



Labor market transitions and the emancipation of young people

UNIVERSITY OF THE BASQUE COUNTRY UPV/EHU

MASTER IN ECONOMICS: EMPIRICAL APPLICATIONS AND POLICIES

Author: Ibone Bilbao Toucet

Supervisors: Alaitz Artabe Echevarría and Javier Gardeazabal Matías

Date: 29th of July, 2022



Abstract:

Youth emancipation is defined as the state of independence that young people achieve when they have a job and can afford housing independent of their parents. In the last decade, Spain shows a growing number of young people who are not emancipated, while at the same time it is well above the average European age of emancipation. The delay of young people to adulthood generates problems for both economic growth and the welfare of young people. Among the factors that most affect this delay are the difficulties of access to employment and the quality of employment. Using data from the Spanish Survey of Living Conditions collected by the Instituto Nacional de Estadística, I analyze how labor market transitions affect the probability of leaving the parental home. For this purpose, I use Abadie´s (2005) Semiparametric difference-in-difference to investigate the relationship between the employment situation of young people and their residential emancipation.

Keywords: youth emancipation, residential emancipation, adulthood, labor market transitions, causal inference, Semiparametric difference-in-difference, survey of living conditions.

Laburpena:

Gazteen emantzipazioa hauek lana dutenean eta gurasoengandik independentea den etxebizitza bat ahalbidetu dezaketenean lortzen duten independentzia-egoera da. Azken hamarkadan, emantzipatu gabeko gazteen kopurua gero eta handiagoa da Espainian, eta aldi berean, emantzipatzeko adina Europako batez bestekoaren oso gainetik dago. Gazteen helduaroa atzeratzeak arazoak sortzen ditu, bai hazkunde ekonomikorako, bai gazteen ongizaterako. Atzerapen horri gehien eragiten dioten faktoreen artean, enplegua lortzeko zailtasunak eta enpleguaren kalitatea daude. Estatistikako Institutu Nazionalak jasotako Espainiako Bizi Baldintzei buruzko Inkestako datuetan oinarrituta, lanmerkatuko trantsizioek gurasoen etxea uzteko probabilitateari nola eragiten dioten aztertuko dugu. Horretarako, ikerketa enpiriko bat egingo da, Abadie-ren (2005) "Semiparametric Dif-in-Diff" metodoa aplikatuz. Metodo honek aukera emango digu gazteen lan-egoeraren eta haien emantzipazioaren arteko erlazioa ezagutzea.

Hitz gakoak: gazteen emantzipazioa, egoitza-emantzipazioa, helduaroa, lan-merkatuko trantsizioak, inferentzia kausala, Difference-in-Difference semiparametrikoa, bizibaldintzen inkesta.

Contents

1. Introduction
2. Theoretical framework
3. Data, treatments and methodology 6
3.1. Data
3.2. Treatments
3.3. Methodology
4. Main findings
4.1. Robustness checks
4.1.1. Covariate balance
4.1.2. Doubly robustness check
5. Conclusion and discussion
Bibliography
Appendix
List of figures
Figure 1: Evolution of the emancipation rate in Spain between 2010 and 2019 3
Figure 2: Evolution of the housing tenure regime of young people in Spain between
2010 and 2019
Figure 3: Labor market characteristics among the total population and young population in 2019
Figure 4: Emancipation rate of the Spanish young population by employment situation in 2019 (percentage)
Figure 5: Emancipation rate of the Spanish young population by employment situation in 2019 (percentage)
Figure 6: Kernel probability density function estimates of the propensity score 17

List of tables

Table 1: Descriptive Statistics	. 9
Table 2: Effect of labor transitions on the probability of emancipation	14
Table 3: Normalized mean differences and standard deviation of the difference	16
Table 4: Effect of labor transitions on the probability of emancipation conditional on	
several covariates	19
Table 5: Propensity score of treatment T1 (From unemployment to employment)	25
Table 6: Propensity score of treatment T2 (From temporal to indefinite contract)	26
Table 7: Propensity score of treatment T3 (From part-time to full-time contract)	27

1. Introduction

The word «emancipation», which comes from Latin, means liberation from any kind of subordination or dependence of one thing in relation to another (Real Academia Española, 2022). In the case of the emancipation of young people, this term is defined as the state of independence young people achieve when they have a job and can afford housing independent of their parents. Therefore, emancipation could be considered as a process of integration in which the acceptance and development of new roles begins. These new roles are associated with new responsibilities, the responsibilities assigned to the adult (Garcia & Martínez, 2012).

The transition to adulthood is characterized, among other things, by leaving the parental home to start an independent household (van den Berg et. al, 2018). In Spain, the age of emancipation has been delayed as a result of both, cultural and socioeconomic factors. According to Eurostat data (Eurostat, 2020), the average age of emancipation in Spain is 29.5 years, more than three years above the EU-27 average of 26.2, ranking sixth from the bottom among European Union countries (Pérez et. al, 2020). Concurrent, the percentage of young people who are emancipated has decreased significantly in the last decade.

Employment enables young people to cover all the expenses involved in moving into a household independent of their parents. However, youth employment has been a huge challenge for the Spanish economy in the years following the 2008 crisis. In this sense, young people in Spain have been affected by high unemployment rates and unpleasant working conditions. In addition, Spanish youths are overqualified, which has a worrying effect on productivity, unemployment, motivation, etc. (Henar et. al, 2015). Indicators such as temporary employment, part-time employment, average wages and overqualification reveal increasingly precarious conditions that hinder the ability to carry out their independent life projects (Pérez et. al, 2020).

The main objective of the research is to analyze the emancipation situation of young people in Spain, detecting the effect of labor market transitions on leaving the parental home. Labor market transitions are understood as changes in employment status, i.e., moving from unemployed to employed, from temporary to permanent contract and from part-time to full-time contract. This allows us to know what weight the employment

situation of young people has when it comes to emancipation, in a context in which unemployment, instability and precariousness affect them disproportionately.

Therefore, in this study I hypothesize that residential emancipation is related to changes in the employment status of young people, and we use the methodology of causal inference to test this hypothesis. Specifically, labor market transitions are used as a treatment variable and the Semi Parametric Difference-in-Differences (SDID) method of Abadie (2005) is used to estimate the treatment effects. This method is applied to data from the Spanish Survey of Living Conditions collected by the *Instituto Nacional de Estadística* (INE) between the years 2010 and 2019.

The study is divided into six sections. In Section 2, we present the background and current status of youth emancipation in Spain, including the most relevant previous research on this topic. Section 3 describes the data set used, the treatments and the method of analysis. Then, in Section 4, the results are presented as well as the robustness checks that provide validity to the analysis. Finally, in Section 5, the conclusions and discussion on the subject are presented.

2. Theoretical framework

Spain has experienced one of the biggest boom-bust cycles since the beginning of the 21st century (Ahn & Sánchez-Marcos, 2015). During the first years of the 2000 era, the Spanish economy was booming thanks to the construction sector and private services. Together, the percentage of emancipated youth grew every year as a consequence of the low level of youth unemployment and the facilities to obtain mortgages for home ownership.

However, young people were also the first to feel the effects of the financial crash in 2008, which caused many of them to lose their jobs or find themselves trapped in jobs with low wages and little security (Gentile, 2015). In 2013, 26% of the Spanish population was unemployed, reaching the highest unemployment rate in its modern age history and never contemplated in any developed country of similar size (Ahn & Sánchez-Marcos, 2015). In this context of job insecurity and precariousness, many young people were forced to stay with their parents or move to rental housing as a less risky option than home ownership (García & del Olmo, 2021).

The emancipation rate is the percentage of young people who live independently from their parents in their own household. *Figure 1* displays the evolution of the emancipation rate among young Spaniards between 16 and 35 years of age from 2010 to 2019, which shows a decrease of more than 10 percentage points between the two years, from 41.9% to 31.6%.

