The impact of parental labor shocks on youth's decisions

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Abstract

This article examines the impacts of parental shocks—both negative and positive—on the labor force participation of their child. Parental shocks are defined as sudden and unexpected changes in a parent's employment status, such as job loss or gain. These shocks can trigger cascading effects within the family, influencing youth labor market behavior. The study investigates how negative parental shocks (job loss or inactivity) and positive shocks (job gain) affect youth participation in the labor market. The analysis incorporates various youth labor market variables, including employment status and formality. Using data from the PNADc from 2012 to 2019 and employing a differences-in-differences approach, the study finds that negative shocks significantly increase youth labor market participation, with the probability of being employed reaching nearly 0.3 in interviews following the shock. An increase in youth participation in the formal sector was also observed after negative shocks. Conversely, positive parental shocks were associated with a reduction in youth labor market participation in subsequent interviews, applicable to both two-parent and single-parent families. However, the impact of positive shocks on youth participation in the formal sector is inconclusive. Therefore, this study corroborates the findings of the added worker effect for Brazil among the youth.

Keywords: Parental shocks, Household dynamics, Youth in the labor market, Added worker effect

1 Introduction

In analyzing the dynamics of the labor market, it becomes evident that understanding the role and participation of the youth is crucial, especially given the shifts observed in recent years. The alterations in the Brazilian economic landscape, driven by both the economic crisis and the global pandemic, have undeniably reshaped the employment scenario. However, it is imperative to transcend these macroeconomic considerations and delve into the distinct challenges and opportunities faced by the younger demographic within the workforce.

One compelling aspect is the persistent and notable disparity in unemployment rates between the youth and other age groups. Historically, the youth unemployment rate tends to surpass those observed in older demographics. Moreover, this particular segment of the workforce demonstrates a heightened sensitivity to economic cycles. As evidenced by studies such as Bell e Blanchflower (2011), youth unemployment tends to escalate more rapidly during economic recessions, making it a critical area of exploration.

Besides the fact that young people have their specificity in the labor market, it is important to highlight the household dynamics in which they are inserted. Several family mechanisms can affect the young person's decisions in the labor market. Negative shocks in the parent's income, as well as parents' loss of employment or worsening in their occupation, are likely to have a ripple effect on the entire family, including the youth. For example, if a parent loses their job, they may have difficulty paying for necessities such as food and housing, leading to financial stress for the entire family (FRADKIN et al., 2017). So, the opportunity costs associated with early entry into the job market has association with variations in adult income (CABANAS et al., 2014).

While the relevance of parental job shocks is evident, and numerous studies specify their impact on children's development (BRITTO et al., 2022; FONTES et al., 2023) and educational outcomes (HILGER, 2016; MÖRK et al., 2020; RUIZ-VALENZUELA, 2021), little is known about how these shocks affect young individuals in the labor market.

This study pioneers research by delving into the repercussions of parental job shocks and how young individuals respond in the labor market. Leveraging data from the Continuous National Household Sample Survey (PNADc) of the Brazilian Institute of Geography and Statistics (IBGE), our focus is on families with children aged between 16 and 29 years. The survey includes information from individuals in both formal and informal sectors over five quarters. Our primary goal is to closely examine the immediate effects of parental shocks on young individuals in the labor market. We will examine their participation and involvement in the formal sector. This examination is crucial for identifying priority areas in mitigating the effects of negative parental shocks through public policies. Additionally, we aim to understand the response of young individuals to positive shocks, such as encouragement for increased employment by their parents.

The "Added Worker Effect," as documented in studies such as Lundberg (1985), illustrates how families respond to job shocks affecting the primary income earner by having additional family members, typically women and children, enter the labor market. This serves as a coping mechanism to mitigate the financial impact of the primary earner's job loss.

Conversely, the "Discouraged Worker Effect" describes the phenomenon where secondary earners, such as spouses or children, may opt to leave the labor force if the primary earner secures a better job opportunity. This withdrawal from the labor market reflects the discouragement secondary earners may feel when faced with limited prospects for employment relative to the improved situation of the primary earner (LONG, 1953; LONG, 1958). Both effects shed light on the complex dynamics within households in response to changes in employment opportunities and underscore the importance of understanding family-level labor market behavior.

Regarding the sensitivity of youth unemployment to the economic cycle, there are not many explanations for the determinants of this phenomenon. Some studies point to the fact that young people when employed, have less human capital accumulation and less protection against dismissal. Moreover, according to the theoretical framework proposed by Gertler et al. (2020), entrepreneurs become more selective in the criteria for hiring new workers in times of recession. They

would start hiring more qualified workers even to fill positions that would require a lower level of qualification. This change in attitude by employers would affect young workers more intensely.

The authors Bell e Blanchflower (2011) also conclude that in recessionary times, not only does a lack of experience and skills make young people less competitive in a market with a greater scarcity of jobs, but they are potentially hurt more by labor market regulations that make it easier to fire young workers. Furthermore, the authors point out in their study that during the economic recession of 2008-09, youth unemployment grew more sharply than adult unemployment in OECD countries, widening the unemployment differentials between the two age groups. This relative change in the youth unemployment rate occurred rapidly, so it is unlikely that it can be attributed to factors such as relative wages or slowly evolving technological change.

The evidence for Brazil, on the one hand, confirms in part the facts previously described and, on the other hand, adds novelties in dimensions little explored in developed countries. The issue of turnover as a determinant of youth unemployment also in Brazil has been recorded by Flori et al. (2005). Also, Corseuil et al. (2014) reinforces this point by showing that even in the formal sector, turnover is extremely high for young people. The work of Reis (2015) is an important milestone for a better understanding of the insertion of young people in the Brazilian labor market. The author shows that the search for a job has a much longer duration among young people trying their first job and that the first job tends to have poorer quality characteristics in dimensions related to salary, informality, and stability.

Although the Added Worker Effect may impact both women and children, there are also studies that do not find this effect for children, only for women. Skoufias e Parker (2006) analysis of male head transition from employment to unemployment during the peso crisis in Mexico reveals significant added-worker effects, particularly among adult females (wives), indicating an increased likelihood of entering the labor force in response to the husband's unemployment. However, no evidence is found to suggest that the unemployment of the household head affects the labor force participation, school attendance, or academic progression of

teenage males.

On the other hand, Fradkin et al. (2017) found that parental employment status does matter for young adults' job search decisions in United States. According to them, the young adults whose parents recently lost a job find a job quicker. Besides the impact on the child's decision to find a job, the authors don't find evidence that parental employment affects the average quality of the job found by young workers in the United States.

Other studies have focused on the effects of income and parents' employment status in Brazil. Vieira et al. (2016) indicate that the parent's income growth affects the youth's job search and education decision. Their results suggest that the primary factor responsible for the change in young people's activity status was the increase in the mother's income specifically, rather than that of adults in general.

Our empirical approach leverages parental job loss events over time within a difference-in-differences (DiD) framework. In line with recent advancements in the DiD literature, we employ estimators resilient to treatment effect heterogeneity across cohorts and time. Utilizing the comprehensive nature of our dataset, we control for an extensive array of covariate-specific trends, encompassing the socioeconomic characteristics of both parents and youth. Our identification strategy relies on the parallel trends assumption conditioned on these covariates. Following the methodology of Callaway e Sant'Anna (2021), we incorporate these elements using doubly-robust estimators. Our findings align with Fradkin et al. (2017), emphasizing parental job shock's significance in shaping young adults' job search decisions.

We initiate the paper by presenting an overview of youth in Brazil, with a specific focus on those residing with their parents. Then we describe the DiD and methodology that we will use for estimation. Next, we present the results of negative and positive shocks, as well as the regression of the youth's situation regarding work and study and the employment status of the parents. Subsequently, an analysis of heterogeneity for negative and positive shocks is presented, followed by the discussion and conclusion of the work.

2 Background: Youth and the Labor Market of Brazil

In this section, we provide an overview of the youth labor market in Brazil, focusing on individuals aged 16-29 who are identified as children in the PNADc dataset. We will focus on this sample in the present study because our goal is to conduct it from a household perspective, and this is the age group that most commonly resides with parents among youth in Brazil for both men and women, as depicted in Figures 1 and 2.

Figure 1 – **CDF of age for men living with their parents**
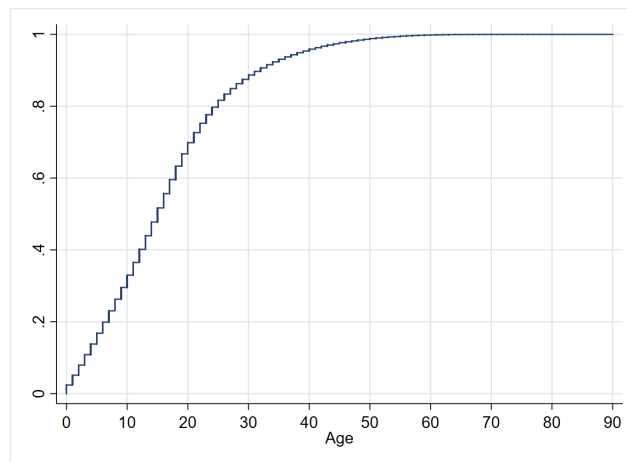
Source: Own elaboration with data from PNADc (2012-2019). Note: This figure shows a histogram of the age distribution of young men who live with their parents in Brazil.

Figure 2 – **CDF of age for women living with their parents**
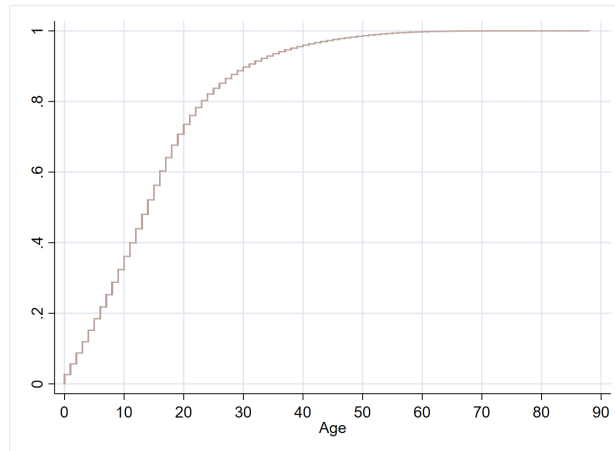
Source: Own elaboration with data from PNADc (2012-2019). Note: This figure shows a CDF of the age distribution of young women who live with their parents in Brazil.

