Male and female NEETs: an analysis between 2012 and 2020 in Brazil

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ABSTRACT

This paper aims, mostly, to comprehend the NEETs' phenomenon for males and females in the position of head/partner of the household or in the position of adult son/daughter in Brazil and its macro-regions between 2012 and 2020, using the panel that we have estimated for the Continuous PNAD. A bivariate probit model was estimated for the period, in order to consider how macroeconomic factors, represented by annual dummies, household and individual traits contribute for youth to be working and studying, or working and not studying, or not working and studying or, finally, not working and not studying. The main contribution is that we have controlled explication variables using the first interview of the panel in order to capture path dependence, when applying the bivariate probit model. We have also compared those results with the transitional matrices based on Markov chains for the time allocation of the youth. Results have shown that previous time allocation of the youth strongly affected the probability of becoming a NEET, thus indicating path dependence. Also, women have higher probabilities of becoming a NEET than men, especially those in the position of head of the household. The estimates have shown significant differences with higher impact of the temporal dummies, expressively in the recent years, especially, for youth in the Northeast region to pertain the group that are neither working nor studying. Black and brown youngsters with lower levels of schooling also presents higher probability of being a NEET (youth that are neither working nor studying).

Key words: youth; NEETs; bivariate probit; transition matrix; panel data.

RESUMO

Este trabalho tem como principal objetivo compreender o fenômeno dos jovens nem-nem para homens e mulheres na posição de chefe/cônjuge de domicílio ou na posição de filho ou filha adulto(a) no Brasil e suas macrorregiões entre 2012 e 2020, utilizando o painel da PNAD Contínua. Recorreu-se a um modelo probit bivariado, com os dados empilhados para o período, a fim de considerar como efeitos macroeconômicos, representados por dummies anuais, características domiciliares e características individuais, podem contribuir para o jovem pertencer à PEA e estar estudando, pertencer à PEA e não estudar, não pertencer à PEA e estudar e, ainda, não pertencer à PEA e não estudar. A principal contribuição é o controle das variáveis explicativas no probit bivariado em função da primeira entrevista do painel, para capturar a dependência do período passado (tanto das características individuais, quanto do tempo) na probabilidade de se tornar um jovem que nem estuda e nem trabalha. Esses resultados também foram comparados com as matrizes de transição baseadas nas cadeias de Markov para a alocação de tempo dos jovens. Os resultados indicam que a alocação de tempo anterior dos jovens afeta fortemente a probabilidade de se tornar um nem-nem. Além disso, as mulheres têm maiores probabilidades de se tornarem nem-nem do que os homens, especialmente àquelas que ocupam a posição de chefe de domicílio. As estimativas foram feitas para cada grande região do Brasil e os resultados evidenciam diferenças significativas como o maior efeito das dummies temporais, mais expressivo nos anos mais recentes, sobretudo, para jovens residentes na região Nordeste de não pertencerem à PEA e de estarem fora da escola. Jovens pretos e pardos, na condição de filhos, com menores níveis de escolaridade também apresentam maior probabilidade de se encontrar nessa condição.

Palavras-chave: jovens; nem-nem; Probit bivariado; matriz de transição; dados em painel.
Área de submissão: 13 – Desigualdade, pobreza e políticas sociais
Classificação JEL: J: J10; J21; J13

INTRODUCTION

In recent years, Brazilian social indicators, especially related to the labour market, were deemed unsatisfactory. Unfortunately, the Covid-19 pandemic worsened an already perilous situation, as several workers faced unemployment, wage reductions or haven't had an option but to work in a precarious situation, given that a large share of the Brazilian labour market is composed of workers employed in the informal economy. In this sense, the Covid-19 pandemic drastically affected and thus highlighted the country's long faced inequality and poverty rates.

This scenario places the youth, particularly, in a highly vulnerable position. Thus, and in accordance with FGV Social (2019), youngsters were the share of the total population that was most affected by the Brazilian economic crisis and by the decrease in the labour income since 2014. In the same line, the 2019 ILO Report has shown that youngsters have higher chances of being unemployed than adults, with three times increase in the odds of being in this position. Moreover, and thus aggravating this circumstance, an enormous share of the youth in school age (high school or university) are not studying. The intersection of those issues led to a series of academic studies focusing on youths that are neither in school, nor in the labour market, known as NEET's youth (CAMARANO, KANSO, 2012). According to the 2020 ILO Report, "Global Employment Trends for Youth 2020", among youngsters aged between 15 and 24 years old, one in four individuals are classified as a NEET in thirteen countries in Latin America and the Caribbean, including Brazil. This ratio is even worse for those aged between 18 and 24 years old, given that one in three youngsters are in the NEET position. This is an issue of considerable importance, given that those who are neither in school, nor in the labour market are not contributing to human capital formation, hence affecting productivity. Worse still, the increase in the proportion of NEETs might also cause problems in the short run, considering that it may raise violence and criminality (DE HOYOS, GUTIÉRREZ, VARGAS, 2015). Thus, this issue may impede to fully exploit the "demographic window of opportunities". In addition, the phenomena may cause intergenerational poverty transmission, ultimately leading to the perpetuation of inequality, both also determinants factors of the importance to understand the NEETs youth.

Moreover, it seems very pertinent to analyse these issues beyond the simplistic range of average results, as Brazil is an extremely heterogeneous country, which is exemplified by social groups discrepancies related to colour and gender, and thus regions. Supporting this view, and according to the PNUD Report (2017), the Municipal Human Development Index and its dimensions, education and income, presents meaningful disparities for different social groups. Concerning the Ninis, the 2012 Understanding Children's Work (UCW) Programme Report suggests that, for example, that women present a different probability of being a NEET than men. Furthermore, in the specific analysis of NEETs, it is also important to ponder the position that one holds in the household, once the behaviour can be quite different whether the youngster is the head/partner of the household or if it is an adult son/daughter. Accordingly, this difference leads to distinct results in the probabilities of becoming a NEET. In this line, according to Torre and Baquerin (2017), within the NEETs, the great majority were housewifes.

Hence, this paper aims, mostly, to comprehend the NEETs' phenomenon for males and females in the position of head/partner of the household or in the position of adult son/daughter in Brazil and its macro-regions between 2012 and 2020, using the panel that we have estimated for the Continuous PNAD. The main contribution is that we have controlled explication variables using the first interview of the panel in order to capture path dependence, when applying the bivariate probit model. We have also compared those results with the transitional matrices for the time allocation of the youth.

2. NEETs: THEORETICAL AND EMPIRICAL ASPECTS

2.1 - Theoretical aspects about the Ninis youth

There is a growing literature referencing youth that are neither in school, nor in the labour market, given that it represents youth vulnerability, in terms of unemployment, school dropout and disincentive to enter the labour market. Moreover, the United Nations (UN) prompted an agenda for Sustainable Development Goals, in order to achieve a better and more sustainable future for the society, by 2030. According to the Sustainable Development Goals Report (United Nations, 2018), the path leading to sustainable development demands quality education for all children and youth. Accordingly, investment in educational scholarships, school infrastructure and equity are crucial to promote and achieve this goal.

Thus, providing more employment opportunities for the youth, healthier working environment and a decrease in informal employment also constitute one of the development goals - i.e., search for decent work and economic growth. In addition, reducing inequality is also a development goal, given that marginalized population should be included in society and should be assisted. Hence, countries are increasingly concerned by this youth phenomenon and its consequences.

In the international literature, the youth that are neither in school, nor in the labour market are known as "Neet". In consonance with the International Labour Organization (ILO), the neet rate is "the percentage of the population of a given age group and sex who is not employed and not involved in further education or training" (ILO, 2015). Many studies have tried to understand the vulnerability of the youth both in the labour market and in school ever since.

In Brazil, the youth issue became important in the 1970s, mostly due to the beginning of the demographic transition and the so-called "young wave" (CAMARANO, 2006). As a result, in 2000 there were 47 million youth between 15 and 29 years old in the country and 51.1 million in 2006, representing 27.4% of the population. Besides, the youth population growth also led to a substantial increase in the economically active population. Along with this fact, poverty, low schooling levels and lacking opportunities enhanced the importance of debating the young population situation. For this reason, since 2005, with the implementation of the National Youth Policy (PNJ), public policies started to incorporate many issues, such as education, work, safety, sports, culture, health, human rights and others (ROCHA, DE MACEDO, 2016), demonstrating the importance of this society group.

In order to understand youth time allocation, Behrman et al (2014) developed a model, describing why constraints faced by youths may shape not only their own decision on the human capital accumulation process, but also their families' decision. To this extent, the youngsters allocate their time amongst four mutually excluding choices: studying, working, studying and working or neither studying, nor working, accompanied by a utility-maximization process. The youth elects between the four allocating choices, bearing in mind the imposed local, micro and macro constraints. Furthermore, a series of immutable endowments, such as socioeconomic aspects, individual, familiar, demographic and cultural factors, will also affect their choice. It is crucial to emphasize that their present decision will also influence future consumption, ascribed to human capital accumulation. Ipso facto, when youth "elect" to be out of the labour market and out of school, the process of human accumulation is ceased.

In order to fully understand the concept of Ninis youth and the life cycle, it is important to also understand concepts of human development, quality of life and wellbeing. To this extent, Amartya Sen's (1992) and Martha Nussbaum's (2011) concepts will be used.

