

Employment risk and the living arrangements of young adults.^{*}

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Resumen

Young adults tend to stay with their parents in Southern Europe longer than their counterparts in Northern Europe and the US. Previous work has linked the delay in hard-to-reverse decisions, like forming a household, marrying or having a child to growing employment risk among young adults in Southern European labor markets. This paper examines if there is a causal link between the probability of losing a job and the decision of forming a new household. First, we use differences in firing costs across contract types to identify young adults with a high probability of losing a job. Second, we exploit two strategies to examine the causal link between obtaining a job with high firing costs and the probability of forming a new household. The first is a regression-discontinuity design that exploits the legally-induced sharp increase in firing costs 3 years after the starting of a temporary contract. The second is a diff-in-diffs strategy that uses regional incentives to convert jobs into permanent ones as a source of identification. Our tentative results using both strategies suggest that increased employment risk has little impact on living arrangements by the youth.

JEL Codes: J1, J2.

Keywords: Job insecurity, living arrangements.

There are large country differences in living arrangements among young adults. While among Scandinavian and Anglo Saxon countries, the fraction of adults between 18 and 35 years of age who stay with their parents is below 50%, the corresponding fraction in Spain, Italy or Greece is about 70%. Italy (74% of young adults live with their parents), Greece (70%) and Spain (67%) are examples of countries with very high coresidency rates, and the Netherlands (20%), the United

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Kingdom (21 %) and Ireland (22 %) fall in the other extreme of the spectrum -see Becker, Bentolila, Fernandes and Ichino (2004).

Those different living arrangements have important consequences both for resource allocation in an economy and for the effectiveness of public policy aimed at redistributing income between generations. Living with parents confines young adults to search for jobs in areas close to their parent's residence, limiting the possibilities of finding a good match. Second, the stark fall in fertility rates in Southern European countries like Italy and Spain is strongly related to the decision of forming a new household and getting married. Third, high rates of coresidence put into question who benefits from public programs that redistribute income from the young to the elderly (like Social Security). If a substantial fraction of the youth shares consumption and housing expenses with elderly parents through coresidence, intergenerational redistribution may not be effective. Our paper examines if the high exposure to employment risk among Southern European young adults explains the high fraction of adults who live with their parents.

We are not the first to address the question: why do young adults in some countries stay so long with their parents? Early contributions by Rosenzweig and Wolpin (1993) find support for the notion that low-income children are more likely to live with parents (holding parental income constant), and Manacorda and Moretti (2005) document that parents with higher income levels are more likely to live with their children. None of those papers seek to understand the international variation in living arrangements of young Southern Europeans. More closely related to our work are the contributions of Becker et al. (2004), who present a theoretical model that predicts that, under certain conditions, large coresidency rates are positively related to employment risk of children and negatively related to the employment risk of their parents. Using aggregate data from 12 countries in the European Union, the authors document some evidence supporting both predictions. Unfortunately, neither the micro evidence in Becker et al (2004) nor the rest of the literature that examines whether or not employment risk is negatively related to household formation deliver clear-cut support for the predictions. Gutierrez-Domenech (2005) and De la Rica and Iza (2004) use Spanish datasets to document that temporal variation in firing costs associated to changes in the type of contract makes young females more likely to form a new household and to become mothers. Finally, Ruiz-Castillo and Martínez Granado (2002) document that unemployment rates are positively related with rates of cohabitation.

This paper re-examines the link between obtaining a job with a low probability of transiting into unemployment and the decision of establishing a new household focusing on what we consider are better measures of employment risk and plausibly exogenous changes in job security. We use a particular feature of the Spanish labor market to identify jobs with high probability of transition into unemployment. Namely, workers who have jobs regulated by a temporary contract have much higher probability of transiting into unemployment than workers with jobs regulated by a "permanent contract". The reason is that firms pay much higher firing costs upon unilateral termination of the second type of job than for the first (between 33 and 45 wage days per year worked vs. almost termination at will if the firm does not renew the temporary contract). Second, we use two different identification strategies that exploit that what we think are exogenous changes in firing costs and that allow us to examine the link between employment risk and living arrangements of the youth.