It is noticeable that both the age distribution of young men and women living with their parents follow a similar pattern. It can be observed that the cumulative distribution function (CDF) tends to increase, indicating a significant concentration of young adults who still live with their parents until before the age of 30, both for women and men. This underscores the importance of considering individuals up to the age of 29 in this study, as in Brazil, it is common for many young adults to reside with their parents until this age range.

Among these young people who live with their parents, Table 1 shows the distribution of the proportion of how they are divided in terms of work and study, and gender. What can be observed is that for women, there is a higher concentration of young individuals who only study between 16-18 years old; of young individuals who neither study nor work between 19-22 years old; and of young individuals who only work between 26-29 years old. This pattern repeats for men; however, from the age of 19-22 years old, the proportion of men who only work exceeds the other options in terms of work and study for youth. Therefore, the table indicates that men who live with their parents in this age group tend to start working earlier than women.

However, work and study are not the only options. Many of these young

Table 1 – **Distribution of employment and study status among youth by gender and age group.**

	16-18	19-22	23-25	26-29	Total
Women					
Only Studies	22.55%	8.53%	2.19%	1.11%	34.36%
	(212,408)	(80,324)	(20,637)	(10,329)	(323,698)
Only works	2.26%	8.45%	6.99%	7.85%	25.50%
	(20,875)	(79,638)	(65,814)	(73,954)	(240,281)
Studies and Works	4.17%	8.45%	2.46%	1.70%	13.87%
	(39,244)	(52,200)	(23,204)	(16,042)	(130,690)
Neither Studies nor works	6.08%	10.31%	5.21%	4.67%	26.26%
	(57,258)	(97,124)	(49,0540)	(44,006)	(247,442)
Total	35,06%	32.83%	16.85%	15.32%	100%
	(329,785)	(309,286)	(158,709)	(144,331)	(942,111)
Men					
Only Study	17.61%	5.67%	1.51%	0.73%	25.53%
	(210,362)	(67,755)	(18,032)	(8,694)	(304,843)
Only works	4.24%	14.59%	10.12%	10.37%	39.32%
	(50,699)	(174,271)	(120,847)	(123,853)	(469,670)
Studies and Works	6.25%	5.16%	2.23%	1.47%	15.07%
	(74,712)	(61,104)	(26,682)	(17,514)	(180,012)
Neither Studies nor works	4.42%	7.94%	4.01%	3.72%	20.09%
	(52,779)	(94,886)	(47,887)	(44,459)	(240,011)
Total	35,53%	33.32%	17.87%	16.28%	100%
	(388,552)	(398,016)	(213,448)	(194,520)	(1,194,536)

Source: Own elaboration with data from PNADc (2012-2019). Note: This table displays the distribution among the choices of studying, working, studying and working, and neither working nor studying for youth aged 16-29 by gender; the numbers in parentheses represent the absolute percentage.

individuals living with their parents are in a state of inactivity[1], as well as their parents. To conduct a more specific analysis of both young individuals and parents in the labor market, it is crucial to understand the reasons why a portion of the population of young individuals and parents is not active in the labor market, as well as the gender and age differences among the youth. For this purpose, the analysis was conducted considering young individuals between 16-29 years old and individuals who are parents in tables 2 and 3.

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[1]It's important to emphasize that inactivity is not the same as being unemployed. Unemployment refers to people in the labor force who are jobless, while inactivity occurs when a person is outside the labor force.

Table 2 – **Reason for inactivity for young people**

	Gender		
	Women	**Men**	**Total**
Needed to take care of household chores, child(ren), or other dependent(s)	7.79% (31,496)	0.46% (1,876)	8.25% (33,372)
Was studying	53.16% 132,059	8.28% 116,346	61.44% (248,405)
Due to physical, mental incapacity, or permanent illness\end{tabular}	2.52% (10,202)	4.16% (16,811)	6.68% (27,013)
Too young or too old to work	1.56% (6,309)	1.61% 6,519	3.17% (12,828)
Did not want to work	3.55% (14,335)	4.64% (18,487)	8.19% (32,822)
Another reason	5.59% (22,599)	6.74% (27,252)	12.33% (49,851)
Total	35.67% (217,000)	46.33% (187,291)	100% (404,291)

As seen in table 2, there is a significant distinction in the reasons why young individuals are inactive. Women have a much higher proportion of being absent to take care of household chores than men, with a difference of 13.51 percentage points between the groups when considering all age groups. This difference persists when analyzing the age groups separately.

Other noticeable differences are related to being unable to work due to physical/mental incapacity or illness, where men have almost twice the proportion of women. Additionally, there is a higher proportion of men who declare not wanting to work, as well as considering themselves too young/old to work.

Now, concerning the parents, it is evident in Table 3 that the gender pattern observed among the youth persists among parents. A considerably higher proportion of mothers declare inactivity due to the need to take care of household chores and dependents compared to fathers.

Moving in a different direction, it is evident that young individuals in this sample are also employed. Table 4 provides a summary of the distribution of young individuals in this sample among primary, secondary, and tertiary sectors of the

<div align="center">Table 3 – **Reason for inactivity of parents**</div>

| | **Parent** | | |
	Father	**Mother**	**Total**
Needed to take care of household chores, child(ren), or other dependent(s)	0.40% (6,699)	33.02% (548,322)	33.42% (555,031)
Was studying	0.20% (3,345)	0.87% (14,402)	1.07% (17,742)
Due to physical, mental incapacity, or permanent illness	5.12% (85,109)	6.53% (108,502)	11.66% (193,611)
Too young or too old to work	17.56% (291,538)	24.52% (407,170)	42.08% (698,528)
Did not want to work	0.90% (14,928)	2.66% (44,253)	3.56% (70,181)
Another reason	2.92% (48,510)	4.64% (77,077)	7.56% (125,580)
Total	27.09% (449,949)	72.91% (1,210,729)	100% (1,660,678)

Source: Own elaboration with data from PNADc (2012-2019). Note: This table shows the distribution of reasons for inactivity for parents who have children between the ages of 16-29 living in their homes; the numbers in parentheses represent the absolute percentage.

economy [2], as well as formality/informality [3].

The young individuals in this sample are predominantly concentrated in the secondary sector, with the majority also in the formal market. Among the sectors, most young individuals in the primary and tertiary sectors are in the informal sector, whereas in the secondary sector, the majority are in the formal sector.

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[2]This definition was created based on question VD4011, which shows the occupational groups of the main job in the reference week. The primary sector was considered to include skilled workers in agriculture, forestry, hunting, and fishing. The secondary sector includes directors and managers, science and intellectual professionals, technicians, and middle-level professionals, administrative support workers, craftsmen, machine and equipment operators. The tertiary sector encompasses service workers, elementary occupations, members of the armed forces, and military firefighters.

[3]This definition was based on questions VD4009 and VD4012 of the PNADc, which show the occupation position and employment category in the reference week and whether they contribute to the pension institute, respectively. A worker in the formal sector is one who is employed with a signed work permit, military and statutory server, and employer and self-employed who are contributors. A worker in the informal sector is one without a signed work permit, family helper worker, and employer and self-employed non-contributors.

Table 4 – **Distribution of youth among sectors and formality in the economy**

	Informal	Formal	Total
Primary sector	6.24%	0.95%	7.19%
	(63,288)	(9,686)	(72,974)
Secondary sector	18.71%	31.33%	50.04%
	(189,762)	(317,869)	(507,631)
Tertiary sector	24,95%	17.82%	42.77%
	(253,090)	(180,755)	(433,845)
Total	45.83%	54.17%	100%
	(506,140)	(508,310)	(1,014,450)

Source: Own elaboration with data from PNADc (2012-2019). Note: This table shows the distribution among primary, secondary, and tertiary sectors; formal and informal, for young individuals aged 16-29 who live with their parents; the numbers in parentheses represent the absolute percentage.

3 Data and Empirical Strategy

3.1 Data

We mainly rely on quarterly longitudinal microdata from PNADc, for the period between 2012 and 2019. This database is a survey that monitors quarterly fluctuations and the evolution of the workforce, and other information necessary for studying the country's socioeconomic development.

Throughout five interviews, information is accessible concerning the labor market, occupational status, working hours, income, time away or searching for employment, occupation, and whether one is in the formal sector, etc. Additionally, various socioeconomic details such as gender, race, family position, municipality of residence, etc., are included. Based on personal and family-related information gathered during these interviews, it is feasible to identify both the individual and the family.

Each household and its residents undergo five interviews over four quarters, facilitating a panel analysis of the same individuals over time. For the purpose of our studies, we specifically focus on families with young individuals (aged between 16 and 29 years) in the position of children and also, we will exclude families that have "others"[4] living in.

When using survey data, we face a series of challenges that can impact the quality and reliability of the collected information. One of the main problems is non-response bias, where some individuals choose not to answer certain questions or even the entire survey, resulting in a biased sample that may not adequately represent the target population. Additionally, response bias can occur, where respondents provide inaccurate or dishonest answers due to social desirability bias, feeling pressured to respond in a socially acceptable manner rather than truthfully.

Attrition is also a concern, especially in longitudinal surveys, where participants may drop out of the study over time, resulting in attrition bias and affecting the representativeness and reliability of the collected data. For instance, for our

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[4]"Others" applies to: grandfather/grandmother, another relative, household member, cohabitant, pensioner, domestic worker, relative of the domestic worker.

specific sample of youth in the position of children aged 16-29 in households without the presence of other relatives besides the father, mother, and siblings, we have attrition rate of 28.18% considering all the interviews, resulting in an unbalanced panel for conducting our estimates.