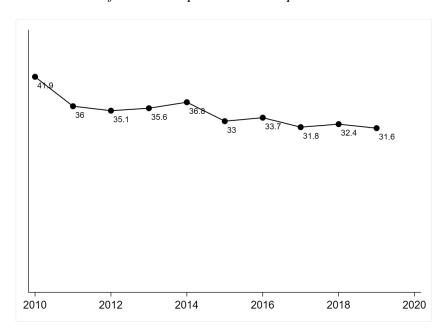


Figure 1: Evolution of the emancipation rate in Spain between 2010 and 2019.

Source: Living Conditions Survey and own elaboration.

Among the factors that most affect the transition of adulthood of young Spaniards are the difficulties in accessing employment and the quality of employment. The typical forms of employment of young people, especially in their first jobs, are characterized by temporary employment, partiality and increasingly lower wages (Garcia & Martínez, 2012). Employment stability and security are determining factors for the emancipation of young people.

Martínez-Granado and Ruiz-Castillo (2002) showed that unemployment has a significant negative effect on emancipation for the case of Spain. Consequently, according to the survey data on living conditions from the INE in 2019, in Spain the rate of emancipation is higher in young people between the ages of 16 and 35 who are employed in the labor market (49.0%) compared to those who are unemployed (34.4%) or inactivity (10.6%). Additionally, a study by Becker et al. (2010) affirms that job insecurity delays leaving the parental home.

The study conducted by Moreno (2018) showed that employment status of men and women affects leaving the parental home differently in Spain. For men, being employed and in good conditions increases the probability of being emancipated, while for women this is not significant. In contrast, the main predictor of leaving home among women is being married. In this sense, the author suggests that a certain proportion of women leave the family home earlier to start living with a partner and move from being economically dependent on their family to their partner, thus reproducing the social expectations of forming a family.

The effect of job instability and precariousness reinforces the rental demand as well as decreases the purchase of housing by the young group. The rental is presented as an opportunity for emancipation without risks or long-term commitments. *Figure 2* shows the evolution of the housing tenure regime of young people in Spain between 2010 and 2019, displaying the percentage of young homes that are proprietary and rented or leased. According to the survey on living conditions, the percentage of home ownership has decreased by around 19% among young people in the last decade.

Figure 2: Evolution of the housing tenure regime of young people in Spain between 2010 and 2019



Source: Living Conditions Survey and own elaboration

Nevertheless, the rental market presents several problems. García & del Olmo (2021) analyze the conditions in which young households access rentals in Spain by means of various indicators of the effort necessary to access housing. These two authors claim that

this effort is related to the rental price and the purchasing power of the household. In this sense, they verified that due to the conditions of the housing market in Spain; lack of supply, high rents and low wages, the efforts to access housing are very high for the young population. Therefore, they state that there is a proportion of the rental demand by this group that is not being satisfied, and if it is, they do so in an unsatisfactory way.

The delay of young people to adulthood in Spain brings with it both economic and social problems in the medium-long term. On the one hand, late emancipation is directly related to a low fertility rate, generating an increasingly aging population and hampering the sustainability of pension systems (Becker et al., 2010). This makes young people a "relegated minority" (Tezanos et al., 2008). In addition, youths' delayed formation of households prevents them from materializing new vital projects (Barcelo & Villanueva, 2019) such as buying a house, moving in with their partner, getting married, having their first child, etc. (Moreno et al., 2012).

On the other hand, the beginning of adulthood is determined by certain social events that suppose a high degree of independence and responsibility for the individual. According to Arciniega and de Dios (2005), besides producing socioeconomic changes, emancipation also affects individuals psychologically. These authors claim that emancipation allows young individuals to gain mental and emotional independence, mature enough to fend for themselves in their own affairs. Therefore, not being able to emancipate may affect a person's human development as well as self-esteem.

The scope of employment and housing policies by the welfare state are key to induce emancipation. Esping-Andersen (1990) developed a classification of the typologies of models or regimes of welfare states in Europe. This classification was expanded by Leibfried (1992) and Ferrera (1996), who incorporated the Mediterranean model of emancipation into it.

The Mediterranean states are distinguished by offering reduced social spending as well as inefficient employment policies. This scant social protection makes the family a fundamental element for the provision of well-being and security among its members, as well as for social cohesion. In addition, the Mediterranean countries have a limited supply of private rentals and an even smaller supply of social housing. Therefore, the housing market ends up depending exclusively on their employment and family support capacity (Bosch Meda, 2015).

3. Data, treatments and methodology

3.1. Data

We use the Spanish Survey of Living Conditions 2010-2019 (Encuesta sobre Condiciones de Vida, ECV) conducted by the *Instituto Nacional de Estadística* (INE). ECV shows a systematic production of statistics on community income and living conditions. Households are chosen using stratified random sampling from census sections and each household has a weight in the sample proportional to that observed in the population.

ECV is a rotating panel in which the sample is made up of four independent subsamples, each of which is a four-year panel. Each year one of the sample panels is renewed. The panel collects information on individuals over the age of 16 living in one of the households interviewed between some specific years. In each four-year panel, nearly 12,000 households are interviewed. However, not all households remain in the panel during the observed four years, as some of them leave the sample.

The analysis focuses on the following binary outcome: leaving the current household. The outcome variable has a value of 1 if the individual leaves the current household and 0 if the individual still remains in it in the year the interview is carried out. Individuals who leave the current household, move to a private household within the country, to a collective household or institution within the country or abroad. Although there are some of the individuals who leave the current household but continue in the sample interviewed in the new household, approximately 88% of them leave the sample.

In addition to the individual's situation in the household, the ECV contains information about two types of variables. On the one hand, it reports information about the age, gender, educational level, employment status and marital status of each household member. On the other hand, the ECV also includes information at the household level, such as the autonomous community in which the household resides, population of the town of residence and total annual income. Therefore, both individual level and household level covariates are considered for the analysis.

The employment situation and the quality of employment are relevant factors for young people when making the decision to emancipate. If we analyze the characteristics of the labor market among young people, we can observe high rates of unemployment, temporary and part-time employment and underemployment. Comparing these rates with

the total subset of the Spanish population (see *Figure 3*) we can appreciate large differences with respect to the youth group.

The unemployment rate is 5% higher for young individuals than for the whole population in Spain, with 15.6% of young people out of work compared to 10.6% of the total population. As for the temporary employment rate, this difference is even greater, with a rate twice as high for young people as for all individuals (20.3% of all jobs are temporary compared to 40.9% of jobs held by young people). In the case of part-time jobs, youth also have %5 more part-time jobs than the population as a whole, with 11.2% of total jobs and 16.8% of youth jobs being part-time.

40.9

00

10.6

10.6

11.2

Unemployment rate

Temporary employment rate

Partial employment rate

Total population

Young population

Figure 3: Labor market characteristics among the total population and young population in 2019

Source: Living Conditions Survey and own elaboration

Figure 4 plots the emancipation rate of the Spanish youth in relation to their employment situation in the year 2019. In Spain, the rate of emancipation is higher among young people between 16 and 35 old who are employed, and even higher for those who have indefinite and full-time jobs.

Employed youths have a rate of emancipation 15 points higher than unemployed youths and 5 times higher than inactive youths. Likewise, the percentage of young people who have left the family home differs depending on the stability and quality of employment: young people with indefinite contracts have a 26.2% higher emancipation rate than young people with temporary contracts, while young people who work full time have an emancipation rate 10 points higher than those who work part time.

Figure 4: Emancipation rate of the Spanish young population by employment situation in 2019 (percentage)

Source: Living Conditions Survey and own elaboration

Inactive

Total

Employed

Unemployed

Temporal

Indefinite

Full-time

Part-time

Likewise, as it can be seen in *Figure 5*, the percentage of young people who are emancipated differs by gender and age group. The female population shows a higher rate of emancipation than the male population (36.4% for women and 26.8% for men), with 10% more emancipated women than emancipated men.