The first strategy exploits a rule that was present in the Spanish labor market between 1984 and 1996. Firms that sign a temporary contract with a worker cannot maintain such contract with low firing costs for more than three years. After 3 years of signing the contract, the firm is legally obliged to either dismiss the worker or to convert the contract into a permanent (i.e., high-firing cost one). We provide evidence using our dataset that the three-year-limit is indeed binding by documenting a peak in the rate of conversion of contracts into permanent ones three-years after the signing of a contract (Guell and Petrongolo document the same result using duration models). Our strategy is then to examine the evolution of living arrangements in the proximity of the period in which the mandatory contract change is due. By focusing on changes around mandatory conversion of contracts, we concentrate of conversion induced by legal changes, rather than introducing other confounding factors, like promotions of better workers with higher lifetime income prospects. That strategy also guarantees that we isolate the element of lower exposure-to-employment risk from other variables that may be associated with "endogenous conversions" and with the propensity to establish a new household (like more active local labor markets). Our second strategy exploits regional variation in subsidies to firms to change temporary contracts into permanent ones. Such incentives were introduced in 1997 by different regional authorities as a response of growing rates of temporary jobs. Not all regional governments decided to implement them (right-wing regional governments were less

likely to do so), and among those regional governments that decided to give subsidies to conversion, the amount of the subsidy varied among different demographic groups. Again, we start by documenting that such the regional variation in subsidies (holding regional characteristics constant) were positively related with the rate of conversion of temporary contracts into permanent ones. Overall, our results using both strategies suggest that employment risk is an unlikely explanation of the international differences in the living arrangements of young adults.

The paper is organized as follows. Section 1 provides some background on the Spanish labor market and on living arrangements. Section 2 describes our empirical strategies and Section 3 our data. Section 4 presents the empirical results and Section 5 concludes.

1. Identification strategy

Our work exploits specific features of the Spanish labor market to identify individuals exposed to different risks of losing their job. Basically, firms face higher firing costs when they want to downsize a worker who has signed a “permanent contract” than they want to downsize a worker with a temporary contract. Graph 1 plots the quarterly probability of exiting into unemployment according to contract type. The probability of transiting into unemployment is systematically higher in the first type of contract. Second, the incidence of temporary contracts (introduced in 1984) has been growing steadily since 1984, much in line with cohabitation rates between young adults and their parents (graphs 2 and 3). In fact, a simple probit of living with parents on holding a permanent contract suggests that workers with permanent contracts are 20% less likely to live with their parents.

Nevertheless, one must be cautious when interpreting the relationship between contract type and type of living arrangements. Many unobserved factors (both economic and non-economic) are correlated both with the propensity to form a new household and with the conversion of a temporary contract into a permanent one. Among others, more mature young adults may have a higher taste for independency and be more committed to the labor market, making the firm more likely to be willing to promote the worker with a permanent contract. A simple regression of an indicator of living with parents and type of contract will confound the impact of employment risk with workers’ maturity. Second, local labor markets may be very different. Young adults in better local labor markets may face higher probabilities of being promoted, if they are a relatively more scarce resource, and

for the same reason, may expect higher future earnings, leading them to establish a new household. Those reasons lead us to seek variation in contract type that is uncorrelated with the ability of the worker and (weakly) related to the local labor market. The instrument we suggest are related with the labor demand of firms, but in principle they are uncorrelated with the natural ability of the worker. We describe those instruments below.

1.1. First methodology: Subsidies to contract conversion

Spain has 17 regions with some power regarding the regulations of labor markets. Following the growing incidence of temporary contracts, specially among younger workers, some regional governments decided to introduce subsidies to firms that employed workers with temporary contracts. These subsidies were typically lump-sum amounts given to the firm if they proved that there was a legal change of contract type in some cases. In other case, they were given as a reduction in the payroll tax. As our data does not collect information on individual wages, we have constructed the subsidy assuming that the worker received the minimum wage. That is probably an extreme assumption. The introduction of those subsidies coincided with a major, national-wide reform that diminished firing costs for workers who were employed under a permanent contract. To avoid problems with the increase in employment risk among workers with permanent contracts, we have chosen to focus the analysis on the post-national-wide reform. Table 1, also used in García and Rebollo (2005) documents the regional variation in subsidies. Large economically growing regions like Catalonia and Madrid decided not to implement those subsidies (but also regions also tended to have right-wing governments, allegedly less prone to believe in the efficacy of subsidies). Poorer regions were indeed more likely to adopt those subsidies. There is some concern about the endogeneity of adoption, that we try to address below.

