DISPARITIES OF THE BRAZILIAN YOUTH'S UNEMPLOYMENT (15 – 29 YEARS OLD)

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1. INTRODUCTION

The discussions about decent job of the International Labour Organization (ILO) and about the utilization of the" demographic bonus"[2]. Brought the youth job thematic to the public politic (ILO,2009).

In 2009, it was used official data of 2006, the Latin America and Caribbean unit of ILO, achieved a study about Brazilian youth. It included educational aspects, insertion's standards in the job market, differences in sexual, race, housing terms (ILO, 2009).

According to IBGE (2016), the unemployment tax in Brazil increases considerably in the last years, as well as the youth unemployment rate for people aged between 18-24 years old, the rate continues to be higher than the total unemployment average rate.

In view of the crescent discussion about the youth job market and the high unemployment taxes registered nowadays in Brazil, we see the relevance of verifying whether the youth job market differences stay relevant. Thus, this article will have as objective to investigate possible elements that influence the youth Brazilian unemployment rate. In other words, based on the literature (ILO, 2009), it's necessary to verify if there are differences related to sex, race, education level and age group.

2. METODOLOGY

In this article we consider youth individuals between 15 and 29 years old, as the youth Brazilian politics and the ILO definitions (ILO, 2009). For the final work, it's necessary to use the Poisson's molding in Brazil's level. As a preliminary analysis, we model the unemployment tax to Minas Gerais State (Brazil's southeast region).

In order to achieve this will be used the data base of third quarter of Pesquisa Nacional por Amostra de Domicílios Contínua (PNAD Contínua)[3]. According to IBGE(2014), the pertinent population is formed with all persons that live in permanent particular residences of the area covered by the search, the sample is probabilistic and representative to Brazil's level, Federation Unity, Big Regions and Metropolitan

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[2] For more on "demographic bonuses", see Alves (2008).

[3] As the PNAD Contínua is a search by sampling, it turns necessary to considerate the sampling plan in the analysis using its micro-data, however, in this preliminary work we don't consider the sample plan. At the final work, the sample plan will be considered.

Regions[4].

It will be used the people's in job age definitions, employed and unemployed obtained by PNAD Contínua in IBGE(2016). This official statistics organ defines the unemployment tax as[5]:

$$\text{Unemployment tax} = \frac{\text{unemployed people}}{\text{people in labor force total}} \times 100$$

The data will be molded from Poisson's model. According to Dobson (2002), the Poisson's model is defined as:

$Y_i \sim Poisson(\mu_i)$; the rate represents the "i - ésimo" co - variables standard

$E(Y_i) = n_i\theta_i = \mu_i$

We have, $\theta_i = \exp\{\mathbf{x}_i^T\}$

Thus, $E(Y_i) = n_i \exp\{\mathbf{x}_i^T\} = \mu_i$

Then we'll have this relation : $g(\mu_i) = \eta_i = \log(\mu_i) = \log(n_i) + \mathbf{x}_i^T\boldsymbol{\beta}$, where :

$\Rightarrow \eta_i$ is the linear predictor;

$\Rightarrow \mathbf{x}_i^T$ is the explanatory variables matrix;

$\Rightarrow \boldsymbol{\beta}$ is the parameters' vector;

$\Rightarrow g(\mu_i)$ is a link's function that describes the expected value of Y_i relates with the linear predictor η_i;

$\Rightarrow \log(n_i)$ is the offset, a constant known and incorporated in the model. It permits model a tax instead of a counting.

The Poisson's model will be constructed considering the explanatory variables, sex, race, categorized age and instruction level (both categorical variables), the offset (logarithm of the youth's number in the labor force) and the variable answer will be the unemployed youth. In our analyses we will use the free software R, version 3.3.2.

3. PRELIMINARY ANALYSES

The PNAD Contínua demonstrates that in the 2016 third quater, the unemployment rate of youth(15-26) from Minas Gerais was 20,24%. By the Graphic1, we can observe the unemployment distribuition rate, with the co-variables standard[6], by sex, race, instruction level and age. The data seem to demonstrate the differences between unemployment rate, in line with the youth's sociodemographic characteristic. The women's differences are higher than the men's, black's and bowns are higher than the white's differences. In terms of age, it declines with the rise of it and possible differences in the unemployment rate by education level, in which was higher the instruction level, the unemployment rate was lower.

Poisson's models were adjusted (null, additive and with interactions), with the intention of verifying the literature's notes as to verify if there is an interaction effect

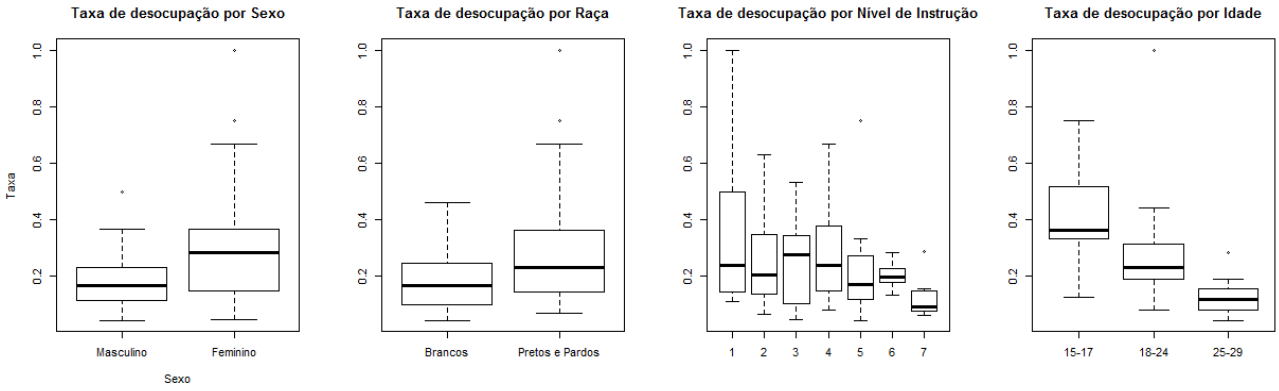
[4] This allows us to produce results at the level of the Federation Unit (Minas Gerais).