3.2 Empirical specification

Our objective is to evaluate the impact of parental job loss on youth's labor outcomes, considering that the consequences of job loss may extend beyond its initial occurrence. We adopt the identification, estimation, and inference methods proposed by Callaway e Sant'Anna (2021) and Sant'Anna e Zhao (2020) for staggered Difference-in-Differences (DiD) setups. This estimation works by dividing the periods into a 2x2 DiD and calculating the estimators using Staggered DiD. By doing this for each period over time, we form an Event Study Design and the Doubly Robust estimators are consistent if either the outcome model or the propensity score is correctly specified.

Following the notation used by Callaway e Sant'Anna (2021) with some specifications for the current study, denote a particular interview by w, where $w = 0, 1, 2, 3, 4$ and let D_w be a binary variable which indicates whether the parents of the youth had a job shock up to w. Also, define G_g to be a dummy variable that is equal to one if the person is first treated between interviews: if $g = 1$, the person is treated between the first and second interview; $g = 2$ between the second and third; $g = 3$ between the third and forth; $g = 4$ between the fourth and fifith. Define C as a dummy variable that is equal to one for the ones who are not treated in any period. Finally, let $Y_w(1)$ and $Y_w(0)$ measure potential youth's outcome at time w with and without parental job loss, respectively. The main building block of our framework is the average treatment effect for the person who are member of group g at a particular time w, denoted by:

$$ATT(g, w) := E[Y_w(1) - Y_w(0) \,|\, G_g = 1] \tag{1}$$

Our parameter of interest in the estimation will be:

$$\tau_i := \sum_{j \in (1,2)} P(G_j = 1)ATT(j,j) \tag{2}$$

Where $\tau_i \in (0,1,2)$, τ_0 is the average treatment effect of parental job loss on youth in the first interview after the shock, τ_1 in the second interview and τ_2 in the third interview.

To derive this difference from the potential outcome of the youth, we rely on the conditional parallel trends assumption. This assumption posits that youths with similar baseline characteristics would experience the same trend in labor market outcomes in the absence of parental job shocks.

Leveraging the depth of our dataset, we employ a propensity score weighting strategy to balance the treated and control groups across various covariates. These encompass fundamental parental and youth demographics (state of residence, race, age range, gender, year, and quarter of the interview) and socioeconomic indicators (years of study for the youth, educational level of the parent who experienced the shock). We employed cluster estimation based on the count of children in each family for our analysis.

3.3 Control and Treatment Group's Definition

In the case of defining negative shock, the control group consists of young individuals from families where both parents have held the same job for six months or more[5] and maintained this status throughout the entire PNADc. In the treatment group, either the father or the mother begins employment for six months or more in the PNADc but experiences a shock of inactivity or unemployment in some subsequent interview, while the spouse remains employed throughout the entire PNADc. In the context of single-parent families, there is no counterpart for spouses.

For the positive shock, the definition follows the same logic, with the only difference being that, instead of considering parents who have been in the same

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[5]This definition was derived from questions V4040 and V40401 in the PNADc, where the question is asked, "Up to the day... (last day of the reference week), for how long had the person been in this job?".

job for six months or more, we consider parents who have been actively seeking employment for six months or more[6] throughout the entire PNADc for the control group. On the other hand, the treatment group is defined as one of the parents experiencing a job shock in some subsequent interview of the PNADc, while the spouse continues to seek employment. Similarly, in single-parent families, there is no counterpart for the spouse.

For both cases, in addition to considering only families with youth (aged 16 to 29) in the child position, we also filtered out families that only have children. In other words, we excluded those with additional members such as dependents, pensioners, domestic workers, grandparents, etc. Tables 5, 6, 7 and 8 display these exclusions and the application of the shock definition to arrive at the samples for the control and treatment groups, considering the negative shock for both biparental and single-parent families and considering the positive shock for both biparental and single-parent families respectively. In all cases, we have a control group larger than the treatment group and a biparental sample larger than the single-parent sample comparatively.

Table 5 – **Sample Analysis Considering Negative Shocks and Biparental Families**

Category	Individuals (youth)
Initial Sample (2012-2019)	1,771,225
Youth Sample (16-29)	657,460
Biparental Family Sample	502,434
Young individuals (aged 16-29) with no "others"	319,065
Treatment	21,026
Control - No Shock	53,080
Remaining Biparental Sample	244,959

Source: own elaboration using data from PNADc (2012-2019). Note: This table shows the filtering of the data to arrive at the treatment and control group for biparental families (composed of a father and a mother) who have suffered a negative shock from the father or mother (loss of job or going into inactivity).

Delving into each sample, the Tables 9, 10, 11 and 12 show relevant statistics for both discrete and continuous variables.

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[6]This definition was derived from questions V4076 and V40761 in the PNADc, where the question is asked, "Up to the day... (last day of the reference week), for how long had [the person] been without any work and actively seeking employment?".

Table 6 – **Sample Analysis Considering Negative Shocks and Mono-parental Families**

Category	Individuals (youth)
Initial Sample (2012-2019)	1,771,225
Youth Sample (16-29)	657,460
Monoparental Family Sample	160,635
Young individuals (aged 16-29) with no "others"	90,339
Treatment	9,654
Control - No Shock	32,005
Remaining Monoparental Sample	48,770

Source: own elaboration using data from PNADc (2012-2019). Note: This table shows the filtering of the data to arrive at the treatment and control group for monoparental families (composed of a father or a mother) who have suffered a negative shock from the father or mother (loss of job or going into inactivity).

Table 7 – **Sample Analysis Considering Positive Shocks and Biparental Families**

Category	Individuals (youth)
Initial Sample (2012-2019)	1,771,225
Youth Sample (16-29)	657,460
Biparental Family Sample	502,434
Young individuals (aged 16-29) with no "others"	319,065
Treatment	27,604
Control - No Shock	95,207
Remaining Biparental Sample	196,254

Source: own elaboration using data from PNADc (2012-2019). Note: This table shows the filtering of the data to arrive at the treatment and control group for biparental families (composed of a father and a mother) who have suffered a positive from the father or mother (gain of a job).

The analysis of Table 9 for young individuals from biparental families who experienced a negative shock reveals some differences between the control and treatment groups in terms of the distribution of discrete variables and the mean values of continuous variables. Specifically, young individuals in the treatment group exhibit a smaller proportion of non-white individuals, those employed in the formal sector and those who attends school. Individuals in the treatment group also have a relatively lower average age, despite having an average number of hours worked and a proportion of women very similar to the control group.

Additionally, the treatment group lives mostly in urban households, but with a smaller proportion than the control group. The two groups have similar

Table 8 – **Sample Analysis Considering Positive Shocks and Mono-parental Families**

Category	Individuals (youth)
Initial Sample (2012-2019)	1,771,225
Youth Sample (16-29)	657,460
Monoparental Family Sample	160,635
Young individuals (aged 16-29) with no "others"	90,339
Treatment	6,567
Control - No Shock	23,124
Remaining Monoparental Sample	60,648

Source: Own elaboration with data from PNADc (2012-2019). Note: This table shows the filtering of the data to arrive at the treatment and control group for monoparental families (composed of a father or a mother) who have suffered a positive from the father or mother (gain of a job).

Table 9 – **Analysis of Variables for Negative Shocks and Biparental Families**

	Control	Treatment	Pairwise t-test
Youth characteristics			
Woman	0.536	0.539	0.399
White	0.447	0.437	0.013
Age	20.264	20.310	0.054
Attends School	0.455	0.446	0.016
Formal	0.230	0.224	0.053
Effective Hours Worked	37.386	37.427	0.752
Household characteristics			
Urban	0.782	0.777	0.072
Presence of Child	0.233	0.238	0.119
Mother's Education (Secondary Completed)	0.413	0.409	0.202
Macro Region (N/NE)	0.487	0.490	0.389

Source: Own elaboration with data from PNADc (2012-2019). Note: This table reports the average characteristics for treated individuals from biparental families that suffered a negative shock (column 1); for control individuals (column 2); and the pair wise t-test for the groups (column 3).

proportions of households in the North/Northeast of the country, which have children (aged 0-6) and the mother has completed secondary education at simillar proportion.

For young individuals from single-parent families who experienced a neg-

Table 10 – **Analysis of Variables for Negative Shocks and Monoparental Families**

	Control	Treatment	Pairwise t-test
Youth characteristics			
Woman	0.563	0.563	0.944
White	0.411	0.405	0.303
Age	20.646	20.602	0.363
Attends School	0.424	0.401	0.001
Formal	0.228	0.231	0.564
Effective Hours Worked	37.224	37.084	0.017
Household characteristics			
Urban	0.886	0.885	0.743
Presence of Child	0.287	0.286	0.801
Mother's Education (Secondary Completed)	0.399	0.390	0.156
Macro Region (N/NE)	0.440	0.454	0.035

Source: Own elaboration with data from PNADc (2012-2019). Note: This table reports the average characteristics for treated individuals from monoparental families that suffered a negative shock (column 1); for control individuals (column 2); and the pair wise t-test for the groups (column 3).

ative shock in Table 10, the difference between the control and treatment groups is considerably smaller than that seen in two-parent families. The only variables that present significant differences are macro region and school attendance. The treatment group has a relatively higher proportion of individuals who live in the North/Northeast regions of the country and a smaller proportion of individuals who attend school.

The pairwise t-test reveals significant differences between the control and treatment groups for young individuals from biparental families who experienced a positive shock, as depicted in Table 11. These differences primarily manifest in the proportion of white individuals and those employed in the formal sector, indicating distinct individual characteristics. Additionally, notable distinctions emerge in household characteristics, including the proportion of households situated in urban areas, those located in the North/Northeast region, and those where the mother possesses higher education. In each of these cases, the treatment group demonstrates a higher proportion compared to the control group. However, the

Table 11 – **Analysis of Variables for Positive Shocks and Biparental Families**

	Control	Treatment	Pairwise t-test
Youth characteristics			
Woman	0.476	0.488	0.010
White	0.331	0.335	0.028
Age	23.934	23.114	0.101
Attends School	0.379	0.376	0.155
Formal	0.204	0.192	0.005
Effective Hours Worked	38.246	37.933	0.114
Household characteristics			
Urban	0.752	0.768	0.002
Presence of Child	0.558	0.600	0.089
Mother's Education (Secondary Completed)	0.310	0.452	0.001
Macro Region (N/NE)	0.622	0.599	0.001

Source: Own elaboration with data from PNADc (2012-2019). Note: This table reports the average characteristics for treated individuals from biparental families that suffered a positive shock (column 1); for control individuals (column 2); and the pair wise t-test for the groups (column 3).

proportion of young individuals in the formal sector is an exception.