According to Amartya Sen (1992), it is important to define capabilities and functionings. Firstly, functionings can be conceptualized as the accomplishments of an individual. These accomplishments are attributed from happiness to basic needs, like feeding. Following Sen's definition, capability is an aggregation of functionings that reverberate on a person's freedom of making life choices (Sen, 1992). Therefore, furthering the concept of "utility", this approach explains welfare. Both authors believe that capabilities are related to the choice of freedom of an individual and, subsequently, that poverty limits such freedom.

The diversity of capabilities emphasizes that the most important elements in individual's quality of life are plural and qualitatively distinct. Aspects of an individual's life cannot be reduced to a single metric unit without distorting reality (Nussbaum, 2011). Therefore, approaching the youth reality with a multidimensional dynamic seems of utmost importance. In the case of youngsters, especially those that are not studying, nor in the labour market (also not seeking an employment), it is feasible to understand the importance of dimensions such as education, health and employment and how it affects their choice of freedom and opportunities in their life cycle.

Education influences the possibility of an increase in quality of life and in the opportunities of an individual. According to Sen (2010), the lack of access to education constitutes a barrier in engaging into economic activities. Following the same line, Nussbaum (2011) points out that education assists in accomplishing a number of basic functionings in the society, as it increases the capacity of imagining and thinking of a human being. Furthermore, education increases the power of choices of an individual and its possibilities of having a better position in the job market.

Complementing education, health is also to be considered, as it is vital for youngsters to have good physic and psychic conditions in order to develop capabilities and have the freedom to develop different functionings, as described by Nussbaum's basic capability approach, including reproduction. Hence, this dimension is crucial to determine a person's ability of developing other capabilities and it is a solid foundation for expanding into other freedoms.

Working can be associated with the central capability of Nussbaum (2011), control over one's environment and it is defined by the capability of an individual in competing for a position in the workplace with equality. Thus, the work situation can be correlated with income, given that the access that an individual has to a basket of goods is related to monetary earnings and are mostly enabled by the labour income. In that sense, not getting a job corresponds to less freedom to function wellbeing. Following the same line, the same happens when prematurely entering the job market - worst still in a double journey -, as it results in abdicating studying and leading to less freedom to function wellbeing. Furthermore, working influences other capabilities and different functioning developments, whilst also being present in almost every life cycle.

2.2 Empirical Literature

The empirical and theoretical literature highlight the fundamental importance of considering individual, household and macroeconomic aspects as determinant factors of a youngster becoming a Nini (not in school and not working), as well as enlightening the phenomena.

Bacher et al (2014) developed a multi-method approach to understand the NEET's phenomenon in Austria between 2006 and 2011. The results indicated that early school leaving was a major factor imparting the NEET risk. Much in accordance, Ranzani and Rosati (2013) and Siraj et al (2014) also highlighted this importance. In the same line, Varshavskaia (2017) and Quintini, Martin, and Martin (2007) called attention to low school attainment and its correlation with the NEET phenomena in other parts of the world. Thus, Camarano (2006) has shown that education has an impact in decreasing the probability of a youth becoming a Nini in Brazil. In addition, Menezes-Filho, Cabanas e Komatsu (2013) foregrounded that brazilian youngsters that haven't completed high school have a higher probability of becoming a Nini and a higher probability of being in this position for a greater length of time, when compared to youngsters with a higher educational level.

Siraj et al (2014), Bacher et al (2014), Russel et al (2011) have disclosed a correlation between the probability of becoming a NEET with social class. As an example, Siraj et al (2014) have found that parental unemployment and lower parental qualification increases the chances of entering this group. In agreement, Torre and Baquerin (2017) found that the probability of becoming an argentinian NEET is positively related to those households that presented social and economic vulnerability, hence, those youths living in unsettled environments, as such environments don't encourage the youths to develop their skills.

It is interesting to observe how the results differ upon gender when analysing the NEETs. Ranzani and Rosati (2013) have studied the NEETs in Mexico and the results have shown higher rates amongst women and correspondingly, women with low education and poor background present the highest rate within the NEET group. Following the same line, Camarano (2006) have shown that there is a different trend for the female and male youth. Finally, Torre and Baquerin (2017) have concluded that, in Argentina, being a male and having a higher educational level decreases the chances of becoming a NEET.

The literature has disclosed the importance of considering income levels when analysing youngsters that are neither studying, nor working. In this view, Vieira et al (2016) used the PNAD data between 1992 and 2013 to estimate how different incomes and parents' employment affects the Brazilian youths' decision between work and studying. The outcome indicates that an increase in the mother's income has a higher effect on the proportion of youngsters in school when compared to an increase in the father's income. Also, when both parents are in the labour market, the probability of the youth becoming a Nini decreases. In agreement, Cabanas, Komatsu e Menezes-Filho (2015), Ranzani and Rosati (2013) and Camarano (2006) have found similar results for the significance of household income in the probability of becoming a NEET.

One important aspect that many authors have tried to understand is how long youngsters remain on the NEET or the Nini position. In that sense, Menezes-Filho, Cabanas e Komatsu (2013) used transition matrices to emphasize the length of time in which youngsters remained a Nini. The research suggests that the average time of being a Nini is relatively short, given that after a year the proportion of Ninis' youth in Brazil that remained in this same position is smaller, compared to the ones who are working or studying or working and studying. Conversely, Ranzani and Rosati (2013) have demonstrated, using transition matrices and duration analysis, that being a NEET in Mexico is a trapped condition for the youth. Furthermore, being a NEET in the present time in Mexico increases the probability of pertaining to this very same group in the future.

Lastly, within the NEET scenario, structural aspects such as environment and age are significant to be considered, as each will affect youngsters differently. As an example, Ranzani and Rosati (2013) have shown that the NEET rate is higher in rural areas in Mexico. Furthermore, Varshavskaia (2017) demonstrated that the NEET rate differs between age groups in Russia, increasing significantly between youngsters aged between 20 and 24 years old.

DESCRIPTIVE ANALYSIS AND METHODS

In order to perceive the influencing factors of the time allocation decision for the youth (those aged between 18 and 29 years old), the Continuous PNAD, between 2012 and 2020, will be applied. This survey, carried by IBGE (Brazilian Institute of Geography and Statistics), provides continuous information concerning demographic and educational features along with share in the labour market. Furthermore, geographically it covers Brazil and its macro-regions, federal units and metropolitan areas. The sample is characterized by repeated cross section data that enables the following of a cohort overtime and the interviews follow a 1-2(5) rotating scheme. Each household is interviewed five times throughout five trimesters, being interviewed for one month and then leaving the sample in the following two months.

As this rotation scheme is repeated five times, it is possible to create a longitudinal panel following the individual. However, as IBGE does not provide the individual identification, we have had to use a similar methodology to Ribas and Soares (2008) to follow the individual and, thus, create a panel for the Continuous PNAD. In order to match cross-section data from the first and the second interview, we have used individuals' date of birth (day, month and year) and gender, as those traits are the same throughout time. It is also important to emphasize that, because of the size of the sample and its statistical consequences, we preferred to use a shorter panel, following the individual from the first interview to the second interview.

Firstly, a descriptive analysis of the Brazilian youth will be taken into consideration. Thus, graph 1 shows the percentage of youngsters that pertain to the economically active population or are inactive, that are going to school or not in Brazil between 2012 and 2020, using the Continuous PNAD. As shown, throughout the years, a substantial proportion of the youngsters, around 60%, pertain to the economically active population (PEA, in the graph). It is noticeable that there is an ongoing problem with the youth that do not work (and do not seek employment) and do not study at the same time. For the analysed period of time, the percentage of the youth known as NEETs, remained around 17%. In addition, it is perceptible that, as an immediate result of the Covid-19 Pandemic, there was not only a decrease in the proportion of youngsters that were working (or seeking employment) and studying, but also an increase amongst the share of NEETs (an increase of 2% between 2019 and 2020).

Graph 1: Brazilian Youth between 2012 and 2020
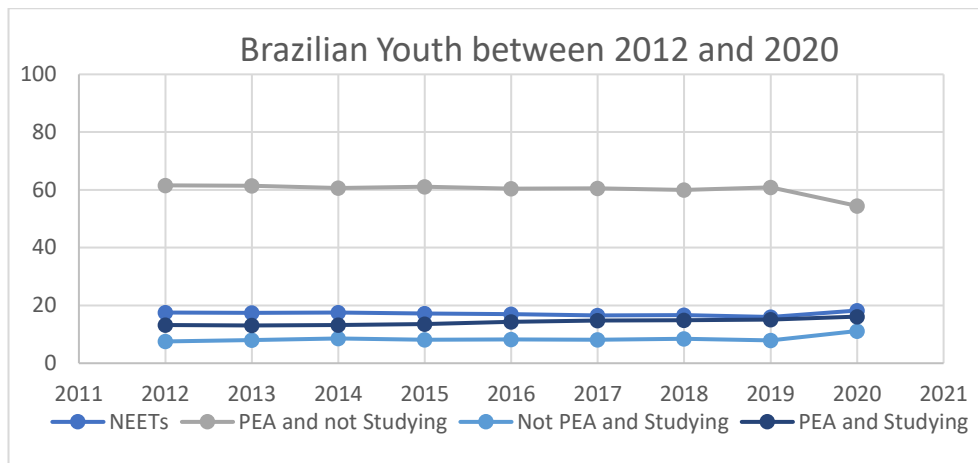
Source: Own elaboration based on the Continuous PNAD

As the main goal of this paper is to show that the decision of time allocation of youngsters between studying and working (or seeking for employment) changes according to the position that one has in the household, the following figure presents the Brazilian youth according to its position in the household. It is perceptible that, approximately, 85% of male youth in the position of head/partner of the household were working (or seeking for employment). In comparison, around 60% of the female youth in the position of head/partner of the household were working (or seeking employment).