As shown in Table 1, the size of subsidies varied over time (Galicia removed them in 1998), and also among demographic groups; Andalucía had special subsidies for firms who changed the contract of workers below 30 years of age into a temporary one, and some regions had higher subsidies for females (Valencia, Cantabria and Navarra, for example).

We assume that the evolution over time of those subsidies is uncorrelated with decisions of household formation for channels other than the conversion of a temporary contract into a permanent one. We also check that those subsidies did

indeed affect conversion rates.

To measure the causal impact of a change of contract from temporary into permanent, we use a sample of young coresidents whom we observe in temporary contracts, and use a bivariate probit of the probability of forming a new household as a function of the contract type.

$$e = 1[\beta_0 + \beta_1 X + \beta_2 transi + \varepsilon > 0] \quad (1)$$

$$transi = 1[\gamma_0 + \gamma_1 X + \gamma_2 subsidy + \xi > 0] \quad (2)$$

e is a binary variable that takes a value of 1 if we observe the individual forming a new household in that quarter, 0 otherwise. $transi$ is a binary variable that takes a value of 1 if we observe the individual's contract changing from temporary into permanent. X additional controls, like age, the regional unemployment rate when we observe the individual and the regional unemployment rate when the subsidies were introduced, the regional unadjusted housing price (thousands of 2005 euro). $subsidy$ is the subsidy in the region (thousands of 95 €) that the individual could qualify for (we do not have data on actual usage of the subsidy).

ε, ξ are random disturbances, independent of Z and distributed as a bivariate normal with mean zero. The parameter of interest in this specification is β_1 , which measures the causal impact of getting a subsidy on the propensity to establish a new household.

The average treatment effect can be defined as

$$\Phi(\widehat{x\beta_1}) - \Phi(\widehat{x\beta_0}) \quad (3)$$

where $\widehat{x\beta_1}(\widehat{x\beta_0})$ is the linear prediction setting $transi$ to 1 (0). We also report TSLS estimates.

1.2. Second strategy: Exploiting legal time limits

Our second strategy exploits the discontinuity in the change of probability of obtaining a permanent contract three years after signing a temporary contract. That discontinuity is introduced by a legal regulation that requires that no worker can work for the same firm for more than three years without a contract that is not permanent. Table 2 summarizes the legal changes with the minimum and

maximum periods of duration of temporary contract between 1984 and 1995. During that period, the maximum probation period using a temporary contract was 3 years. After the third year, the firm could choose between finishing the relationship with the worker or signing a high-firing cost contract. Our identification assumption is that three years after signing a contract, the worker experiences an “exogenous change” in the probability of losing his or her job. If the contract is converted into a permanent one, the probability of losing the job falls dramatically (see Graph 1 for suggestive evidence). We assume that if the worker keeps not working with the firm, his or her probability of losing the next job is basically the same as in the previous firm. Such assumption is supported by the evidence provided by Bover and Gómez (2004), who document a high probability of leaving unemployment with a temporary contract.

The previous strategy could potentially be wrong if only selected workers make it to the third year (selected in a way that is correlated with the propensity to establish a new household). To avoid such pitfalls, we are going to construct a new variable called “potential tenure”. The variable basically keeps track of the time elapsed since a contract was first signed with a firm, *regardless* of whether or not the worker keeps on working with the same firm. In other words, three years after signing a temporary contract, the worker has the option of experiencing a decrease in the probability of losing his or her job. Many factors may affect actual taking-up of the opportunity. Our strategy only exploits the existence of the option.