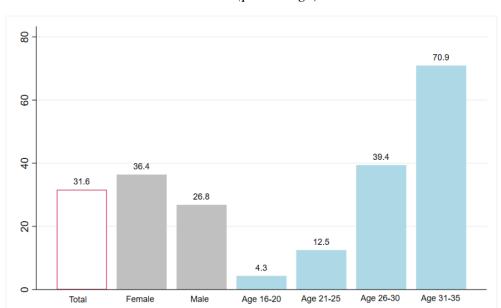


Figure 5: Emancipation rate of the Spanish young population by employment situation in 2019 (percentage)

Source: Living Conditions Survey and own elaboration

Looking at the rates by age groups, it can be seen that the population under 25 years of age shows a very low percentage of young people living on their own (4.3% for young people between 16 and 20 and 12.5% for the population between 21 and 25). However, this percentage rises to 27% for young people between 26 and 30, with almost a quarter of young people emancipated. Finally, the last age range of young people, between 31 and 35, shows the highest percentage with 70.9% of the young population emancipated.

Our analysis aims to observe how labor market transitions affect the decision to leave home among the young population not yet emancipated. Hence, the sample of analysis is restricted to individuals between the ages of 16 and 35 living with their parents. *Table 1* reports all the variables that are considered in the analysis, as well as, their descriptive statistics for the four-year panel from 2016 to 2019. The other panels for the remaining years have data similar to those shown in *Table 1*.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Leave house	0.049	0.216	0	1
Education level				
Primary or less	0.046	0.209	0	1
Lower secondary	0.312	0.463	0	1
Upper secondary	0.367	0.482	0	1
Higher education	0.275	0.447	0	1
Age interval				
From 16 to 20	0.335	0.472	0	1
From 21 to 25	0.335	0.472	0	1
From 26 to 30	0.214	0.410	0	1
From 31 to 35	0.114	0.319	0	1
Gender				
Female	0.451	0.497	0	1
Marital status				
Married	0.011	0.105	0	1
Employment				
status				
Employed	0.333	0.471	0	1
Unemployed	0.164	0.370	0	1
Working				
experience				
0 years	0.100	0.300	0	1
1-3 years	0.212	0.408	0	1
4-6 years	0.100	0.301	0	1
7-10 years	0.066	0.248	0	1
10-15 years	0.038	0.191	0	1
More than 15	0.007	0.085	0	1
Individual income				
0	0.423	0.421	0	1
1-10.000	0.394	0.445	0	1
10.001-15.000	0.104	0.199	0	1
15.001-25.000	0.070	0.030	0	1
>25.001	0.009	0.497	0	1
Household				

income				
1-15.00	0.136	0.343	0	1
15.001-25.000	0.208	0.406	0	1
25.001-35.000	0.195	0.396	0	1
35.001-50.000	0.217	0.412	0	1
50.001-75.000	0.170	0.375	0	1
>75.001	0.074	0.261	0	1
Number of				
hh members	3.840	1.105	1	13
Town size				
High populated	0.494	0.500	0	1
Medium	0.212	0.409	0	1
populated				
Low populated	0.292	0.454	0	1
Region				
Galicia	0.058	0.234	0	1
Asturias	0.035	0.184	0	1
Cantabria	0.047	0.212	0	1
País Vasco	0.027	0.164	0	1
Navarra	0.030	0.172	0	1
La Rioja	0.037	0.188	0	1
Aragón	0.115	0.319	0	1
Madrid	0.054	0.227	0	1
Castilla y Leon	0.056	0.230	0	1
Castilla-La	0.040	0.196	0	1
Mancha				
Extremadura	0.078	0.269	0	1
Cataluña	0.072	0.259	0	1
Comu. Valenciana	0.027	0.162	0	1
Islas Baleares	0.144	0.352	0	1
Andalucía	0.050	0.218	0	1
C.A. Ceuta	0.015	0.123	0	1
CA. Melilla	0.020	0.140	0	1
Canarias	0.052	0.222	0	1

3.2. Treatments

The sample I analyze includes only individuals between 16 and 35 years of age living at a household with their parents. Moreover, in order to observe the effect of labor market transitions on young people, I focus on those individuals between 16 and 35 who have observations in a subsequent year, i.e. the year prior to treatment and the year of treatment. I analyze the effect of three different treatments: changes from employment to unemployment (T1), change from temporary to permanent job (T2) and changes from part-time to full-time job (T3). The analyses of the three treatments use different subsamples, since each of them incorporates individuals who meet different conditions.

The individuals included in the subsample used in the analysis of T1 are unemployed in the year prior to treatment. The treatment group incorporates the individuals in the subsample who are employed in the second year. Consequently, the treatment group T1 is composed of those young people who were unemployed in the first year and have

switched to being employed in the second year. In turn, individuals belonging to the control group are those who remain unemployed in the second year.

The subsamples used for both T2 and T3 analysis are composed of individuals who are employed in both years. In the case of treatment T2, all individuals in the subsample have a temporary contract in the first year. The treatment group is defined as those individuals who go from having a temporary contract in the first year to having a permanent contract in the second year. In contrast, individuals who are included in the control group remain on a temporary contract in the second year.

Finally, in the analysis of treatment T3, all individuals in the subsample had a part time contract in the pre-treatment period. The treatment group are those who switch from having a part-time contract in the first year to having a full-time contract in the second year. Thus, the control group is defined as those individuals who have a part-time contract in both the first and second year.

3.3. Methodology

The methodology used in the analysis is based on Abadie's (2005) Semiparametric Difference-in-Differences method as described by Gardeazabal and Polo-Muro (2022) to estimate household consumption response to labor market shocks. In this case, I want to evaluate the impact of each treatment on the outcome of leaving household (Y_i) over the observed individuals. Individuals belong to either the treated group $(D_i = 1)$ or the untreated group $(D_i = 0)$ and they are observed in two time periods (t = 0, 1), where 0 is the pre-treatment period and 1 the post-treatment period.

The effect of the treatment is represented in terms of potential outcomes: $Y_i^0(t)$ means the potential outcome when the individual i is untreated at time t and $Y_i^1(t)$ means the potential outcome when the individual i is treated at time t. Thus, the individual effect of the treatment on leaving the household is defined as $Y_i^1(t) - Y_i^0(t)$. However, it is impossible to observe both potential outcomes for any particular individual i since we cannot observe individuals in the two treatment statuses in the same t period. For this reason, I focus on estimating the average effect on all observed individuals.

Suppose the treatment is randomly assigned over the population so that the treated and untreated groups were probabilistically equivalent before applying the treatment. In this case, the average treatment effect (ATE) on an outcome of interest would be defined as $\mathbb{E}(Y_i^1 - Y_i^0)$, where Y_i^1 and Y_i^0 are the potential outcomes under treated and untreated

(Rubin, 1974). Since we are in a randomized experiment the ATE can be calculated by estimating β and using the following OLS regression

$$Y_i = \alpha + \beta D_i + u_i \tag{1}$$

where u_i is a zero mean disturbance and coefficient β measures the average outcome difference between the treated and untreated groups. Under randomized assignment, coefficient β captures the ATE as the treatment status is not correlated with the disturbance term u_i . Nevertheless, in my case, treatments are not randomly assigned since treated and untreated individuals have permanent average differences in outcome. Hence, the treatment indicator is correlated with confounding factors included in the disturbance term.