It is important to highlight that over the studied period, the percentage of NEETs has grown between 2019 and 2020, independently of the position in the household, and in consonance with the Covid-19 pandemic crisis. Furthermore, it is noticeable the substantial difference between male and female youngsters and thus, within groups (position in the household). The highest rates of NEETs pertain to female youth in the position of head/partner of the household, followed by adult daughters. In this sense, female youth tend to be more vulnerable than male youngsters.

Figure 1: Brazilian youth according to position in the household
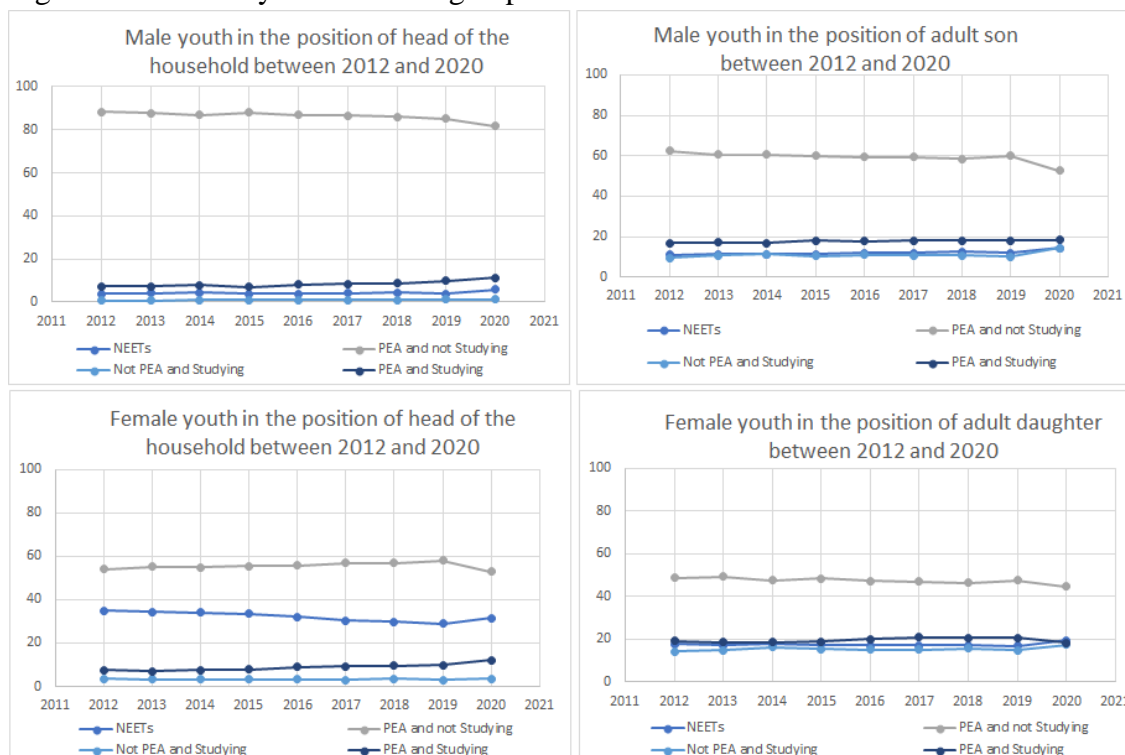
Source: Own elaboration based on the Continuous PNAD

METHODS

In this section we have taken into consideration two complementary methods in the analysis of the Brazilian youngsters, that is, the Markov transition matrix and the bivariate probit. While the Markov transition matrix will show the transitions between different time allocations (also known as states) in different periods of time, the use of the bivariate probit will allow us to understand how individual, household and macroeconomic factors influence on the youth's decision on time allocation in Brazil.

MARKOV TRANSITION MATRIX

The adopted methodology to examine the entry-exit decisions of the NEETs is referenced in the work of Clark and Summers (1990), and in lecture notes for Statistics of the University of Auckland (2014).

Given that the Markov chain is the process $\{X0, X1, X2, \dots, Xn\}$, the state of a Markov chain at time t is the value of Xt. Considering $\{X0, X1, X2, \dots, Xn\}$ a sequence of discrete variables, this is a Markov chain if it satisfies the Markov property. The fundamental property of a Markov chain is that only the most recent point in the trajectory affects what happens next. Therefore:

$$P(Xt + 1 = s|Xt = st, \dots, X0 = s0) = P(Xt + 1 = s|Xt = st)$$

$$for\ all\ (t = 1,2, \dots, n)\ and\ for\ all\ states\ (s0, s1, \dots, st, s).$$

The matrix describing the Markov chain is known as the transition matrix and, as a result, shows the transitions between different states. In the transition matrix P, the rows represent the current period (Xt), the columns represent the next period $(Xt + 1)$and$(j, i)$is the conditional probability of going from state "j" to state "i" (University of Auckland, 2014). Clark and Summers (1990) postulates that the individual behaviour can be characterized by a transition matrix p^i, given by:

$$\left(p^i\right) = \begin{pmatrix} p_{1;1}^i & p_{1;2}^i & p_{1;3}^i & p_{1;4}^i \\ p_{2;1}^i & p_{2;2}^i & p_{2;3}^i & p_{2;4}^i \\ p_{3;1}^i & p_{3;2}^i & p_{3;3}^i & p_{3;4}^i \\ p_{4;1}^i & p_{4;2}^i & p_{4;3}^i & p_{4;4}^i \end{pmatrix}$$

Where, 1 at the matrix represents youngsters studying and working, 2 represents those who are only studying, 3 represents those who are only working and 4 represents those who are neither studying, nor working. Furthermore, p_{jk}^i represents the probability of an individual "i" being in the state of "k" in the period "t+1" affected by the state "j" to the state "t". Understanding the probability of a youngster becoming a NEET or exiting this category is crucial to determine the phenomena in Brazil and its consequences.

BIVARIATE PROBIT

The independence of irrelevant alternatives (IIA) is the "property that the relative odds between two alternative outcomes depend exclusively on characteristics pertaining to the two outcomes and are therefore independent of the number and the nature of all other outcomes that are simultaneously considered" (MCFADDEN, page 245, 1984). As for how youth allocate time, study and working (or seeking for employment) can be seen as close substitutes and, in this sense, the property of the independence of

irrelevant alternatives is not valid. Thus, the correlation between latent error terms are significant (studying and working, or seeking for employment, are close substitutes for youngsters). By that means, we have employed the bivariate probit model in order to comprehend the NEETs, given its the position in the household, in Brazil.

In accordance with Cameron and Trivedi (2005) the bivariate probit model is an extension of the probit model with two equations with correlated disturbances. The unobserved latent variables would be:

$$y_1^* = x'_1\beta_1 + \varepsilon_1$$

$$y_2^* = x'_2\beta_2 + \varepsilon_2$$

where, $E[\varepsilon_1|x_1, x_2] = E[\varepsilon_2|x_1, x_2] = 0$ the correlation is ρ (if correlation is zero it is better to estimate two separate probit models) and variances one. Furthermore, in the specific case of this paper, youth would allocate their time between y_1^*, pertaining to the economically active population (PEA), and y_2^*, studying. In this sense, still in agreement with Cameron and Trivedi (2005), the observed outcomes:

$$y_1 = 1 \text{ if } y_1^* > 0, 0 \text{ otherwise}$$

$$y_2 = 1 \text{ if } y_2^* > 0, 0 \text{ otherwise}$$

The log-likelihood estimation for the bivariate probit, according to Greene (2000), is given by:

$$log\ L = \sum_{i=1}^{n} ln\ \phi_2(w_{i1}, w_{i2}, \rho_{i^*})$$

where, ϕ_2 is the cumulative density function. Thus, taking the first order conditions, one obtains the maximum likelihood.

The bivariate probit should be interpreted with marginal effects and predicted values. Therefore, it is possible to verify, using the bivariate probit, the differences between the explanatory variables and response variables in an interesting way.

In light of the theoretical literature, the explanatory variables will be divided into three categories: individual, household and macroeconomic factors. The individual factors are related to gender, race, age, education, metropolitan area and urban area. On the other hand, the household factors are related to having children/teenagers and elderly in the household. Thus, temporal dummies, between 2012 and 2020, were used in order to indirectly capture the macroeconomic behaviour of the period.

As we have used the Continuous PNAD panel, the explanatory variables were controlled by the first interview, while the dependent variables were considered using the second interview. This method allows to observe how the traits in the previous period influences on the preceding period. Also, in order to compare with the Markov matrix, we have included time allocation of the youth in the first interview (either if they were working, or studying, or not working and not studying). Therefore, controlling by the first interview allows to analyse if there is a path dependence associated with time allocation, especially for the NEETs.

RESULTS

Tables 1 and 2 present the Markov transition matrix respectively for male and female youth in Brazil. In Table 1, it is perceptible that the probability of remaining a NEET in the second interview is 40.64% for male in the position of head of the household while it is 55.35% for those in the position of son. The probability of transitioning from not pertaining to the economic active population and not studying in the first interview to pertaining to the economic active population is very low, independently of the position in the household.