Graphs 4 and 5 provide visual evidence on the rate of conversions of temporary contracts into permanent ones for different values of our “potential tenure” variable. Graph 4 shows the relationship between potential tenure (horizontal axis) and the probability of conversion of a temporary contract into a permanent one in 1987. Given that the wide use of temporary contracts only started in 1984, by 1987 few contracts would have reached their legal limit. The relationship between potential tenure and conversion of temporary contracts into permanent ones should not exhibit a peak at three years, given that the three year-rule only was introduced in 1984. Graph 5 shows exactly the same profile of potential tenure versus rates of contract conversion in 1991, when the reform was fully operative. One can notice the accumulation at the three years limit in this case (see Guell and Petrongolo, forthcoming, for similar evidence). The absence of a peak in graph 4 reinforces our interpretation that the peak was due to the reform. That peak in conversion rates will be exploited to identify the causal link between increases in

job security and household formation.

1.2.1. Analysis of flows

We start by relating flows of household formation to flows of conversion of temporary contracts into permanent ones. We use data on young adults (between 20 and 35 years of age), who live with their parents and are working on a job covered by a temporary contract when we first observe them. We instrument the variable "conversion of a temporary contract into a permanent one" using a dummy variable that takes value 1 if the young adult has a value of *potential* tenure between 3 and 4 years. The exact model we estimate is the following.

$$transi = \varsigma + \phi d + f(Exp) + g(Exp_c) + \omega cont + \mu \quad (4)$$

$$e = \alpha + \beta transi + f(Exp) + g(Exp_c) + \lambda X + \varepsilon \quad (5)$$

Where, as above e ($transi$) is a binary variable that takes value 1 if the individual forms a new household (experiences a change of contract). Exp denotes potential tenure, and the instrument is d , a binary variable that takes value 1 if potential tenure is between 3 and 4 years. X contains controls like age, gender, schooling attainment, family size, year and regional dummies. Exp_c equals potential tenure Exp minus 3 (the cut-off). The coefficient of interest is β , and following the literature on regression discontinuity design, we estimate the model using TSLS –see Van der Klaauw (1997) or Angrist and Lavy(1999). As the variable that serves as a basis for the discontinuity is not continuous, we chose not to use semiparametric methods to identify $f(\cdot)$ and $g(\cdot)$. Instead, we use global polynomial approximations.¹

1.2.2. Analysis of stocks

One may claim that, using a short panel (like the one at hand, see Section 3), the previous strategies are only likely to pick up short-run impacts of changes in contract type on household formation. To cross-check our findings, we use an alternative strategy that relates changes in the stock of young adults with

¹A concern with this strategy is that the transition from a transitory contract into a permanent one can be associated with wage increases (see De la Rica, 2002). Thus β can also pick up wage increases associated to contract changes. As wage increases are positively related to household formation in virtually any paper on coresidence we are aware of, β is most likely to be an upper bound on the impact of a fall in employment risk on household formation.

permanent contract to the stock of young adults who live with their parents. Our sample includes all young adults who are working. We estimate the following model:

$$permanent = \varsigma + \phi d + f(Exp) + g(Exp_c) + \omega cont + \mu \quad (6)$$

$$Coresid = \alpha + \beta permanent + f_1(Exp) + g_1(Exp_c) + \lambda cont + \varepsilon \quad (7)$$

Coresid (permanent) is a binary variable that takes value 1 if the young adult lives with parents (has a permanent contract).

2. Data

We use the 1987-2001 waves of the Spanish Labor Force Survey or EPA. The EPA is a rotating panel in which individuals are tracked for six periods (aside from attrition issues). It contains basic information about the labor history of the individual, as well as about age, occupation, industry and schooling.

First, we define the variables “establishing a new household” and “conversion of a temporary contract into a permanent one”. The second variable is easy to contract keeping track of contract changes over time. Unfortunately, the event “establishing a new household” is harder to measure, as the EPA does not track young individuals who leave households in the interview to establish a new one. We follow Martins and Villanueva (2006) and define that a young adult has left the sample if, conditional on the household being in the sample in quarters q and $q+1$, we observe the young adult as a household member in period q but not in period $q+1$.