I am not working with random data; therefore, other methods of causal inference must be used. The difference in difference estimator estimates the difference in average outcome in the treatment group before and after the treatment minus the difference in average outcome in the control group before and after the treatment,

$$\bar{\delta}_{DD} = \bar{Y}^1(1) - \bar{Y}^1(0) - (\bar{Y}^0(1) - \bar{Y}^0(0)). \tag{2}$$

In order to obtain an unbiased estimate of δ_{DD} , the diff-in-diff method requires the assumption of parallel trend. This assumption states that conditional on the covariates, the mean outcomes for treated and untreated groups would have followed a parallel path in absence of the treatment,

$$\mathbb{E}\left[Y_i^0(1) - Y_i^0(0)|X_i, D_i = 1\right] = \mathbb{E}\left[Y_i^0(1) - Y_i^0(0)|X_i, D_i = 0\right]. \tag{3}$$

This assumption may not hold because the distribution of pretreatment covariates is different in the treated and untreated groups and this will cause the evolution of the outcome to be different for each group.

Abadie (2005) SDID method takes into account the imbalance of covariates between the two groups to obtain the estimation. This method uses a simple weighting scheme to obtain the average treatment effect on the treated (ATET) and it is directly based on the propensity score $P(D_i = 1 \mid X_i)$. Thus, weights depend on the propensity score, which is defined as the probability of receiving treatment conditional on the pre-treatment covariates. In other words, this scheme uses the Inverse Probability Weighting (IPW) for weighting down the over represented observations and weighting up the underrepresented

observations. According to Abadie (2005), if the (conditional) parallel trends condition holds, $P(D_i = 1 \mid X_i) < 1$ and $P(D_i = 1) > 0$, then the ATET can be calculated as

$$\mathbb{E}\left[Y_i^1(1) - Y_i^0(1) \mid X_i, D_i = 1\right] = \mathbb{E}\left[\left(Y_i(1) - Y_i(0)\right) \frac{D_i - P(D_i = 1 \mid X_i)}{(1 - P(D_i = 1 \mid X_i))P(D_i = 1)}\right]. \tag{4}$$

Equation 4 proposes a simple two-step procedure to estimate the average effect of the treatment on the treated. Firstly, I estimate the propensity score, $P(D_i = 1 \mid X_i)$, by using a logistic regression and compute the predicted probabilities of treatment, $\hat{P}(X_i)$, for the sample. Secondly, I run a weighted regression of the form

$$Y_i = \alpha + \beta D_i + u_i \tag{5}$$

with weights defined as $w_i = \frac{D_i}{\hat{P}} + \frac{\hat{P}(X_i)(1-D_i)}{(1-\hat{P}(X_i))\hat{P}}$, where \hat{P} represents the unconditional probability of receiving treatment. Once I regress the outcome on the treatment indicator, I get the estimation of β , which measures the weighted difference in means between the treatment groups, i.e., the ATET.

My application of the SDID extends equation 5 to add the covariates as in

$$Y_i = \alpha + \beta D_i + (X_i - \bar{X})'\theta + D_i(X_i - \bar{X})'\gamma + u_i \tag{6}$$

where the covariates enter the equation demeaned to ensure that the coefficient of the treatment dummy continues as the treatment effect. By the balancing property of the propensity score, in the weighted sample, covariates and the treatment indicator are orthogonal, so the weighted least squares estimate of the treatment effects from equation 5 and 6 should be theoretically identical and in practice very similar. The extended specification 6 should display a somewhat better fit than specification 5, and smaller standard error. Equation 6 also allows checking for significance of the treatment interaction terms to determine whether treatment effects are heterogeneous.

4. Main findings

Table 2 reports the ATET estimates using the SDID method. These estimates indicate the change in the probability that treated individuals have to leave the parental home in the year in which they receive treatment. The first column displays the estimations for

treatment T1, where all individuals are unemployed in the first period and treated individuals are employed in the second period. The second column shows the estimations for treatment T2, where all individuals have a temporary contract in the first period and treated individuals have an indefinite contract in the second period. Finally, the third column reports the estimation for treatment T3, where all individuals have a part-time contract in the first period and treated individuals have a full-time contract in the second period.

According to the SDID estimate, treatment T1 increases the probability of young people leaving household by 5.6% in the same year that they become employed. If I restrict the sample to females, the probability of leaving the parental home is not significant. However, the estimate is significant if I restrict the sample to male, since the group of treated men is 7.2% more likely to emancipate than the group of untreated men.

Table 2: Effect of labor transitions on the probability of emancipation

Semiparametric diff in diff	Treatment T1 Unemployed →Employed	Treatment T2 Temporal →Indefinite	Treatment T3 Part time→Full time
ATET	0.056***	-0.037	0.055*
Number of treated	650	108	241
Number of controls	1,304	604	390
By gender			
ATET on females	0.023	-0.035	0.027
Number of females treated	243	46	125
Number of females controls	502	259	236
ATET on males	0.072***	-0.040	0.084**
Number of males treated	407	62	116
Number of males controls	802	345	154

^{*} p < 0.05, ** p< 0.01, *** p < 0.001

In the case of treatment T2, the probability of a young person to leave the parental household is 3.7% lower among those who go from a temporary contract to an indefinite one, although this estimate is not statistically significant. When I restrict the sample by gender, the difference between the two ATET estimates is very small and none of the them is statistically significant. Therefore, changing from a temporary contract to a permanent contract does not seem to impact the probability of becoming emancipated.

Lastly, in the case of the treatment T3, the probability of moving to a household independently from their parents in the same year that they change from part-time to full-time contract increases by 5.5% for the treated group. In the case of treated women this is also statistically insignificant. However, in the case of treated men, the probability increases 3 points and is statistically significant, since treated men have on average 8.4% more chances of becoming emancipated than untreated men.

4.1. Robustness checks

Next, I check that the data used and the methodology are correct by performing two robustness checks. Firstly, I check for covariate imbalance. When covariates are imbalance the units in the control group have covariate values different from the units in the treatment group, and therefore, groups are not probabilistically equivalent and they are not comparable. Additionally, I plot the kernel density function of the propensity score for treated group, the unweighted control group and the weighted control group. Secondly, the outcome equation is estimated again using a doubly robust procedure what implies extending the outcome equation to include, in addition to the treatment variable, the baseline covariates.

4.1.1. Covariate balance

The analysis of the effect of employment transitions on the probability of leaving the parental home assumes that the control and treatment groups have similar characteristics, i.e., similar covariance values. If both groups are probabilistically equivalent, switching the treatment statuses would not change the ATET values obtained. In this case, the outcome of the control group could be used as an approximation to the counterfactual outcome for the treated. However, in the presence of covariance imbalance, counterfactual predictions are risky. As Abadie & Imbens (2011), Imbens (2015) and Imbens & Rubin (2015) in order to check for covariate imbalance, I use descriptive statistics that tell us how close the means and the standard deviations are: the normalized differences in means and variance ratio between the treatment and the control groups.

Table 3 displays the normalized differences in means (MD) and variance ratio (VR) for the samples used to analyze treatments. Normalized mean differences should be less than 0.25 to be acceptable and VR should be as close to 1 as possible. These MD are reported for the full samples (columns 1, 3 and 5) and for the full samples once covariates are weighted following the SDID weighting scheme (columns 2, 4 and 6).