In the last case, the young individuals from single-parent families who experienced a positive shock do not exhibit significant differences in any of the variables listed in Table 12.

Table 12 – **Analysis of Variables for Positive Shocks and Monoparental Families**

	Control	Treatment	Pairwise t-test
Youth characteristics			
Woman	0.454	0.469	0.128
White	0.298	0.302	0.683
Age	21.026	21.016	0.222
Attends School	0.419	0.424	0.604
Formal	0.233	0.223	0.270
Effective Hours Worked	37.918	37.663	0.476
Household characteristics			
Urban	0.867	0.861	0.385
Presence of Child	0.305	0.31	0.536
Mother's Education (Secondary Completed)	0.365	0.372	0.426
Macro Region (N/NE)	0.464	0.471	0.465

Source: Own elaboration with data from PNADc (2012-2019). Note: This table reports the average characteristics for treated individuals from biparental families that suffered a positive shock (column 1); for control individuals (column 2); and the pair wise t-test for the groups (column 3).

4 Main Results

4.1 Negative Shocks

The shock of job loss or transition to inactivity by either the father or mother results in an increase in the youth's participation in the labor market, even when specifically examining the formal job market.

The results found indicate that immediately after the shock, there is a positive effect on employment status among the treated, which decreases as the interviews progress but remains positive (Figure 3). Although it demonstrates an ATT of lower magnitude, the same can be observed when analyzing the youth's participation in the formal sector (Figure 4)

This result suggests that the transition of adults (mother or father) in the labor market affects the youth's decisions to work, potentially to mitigate the negative effects of this shock on the family.

Figure 3 – **Event Study - Probability of being employed in biparental families (Negative shock)**
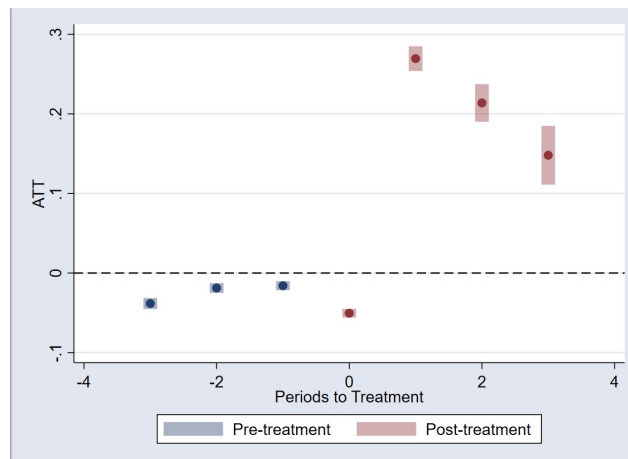
Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

Figure 4 – **Event Study - Probability of being in the formal sector in bi-parental families (Negative shock)**

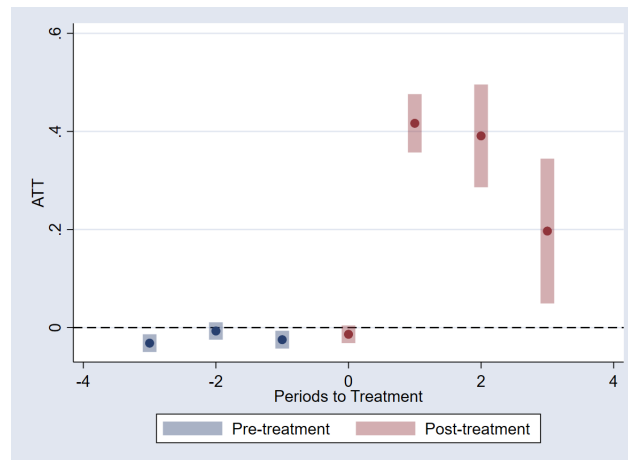Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

4.2 Positive Shocks

Analyzing the scenario of positive shock, we observe that the event of securing employment for a parent who had been actively seeking a job for more than six months reduces has a negative effect on the youth's decisions to work, aligning with the theory of the "Discouraged Worker Effect" (Figure 7).

For the formal sector in biparental families, the probability of youth being in the formal sector is inconclusive. As can be seen in Figure 8, we cannot classify whether the shock effect was positive or negative in the firsts interviews after the shock. However, even though the standard deviation increases considerably over the quarters, it is possible to notice a slight decreasing trajectory for the probability of being in the formal sector, tending towards a more negative value.

This negative effect on the decision to work seems to diminish over the quarters. This may indicate that the discouraged worker effect mainly occurs in the immediate aftermath of the shock, but afterward, the individual may return to

the labor market with better personal indicators of their work, rather than having to mitigate potential effects on family income.

Figure 5 – **Event Study - Probability of being employed in biparental families (Positive shock)**
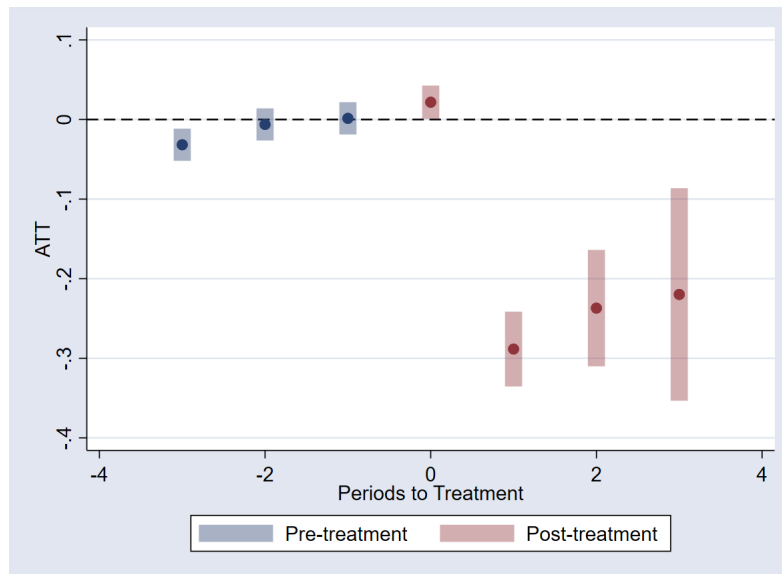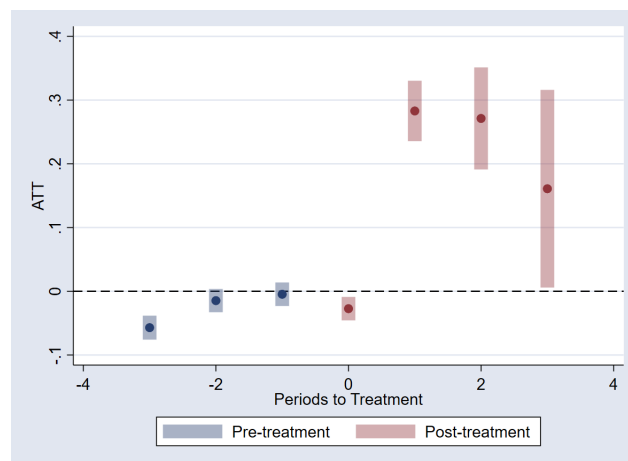

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed through PNADc.

Figure 6 – **Event Study - Probability of being in the formal sector in bi-parental families (Positive shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed through PNADc.

5 Heterogeneities

5.1 Negative Shocks

5.1.1 Gender

In order to capture the effect separately for young men and women, a separate analysis was carried out for both groups. It is possible that the gender difference leads to different roles within the household and, consequently, that the young person's response to the parental shock could be different.

As can be seen in figure 7 and 9, the probability of men being employed after the shock is considerably higher than that of women. In both cases, there is a greater increase in the following quarter, but over time this increase decreases. Therefore, this may suggest that to mitigate the negative effect of job loss in the family, young men, more so than women, have a higher probability of entering the labor market.

When we analyze the probability of being in the formal sector in 10 and 8, men also present effects with a greater magnitude, as well as smaller standard deviations, indicating a more precise estimate. So, not only does the man have a higher probability of entering the labor market than the woman, but he also has a higher probability of entering the formal sector.