We restrict to young individuals who are between 20 and 35 years of age and are working. We exclude young adults who are unemployed in the first quarter we observe them, as we assume they are not exposed to the risk of losing their job.

2.1. Sample used for the first strategy, using regional variation in subsidies to conversion

The first strategy uses the period spanning 1997 and 2001. Our sample contains 204571 observations on 50758 young adults. We use as an instrument the amount subsidized to a firm that converts a transitory contract into a permanent one (and disregard much higher subsidies because of contracting an unemployed as a

permanent worker). Table 3 presents summary statistics. Regions with a higher fraction of permanent contracts tended to have lower subsidies.

2.2. Sample used for the 2nd strategy, exploiting legal time limits

The sample for this strategy spans the periods 1987 and 1995. For this sample, we construct the variable “potential tenure”. The methodology is the following. We accumulate potential experience using the first observation on actual tenure in the present firm we observe. Every quarter, we add .25 to our measure, regardless of the situation of the young adult in the labor market. A problem with the potential tenure measure is that the Spanish Employment Survey does not contain monthly-level information on tenure, but only on years. We have constructed two alternative measures of potential tenure to address the issue

1. First, we infer the accumulation in quarters from changes in years of tenure, if individuals are first observed with more than a year’s tenure. This strategy tended to produce accumulation at systematic tenure points.
2. The second strategy draws random realizations from an uniform distribution with discrete support to assign in which quarter we first observe an individual, and then accumulate potential tenure in consecutive quarters (we follow Guell and Petrongolo, 2005)

Of course, by construction, actual and potential tenure will coincide if the individual stays with the same firm. Otherwise, actual tenure will always fall below potential tenure. We use two samples. The first is composed of young adults between 20 and 35 years of age, who are working and whom we observe with a temporary contract in their first year in the sample. After some sensitivity checks, we have chosen an extended sample of 69,655 observations on 29,351 individuals between 1 and 6 years of potential tenure. The second sample contains young adults who are working, and who may or not live with their parents. . It contains 257,345 observations on 88,462 individuals. Table 5 presents the summary statistics of both samples.

3. Empirical findings

Table 6 presents a simple regression of the event "lives with parents" on contract type, holding constant the age, region, gender, year and regional housing price. The Probit specification suggests that workers with a permanent contract are 20 percent less likely to live with parents.

3.1. Regional variation in subsidies to convert temporary contracts into permanent ones

Table 7 presents Probit and OLS regressions in which the dependent variable takes value 1 if the temporary contract is observed changing into a permanent one, and can be considered as the "first stage regression", that tests the validity of the instrument: amount of the subsidy. We experiment with different subsamples. The first contains all young adults whom we first observe living with their parents and with a temporary contract, and are between 20 and 35 years of age. The second subsample focuses on young adults between 25 and 35 years. Finally, we split the sample by gender.

All regressions include controls for age, gender, region, industry, occupation and schooling, as well as some parental characteristics, like their schooling, parental household size and labor market status, the regional housing price. Finally, we introduce regional controls, like the unemployment rate at the introduction of the subsidy (to partly mitigate the problem of the endogeneity of the decision to implement the subsidy) and the current unemployment rate (to control for current labor market status). Standard errors are computed assuming arbitrary correlation among observations belonging to the same individual, as well as independence and heteroscedasticity.²

The coefficients in Table 7 reflect the marginal change in the probability of conversion when one changes the variable of interest by a unit, holding the rest of the covariates constant. In all models, but in females between 20 and 35 years of age, larger subsidies result in higher conversion rates. The F-test of exclusion of the subsidy variable varies across specifications, and denotes a strong instrument in the main specification –it is 16.22, above the benchmark values reported in Murray (2005).

²We also followed Bertrand, Mullainathan and Duflo (2004) clustering standard errors by incidence groups of the subsidy, but the standard errors were implausibly small. We plan to revisit this issue in further versions of the paper.