Table 3: Normalized mean differences and standard deviation of the difference

_	(1)	(2)	(3)	(4)	(5)	(6)
MD						
(VR)	Treatm	ent T1	Treatm	ent T2	Treatm	ent T3
(/ 13 /	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
Gender						
Female	-0.024	0.005	-0.004	0.011	-0.173	0.004
	(0.989)	(1.003)	(1.007)	(1.011)	(1.044)	(1.001)
Age interval						
From 16 to 20	-0.140	0.022	-0.007	-0.021	0.039	0.012
	(0.729)	(1.060)	(0.979)	(0.921)	(1.175)	(1.051)
From 21 to 25	-0.019	0.033	0.154	0.027	-0.036	0.014
	(0.992)	(1.018)	(1.035)	(1.009)	(0.996)	(1.004)
From 26 to 30	0.153	-0.030	-0.115	-0.014	0.057	-0.032
	(1.122)	(0.984)	(0.944)	(0.998)	(1.032)	(0.988)
From 31 to 35	-0.044	-0.022	-0.058	-0.007	-0.057	0.018
	(0.923)	(0.961)	(0.887)	(0.992)	(0.872)	(1.051)
Education level						
Primary or less	-0.153	0.011	-0.037	-0.003	-	-
	(0.503)	(1.062)	(0.712)	(0.978)		
Lower secondary	-0.126	0.010	-0.100	0.019	-0.108	-0.059
	(0.834)	(1.018)	(0.871)	(1.040)	(0.773)	(0.865)
Upper secondary	0.129	-0.002	-0.190	-0.000	0.157	-0.045
	(1.380)	(0.996)	(0.773)	(1.007)	(1.312)	(0.941)
Higher education	0.371	-0.011	0.249	-0.014	0.098	0.015
	(2.165)	(0.986)	(0.944)	(1.015)	(1.081)	(1.012)
Working						
experience						
0 years	0.039	0.063	0.277	-0.041	0.061	0.032
	(1.125)	(1.214)	(1.553)	(0.964)	(1.164)	(1.083)
1-3 years	0.060	-0.000	-0.084	0.023	-0.075	0.023
	(1.075)	(1.000)	(0.981)	(1.018)	(0.980)	(1.010)
4-6 years	0.085	0.012	-0.080	0.005	0.028	-0.002
	(1.219)	(1.026)	(0.895)	(1.016)	(1.036)	(0.999)
7-10 years	0.087	-0.034	-0.053	0.005	0.013	-0.022
	(1.293)	(0.916)	(0.890)	(1.016)	(1.028)	(0.959)
10-15 years	0.038	0.024	-0.111	-0.013	0.050	-0.025
3.5 4 4.5	(1.230)	(1.135)	(0.629)	(0.945)	(1.197)	(0.924)
More than 15	-0.000	0.002	-	-	-	-
	(0.996)	(1.063)				
Town size						
High populated	-0.153	-0.007	0.238	-0.005	-0.067	-0.071
	(0.503)	(0.999)	(0.970)	(1.010)	(1.010)	(1.010)
Medium	-0.126	0.010	-0.031	-0.022	-0.048	-0.026
populated	(0.834)	(1.018)	(0.960)	(0.973)	(0.937)	(0.965)
Low populated	-0.026	-0.005	-0.190	0.027	0.122	0.105
ъ :	(0.980)	(0.996)	(0.773)	(1.048)	(1.150)	(1.126)
Region	0.054	0.032	-0.032	-0.006	0.045	0.007
TT 1 11	(1.246)	(1.138)	(0.814)	(0.966)	(1.251)	(1.033)
Household	0.485	-0.025	0.092	-0.039	0.023	-0.013
income	(1.553)	(1.006)	(1.357)	(1.238)	(1.052)	(1.007)
Household	-0.079	-0.070	-0.160	-0.202	0.042	0.138
members	(0.926)	(1.090)	(0.804)	(0.780)	(0.764)	(0.898)

Comparing unweighted and weighted columns, it shows that IPW reduces covariate imbalance somewhat, as covariates reduced their MD and VR is closer to 1 after being weighted. Therefore, I can say that the covariates are balanced among the treated and control groups using the weighting scheme of SDID. It should be noted that some covariate categories do not appear and this occurs because the sample of that treatment does not include individuals belonging to that category.

Figure 6 plots the kernel density estimation of the propensity score distribution for the treated group, the control group and the weighted control group. The propensity score represents the probability of receiving treatment. It can be observed a significant different distribution between the propensity score of the treated group and the control group in the three samples. However, this distribution becomes more similar if I compare the propensity score of the treatment group with that of the control group after applying the SDID weighting scheme.

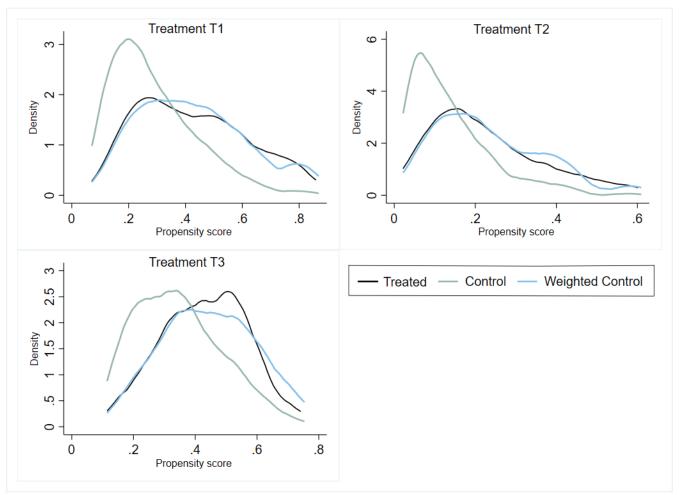


Figure 6: Kernel probability density function estimates of the propensity score

Source: Living Conditions Survey and own elaboration

4.1.2. Doubly robustness check

The outcome equation is estimated again, this time including as regressors, in addition to the treatment, other covariates. The weighting scheme used by SDID method generates treatment and control groups that are comparable, therefore, in the weighted sample the characteristics of the individuals are not related to the treatment status. This means that, in the weighted sample, the additional regressors are uncorrelated with the treatment status so that they should not affect the estimate of the treatment effect. The aim of this section is to allow for the effect of the covariates on the outcome, thus improving the goodness of fit of the outcomes equation and hence obtaining more efficient estimates of the treatment effects.

Table 4 shows the estimates of ATET also using the SDID method, but this time conditioned to some covariates. We can observe that the ATET estimates obtained from this new regression are very similar to the results estimated in the regression without covariates. Furthermore, the table includes values that determine how different youth characteristics affect the probability of leaving the household among treated individuals. Covariates included in the regression are gender, marital status, age, education, working experience, parental household income level and number of household members. It should be noted that the age at which emancipation is most likely to occur is from 26 to 30 years of age, and for this reason, this age range is left out as reference group.

There are some covariates that are not significant in increasing or decreasing the probability of a young individual leaving the family home. The estimation performed in our analysis suggests that gender, marital status, education level, family income level and number of family members are not statistically significant.

In contrast, the results show that age might be a determining factor for young people when deciding to emancipate. In the case of treatment T1, compared to the age range between 26 and 30 years old, the probability of leaving home decreases by 12.9% for those young people between 16 and 20 years old who were treated. The estimations of the treatment T3 show that the probability of emancipation declines 23.6 points for those between the age range of 31 and 35.

In addition, the results suggest that years of work experience also have an effect on leaving the parental home. In the analysis of treatment T1 the effect is negative, i.e., the more years of experience the less likely to emancipate. However, if we look at the T3

treatment analysis, this effect is positive, since the probabilities of leaving the parental household increase when young people have more experience.