Table 1: Transition matrices for Male Youth

Markov transition matrix for Male in the position of head of the household

		State in the second interview				
		PEA and Studying	PEA	Studying	NEETs	TOTAL
State in the first interview	PEA and Studying	68.33	27.27	3.26	1.15	100.00
	PEA	1.88	94.73	0.10	3.29	100.00
	Studying	28.47	11.29	52.35	7.88	100.00
	NEETs	1.33	57.13	0.90	40.64	100.00
	TOTAL	7.26	86.96	0.85	4.93	100.00

Markov transition matrix for Male in the position of son (offspring)

		State in the second interview				
		PEA and Studying	PEA	Studying	NEETs	TOTAL
State in the first interview	PEA and Studying	66.90	18.53	12.31	2.26	100.00
	PEA	3.96	86.77	0.97	8.31	100.00
	Studying	20.10	7.48	64.70	7.71	100.00
	NEETs	2.30	37.30	5.09	55.32	100.00
	TOTAL	16.48	59.57	10.71	13.24	100.00

Source: Own elaboration based on the Continuous PNAD

From the Table 2 below it is possible to see that women present higher probabilities of remaining a NEET in the second interviewed when compared to men. Differently from men, women in the position of head of the household have a higher probability of remaining a NEET in the second interview than those in the position of daughter. These probabilities are, respectively, 78.88% and 65.80%. Also, the probability of transitioning from being a NEET to pertaining to the economic active population is higher for those in the position of daughter.

Table 2: Transition matrices for Female Youth

Markov transition matrix for Female in the position of head of the household

		State in the second interview				
		PEA and Studying	PEA	Studying	NEETs	TOTAL
State in the first interview	PEA and Studying	65.71	21.60	8.88	3.81	100.00
	PEA	2.70	82.31	0.44	14.55	100.00
	Studying	19.14	7.21	56.09	17.56	100.00
	NEETs	0.59	18.98	1.55	78.88	100.00
	TOTAL	7.62	50.87	3.64	37.86	100.00

Markov transition matrix for Female in the position of daughter (offspring)

		State in the second interview				
		PEA and Studying	PEA	Studying	NEETs	TOTAL
State in the first interview	PEA and Studying	68.21	14.82	14.25	2.72	100.00
	PEA	5.14	81.94	1.41	11.51	100.00
	Studying	16.80	5.40	68.92	8.89	100.00
	NEETs	1.85	26.49	5.86	65.80	100.00

	TOTAL	18.73		44.99	16.27	20.01	100.00

We have also employed the bivariate probit model in order to comprehend the NEETs, given its position in the household, in Brazil and compare to the matrices. Thereby, Table 3 presents the predicted probabilities of becoming a NEET, given its position in the household, in light of individuals, household and macroeconomic factors. It is important to highlight that we have included time allocation of the youth in the first interview to analyse if there is a path dependence associated with time allocation, especially for the NEETs. As it can be seen from Table 3, those who were either not working or not studying in the first interview had higher probabilities of becoming a NEET when compared to those who were either working or studying in the first interview. Also, females in the position of head of the household that were not working in the first interview presented the highest probability of becoming a NEET with 60.4%. In the same line, males in the position of head of the household that were not working in the first interview had 33,8% of chances of becoming a NEET.

The model's estimated results, by individual traits, demonstrate the importance of attentive analysis for women, especially those in the position of head/partner of the household, when compared to the other studied groups.

Given that Brazil's historical structure is marked by racial inequality, it is important to analyse discrepancies of colour for the youth. The probability of a black youth becoming a NEET is higher than a white youth becoming a NEET for all positions in the household that one might have. Furthermore, taking into consideration that differences amongst youngsters tend to increase over time with age (BECKER, 1993), it is relevant to analyse how this single aspect affects the probability of becoming a NEET. Thus, and according to Varshavskaia (2017), the NEET rate differs between age groups. As an example, the highest probability of becoming a NEETs, age regarded, is for those who are 19 years old, regardless of the position in the household.

Furthermore, when analysing household factors, the probability of a youngster, living in a household with children between 6 and 14 years old that don't attend school, becoming a NEET is higher than a youngster living in a household with teenagers between 15 and 17 years old that don't attend school, becoming a NEET. Thus, this probability is higher for women than for men.

Table 3: Marginal effects for the joint probabilities of becoming a NEET.

Marginal Effects for the joint probabilities P(y1=0, y2=0)				
	Male head of the household/Partner	Adult son (Offspring)	Female head of the household/Partner	Adult daughter (offspring)
Working in the first interview	0,024	0,416	0,121	0,103
Not working in the first interview	0,338	0,059	0,604	0,508
Studying in the first interview	0,047	0,043	0,093	0,056
Not studying in the first interview	0,133	0,194	0,306	0,265
White	0,086	0,127	0,204	0,172
Black	0,131	0,181	0,292	0,248
19 years old	0,132	0,167	0,270	0,226

20 years old	0,130	0,167	0,268	0,219
21 years old	0,119	0,161	0,272	0,215
22 years old	0,118	0,157	0,253	0,220
23 years old	0,116	0,157	0,265	0,220
24 years old	0,098	0,155	0,253	0,199
25 years old	0,113	0,149	0,260	0,215
26 years old	0,103	0,156	0,251	0,216
27 years old	0,102	0,155	0,250	0,207
28 years old	0,105	0,146	0,248	0,211
29 years old	0,105	0,154	0,243	0,208
8 to 10 years of study	0,128	0,165	0,295	0,240
11 or more years of study	0,078	0,078	0,193	0,151
North	0,119	0,192	0,294	0,260
Northeast	0,171	0,218	0,334	0,292
Southeast	0,080	0,119	0,212	0,163
South	0,065	0,097	0,164	0,139
MidWest	0,075	0,128	0,219	0,180
Urban Area	0,090	0,135	0,214	0,177
Metropolitan Area	0,081	0,129	0,193	0,162
Households w/ 6 to 14	0,239	0,270	0,456	0,367
Households w/ 15 to 17	0,146	0,175	0,300	0,266
Elderly	0,125	0,167	0,264	0,220
2012	0,108	0,151	0,268	0,221
2013	0,111	0,162	0,269	0,224
2014	0,108	0,163	0,265	0,223
2015	0,104	0,161	0,252	0,218
2016	0,115	0,158	0,252	0,219
2017	0,109	0,163	0,252	0,211
2018	0,124	0,162	0,252	0,212
2019	0,117	0,154	0,243	0,203
2020	0,153	0,180	0,283	0,253

Source: Own Elaboration based on the Continuous PNAD

The temporal dummies allow an analysis for the predicted probabilities of being a NEET in the Brazilian regions throughout time. Hence, this also captures, indirectly, how the macroeconomic scenario affects youngsters. The predicted probabilities of being a male NEET, either in the position of head/partner of the household or in the position of adult son are shown in Figure 2. The predicted probabilities of being a NEET for both positions in the household remained roughly the same for each region, with a substantial increase in 2020 that can be related to the Covid-19 Pandemic Crisis and the precarious situation that the country's been facing. Furthermore, it is noticeable the substantial difference within Brazilian regions, highlighting regional inequalities throughout the country. The highest rates of NEETs are located in the Northern and North-eastern region for all these years.

Figure 2: Predicted probabilities of being a male NEET between 2012 and 2020 in the Brazilian regions
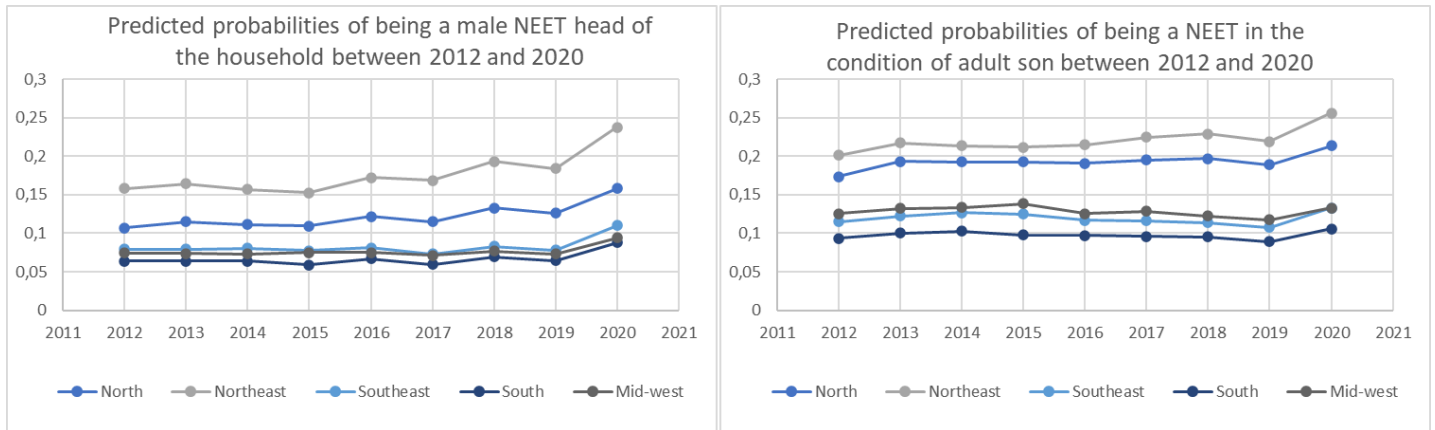
Source: Own Elaboration based on the Continuous PNAD.