Tabla 8 presents estimates of the link between contract conversion and household formation using Two Stage Least Squares. The estimates are not significantly different from zero

Tabla 9 reports a bivariate Probit. The results for the baseline sample suggest that conversion of a temporary contract into a permanent one increases the probability of forming a new household by .2 percentage points (the probability of emancipation in our sample is of 2.2 percentage points). Unfortunately standard errors are relatively large. Given this Table 10 presents intention-to-treat results (i.e., models that regress directly household formation on the subsidy). The coefficient of the variable “subsidy” are typically small: an increase in the subsidy of 1,000 euro increases the rate of household formation by .0001 per cent

3.2. Results using legal limits to conversion

This subsection examines patterns of job contract and living arrangements three years after signing a temporary contract with a firm (period in which the firm must opt between changing the contract to permanent or firing the worker). The results are shown in Tables 11-14. We explore short- and long-term effects of contract conversion on household formation by using two different samples: a sample of flows (relating actual rates of nest-leaving to changes in contract type) and another one of stocks (examining the evolution of the stock of coresidents and of workers with permanent contracts). In all specifications, standard errors are clustered at the individual level. We use the same sample splits and covariates as in the previous subsection.

3.3. Analysis of household formation and contract changes (flows)

Graph 6 highlights the source of identification by plotting the residuals of a regression of contract conversion on potential tenure and age (full line) and the residuals of a regression of nest-leaving on the same covariates (dotted line). While the residuals of the contract conversion regression exhibit a mean change three years after the conversion of the contract, the residuals of the household formation regressions are basically flat across all potential tenure levels. We interpret from Graph 6 that there is little evidence of a causal link between household formation and contract conversion.

Tables 11 and 12 show the estimates of equations (4) and (5). Given that

both outcomes (contract conversion and household formation) are low probability events, and that household formation is possibly a time-consuming process, we allow the household formation variable to lag four quarters the conversion of temporary contracts into permanent ones.

Table 11 presents OLS estimates of equation (4), assuming that $f()$ is a linear function. In all cases, the dummy indicating that between 3 and 4 years have elapsed after signing the contract is large and positive: conversion rates increase by between 5 and 7 percentage points during such period. The estimates are significantly different from zero for usual confidence levels. Furthermore, F-tests indicating the validity of the instrument are well above the 16.22 threshold in Murray (2005).

Table 12 presents TSLS estimates of the link between household formation and contract conversion. The coefficient has even the wrong sign (contract conversion impacts negatively household formation), but the precision is small.

3.4. Analysis using living arrangements and type of contract (stocks)

Next, we use a specification with stocks. The advantage of this model is that we can explore longer-term impacts of contract conversion on household formation, as the rotating panel nature of the EPA precludes us from examining effects beyond the maximum period of the individual staying in the sample (five quarters, in our case).

Tables 13 and 14 show the results of the estimation of equations (6) and (7). The key covariate in the first stage regression is a dummy that takes value 1 if the potential tenure of the individual exceeds three years.

Table 13 presents estimates of equation (6), using a third order polynomial as the best fit for $f()$. Three years after signing a contract with a firm, the probability of a worker being observed with a permanent contract increases by between 3 and 9 percentage points, again with very high values of F-test.

Table 14 shows TSLS estimates of the system of equations (6) and (7). In this case, we obtain evidence consistent with the idea that obtaining a permanent contract decreases cohabitation rates by a sizable amount: 17%. Now, when we split the sample by gender and age, the impact seems to be operating through the groups that typically respond less to the conversion of temporary contracts: females and the younger young males. Our preferred specification in column 4

(males between 25 and 35 years of age) suggest a very small impact 1%, albeit not very precisely estimated.

3.5. Summary of results

Table 15 summarizes our results to date, mostly suggesting that the link between obtaining a secure job and forming a new household is weak.

4. Conclusions

We have exploited institutional features of the Spanish labor market to address the question: Does the growing incidence of less secure jobs explain the different living arrangements of young adults across countries? The advantage of working with Spanish labor market data is that we can easily identify individuals with insecure jobs, due to the difference in firing costs associated to type of job contract. We also exploit legal changes that influence the labor demand of firms to analyze whether or not obtaining a more secure jobs leads Spanish young adults to form their own household.