Figure 7 – **Event Study - Probability for women of being employed in bi-parental families (Negative shock)**
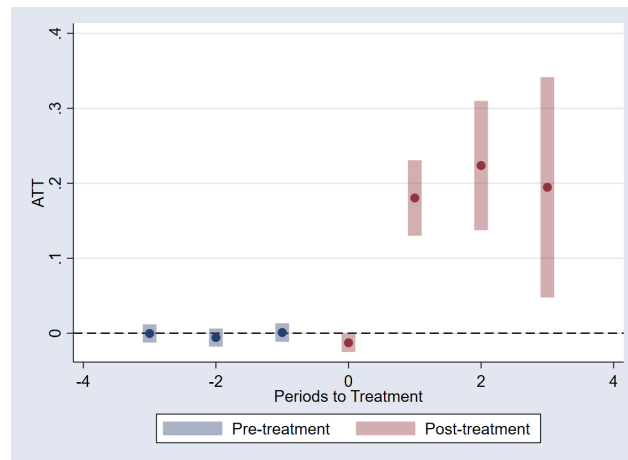
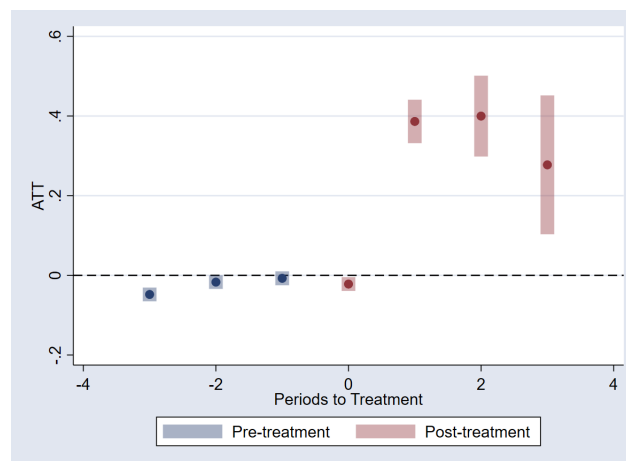

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on woman employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

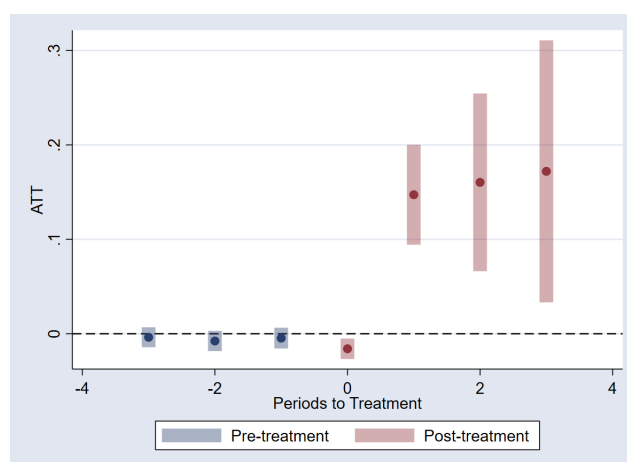Figure 8 – **Event Study - Probability for women of being in the formal sector in biparental families (Negative shock)**
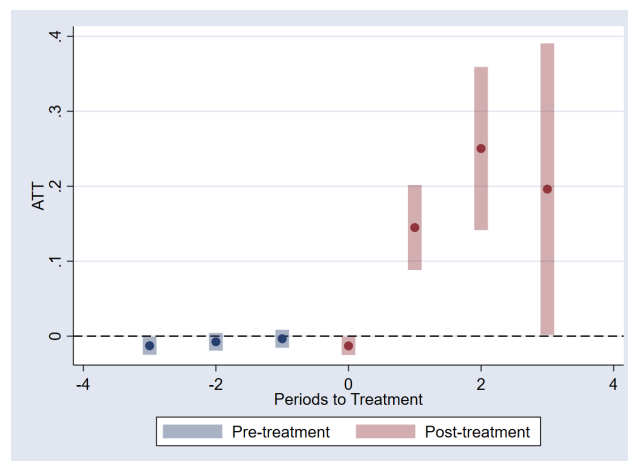
Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on women employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

Figure 9 – **Event Study - Probability for men of being employed in biparental families (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on men employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

Figure 10 – **Event Study - Probability for men of being in the formal sector in biparental families (Negative shock)**

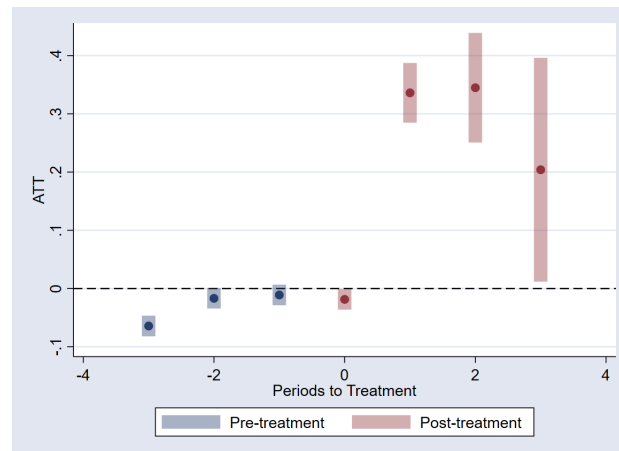
Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on men employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

5.1.2 **Race**

Likewise, a separate analysis of white and non-white young people will be carried out to seek to understand how the increase in participation occurs separately for each group.

In the case of this specific analysis, as shown in figures 11 and 13, the probability of being employed after the negative shock increases more for non-white individuals. In other words, non-white individuals may have to enter the job market to mitigate the negative impact of their parents' shock more than white individuals.

However, when we analyze the formal sector in figures 12 and 16, this is not the case, with white people being more likely to be in the formal sector than non-white people.

Figure 11 – **Event Study - Probability for white individuals of being employed in biparental families (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on white individuals employment outcomes (CALLAWAY; SANT'ANNA, 2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

Figure 12 – **Event Study - Probability for white individuals of being in the formal sector in biparental families (Negative shock)**
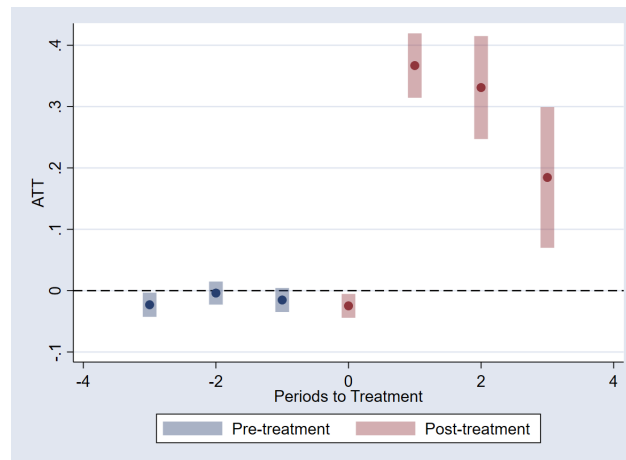

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on white individuals employment outcomes (CALLAWAY; SANT'ANNA, 2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

Figure 13 – **Event Study - Probability for non-white individuals of being employed in biparental families (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on non-white individuals employment outcomes (CALLAWAY; SANT'ANNA, 2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

Figure 14 – **Event Study - Probability for non-white individuals of being in the formal sector in biparental families (Negative shock)**
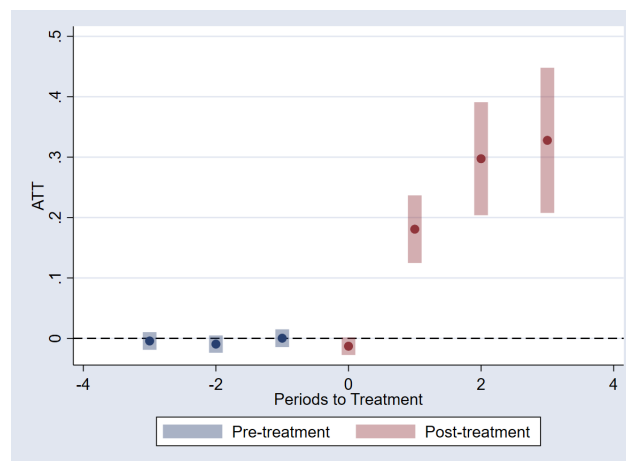

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on non-white individuals employment outcomes (CALLAWAY; SANT'ANNA, 2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed through PNADc.

5.1.3 Mother's education

Now, the sample will be divided into two groups: young people from families where the mother has at least completed high school and young people from families where the mother does not have completed high school. As the mother's education can be a good socioeconomic indicator, we will analyze these groups separately.

For individuals from families with a mother who has a higher level of education, the probability of being employed is practically the same as being in the formal sector, as can be seen in figures 15 and 16. For young people from families where the mother has a lower level of education in figures 17 and 18, the probability of being employed is slightly higher than the first group, but the formal sector has a considerably lower ATT and this increases over time, diverging from the decreasing trajectory of the first group.

Figure 15 – **Event Study - Probability for individuals with higher educated mothers of being employed in biparental families (Negative shock)**
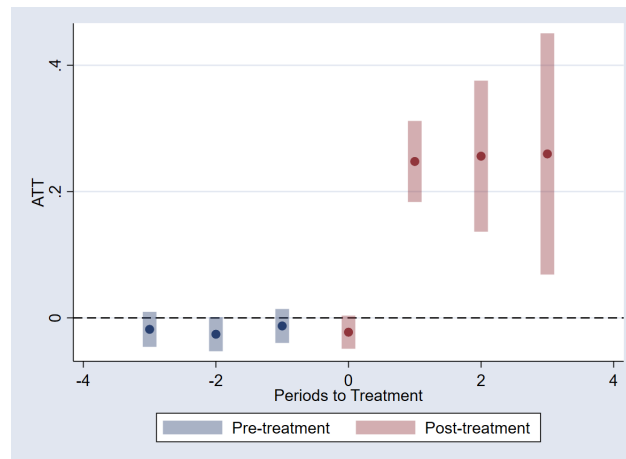

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on individuals with higher educated mothers employment outcomes (CALLAWAY; SANT'ANNA, 2021). The treatment group comprises youth from families that the mother/father lost their job, while the control group is defined among youth that both parents remained employed.

Figure 16 – **Event Study - Probability for individuals with higher educated mothers of being in the formal sector (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on individuals with higher educated mothers employment outcomes (CALLAWAY; SANT'ANNA, 2021). The treatment group comprises youth from families that the mother/father lost their job, while the control group is defined among youth that both parents remained employed.

Figure 17 – **Event Study - Probability for individuals with lower educated mothers of being employed in biparental families (Negative shock)**
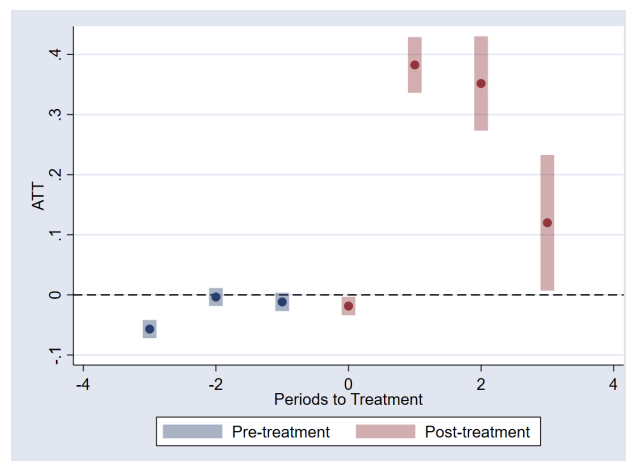

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on individuals with lower educated mothers employment outcomes (CALLAWAY; SANT'ANNA, 2021). The treatment group comprises youth from families that the mother/father lost their job, while the control group is defined among youth that both parents remained employed.