Also in regards to Figure 2, it is interesting to highlight that men in the position of adult son have higher predicted probabilities than men in the position of head/partner of the household. Moreover, as it can be seen in Figure 3[1], women have higher predicted probabilities than men of being a NEET. Mainly, the highest predicted probabilities between women are for those in the position of head/partner of the household.

Figure 3: Predicted probabilities of being a female NEET between 2012 and 2020 in the Brazilian regions
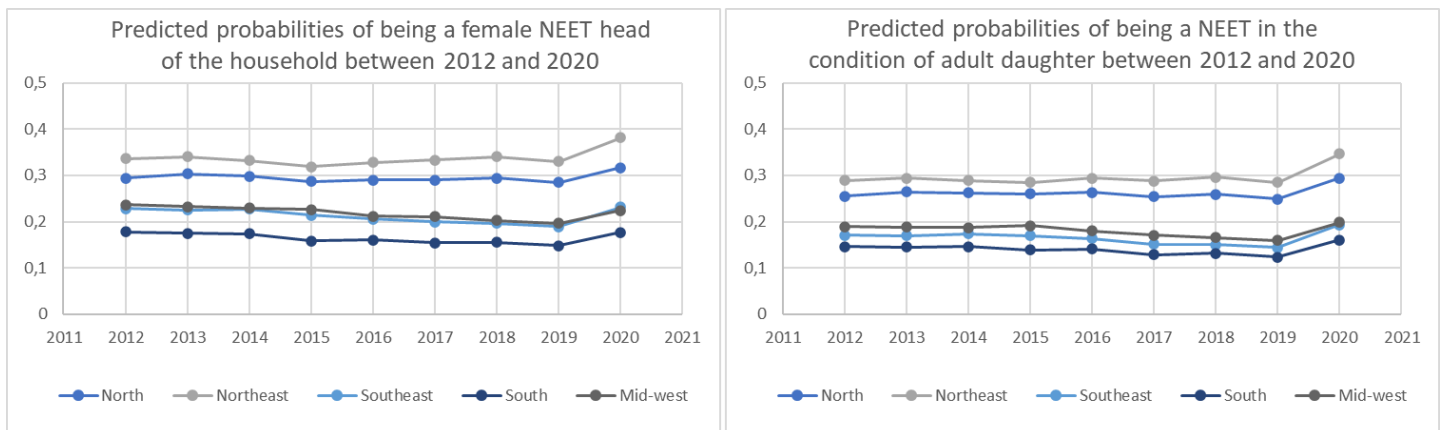
Source: Own Elaboration based on the Continuous PNAD

In accordance with figure 3, the occurrence of the highest predicted probabilities of being a NEET are located in the Northeast and in the North regions amongst women. Conversely, the lowest predicted probabilities of being a NEET are located in the Southern and in the South-eastern regions. There is, therefore, a huge interregional NEET discrepancy for both male and female youngsters.

Finally, it is important to understand how educational levels affect the predicted probabilities of being a NEET throughout the years. In accordance with Sen (2010), the lack of access to education constitutes a barrier in engaging economic activities. Thus, Camarano (2006) has shown that education has an impact in decreasing the probability of a youth becoming a NEET. In accordance, Siraj et al. (2014) have presented

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[1] It is important to emphasize that the graph axis has a different size between Figure 2 and Figure 3, given that the predicted probabilities for men are much lower than for women and it would be very difficult to see the differences between regions if it had the same size as figure 3.

that low education also influenced the chance of becoming a NEET, as it is an obstacle to attain higher levels of education, or getting a job.

In an attempt to demonstrate how different schooling levels affect individuals in the labour market, Camargo and Reis (2005) divide the workers into three groups, according to their educational levels. There are the non-qualified workers, the semi-qualified workers and the highly-qualified workers. These groups present different behaviours in regards to productivity and handle with different information asymmetry in the labour market. Furthermore, the authors highlight that there is an immense information asymmetry amongst youth, reverberating higher levels of unemployment. The employers have difficulties in presuming the productivity of the youth, given that youngsters have little (or none) experience in the labour market. Therefore, it is hard to discriminate against the workers, elevating the uncertainty level and the information asymmetry (CAMARGO AND REIS, 2005). Pursuantly, Becker (1993) highlighted the importance of educational levels and training for accumulating human capital and achieving good results in the labour market.

The same reasoning applies to semi-qualified workers. The employers also have difficulties in presuming the productivity of this group, based on the educational levels that the individuals present. Therefore, it is hard to discriminate the hard worker from the lazy worker, elevating the uncertainty level and the information asymmetry. Differently, highly-qualified workers (11 or more years of study) present little information asymmetry in the labour market. This is associated with the fact that the higher the degree one individual has, the easier it is to find good information about this qualification, and lower is the uncertainty about the worker.

The information asymmetry is remarkably low for non-qualified workers. This happens because this group is quite homogenous and there is little difference between their abilities. In fact, as this group is quite homogenous and there is little difference between their abilities, the employers know that this type of worker presents low levels of productivity (CAMARGO AND REIS, 2005), resulting in low information asymmetry for this group. Usually, youngsters with this educational level turn to the informal labour market and present the highest levels of unemployment, despite low information asymmetry.

Figure 4, below, shows the predicted probabilities of being a NEET, given the schooling levels for the different positions that the youngster holds in the household between 2012 and 2020. The predicted probabilities of being a NEET were higher between those with 0 to 8 years of study, regardless of its position in the household. Moreover, it is pertinent to highlight that, as before, women are more vulnerable, presenting higher predicted probabilities than men. In the same line, the predicted probabilities of being a NEET increased, for all schooling levels, in 2020, demonstrating the initial consequences of the Covid-19 pandemic crisis.
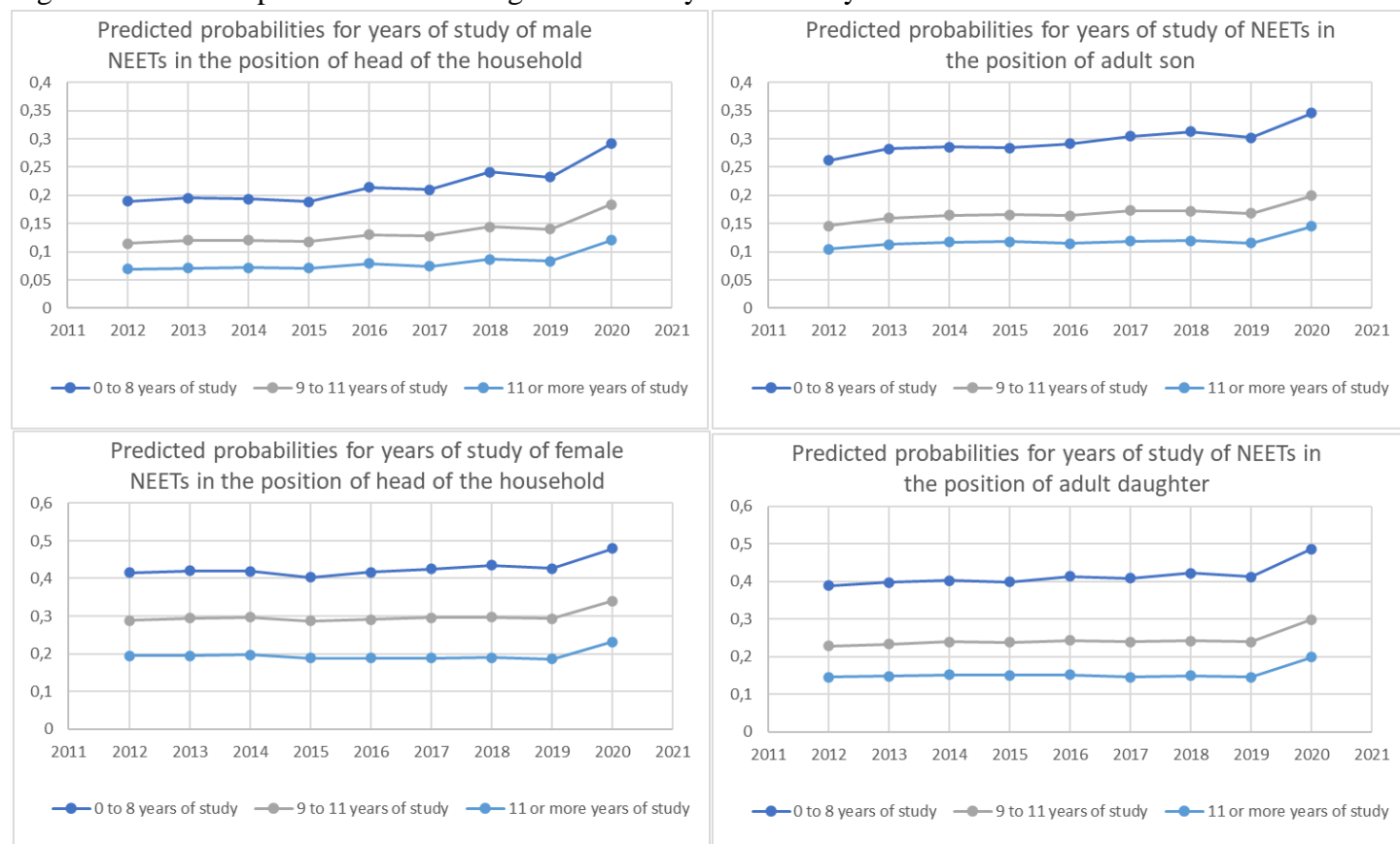
Figure 4: Predicted probabilities of being a NEET for years of study between 2012 and 2020

Source: Own elaboration based on the Continuous PNAD.