[5] In the case of analyzes for youth, the total number of people of working age corresponds to the total number of young people.

[6] In total there are 68 covariate patterns (Sex, Race, Education Level and Age). That is, the base used contains 68 observations. Remembering that in Race we work only with Whites, Blacks and bowns.

between the youth demographic characteristics in the unemployment rate. We assume the significance level of 5% in our analyses The model's quality evaluation was obtained by the statistics: Deviance (D), Pearson's chi-squared (X^2) and by the Akaike Information Criterion (AIC), as indicated by Dobson (2002). Comparisons between models were performed by the Deviance difference test, for those validated models by the Deviance test. It is worth mentioning that in all adjusted models, except the null model, the offset term was inserted. It's the offset term that permits us to model the rates and not just a counting.

Graphic 1: Youth Unemployment Tax (15-29) of Minas Gerais, according to Sex, Race, Instruction Level and Age – 3rd Quarter of 2016.[7]



Source: Microdata PNAD Contínua (3rd Quarter 2016) / IBGE. Self elaboration.

We adjusted 21 models and by the adjustment statistics we concluded, at the significance level of 5% that the parsimonious model of good adjustment at data is:

$$\log(\mu_i) = \log(n_i) + \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \sum_{j=5}^{10} \beta_j X_{ji}$$

In which o X_1 is the sex variable, being 0= male and 1= female; X_2 is the race variable, being 0= White and 1=Blacks and Browns; X_3= age category variable, being 1=18 a 24 years old and 0=otherwise, X_4= age category variable, being 1=25 – 29years old and 0=otherwise, and X_j the variable *dummy of* Education level, being j=5=Incomplete elementary school or equivalent, j=6=Complete Elementary school or equivalent, j=7=Incomplete high school or equivalent, j=8=Complete high school or equivalent, j=9=Incomplete college education or equivalent and j=10=Complete college education or equivalent. Therefore, the model's baseline is, male sex, age group between 15 a 17 years old, white youth and without instruction. The Table 1 presents the adjusted model's coefficient. Thus, we conclude that there are statistics evidences of differences in the unemployment tax per sex, age group, race and instruction level.

[7] The categories of Instruction Level are: *1-No instruction, 2- Incomplete elementary school or equivalent, 3- Complete elementary or equivalent, 4-Incomplete high school or equivalent, 5-Complete high school or equivalent, 6-Incomplete college education or equivalent, 7-Complete college education or equivalent.*

We can observe that by the adjusted model, the women's unemployment tax is, on average, 48,4% bigger than themen's unemployment rate; Blacks' and Browns' is, on average, 30,81% higher than the white youth; the tax by age category reduces with the age raise. In relation to the Education level, the adjusted model indicated differences in the unemployment tax just to the complete college course, in which the unemployment tax of this group 50,90% lower than that of youth without Education, on average. The residuals' analysis was as it was supposed, the adjusted residuals are distribuited randomly around zero and at the interval [-3,3].

Table 1: Expected coefficients and statistics of the adjusted model.

	Coeficientes (ep)	Z	P-valor Z	RT	RT_Efeito		Coeficientes (ep)	Z	P-valor Z	RT	RT_Efeito
β_0	-0,9619(0,2889)	-3,329	0,0009	0,382	-61,78	B_6	-0,3495(0,2886)	-1,211	0,2259	0,705	-29,5
β_1	0,3947(0,0581)	6,794	1,09E-11	1,484	48,39	β_7	-0,2333(0,2854)	-0,818	0,4136	0,792	-20,81
B_2	0,2686((0,0627)	4,284	1,83E-05	1,308	30,81	β_8	-0,5221(0,2840)	-1,838	0,0661	0,593	-40,67
β_3	-0,4559(0,0845)	-5,392	6,96E-08	0,634	-36,61	β_9	-0,3666(0,2941)	-1,247	0,2126	0,693	-30,69
β_4	-1,0855(0,0979)	-11,087	<2e-6	0,338	-66,23	β_{10}	-0,7114(0,3078)	-2,311	0,0208	0,491	-50,9
β_5	-0,3278(0,2869)	-1,142	0,2533	0,72	-27,95						

Source: Microdata PNAD Contínua (3rd Quarter 2016) / IBGE. Self elaboration.

4. FINAL CONSIDERATIONS

This extended summary isn't an article, it just aims to point the method and relevance in developing the study. Exanimating the preliminary results, it's possible to notice that to Minas Gerais State, the women, the blacks and browns, the youth aged between 15 and 17 years old and those with low instruction level have unemployment tax, on average, higher in relation to men, whites, youth aged between 25-29 years old and in relation to youth with high instruction level. In terms of future results, it's expected to verify the disparities in the unemployment tax by these sociodemographics characteristics in Brazil's level.

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