Figure 18 – **Event Study - Probability for individuals with lower educated mothers of being in the formal sector (Negative shock)**

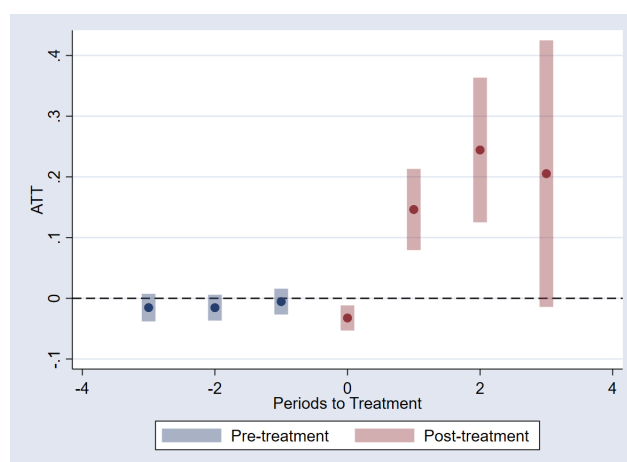
Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on individuals with higher lower mothers employment outcomes (CALLAWAY; SANT'ANNA, 2021). The treatment group comprises youth from families that the mother or the father lost their job, while the control group is defined among youth that both parents remained employed.

5.1.4 Age range

As our sample has an age range that encompasses young people at different stages of life, we will analyze separately the group of young people aged 16 to 22 and those aged 23 to 29.

As we can see in figures 20 and 22, there are no major changes in terms of the probability of participating in the formal sector among individuals in these two groups. However, individuals in the 23 to 29 year old group have a greater increase in the probability of being employed than the 16-22 year old group, as can be seen in figures 19 and 21.

Figure 19 – **Event Study - Probability for individuals with 16-22 years old of being employed in biparental families (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on individuals (16-22) employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed.

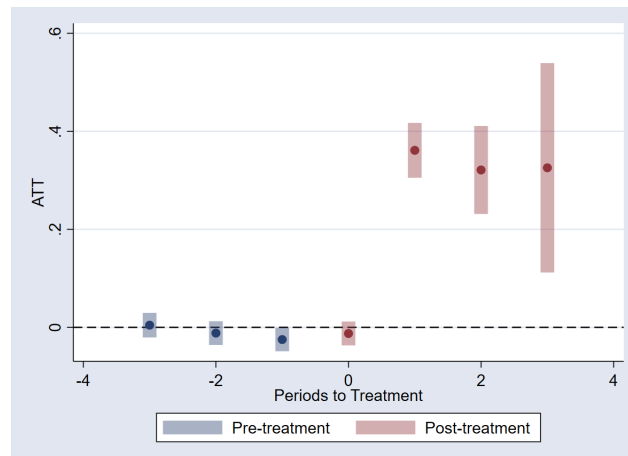Figure 20 – **Event Study - Probability for individuals with 16-22 years old of being in the formal sector in biparental families (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on individuals (16-22) employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed.

Figure 21 – **Event Study - Probability for individuals with 23-29 years old of being employed in biparental families (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on individuals (23-29) employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed.

Figure 22 – **Event Study - Probability for individuals with 23-29 years old of being in the formal sector in biparental families (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on individuals (23-29) with higher lower mothers employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father lost their job or went to inactivity, while the control group is defined among youth that both parents remained employed.
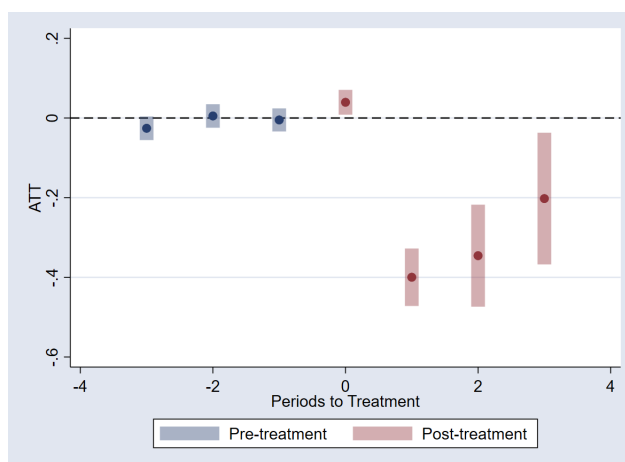
5.1.5 Monoparental Families

Similar to the case of biparental families, we observe that, overall, a shock of job loss or transition to inactivity by either the father or mother increases youth participation in the labor market, including the probability of being employed in the overall market and specifically in the formal sector.

As in the previous results, the shock increases the probability of being employed, reaching an ATT with the value between 0.35 and 0.4, which is higher than the biparental scenario. This probability decreases over time but remains positive (Figure 25). In other words, young individuals from single-parent families may have to enter the job market to mitigate the effects of the negative shock more than those from biparental families, which makes sense since there are fewer income opportunities within the family.

For the probability of being in the formal sector, in the two interviews following the shock, this probability becomes around 0.1 of being in the formal

sector. There is a different behavior than the two-parent scenario, this probability of the formal sector is considerably lower in the quarter following the shock and it follows an increasing rather than decreasing trajectory (Figure 26).

Figure 23 – **Event Study - Probability of being employed in monoparental families (Negative shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on youth employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father lost their job or went to inactivity, while the control group is defined among youth that parents remained employed.

Figure 24 – **Event Study - Probability of being in the formal sector in mono-parental families (Negative shock)**
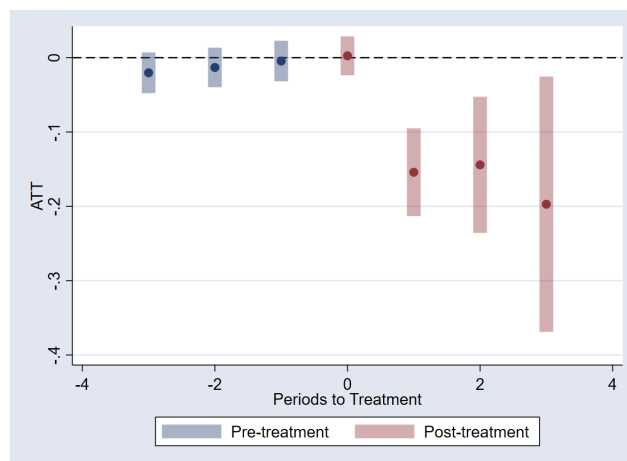

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job loss on youth employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father lost their job or went to inactivity, while the control group is defined among youth that parents remained employed.

5.2 Positive Shocks

5.2.1 Gender

As can be seen in figures 25 and 27, the probability of women being employed after the shock is considerably lower than that of men considering the first quarters after the shock. This difference between men and women becomes less clear over time, mainly due to the high standard deviations of the event study for men. In proportion to what we see in the negative shock, the discouraging effect of being in the job market may be greater for women than for men.

Regarding participation in the formal sector of both groups, as well as the main result, there is no positive or negative inclination in relation to the shock, as shown in figures 26 and 28.

Figure 25 – **Event Study - Probability for women of being employed in bi-parental families (Positive shock)**
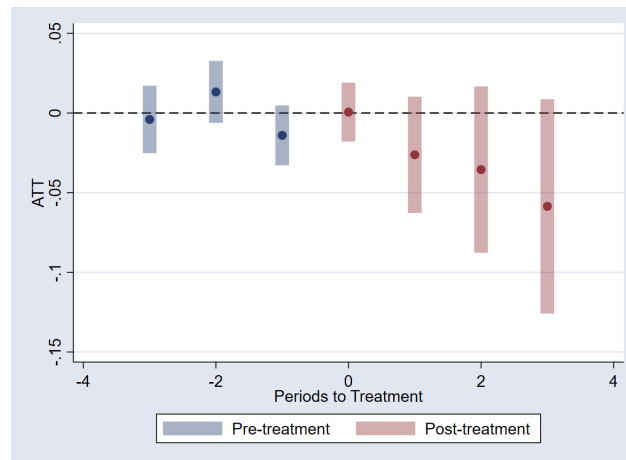

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on women employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 26 – **Event Study - Probability for women of being in the formal sector in biparental families (Positive shock)**
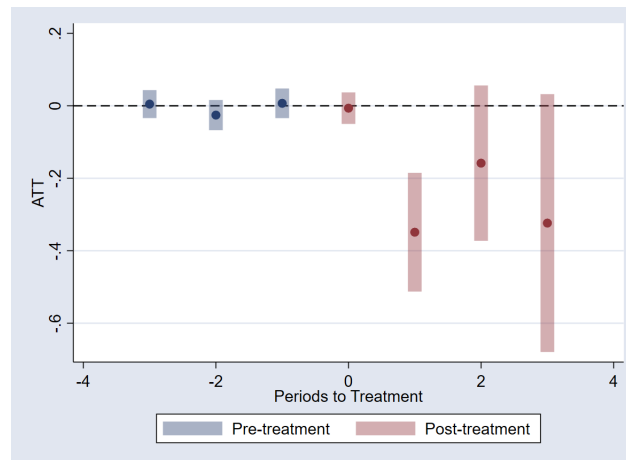

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on women employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 27 – **Event Study - Probability for men of being employed in biparental families (Positive shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on men employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

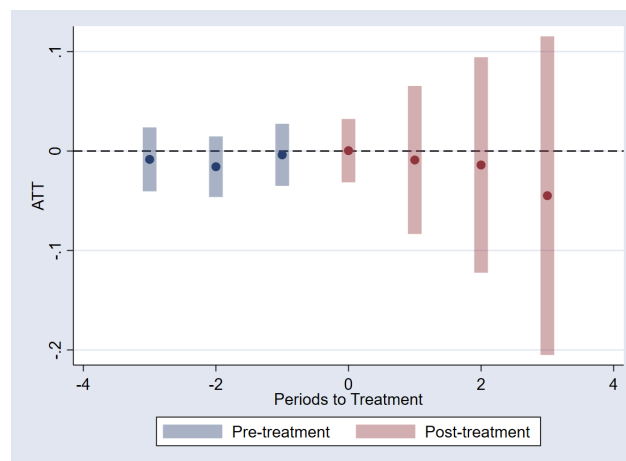Figure 28 – **Event Study - Probability for men of being in the formal sector in biparental families (Positive shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on men employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

5.2.2 Race

After the positive shock, although the probability of non-white individuals (Figure 29) being employed is lower than that of white individuals in the subsequent interview (Figure 31), over the following interviews, the standard deviation is such that it's not possible to determine the sign of the ATT. On the other hand, for non-white individuals, the probability remains negative over time, while for white individuals, we cannot determine the sign of the ATT precisely due to high standard deviations.Figures 30 and 30 again demonstrate nonspecific results regarding the formal sector for both groups.