Table 4: Effect of labor transitions on the probability of emancipation conditional on several covariates

Cominguous atric diff in diff	Treatment T1	Treatment T2	Treatment T3
Semiparametric diff in diff	Unemployed →Employed	Temporal →Indefinite	Part time→Full time
ATET conditional on covariates	0.057***	-0.042	0.056*
Gender			
Female	-0.043	0.024	-0.047
Marital status			
Married	-0.071	-0.571	0.02534
Age interval			
From 16 to 20	-0.129**	0.088	0.051
From 21 to 25	-0.043	0.096	-0.016
From 31 to 35	-0.016	-0.036	-0.236**
Education level			
Lower secondary	0.034	0.191	-
Upper secondary	0.042	0.108	-0.076
Higher education	-0.024	0.031	0.069
Working experience			
1-3 years	-0.030	0.003	0.156*
4-6 years	-0.104*	0.029	0.134
7-10 years	-0.044	0.049	0.169
10-15 years	-0.198**	0.060	0.260*
More than 15	-0.070	-	-
Household income			
15.001-25.000	-0.001	-0.091	0.210
25.001-35.000	0.009	0.014	0.002
35.001-50.000	-0.013	0.044	0.029
50.001-75.000	-0.007	0.029	0.066
>75.001	-0.005	-0.016	0.215
Number of			
hh members	-0.010	0.012	-0.006

^{*} p < 0.05, ** p < 0.01, *** p < 0.001

5. Conclusion and discussion

This paper analyzes the impact of labor market transitions on the probability that young people leave the parental home in the same year that the transition occurs. This analysis has two technical problems. On the one hand, variations in employment status are not random and likely correlated with unobserved confounders that affect the probability of becoming emancipated. On the other hand, youths who get a job or transition to better working conditions and those who do not, might not be directly comparable, since they might have different characteristics that are determinants in the decision to emancipate.

The methodology used in the analysis has been the SDID of Abadie (2005), which combines the method of differences in differences and IPW. This methodology takes into

account all observed and unobserved confounding factors, provided that the latter are time invariant or vary equally between treated and control units. Furthermore, to lend internal validity to our estimates, I verify that the covariates are balanced among the treated and control groups.

I have applied this methodology to nine waves of the Spanish Survey of Living Conditions from 2010 to 2019, a survey conducted by INE. The results indicate that young people who get a job are 5.6% more likely to emancipate compared to those who remain unemployed the same year they get the job. On the contrary, the transition from a temporary contract to a permanent one has no significant effect on the probability of being emancipated in the same year as the transition. However, the fact is that the percentage of emancipated young people with permanent contracts is almost double that of young people with temporary contracts. In the case of transitions from a part-time contract to a full-time contract, young people affected by this change increase the probability of becoming emancipated by 5.5% in the same year of the transition.

This same analysis has been done separately for women and men. The results show that while for women labor market transitions do not have a direct effect in the same year as the transition, for men they do. This suggests that, on average, the labor market does not affect the transition to adulthood of women and men in the same way. Historically, residential emancipation has different expectations by gender, while for men emancipation is associated with economic independence, for women it is related with the formation of a family (Moreno, 2018).

Nevertheless, if we consider the whole young population in Spain, we can see that there is a relationship between obtaining a job or improving the quality of employment and moving to a home independent of parents. The youth group is proportionally more affected by the economic cycles than the rest of the participants in the labor market, either because of their lack of protection or less stability in employment (Henar et. al, 2015). Hence, economic recessions affect the life trajectories of young people during their labor insertion, delaying the age of emancipation and leading the group to social exclusion (Garcia & Martínez, 2012).

In this context, the relationship between young people and public services should serve to achieve new patterns of emancipation that increase their well-being. Emancipation processes are mainly determined by the following structural factors: the role of the family in society, the macroeconomic situation (especially its impact on employment) and the

housing and employment policies developed by the welfare state. Therefore, public policies aimed at facilitating residential transitions should consider all the structural factors that affect this transition, and based on these, propose the policies that best fit the execution scenario (Bosch Meda, 2015).

This may be achieved by promoting the productive economy of specialization in those sectors with long-term future and high added value, driving sustained economic growth and taking advantage of Spain's enormous human capital. Moreover, the legal structure that integrates the regulation of employment protection contributes to generating security and stability in the labor market. In view of the results obtained, public policies should be aimed at encouraging the employment of young people in companies, as well as ensuring that the work is secure and full-time.

On the other hand, and although this has not been the subject of this study, the difficult access to housing in Spain means that many young people cannot afford to live independently from their parents. Therefore, efficient housing policies are required to ensure greater residential emancipation among young people and that this emancipation does not entail an excessive effort on their part.

Bibliography

- Abadie, A. (2005). Semiparametric Difference-in-Differences Estimators. *The Review of Economic Studies*, 72(1), 1–19. https://doi.org/10.1111/0034-6527.00321
- Abadie, A., & Imbens, G. W. (2011). Bias-Corrected Matching Estimators for Average Treatment Effects. *Journal of Business & Economic Statistics*, 29(1), 1–11. https://doi.org/10.1198/jbes.2009.07333
- Ahn, N., & Sánchez-Marcos, V. (2015). Emancipation under the great recession in Spain. *Review of Economics of the Household*, *15*(2), 477–495. https://doi.org/10.1007/s11150-015-9316-7
- Arciniega, U., & de Dios, J. (2005). En la transición a la edad adulta. Los adultos emergentes. *International Journal of Developmental and Educational Psychology*, *3*(1), 145–160. https://www.redalyc.org/articulo.oa?id=349832310013

Barcelo, C., & Villanueva, E. (2018). The Risk of Job Loss, Household Formation and Housing Demand: Evidence from Differences in Severance Payments. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3312078

- Becker, S. O., Bentolila, S., Fernandes, A., & Ichino, A. (2010). Youth emancipation and perceived job insecurity of parents and children. *Journal of Population Economics*, 23(3), 1047–1071. https://doi.org/10.1007/s00148-008-0224-5
- Bosch Meda, J. (2015). La transición residencial de la juventud europea y el Estado de bienestar: un estudio comparado desde las políticas de vivienda y empleo. ZERBITZUAN, 59, 107–126. https://doi.org/10.5569/1134-7147.57.07
- Esping-Andersen, G. (1990). The three worlds of welfare capitalism. *Princeton University Press*.
- Ferrera, M. (1996). The «Southern Model» of Welfare in Social Europe. *Journal of European Social Policy*, 6(1), 17–37. https://doi.org/10.1177/095892879600600102
- García, A. E., & del Olmo, A. M. (2021). Emancipación residencial y acceso de los jóvenes al alquiler en España: un problema agravado y su diversidad territorial. Ciudad y Territorio Estudios Territoriales, 2021 MONO. https://doi.org/10.37230/cytet.2021.m21.02
- García Moreno, J. M., & Martínez Martín, R. (2012). Ser joven hoy en España.

 Dificultades para el acceso al mundo de los adultos. *Barataria. Revista Castellano-Manchega de Ciencias Sociales*, *14*, 29–40.

 https://doi.org/10.20932/barataria.v0i14.99
- Gardeazabal, J., & Polo-Muro, E. (2021). Cultural expenditure of those who enter (or exit) unemployment. *Journal of Cultural Economics*. https://doi.org/10.1007/s10824-021-09423-6
- Gardeazabal, J., & Polo-Muro, E. (2022). *The response of household consumption to labor market shocks and other life events* [Unpublished manuscript]. Economic Analysis Department, University of the Basque Country.
- Gentile, A. (2015). Rental subsidy and the emancipation of young adults in Spain.

 International Journal of Housing Policy, 16(2), 243–254.

 https://doi.org/10.1080/14616718.2015.1119359

González, D. P. S., & Vanti, A. A. (2020). Economía sostenible: análisis de los retos y oportunidades para España. En *El pensamiento económico y empresarial en la era de la información* (pp. 95–110). Egregius.