It is also interesting to ponder that the predicted probabilities of being a NEET for those with 9 to 11 years of study and in the position of adult son are roughly the same as those with 9 to 11 years of study in the position of adult son. Finally, the predicted probabilities of becoming a NEET were the lowest for the youth that had 11 or more years of study, regardless of its position in the household. This can be associated with the fact that these are the individuals that have the highest educational levels and low information asymmetry on the labour market.

CONCLUSION

The main goal and contribution of this paper was to comprehend the NEETs' phenomenon in Brazil given its household position, between 2012 and 2020, regarding the bivariate probit and transition matrices based on Markov chains. As it was shown, women have higher probabilities of becoming a NEET than men, especially those in the position of head of the household. Furthermore, results have sown that previous time allocation of the youth strongly affected the probability of becoming a NEET, thus indicating path dependence.

Furthermore, the bibliographic review about the topic allowed perceiving the importance of considering individual and macroeconomic factors in the analysis, and, thus, consider the phenomena throughout time. It is important to highlight that the widespread presence of youths that are neither in school, nor in the labour market in Brazil remained a persistent and a structural phenomenon during the studied time. Thus, and aggravating the problem, there are substantial differences within male and female, especially those in the position of head/partner of the household.

This scenario requires attention, having Camarano and Kanso (2012) noted that youngsters in this position are not accumulating human capital in a crucial stage of the life cycle, and this might negatively affect the future productive capacity. Within this scenario, it is of utmost relevance and importance to apply social public policies in order to diminish the NEETs' youth issue in Brazil. Given the regional disparities, and thus differences on individuals traits, such as gender and colour, it is also important that social policies are regionally based, when focusing on the youth. In accordance with the Sustainable Development Goals Report (United Nations, 2018), it is important to have quality education for the youth. In light of that, and based on Iceland´s successful social policies focused on youth, the "Youth in Iceland" and "Planet of youth: Programme", it seems feasible to suggest that Brazilian research institutes, such as IPEA and IBGE, should promote, on a regular basis, questionnaires based on the perception of the youth towards relevant topics, such as education, health, work, social activities and others. In conclusion, based on the youth's perspective of what needs improvement, social policies would be applied on a local scale, respecting the differing needs of each region. This would enable improving not only youth's life quality and social indicators, but also would promote economic growth.

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APPENDIX

MALE IN THE POSITION OF HEAD/APRTNER OF THE HOUSEHOLD

WORKING

	Coef.	Robust Std. Error	z	P>|z|	[95% Conf. Interval]	
Working in the 1st interview	1,730794	0,028794	60,11	0	1,674358	1,78723
Studying in the 1st interview	-0,244727	0,030315	-8,07	0	-0,30414	-0,18531
White	0,0007587	0,026558	0,03	0,977	-0,05129	0,052812
19 years old	-0,225204	0,066948	-3,36	0,001	-0,35642	-0,09399
20 years old	-0,207316	0,064114	-3,23	0,001	-0,33298	-0,08166
21 years old	-0,105912	0,0583	-1,82	0,069	-0,22018	0,008354
22 years old	-0,112171	0,05195	-2,16	0,031	-0,21399	-0,01035
23 years old	-0,098145	0,052843	-1,86	0,063	-0,20171	0,005425
24 years old	0,0706474	0,048848	1,45	0,148	-0,02509	0,166387
25 years old	-0,043091	0,046834	-0,92	0,358	-0,13488	0,048702
26 years old	0,0241223	0,046143	0,52	0,601	-0,06632	0,114561
27 years old	0,0347422	0,043479	0,8	0,424	-0,05047	0,119959
28 years old	0,0067913	0,052358	0,13	0,897	-0,09583	0,109412
29 years old	-0,000101	0,001502	-0,07	0,946	-0,00305	0,002844
8 to 10 years of study	0,1404094	0,02997	4,68	0	0,081669	0,19915
11 or more years of study	0,254753	0,028896	8,82	0	0,198117	0,311389
North	0,2018485	0,029309	6,89	0	0,144404	0,259293
Southeast	0,2593862	0,030899	8,39	0	0,198825	0,319948
South	0,288906	0,032218	8,97	0	0,225761	0,352051
MidWest	0,3211958	0,035359	9,08	0	0,251896	0,390501
Urban Area	0,0460143	0,023013	2	0,046	0,000909	0,09112
Metropolitan Area	-0,003595	0,027747	-0,13	0,897	-0,05798	0,050789
Households w/ 6 to 14	-0,247022	0,120029	-2,06	0,04	-0,48227	-0,01177
Households w/ 15 to 17	-0,093236	0,064322	-1,45	0,147	-0,21931	0,032833
Elderly	-0,105601	0,054769	-1,93	0,054	-0,21295	0,001745
2013	-0,001739	0,04273	-0,04	0,968	-0,08549	0,08201
2014	0,0116184	0,043514	0,27	0,789	-0,07367	0,096904
2015	0,0186458	0,041608	0,45	0,654	-0,0629	0,100195
2016	-0,067513	0,043356	-1,56	0,119	-0,15249	0,017463
2017	-0,025651	0,042198	-0,61	0,543	-0,10836	0,057055
2018	-0,127469	0,05114	-2,49	0,013	-0,2277	-0,02724
2019	-0,117843	0,040147	-2,94	0,003	-0,19653	-0,03916
2020	-0,315709	0,067459	-4,68	0	-0,44793	-0,18349
Constant	-0,094679	0,049532	-1,91	0,056	-0,19176	0,002401

STUDYING

	Coef.	Robust Std. Error	z	P>|z|	[95% Conf. Interval]	
Working in the 1st interview	-0,192385	0,043281	-4,45	0	-0,27721	-0,10756
Studying in the 1st interview	2,606772	0,02536	102,79	0	2,55707	2,656477
White	0,0519156	0,025937	2	0,045	0,00108	0,102752
19 years old	0,3065519	0,079761	3,84	0	0,150224	0,46288
20 years old	0,2030248	0,070046	2,9	0,004	0,065738	0,340312
21 years old	0,0779094	0,062205	1,25	0,21	-0,04401	0,199828
22 years old	0,0383257	0,054491	0,7	0,482	-0,06847	0,145126
23 years old	0,1112448	0,054313	2,05	0,041	0,004794	0,217696
24 years old	-0,042104	0,047302	-0,89	0,373	-0,13482	0,050607
25 years old	-0,037123	0,04923	-0,75	0,451	-0,13361	0,059365
26 years old	-0,01483	0,04767	-0,31	0,756	-0,10826	0,078602
27 years old	-0,030337	0,050309	-0,6	0,546	-0,12894	0,068267
28 years old	-0,072297	0,04549	-1,59	0,112	-0,16146	0,016863
29 years old	-0,003018	0,001558	-1,94	0,053	-0,00607	3,44E-05
8 to 10 years of study	0,0165946	0,041831	0,4	0,692	-0,06539	0,098582
11 or more years of study	0,4054922	0,034826	11,64	0	0,337235	0,473749
North	0,0548574	0,038027	1,44	0,149	-0,01967	0,129388
Southeast	-0,133692	0,031774	-4,21	0	-0,19597	-0,07142
South	-0,008672	0,033541	-0,26	0,796	-0,07441	0,057068
MidWest	0,0531871	0,035544	1,5	0,135	-0,01648	0,122852
Urban Area	0,1934284	0,029328	6,6	0	0,135947	0,25091
Metropolitan Area	0,0623518	0,028725	2,17	0,03	0,006051	0,118652
Households w/ 6 to 14	-0,08011	0,218397	-0,37	0,714	-0,50816	0,347941
Households w/ 15 to 17	-0,018549	0,086693	-0,21	0,831	-0,18846	0,151366
Elderly	0,0384037	0,064814	0,59	0,554	-0,08863	0,165437
2013	-0,079591	0,047389	-1,68	0,093	-0,17247	0,013289
2014	-0,054004	0,044617	-1,21	0,226	-0,14145	0,033443
2015	-0,030723	0,045466	-0,68	0,499	-0,11983	0,058388
2016	-0,042651	0,047934	-0,89	0,374	-0,1366	0,051297
2017	-0,043379	0,051054	-0,85	0,396	-0,14344	0,056685
2018	-0,05943	0,047929	-1,24	0,215	-0,15337	0,034509
2019	-0,046104	0,048183	-0,96	0,339	-0,14054	0,048332
2020	-0,050178	0,051834	-0,97	0,333	-0,15177	0,051415
Constant	-2,230747	0,068791	-32,43	0	-2,36558	- 2,0959
athrho	-.1015861	.0247263	-4,11	0,000	-.1500487	-.0531234
rho	-.1012381	.0244729			-.1489327	-.0530735
Wald Test	chi2(1) =	168.791			Prob > chi2 = 0.0000	