Figure 29 – **Event Study - Probability for white individuals of being employed in biparental families (Positive shock)**
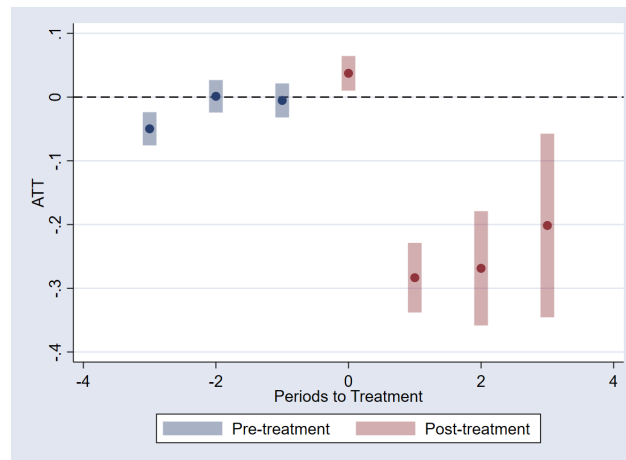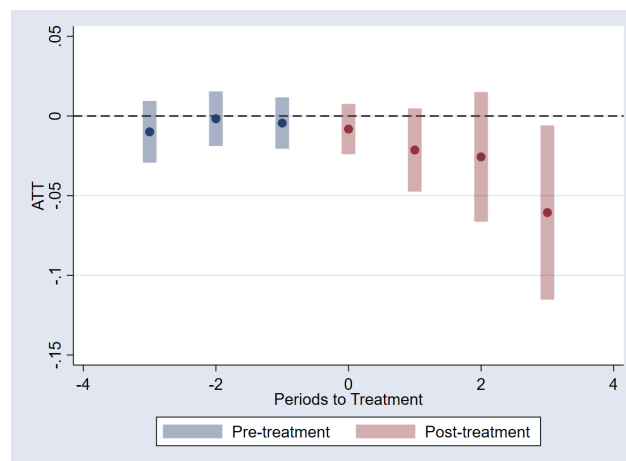

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on white individuals employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 30 – **Event Study - Probability for white individuals of being in the formal sector in biparental families (Positive shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on white individuals employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 31 – **Event Study - Probability for non-white individuals of being employed in biparental families (Positive shock)**
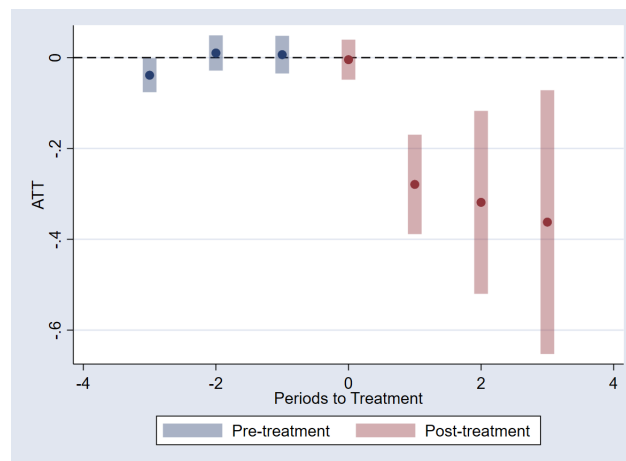

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on non-white individuals employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 32 – **Event Study - Probability for non-white individuals of being in the formal sector in biparental families (Positive shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on non-white individuals employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.
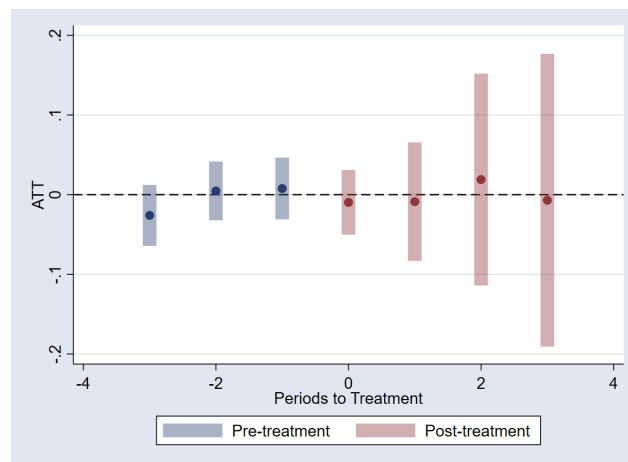
5.2.3 Mother's education

Both individuals from families where the mother has higher education (Figure 33) and those from families where the mother has lower education (Figure 35) exhibit a negative ATT in all interviews following the shock. However, the first group consistently shows a lower ATT on average than the second group at each time point. These ATT values in both cases tend to have larger standard deviations over time, becoming less precise, but never reaching positive values. Following Figures 34 and 36, we also cannot glean much information about the youth's participation in the formal sector.

Figure 33 – **Event Study - Probability for individuals with higher educated mothers of being employed in biparental families (Positive shock)**
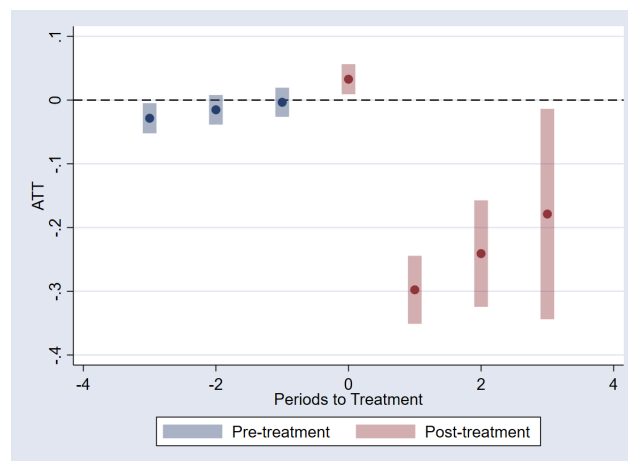

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on individuals with higher educated mothers employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 34 – **Event Study - Probability for individuals with higher educated mothers of being in the formal sector in biparental families**
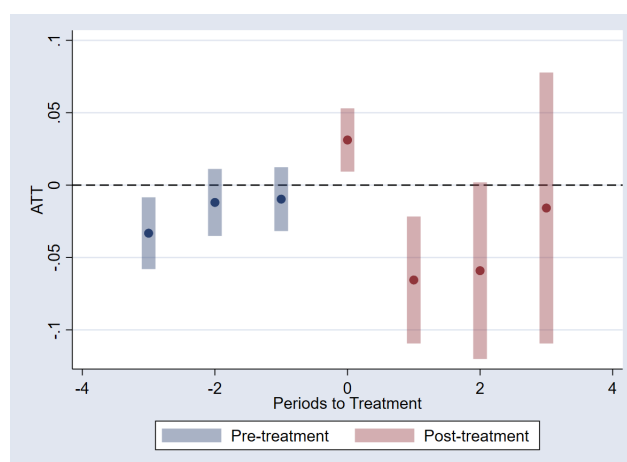

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on individuals with higher educated mothers employment outcomes. The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 35 – **Event Study - Probability for individuals with lower educated mothers of being employed in biparental families**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on individuals with lower educated mothers employment outcomes. The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 36 – **Event Study - Probability for individuals with lower educated mothers of being in the formal sector in biparental families**
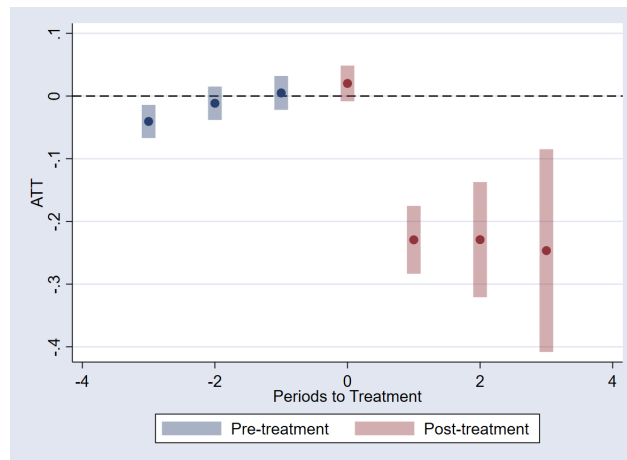

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on individuals with lower educated mothers employment outcomes. The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.
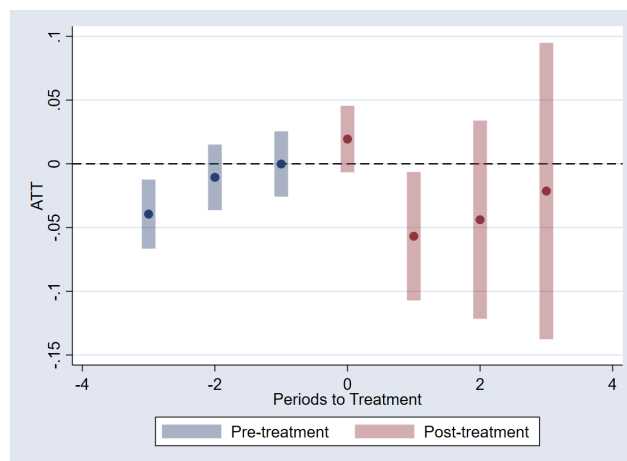
5.2.4 **Age range**

Regarding the division between the age groups of 16-22 years and 23-29 years, the first group, despite experiencing a more significant reduction in the ATT in the subsequent interview following the shock, exhibits a trajectory with larger standard deviations, potentially approaching zero over time (Figure 37). Meanwhile, the second group shows, on average, a progressively more negative ATT across all interviews (Figure 39). Figures 38 and 40 continue to demonstrate similar patterns concerning participation in the formal sector, and we cannot draw relevant conclusions from them.