- Henar Lomeña, L., Segales Kirzner, M., & CEET (Centro de Estudios Económico Tomillo). (2015). Cambios sociales y el empleo de la juventud en España: una mirada hacia el futuro. INJUVE. http://www.injuve.es/observatorio/formacion-empleo-y-vivienda/cambios-sociales-y-el-empleo-de-la-juventud-en-espana-una-mirada-hacia-el-futuro
- Imbens, G. W. (2015). Matching Methods in Practice: Three Examples. *Journal of Human Resources*, 50(2), 373–419. https://doi.org/10.3368/jhr.50.2.373
- Imbens, G. W., & Rubin, D. B. (2015). Causal Inference for Statistics, Social, and Biomedical Sciences. *Cambridge University Press*. https://doi.org/10.1017/cbo9781139025751
- INE Instituto Nacional de Estadística. (2010–2019). INEbase / Nivel y condiciones de vida (IPC) /Condiciones de vida /Encuesta de condiciones de vida / Resultados [Conjunto de datos].
 https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=125 4736176807&menu=resultados&idp=1254735976608
- Leibfried, S. (1992). Towards an European welfare state? On integrating poverty regimes in the European Community. *Westview Press*.
- Martínez-Granado, M., & Ruiz-Castillo, J. (2002). The decisions of Spanish youth: A cross-section study. *Journal of Population Economics*, *15*(2), 305–330. https://doi.org/10.1007/s001480100082
- Moreno, A., López, A., & Sanchez-Cabezudo, S. (2012). The transition to adulthood in Spain. Economic crisis and late emancipation. Social studies collection. (Vol. 34). La Caixa.
- Moreno Mínguez, A. (2018). The youth emancipation in Spain: a socio-demographic analysis. *International Journal of Adolescence and Youth*, 1–15. https://doi.org/10.1080/02673843.2018.1438299
- Pérez, M. T., Simón, P., Clavería, S., García Albacete, G., López, A., & Torre, M. (2020). Resumen ejecutivo informe juventud en España 2020. INJUVE.

http://www.injuve.es/sites/default/files/adjuntos/2021/03/informe-juventud-enespana-2020-resumen-ejecutivo.pdf

- Real Academia Española. (2022). Emancipar. En *Diccionario de la lengua española* (23.a ed.). https://dle.rae.es/emancipar?m=form
- Rubin, D. B. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. *Journal of Educational Psychology*, 66(5), 688–701. https://doi.org/10.1037/h0037350
- Tezanos, J. F., Ogáyar, J. J. V., & Moreno, V. D. (2008). Tendencias de cambio de las identidades y valores de la juventud en España. 1995–2007. *Instituto de la Juventud, Madrid.* http://www.injuve.es/tendencias-de-cambio-de-las-identidades-y-valores-de-la-juventud-en-espana-1995-2007
- van den Berg, L., Kalmijn, M., & Leopold, T. (2018). Family Structure and Early Home Leaving: A Mediation Analysis. *European Journal of Population*, *34*(5), 873–900. https://doi.org/10.1007/s10680-017-9461-1

UPV/EHU_______IBONE BILBAO

Appendix

Table 5: Propensity score of treatment T1 (From unemployment to employment)

Treated	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
(Employed)							
Region (base:							
Galicia)	1.000	0.240	2.12	0.00	1.770	0.405	***
Asturias	-1.088	0.348	-3.12	0.00	-1.770	-0.405	***
Cantabria	-0.022	0.297	-0.08	0.94	-0.605	0.561	
País Vasco	-0.553	0.435	-1.27	0.20	-1.406	0.299	
Navarra	0.350	0.350	1.00	0.32	-0.336	1.035	
La Rioja	-0.127	0.331	-0.38	0.70	-0.775	0.521	
Aragón	-0.224	0.247	-0.91	0.36	-0.709	0.260	
Madrid	-0.297	0.266	-1.12	0.26	-0.818	0.224	
Castilla y Leon	-0.356	0.278	-1.28	0.20	-0.900	0.188	
Castilla-La Mancha	-0.981	0.297	-3.30	0.00	-1.563	-0.399	***
Extremadura	-0.454	0.281	-1.61	0.11	-1.005	0.097	
Cataluña	-0.378	0.242	-1.57	0.12	-0.852	0.095	
Comu. Valenciana	1.147	0.417	2.75	0.00	0.330	1.964	***
Islas Baleares	-0.671	0.206	-3.26	0.00	-1.074	-0.268	***
Andalucía	-0.456	0.294	-1.55	0.12	-1.032	0.119	
C.A. Ceuta	-0.664	0.423	-1.57	0.12	-1.493	0.166	
CA. Melilla	-2.026	0.533	-3.80	0.00	-3.071	-0.981	***
Canarias	0.225	0.278	0.81	0.42	-0.319	0.769	
Town size							
Medium populated	0.185	0.137	1.35	0.17	-0.084	0.454	
Low populated	0.254	0.138	1.84	0.06	-0.016	0.524	*
Education Level							
(base: primary or							
less)							
Lower secondary	0.496	0.282	1.76	0.08	-0.057	1.049	*
Upper secondary	1.082	0.302	3.59	0.00	0.491	1.673	***
Higher education	1.674	0.300	5.58	0.00	1.085	2.262	***
Age							
From 21 to 25	0.041	0.175	0.23	0.82	-0.302	0.384	
From 26 to 30	0.016	0.190	0.09	0.93	-0.356	0.389	
From 31 to 35	-0.633	0.233	-2.71	0.00	-1.090	-0.176	***
Household income							
(base: 1-15.000)							
15.001-25.000	0.473	0.155	3.05	0.00	0.169	0.778	***
25.001-35.000	0.689	0.166	4.15	0.00	0.363	1.015	***
35.001-50.000	0.825	0.171	4.82	0.00	0.490	1.161	***
50.001-75.000	1.315	0.200	6.58	0.00	0.923	1.707	***
>75.001	2.035	0.392	5.20	0.00	1.268	2.803	***
Marital status							
Married	-0.262	0.164	-1.60	0.11	-0.583	0.059	
Gender							
Female	-0.029	0.109	-0.26	0.79	-0.243	0.186	
Working experience							
1-3 years	0.391	0.149	2.62	0.00	0.099	0.683	***
4-6 years	0.672	0.195	3.45	0.00	0.290	1.054	***
7-10 years	0.944	0.227	4.17	0.00	0.500	1.388	***
10-15 years	1.334	0.337	3.95	0.00	0.673	1.995	***
More than 15	1.156	1.251	0.92	0.35	-1.296	3.609	
Year (base: 2010)	0		•				
2011	-0.013	0.234	-0.06	0.96	-0.472	0.446	
2012	-0.566	0.281	-2.01	0.04	-1.118	-0.015	**
2013	-0.448	0.251	-1.78	0.07	-0.940	0.044	*

2014	-1.021	0.366	-2.79	0.00	-1.739	-0.303	***
2015	-0.961	0.353	-2.72	0.00	-1.654	-0.268	***
2016	-0.587	0.380	-1.55	0.12	-1.333	0.158	
2017	-0.65	0.368	-1.77	0.08	-1.372	0.072	*
2018	-0.446	0.372	-1.20	0.23	-1.174	0.283	
Constant	-0.893	0.395	-2.26	0.02	-1.667	-0.119	**
Mean dependent var		0.333	SD dependent var			0.471	
Pseudo r-squared		0.122	Number of obs			2003	
Chi-square		310.246	Prob > chi	2		0.000	
Akaike crit. (AIC)		2330.704	Bayesian c	crit. (BIC)		2588.415	

^{***} p<.01, ** p<.05, * p<.1

Table 6: Propensity score of treatment T2 (From temporal to indefinite contract)