We use two strategies to identify the causal link between job insecurity and household formation. The first exploits regional-level subsidies to conversion of temporary contracts into permanent ones. The second exploits binding time limits that require firms to convert temporary jobs into permanent ones. Both strategies suggest the same preliminary conclusion: the link between job insecurity and household formation is at best weak.

Our next steps are to improve the precision of our TSLS estimates, using Card and Lee's (2006) suggestions, and to experiment with more elaborate models that allow time-varying effects of contract conversion on nest-leaving.

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Table 1: Subsidies for conversion of temporary contracts into permanent ones, by region and year

Region / Year	1997	1998	1999	2000	2001
1. Andalucia			All years, 1,800 euro if age < 30		
2. Aragon			All years, 1,200 euro for females		
3. Asturias	2,100 euro	2,100 euro, all workers 2,400 if "learning contract" 600 extra if female in male job	2,100 euro, all workers 2,400 euro if "learning contract" 600 extra if female in male job	2,100 euro, all workers 2,400 if "learning contract" plus 600 if female in male job	None
4. Baleares			None		
5. Canarias	None	3,600 if age<25 or if female	None	None	None
6. Cantabria	None	1,800 2,400 if age<30 or female 3,600 if above 40	None	None	None
7. Castilla-Leon	None	1,800 euro 2,400 if apprenticeship contract	1,800 euro 2,400 if apprenticeship contract	1,803 if age<30	1,803 if age<30 2,040 if female
8. Castilla-La Mancha			None		
9. Catalonia			None		
10. Valencia	None	None	30% of payroll tax	30% of payroll tax	1400, practice contr. 1,800 if "practice c." and female
11. Extremadura	4908	3545	3618	2100 if training	2101 if "practice c."
12. Galicia	None	3000 euro if age<30 4200 if female in male job	None None	None None	None None
13. Madrid			None		
14. Murcia	1800 2400 if age<30	2100 if age<=30 1500 if age>30	2100 if age<=30 1800 if age>30	2100 if age<=30 1800 if age>30	2100 if age<=30 1800 if age>30
15. Navarra	None	1800	None	Payroll subsidy depending on age	
16. Basque country	None	3000 for age<40 150 extra if female	3000 for age<40 150 extra if female	Both years: Former+ 6009 euro if age<30 Former+ 4507 euro if age<30 & female	
17. Rioja	None	Depends on # conversions	Depends on # conversions	Depends on # conversions	

1. "Apprenticeship contract" (contrato de aprendizaje): contract typically offered to low-skilled young workers

2. "Learning contract" (contrato de formación): contract typically used for workers between 16 and 18 years of age.

3. "Practice contract" (contrato en prácticas) Contract typically used for qualified young workers without labor market experience

Table 2: Minimum and maximum duration of temporary contracts, by contract type

	1984		1992		1994		1997	
	minimum	maximum	minimum	maximum	minimum	maximum	minimum	maximum
1. Contract to promote employment	6 months	3 years	12 months	3 years	6 months	3 years	---	(contract disappeared)
2. Practice contract	6 months	3 years	6 months	3 years	6 months	2 years	6 months	2 years
3. Apprenticeship contract	6 months	3 years	6 months	3 years	6 months if age>16 & age<25	3 years	6 months if age>16 & age<21	3 years

