 it took into account the sectors of economic activity and the socioeconomic and demographic characteristics as determinants of turnover in jobs. Data were collected in the RAIS and the CAGED of the MTE, being considered the only formal jobs.

The main records suffer from high rates of admission for re-employment and unfair dismissal. The first of these records refers to those who have returned to the industrial segment after segment resignation. The second studies the deregulation of the labor market and the high incidence of workers laid off without apparent reason, just made the adjustment of labor to production. Additionally, there was significantly high percentage of employed who left their jobs in less than a year, both in 2001 as in 2010.

Regarding turnover by sector of economic activity, considering the classification of sectors of the IBGE, there were high rates in construction and agriculture, and even featured to high rate of creation (destruction) of net jobs in construction in 2010, caused by the movement into the workforce in the sector. Such

dynamics could be related to the increase of job opportunities in Northeastern construction, given the works of the São Francisco river transposition, as well as the construction of the railway Transnordestina, which positively impacted the northeastern construction sector. In addition, the housing programs implemented by the program “My House, My Life” from the Federal Government, a major impact on housing construction in the Northeast may have influenced the result.

With regard to sectors of the manufacturing industry, in 2001, mechanical engineering, as well as footwear and food and beverage led the turnover rates in the industrial labor market in the region, repeating the high level for the first and the last mentioned 2010th. It is noteworthy that they are labor-intensive sectors with low technological intensity and low wage bill of their jobs. In this sense, the high turnover is justified, as they are the jobs with the lowest wages are the most stress incoming and outgoing movement.

Regarding socioeconomic and demographic characteristics, the data collected show turnover rates for higher than those observed for female labor male occupied. In addition, turnover is exceedingly high for the hand of youth and youthful work, especially under the age of 29 years, and for the workforce aged over 30 years were net creation rates (destruction) negative intensified in the year 2001, with the same happened in 2010, just to the workforce aged over 50 years.

Also, turnover in jobs of northeastern industry proved sharp for the population with few years of study, namely: in 2010, the rate of creation (destruction) of net jobs were negative for labor with schooling until the 5th full year of elementary school, a fact driven by the movement of output greater than the input. Moreover, the high rate of turnover occurred in manufacturing jobs with pay of up to one minimum wage, and, from 2 wages, the rate of creation (destruction) net was negative both in 2001 as in 2010.

Given these results, it is observed that the turnover in the northeastern industrial labor market proved to be relatively strong in some sectors of economic activity and significantly lower in sectoral activities in the manufacturing industry and the mining industry, registering only three of them (labor-intensive) with the highest rates. This phenomenon can result from the growing opportunity of jobs with low renumbering, inducing the search for minimal improvements in work conditions (among other unobservable factors in this study) which can be given by the turnover by salary range and job offer in economic sectors affected of strong seasonality.

Moreover, the good performance of the Brazilian economy in the 2000s allowed opportunity of choice of insertion in the labor market, although in intensive activity in work with low pay and markedly seasonal, such as construction, agriculture, food industry, textile industry and shoes, impelled by rising international demand for agricultural products; and the domestic demand for consumer goods, given the elevation and improvement in the distribution of domestic income.

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