Treated	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
(Indefinite contract)							
Region (base: Galicia)							
Asturias	-0.024	0.538	-0.04	0.96	-1.077	1.030	
Cantabria	-0.218	0.417	-0.52	0.60	-1.035	0.600	
País Vasco	-1.075	0.669	-1.61	0.11	-2.387	0.236	
Navarra	-1.800	1.063	-1.69	0.09	-3.884	0.284	*
La Rioja	-0.127	0.432	-0.29	0.77	-0.973	0.718	
Aragón	-0.317	0.352	-0.90	0.37	-1.006	0.372	
Madrid	-0.545	0.488	-1.12	0.26	-1.503	0.412	
Castilla y Leon	-0.427	0.552	-0.78	0.44	-1.508	0.654	
Castilla-La Mancha	-0.217	0.521	-0.42	0.68	-1.239	0.805	
Extremadura	-0.105	0.378	-0.28	0.78	-0.846	0.635	
Cataluña	0.082	0.388	0.21	0.83	-0.678	0.843	
Comu. Valenciana	0.443	0.459	0.96	0.33	-0.458	1.344	
Islas Baleares	-0.702	0.373	-1.88	0.06	-1.433	0.028	*
Andalucía	-0.602	0.509	-1.18	0.24	-1.601	0.396	
C.A. Ceuta	-0.514	0.865	-0.59	0.55	-2.210	1.182	
CA. Melilla	_	_	_	_	-	_	
Canarias	-1.032	0.591	-1.74	0.08	-2.191	0.127	*
Town size							
Medium populated	-0.240	0.240	-1.00	0.32	-0.711	0.230	
Low populated	-0.748	0.244	-3.07	0.00	-1.226	-0.270	***
Education Level (base:	017.10	0.2	2.07	0.00	1,220	0.270	
primary or less)							
Lower secondary	0.362	1.101	0.33	0.74	-1.796	2.519	
Upper secondary	0.131	1.102	0.12	0.90	-2.028	2.290	
Higher education	0.855	1.084	0.79	0.43	-1.270	2.980	
Age							
From 21 to 25	0.208	0.417	0.50	0.62	-0.609	1.025	
From 26 to 30	-0.067	0.446	-0.15	0.88	-0.941	0.807	
From 31 to 35	-0.532	0.505	-1.05	0.29	-1.523	0.458	
Marital status							
Married	-0.082	0.355	-0.23	0.82	-0.778	0.614	
Gender							
Female	-0.010	0.181	-0.05	0.96	-0.364	0.344	
Individual anual							
income (base: ~0)							
1-10.000	-0.865	0.631	-1.37	0.17	-2.102	0.371	
10.001-15.000	-0.051	0.615	-0.08	0.93	-1.257	1.154	
15.001-25.000	-0.653	0.628	-1.04	0.30	-1.884	0.579	
>25.001	-	-	-	-	-	-	
Working Experience							
1-3 years	-0.638	0.261	-2.44	0.01	-1.150	-0.126	**
,	0.000	0.201		0.01	2.220	0.120	

4-6 years	-0.397	0.305	-1.30	0.19	-0.996	0.201	
7-10 years	-0.497	0.368	-1.35	0.18	-1.218	0.224	
10-15 years	-0.398	0.509	-0.78	0.43	-1.395	0.598	
Year (base: 2010)							
2011	0.569	0.362	1.57	0.11	-0.141	1.279	
2012	0.715	0.426	1.68	0.09	-0.119	1.549	*
2014	-0.698	1.184	-0.59	0.55	-3.019	1.622	
2015	-0.389	1.134	-0.34	0.73	-2.611	1.833	
2016	-0.543	1.146	-0.47	0.63	-2.789	1.702	
2017	-0.038	1.134	-0.03	0.97	-2.261	2.184	
2018	0.019	1.134	0.02	0.99	-2.204	2.241	
Household income							
(base: 1-15.000)							
15.001-25.000	0.107	0.506	0.21	0.83	-0.886	1.099	
25.001-35.000	0.207	0.487	0.42	0.67	-0.748	1.162	
35.001-50.000	0.335	0.485	0.69	0.49	-0.616	1.285	
50.001-75.000	0.046	0.507	0.09	0.93	-0.948	1.039	
>75.001	-0.041	0.567	-0.07	0.94	-1.154	1.071	
Constant	-0.682	1.014	-0.67	0.50	-2.671	1.306	
Mean dependent var		0.148	SD depende	ent var		0.356	
Pseudo r-squared		0.068	Number of			1118	
Chi-square 1		63.807	Prob > chi2			0.034	
Akaike crit. (AIC)		967.452	Bayesian cı	rit. (BIC)		1198.340	
strategie O.1 strate O.5 str	-		-				

^{***} p<.01, ** p<.05, * p<.1

Table 7: Propensity score of treatment T3 (From part-time to full-time contract)

Treated	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
(Full-time contract)							
Region (base: Galicia)							
Asturias	-0.578	0.653	-0.89	0.37	-1.858	.702	
Cantabria	-0.349	0.477	-0.73	0.46	-1.283	.585	
País Vasco	-0.095	0.573	-0.17	0.87	-1.218	1.028	
Navarra	-0.776	0.666	-1.17	0.24	-2.08	.529	
La Rioja	0.039	0.506	0.08	0.94	954	1.031	
Aragón	0.469	0.398	1.18	0.24	311	1.25	
Madrid	0.566	0.438	1.29	0.19	293	1.425	
Castilla y Leon	0.891	0.506	1.76	0.08	1	1.882	*
Castilla-La Mancha	0.503	0.504	1.00	0.32	484	1.491	
Extremadura	0.938	0.393	2.39	0.01	.168	1.708	**
Cataluña	0.383	0.454	0.84	0.39	507	1.274	
Comu. Valenciana	0.879	0.557	1.58	0.11	214	1.971	
Islas Baleares	0.264	0.400	0.66	0.51	52	1.047	
Andalucía	0.732	0.507	1.45	0.15	261	1.725	
C.A. Ceuta	553	0.901	-0.61	0.54	-2.319	1.213	
CA. Melilla	523	0.768	-0.68	0.49	-2.028	.983	
Canarias	0.404	0.549	0.74	0.46	672	1.48	
Education Level (base:							
lower secondary or							
less)							
Upper secondary	0.663	0.319	2.08	0.04	.038	1.288	**
Higher education	0.647	0.303	2.13	0.03	.052	1.242	**
Age							
From 21 to 25	-0.312	0.425	-0.73	0.46	-1.145	.521	
From 26 to 30	-0.334	0.453	-0.74	0.46	-1.222	.555	
From 31 to 35	-0.780	0.544	-1.43	0.15	-1.846	.286	
Marital status							

Married	-1.061	0.649	-1.63	0.10	-2.333	.212	*
*Gender							
Female	-0.302	0.182	-1.66	0.09	659	.054	*
Individual anual							
$income\ (base: \sim 0)$							
1-10.000	-0.323	0.528	-0.61	0.54	-1.358	.711	
10.001-15.000	0.031	0.559	0.06	0.96	-1.065	1.127	
15.001-25.000	0.055	0.645	0.08	0.93	-1.21	1.32	
>25.001	-	-	-	-	-	-	
Working Experience							
1-3 years	0.233	0.294	0.79	0.43	344	.81	
4-6 years	0.494	0.340	1.45	0.15	172	1.161	
7-10 years	0.734	0.399	1.84	0.07	049	1.516	*
10-15 years	1.153	0.507	2.27	0.02	.159	2.148	**
>15 years	-	-	-	-	-	-	
Year (base: 2011)							
2012	-0.336	0.432	-0.78	0.44	-1.182	.511	
2013	0.176	0.324	0.54	0.59	46	.812	
2014	-0.092	0.437	-0.21	0.83	949	.765	
2015	-0.337	0.387	-0.87	0.38	-1.095	.422	
2016	0.416	0.474	0.88	0.38	512	1.345	
2017	0.098	0.403	0.24	0.81	692	.888	
2018	0.390	0.402	0.97	0.33	397	1.177	
Type of contract							
Indefinite	-0.683	0.211	-3.23	0.00	-1.097	269	***
Constant	0.705	0.987	0.71	0.47	-1.231	2.64	
Mean dependent var		0.371	SD dependent var			0.483	
Pseudo r-squared		0.084	Number of obs			655	
Chi-square		72.991	Prob > chi2		0.001		
Akaike crit. (AIC)		870.930	Bayesian cr	rit. (BIC)	1050.315		
*** . O1 ** . OF *	. 1						

^{***} p<.01, ** p<.05, * p<.1