Figure 37 – **Event Study - Probability for individuals with 16-22 years old of being employed in biparental families (Positive shock)**
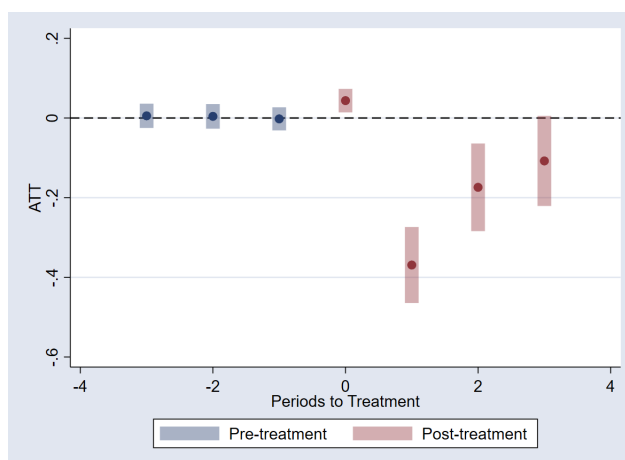

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on on individuals (16-22) employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 38 – **Event Study - Probability for individuals with 16-22 years old of being in the formal sector in biparental families (Positive shock)**
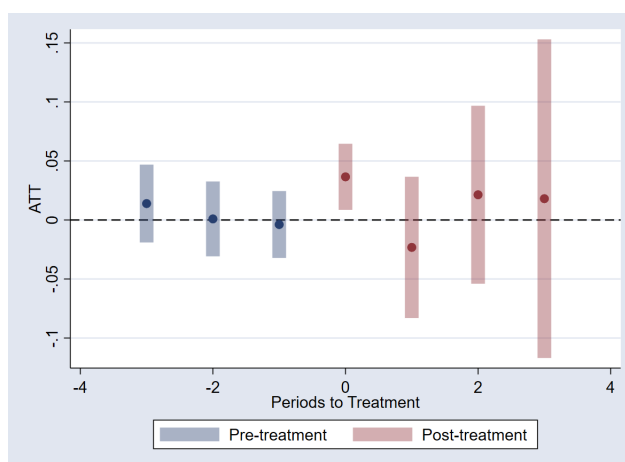

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on on individuals (16-22) employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 39 – **Event Study - Probability for individuals with 23-29 years old of being employed in biparental families (Positive shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on on individuals (23-29) employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

Figure 40 – **Event Study - Probability for individuals with 23-29 years old of being in the formal sector in biparental families (Positive shock)**
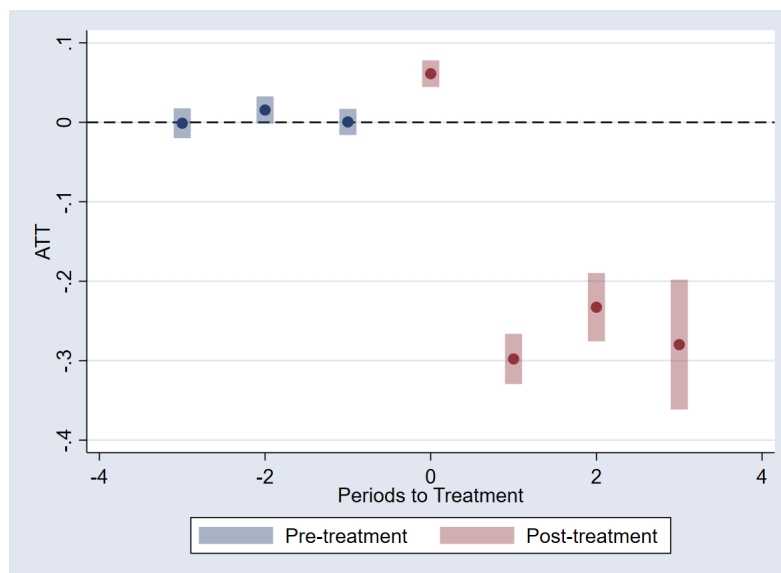

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on on individuals (23-29) employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother/father that were seeking for a job gained one, while the control group is defined among youth that both parents remained unemployed.

5.2.5 Monoparental Families

In the case of single-parent families, there is an increasing trend in the probability of being employed in the labor market. However, this trend reverses in the interview following the shock, reaching a participation of -0.3 (Figure 43).
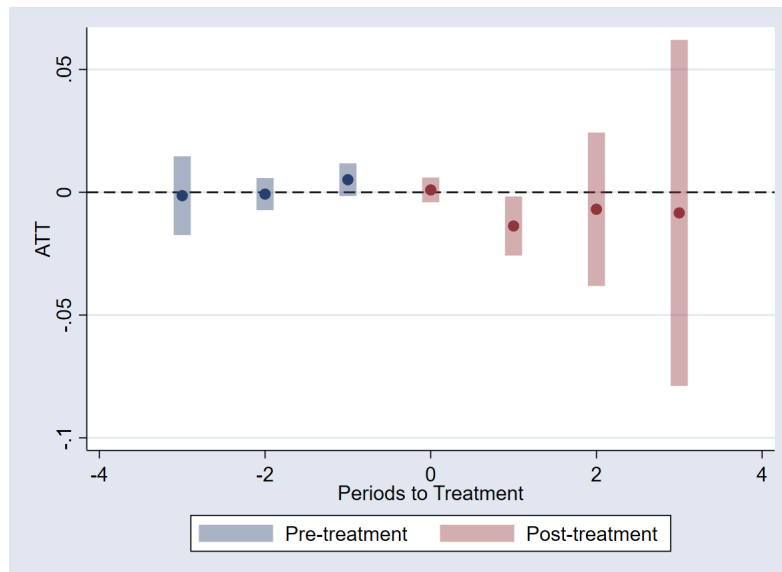
Regarding the probability of being in the formal sector, the behavior closely mirrors that of biparental families. In the interview following the shock, this participation turns negative, but in all other periods, we cannot draw any conclusions about the sign (Figure 44).

Figure 41 – **Event Study - Probability of being employed in monoparental families (Positive shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father that were seeking for a job gained one, while the control group is defined among youth that parents remained unemployed through PNADc.

Figure 42 – **Event Study - Probability of being in the formal sector in mono-parental families (Positive shock)**

Source: own elaboration using data from PNADc (2012-2019). Note: This figure presents dynamic treatment effects of parental job gain on employment outcomes, as estimated using Callaway e Sant'Anna (2021). The treatment group comprises youth from families that the mother or the father that were seeking for a job gained one, while the control group is defined among youth that parents remained unemployed through PNADc.

6 Discussion and Conclusions

In the context of the negative shock — namely, the job loss or transition to inactivity of either parent of hose who had been in the same job for six months or more — we observe a rise in youth engagement in the labor market. This increase holds true even when examining participation in the formal sector.

When we delve into the analysis of heterogeneities, women exhibit effects of smaller magnitude than men, showing a positive probability (with a decreasing trajectory) post-shock of being employed and in the formal sector, but on average, with smaller magnitude than men. The same occurs for white individuals, those whose mothers have lower education, and individuals between 23-29 years old.

Comparing the cases of biparental and monoparental families in the negative shock scenario, we observe that for monoparental families, the probability of being employed after the shock increases more in the interview following the moment of the shock. Additionally, participation in the formal sector also experiences an increase, but at the same time, undergoes a greater reduction over time. From the third interview post-shock onwards, it is no longer clear that the probability of youth participation in the formal sector is positive.

In the case of positive shocks - namely, the transition to employment for a parent who had been actively seeking a job for at least six months - it generally reduces the probability of youth employment. However, the conclusion is inconclusive regarding the probability of the youth being in the formal sector.

Similarly to men, non-white individuals, those with mothers with lower education, and those in the age group (23-29) tend to participate more in the labor market to mitigate the effects of the negative shock. These same groups of people tend to be discouraged from the decision to work when there is a positive shock.

Comparing youth from single-parent and biparental families in the positive shock scenario, the behavior regarding the probability of being employed is similar, showing a reduction in this probability. However, this effect is more enduring and has a greater magnitude for youth from biparental families. As for the probabil-

ity of being in the formal sector, the effect is similar in both cases, resulting in inconclusive outcomes.

Finally, this study endeavors to contribute to the literature on household dynamics and youth in the labor market, employing the difference-in-differences methodology. It yields significant results highlighting the youth's response to a parental employment shock. It is noteworthy that separate analyses were conducted for negative and positive shocks, as it was premised that these effects may not necessarily be asymmetric, as observed in the case of youth participation in the formal sector.

The most significant aspect is that this study provides clear evidence of the added work effect for young people in Brazil, and by utilizing PNADc, it does not exclude informal workers from the analysis. The study also sought to highlight the groups most affected by the negative shock, many of which are already from socioeconomically vulnerable groups (such as non-white individuals and those with mothers with lower education levels), and would possibly be the ones to benefit most from policies guaranteeing employment for adults.

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