FEMALE IN THE POSITION OF HEAD/APRTNER OF THE HOUSEHOLD

WORKING

	Coef.	Robust Std. Error	z	P>|z|	[95% Conf. Interval]	
Working in the 1st interview	1,85542	.0122173	151.87	0.000	1,831472	1,879363
Studying in the 1st interview	.1182286	.0183883	6.43	0.000	.0821881	.1542691
White	.0368684	.0133488	2.76	0.006	.0107053	.0630315
19 years old	-.1439408	.0351452	-4.10	0.000	-.2128241	-.0750575
20 years old	-.1524955	.0344269	-4.43	0.000	-.219971	-.0850199
21 years old	-.1576702	.0299902	-5.26	0.000	-.21645	-.0988905
22 years old	-.0530599	.0266517	-1.99	0.046	-.1052963	-.0008236
23 years old	-.0891248	.0283219	-3.15	0.002	-.1446348	-.0336149
24 years old	-.0174216	.0268233	-0.65	0.516	-.0699942	.0351511
25 years old	-.0256975	.0261052	-0.98	0.325	-.0768627	.0254677
26 years old	.0254279	.023253	1.09	0.274	-.0201472	.071003
27 years old	.0391399	.0236282	1.66	0.098	-.0071706	.0854504
28 years old	.0497594	.024125	2.06	0.039	.0024753	.0970435
29 years old	.0022668	.0007573	2.99	0.003	.0007825	.003751
8 to 10 years of study	.0711542	.0176591	4.03	0.000	.0365431	.1057654
11 or more years of study	.313783	.015515	20.22	0.000	.283374	.3441919
North	-.0145477	.0178668	-0.81	0.416	-.0495659	.0204706
Southeast	.1365777	.0159447	8.57	0.000	.1053267	.1678286
South	.2908811	.0172264	16.89	0.000	.257118	.3246442
MidWest	.089455	.0183109	4.89	0.000	.0535663	.1253437
Urban Area	.1619244	.0126282	12.82	0.000	.1371735	.1866753
Metropolitan Area	.074261	.0160126	4.64	0.000	.0428769	.1056451
Households w/ 6 to 14	-.2178141	.06695	-3.25	0.001	-.3490336	-.0865946
Households w/ 15 to 17	.0371265	.0794184	0.47	0.640	-.1185307	.1927838
Elderly	-.0543718	.0349413	-1.56	0.120	-.1228554	.0141119
2013	.007512	.0208338	0.36	0.718	-.0333216	.0483455
2014	.0318985	.0226104	1.41	0.158	-.0124171	.076214
2015	.083036	.0221121	3.76	0.000	.0396972	.1263748
2016	.0783499	.022528	3.48	0.001	.0341958	.122504
2017	.0673532	.0227854	2.96	0.003	.0226947	.1120117
2018	.0794845	.0225037	3.53	0.000	.0353781	.1235908
2019	.0790929	.0238253	3.32	0.001	.0323963	.1257896
2020	-.0589637	.0387906	-1.52	0.128	-.1349919	.0170645
Constant	-1,24774	.0246424	-50.63	0.000	-1,296038	-1,199441

STUDYING

	Coef.	Robust Std. Error	z	P>|z|	[95% Conf. Interval]	
Working in the 1st interview	.0107661	.0206045	0.52	0.601	-.029618	.0511502
Studying in the 1st interview	2.588.152	.0189893	136.30	0.000	2.550.934	262.537
White	.0493712	.0206408	2.39	0.017	.0089159	.0898265
19 years old	.1310701	.0436558	3.00	0.003	.0455062	.2166339
20 years old	.1549197	.0465379	3.33	0.001	.063707	.2461324
21 years old	.0931964	.0384722	2.42	0.015	.0177922	.1686006
22 years old	.0927307	.0365469	2.54	0.011	.0211001	.1643614
23 years old	.0642579	.0380291	1.69	0.091	-.0102777	.1387935
24 years old	.0316723	.0367961	0.86	0.389	-.0404468	.1037913
25 years old	.0189423	.0419918	0.45	0.652	-.0633602	.1012448
26 years old	-.0242592	.0342343	-0.71	0.479	-.0913572	.0428381
27 years old	-.0377925	.04048	-0.93	0.351	-.1171319	.0415468
28 years old	-.0982589	.0371823	-2.64	0.008	-.1711349	-.0253829
29 years old	-.0023872	.0011577	-2.06	0.039	-.0046562	-.0001183
8 to 10 years of study	.0456079	.0297444	1.53	0.125	-.01269	.1039059
11 or more years of study	.3070152	.0255522	12.02	0.000	.2569317	.3570946
North	.052288	.0251655	2.08	0.038	.0029645	.1016115
Southeast	-.1412328	.0248667	-5.68	0.000	-.1899706	-.0924951
South	-.0540809	.0259011	-2.09	0.037	-.1048462	-.0033157
MidWest	.020613	.027405	0.75	0.452	-.0330998	.0743259
Urban Area	.1167513	.0200519	5.82	0.000	.0774504	.1560522
Metropolitan Area	.0444338	.0217055	2.05	0.041	.0018918	.0869758
Households w/ 6 to 14	-.1365745	.0968332	-1.41	0.158	-.326364	.053215
Households w/ 15 to 17	-.1135472	.0998989	-1.14	0.256	-.3093454	.082251
Elderly	.0151074	.0509497	0.30	0.767	-.0847521	.1149669
2013	-.0090873	.0329944	-0.28	0.782	-.0735937	.055419
2014	-.0715104	.0338544	-2.11	0.035	-.1378639	-.005157
2015	-.0687769	.0398013	-1.73	0.084	-.1467861	.0092323
2016	-.070347	.0340833	-2.06	0.039	-.137149	-.003545
2017	-.0548276	.0359204	-1.53	0.127	-.1252303	.0155751
2018	-.0615704	.0336982	-1.83	0.068	-.1276176	.0044767
2019	-.0314862	.0389816	-0.81	0.419	-.1078888	.0449164
2020	-.0436675	.0382748	-1.14	0.254	-.1186848	.0313498
Constant	-2,18238	.0396035	-55.11	0.000	-2,26000	-2,10476
athrho	.0205891	.015344	1.34	0.180	-.0094846	.0506627
rho	.0205862	.0153375			-.0094843	.0506194
Wald Test	chi2(1) =	180.052			Prob > chi2 = 0.0000	

ADULT SON (OFFSPRING)

WORKING

	Coef.	Robust Std. Error	z	P>|z|	[95% Conf. Interval]	
Working in the 1st interview	1,658159	0,01258	131,81	0	1,63350	1,68282
Studying in the 1st interview	-0,30411	0,013115	-23,19	0	-0,32981	-0,2784
White	-0,03853	0,012768	-3,02	0,003	-0,06356	-0,01351
19 years old	0,012675	0,020306	0,62	0,533	-0,02712	0,052473
20 years old	0,038689	0,020599	1,88	0,06	-0,00168	0,079063
21 years old	0,089578	0,021765	4,12	0	0,046921	0,132236
22 years old	0,140268	0,022338	6,28	0	0,096487	0,184049
23 years old	0,178279	0,024769	7,2	0	0,129733	0,226825
24 years old	0,1989	0,032425	6,13	0	0,135347	0,262452
25 years old	0,264708	0,027144	9,75	0	0,211506	0,31791
26 years old	0,229739	0,027472	8,36	0	0,175896	0,283583
27 years old	0,244214	0,028987	8,43	0	0,187401	0,301026
28 years old	0,311578	0,02966	10,5	0	0,253446	0,369711
29 years old	0,00877	0,001091	8,03	0	0,00663	0,010909
8 to 10 years of study	0,245052	0,017382	14,1	0	0,210985	0,27912
11 or more years of study	0,299411	0,015153	19,76	0	0,269712	0,32911
North	-0,0078	0,017181	-0,45	0,65	-0,04147	0,025877
Southeast	0,219681	0,014495	15,16	0	0,191271	0,248092
South	0,276528	0,017282	16,02	0	0,243006	0,310501
MidWest	0,163517	0,020971	7,8	0	0,122415	0,204619
Urban Area	-0,01808	0,013306	-1,36	0,174	-0,04416	0,008003
Metropolitan Area	-0,05217	0,014374	-3,63	0	-0,08034	-0,02399
Households w/ 6 to 14	-0,03888	0,069408	-0,56	0,575	-0,17492	0,097155
Households w/ 15 to 17	0,059783	0,031912	1,87	0,061	-0,00276	0,12233
Elderly	-0,04208	0,016908	-2,49	0,013	-0,07522	-0,00895
2013	-0,0841	0,021763	-3,86	0	-0,12676	-0,04145
2014	-0,07613	0,021951	-3,47	0,001	-0,11915	-0,03311
2015	-0,08267	0,022565	-3,66	0	-0,1269	-0,03844
2016	-0,0734	0,022284	-3,29	0,001	-0,11708	-0,02972
2017	-0,10448	0,021885	-4,77	0	-0,14738	-0,06159
2018	-0,08857	0,022156	-4	0	-0,132	-0,04515
2019	-0,07508	0,02223	-3,38	0,001	-0,11865	-0,03151
2020	-0,18585	0,035756	-5,2	0	-0,25593	-0,11577
Constant	-0,60553	0,024627	-24,59	0	-0,65379	-0,55726

STUDYING

	Coef.	Robust Std. Error	z	P>|z|	[95% Conf. Interval]	
Working in the 1st interview	-.2341934	.0148192	-15.80	0.000	-.2632386	.2051482
Studying in the 1st interview	2	.0137212	182.12	0.000	2	3
White	.0502051	.0145378	3.45	0.001	.0217115	.0786986
19 years old	.0260555	.0227512	1.15	0.252	-.0185361	.0706471
20 years old	-.0399941	.0237581	-1.68	0.092	-.086559	.0065708
21 years old	-.0851261	.0245614	-3.47	0.001	-.1332656	-.0369865
22 years old	-.1545367	.026028	-5.94	0.000	-.2055507	-.1035228
23 years old	-.2313546	.0262194	-8.82	0.000	-.2827437	-.1799656
24 years old	-.2437206	.0285497	-8.54	0.000	-.299677	-.1877641
25 years old	-.2432236	.0327601	-7.42	0.000	-.3074323	-.1790149
26 years old	-.321313	.0374227	-8.59	0.000	-.3946602	-.2479657
27 years old	-.3496031	.0342069	-10.22	0.000	-.4166473	-.2825588
28 years old	-.4096381	.0373509	-10.97	0.000	-.4828445	-.3364318
29 years old	-.0162938	.0014145	-11.52	0.000	-.0190662	-.0135214
8 to 10 years of study	.0128117	.0232221	0.55	0.581	-.0327028	.0583262
11 or more years of study	.3870695	.0198439	19.51	0.000	.3481962	.4259628
North	.0181157	.0195021	0.93	0.353	-.0201077	.056339
Southeast	-.0878871	.0169483	-5.19	0.000	-.1211052	-.0546691
South	-.0111822	.0204518	-0.55	0.585	-.051267	.0289026
MidWest	-.0061374	.0224178	-0.27	0.784	-.0500754	.0378006
Urban Area	.1392789	.0147256	9.46	0.000	.1104171	.1681406
Metropolitan Area	.0643768	.0158901	4.05	0.000	.0332327	.0955209
Households w/ 6 to 14	.0545628	.0987249	0.55	0.580	-.1389344	.24806
Households w/ 15 to 17	.0522199	.0400478	1.30	0.192	-.0262724	.1307121
Elderly	-.0509453	.0195577	-2.60	0.009	-.0892777	-.0126129
2013	.046461	.0267279	1.74	0.082	-.0059247	.0988466
2014	-.0219679	.0261291	-0.84	0.400	-.0731799	.0292442
2015	-.0177692	.0263607	-0.67	0.500	-.0694353	.0338969
2016	.0046768	.026858	0.17	0.862	-.0479639	.0573176
2017	-.0124835	.0272629	-0.46	0.647	-.0659178	.0409507
2018	-.0226465	.0269988	-0.84	0.402	-.0755632	.0302702
2019	-.0228753	.0255199	-0.90	0.370	-.0728933	.0271427
2020	.0029915	.0314848	0.10	0.924	-.0587177	.0647006
Constant	-1,64876	.0301465	-54.69	0.000	-1,707842	-158.967
athrho	-.2248845	.0097717	-23.01	0.000	-.2440367	-.2057322
rho	-.2211686	.0092938	-.239305	-.2028779		
Wald Test	chi2(1) = 529.632				Prob > chi2 = 0.0000	

ADULT DAUGHTER (OFFSPRING)

WORKING

	Coef.	Robust Std. Error	z	P>|z|	[95% Conf. Interval]	
Working in the 1st interview	1,684117	.0136948	122.98	0.000	1,657276	1,710958
Studying in the 1st interview	-.1773851	.0140709	-12.61	0.000	-.2049636	-.1498067
White	-.0386811	.014061	-2.75	0.006	-.0662401	-.0111221
19 years old	-.0222743	.0223222	-1.00	0.318	-.066025	.0214764
20 years old	.0362365	.022984	1.58	0.115	-.0088112	.0812842
21 years old	.0861045	.0247181	3.48	0.000	.0376578	.1345511
22 years old	.1064458	.0250189	4.25	0.000	.0574097	.155482
23 years old	.1537842	.0291836	5.27	0.000	.0965854	.2109829
24 years old	.2839608	.0420143	6.76	0.000	.2016143	.3663073
25 years old	.2438298	.0286293	8.52	0.000	.1877173	.2999422
26 years old	.2493538	.0310291	8.04	0.000	.1885379	.3101697
27 years old	.3053686	.0306027	9.98	0.000	.2453884	.3653489
28 years old	.2746767	.0317684	8.65	0.000	.2124118	.3369416
29 years old	.0104167	.001149	9.07	0.000	.0081647	.0126686
8 to 10 years of study	.2960048	.0252363	11.73	0.000	.2465425	.3454671
11 or more years of study	.4959943	.0217336	22.82	0.000	.4533972	.5385914
North	-.0371041	.019268	-1.93	0.054	-.0748687	.0006605
Southeast	.2254074	.0160725	14.02	0.000	.1939058	.256909
South	.2733342	.0198286	13.78	0.000	.2344708	.3121976
MidWest	.1182338	.0210525	5.62	0.000	.0769717	.159496
Urban Area	.1553566	.0154621	10.05	0.000	.1250514	.1856619
Metropolitan Area	-.00055	.0166349	-0.03	0.974	-.0331537	.0320537
Households w/ 6 to 14	-.049756	.0840524	-0.59	0.554	-.2144957	.1149837
Households w/ 15 to 17	.0167558	.037643	0.45	0.656	-.0570231	.0905346
Elderly	-.0290859	.0196931	-1.48	0.140	-.0676836	.0095118
2013	-.032018	.0225541	-1.42	0.156	-.0762232	.0121871
2014	-.0275726	.0223319	-1.23	0.217	-.0713422	.016197
2015	-.022504	.0227196	-0.99	0.322	-.0670336	.0220255
2016	-.030496	.0234653	-1.30	0.194	-.0764873	.0154952
2017	.0100241	.0238357	0.43	0.669	-.035925	.0559732
2018	.0009236	.0238156	0.04	0.969	-.0457541	.0476012
2019	.0097248	.023935	0.41	0.685	-.037187	.0566366
2020	-.2457752	.0460025	-5.34	0.000	-.3359385	-.1556119
Constant	-1,257679	.030974	-40.60	0.000	-1,318387	-1,196972

STUDYING

	Coef.	Robust Std. Error	z	P>|z|	[95% Conf. Interval]	
Working in the 1st interview	-.1755322	.0150053	-11.70	0.000	-.2049421	-.1461223
Studying in the 1st interview	2.491448	.0151454	164.50	0.000	2.461764	2.521133
White	.0977896	.0157055	6.23	0.000	.0670075	.1285717
19 years old	.0470177	.0245895	1.91	0.056	-.0011768	.0952122
20 years old	.0587379	.0250511	2.34	0.019	.0096387	.1078371
21 years old	.0095914	.028969	0.33	0.741	-.0471869	.0663696
22 years old	-.1281316	.0279915	-4.58	0.000	-.1829939	-.0732694
23 years old	-.2008164	.0289761	-6.93	0.000	-.2576086	-.1440242
24 years old	-.2260009	.0351319	-6.43	0.000	-.294858	-.1571437
25 years old	-.3105572	.0335724	-9.25	0.000	-.3763578	-.2447566
26 years old	-.3704622	.0370255	-10.01	0.000	-.4430309	-.2978935
27 years old	-.3638141	.0381311	-9.54	0.000	-.4385498	-.2890784
28 years old	-.3024464	.0435627	-6.94	0.000	-.3878277	-.217065
29 years old	-.0154455	.0014713	-10.50	0.000	-.0183293	-.0125617
8 to 10 years of study	-.0938391	.0359358	-2.61	0.009	-.164272	-.0234063
11 or more years of study	.3345340	.0319286	10.53	0.000	.27224	.3968331
North	.0203155	.0221357	0.92	0.359	-.0230696	.0637007
Southeast	-.0708585	.0179515	-3.95	0.000	-.1060427	-.0356742
South	.0360423	.021375	1.69	0.092	-.0058519	.0779365
MidWest	.0472585	.0235408	2.01	0.045	.0011193	.0933977
Urban Area	.0745013	.0168286	4.41	0.000	.0413915	.1076111
Metropolitan Area	.0785898	.0169733	4.63	0.000	.0453227	.1118569
Households w/ 6 to 14	.144658	.0873086	1.66	0.098	-.0264636	.3157796
Households w/ 15 to 17	-.0413265	.0470956	-0.88	0.380	-.1336322	.0509793
Elderly	-.0083152	.0217787	-0.38	0.703	-.0510008	.0343703
2013	.0945456	.0286884	3.30	0.001	.0383173	.1507738
2014	.0464375	.0287357	1.62	0.106	-.0098834	.1027584
2015	.0492723	.0294876	1.67	0.095	-.0085224	.1070671
2016	.0321362	.028145	1.14	0.254	-.0230269	.0872994
2017	.0246982	.027617	0.89	0.371	-.0294302	.0788265
2018	.0389403	.0276093	1.41	0.158	-.0151729	.0930535
2019	.0384014	.0274501	1.40	0.162	-.0153998	.0922027
2020	.1237481	.0357111	3.47	0.001	.0537556	.1937406
Constant	-1,664024	.037868	-43.94	0.000	-1,738244	-1,589804
athrho	-.1680948	.011119	-15.12	0.000	-.1898876	-.1463021
rho	-.1665293	.0108106	-.1876378	-.1452671		
Wald Test	chi2(1) = 228.549				Prob > chi2 = 0.0000	