Table 3: Means of selected variables, by region

	Sample (1), flows			Sample (2), stocks	
	Subsidy	Contract changed from transitory to permanent	New household	Permanent contract (1 if permanent, 0 ow.)	Lives with parents
1. Andalucia	1057.22	0.020	0.028	0.355	0.558
2. Aragon	389.25	0.038	0.022	0.499	0.519
3. Asturias	768.38	0.018	0.022	0.474	0.603
4. Baleares	0	0.041	0.028	0.527	0.470
5. Canarias	477.8	0.035	0.023	0.442	0.558
6. Cantabria	732.05	0.017	0.014	0.474	0.659
7. Castilla-Leon	1216.01	0.031	0.025	0.470	0.555
8. Castilla-La Mancha	0	0.031	0.024	0.419	0.542
9. Catalonia	0	0.042	0.024	0.512	0.534
10. Valencia	1289.64	0.034	0.022	0.443	0.519
11. Extremadura	2222.25	0.028	0.027	0.431	0.509
12. Galicia	477.47	0.023	0.022	0.425	0.622
13. Madrid	0	0.04	0.015	0.618	0.601
14. Murcia	1633.22	0.035	0.026	0.409	0.554
15. Navarra	831.51	0.045	0.023	0.506	0.585
16. Basque country	1661.96	0.033	0.022	0.440	0.605
17. Rioja	2681	0.037	0.017	0.506	0.55

1. The first three columns present summary statistics on a sample of working young adults between 20 and 35 years of age, years 1991-1997.

whom we first observe living with a parent and working on a job regulated by a temporary contract.

2. Subsidy amounts (in 1995 euros) indicate the amount that the group the young belongs to may qualify for. They do not reflect actual take-up

3. Last two columns correspond to a sample of working young adults between 20 and 35 years of age.

Table 4: Mean subsidy by age and gender

Age	Females	Males
20-24	962.51	927.87
25-29	994.87	899.95
30-35	578.46	465.13

Table 5: Summary statistics of 1984-1997 sample (analysis of legal limits)

Panel A: Young adults whom we first observe working with a temporary contract and living with parents				
	Mean	Standard deviation	Minimum	Maximum
Contract changed from temporary into permanent	0.022	0.147	0	1
Young adult formed a new household	0.49	0.217	0	1
Age	22.67	3.382	20	35
Potential tenure (in years)	1.51	1.614	0	21.25
Actual tenure (in years)	0.997	1.487	0	20
Male	0.63	0.483	0	1
Household size in parental hhold.	4.328	1.291	2	13
Sample size: 244,253				
Panel B: Young adults whom we observe working in some period				
	Mean	Standard deviation	Minimum	Maximum
Job covered by permanent contract	0.517	0.500	0	1
Adult lives with parents	0.603	0.489	0	1
Age	25.058	4.209	20	35
Potential tenure (in years)	3.39	4.312	0	22
Actual tenure (in years)	3.28	4.33	0	20
Male	0.62	0.485	0	1
Household size in parental hhold.	3.391	1.507	1	13
Sample size: 633,621				

Table 6. The link between type of contract and living arrangements.

	OLS	PROBIT
Permanent contract	-0.042 (0.0022)**	-0.1848 (0.0117)**
Household size	0.1333 (0.0008)**	1.1179 (0.0118)**
Age	-0.0384 (0.0003)**	-0.1509 (0.0017)**
Male	0.0387 (0.0024)**	0.1896 (0.0132)**
Regional housing price	0.0627 (0.0032)**	0.3381 (0.0203)**
Constant	0.8671 (0.0178)**	-0.3683 (0.0999)**
# Individuals	117393	117393
Observations	433747	433747
R-squared	0.5	

- Standard errors allow for arbitrary correlation between observations belonging to the same individual and heteroscedasticity across individuals
- Working adults between 20 and 35 years of age
- *, ** statistically significant at 5%(1%) confidence level
- Additional covariates: region, gender, occupation, industry, schooling and

Table 7: The impact of regional subsidies on contract conversion (temporary into permanent)

Estimation method:	20-25		25-35		25-35 hombres	
	OLS	PROBIT	OLS	PROBIT	OLS	PROBIT
Dependent variable: contract change						
Subsidy amount	0.0060 (0.0015)**	0.0050 (0.0015)**	0.0057 (0.0016)**	0.0045 (0.0016)**	0.0079 (0.0022)**	0.0066 (0.0019)**
Male	0.0033 -0.0033	0.0039 -0.0032	0.0031 -0.0051	0.0044 -0.0048		
Current regional unempl. rate	-0.0053 (0.0010)**	-0.0060 (0.0009)**	-0.0062 (0.0011)**	-0.0069 (0.0010)**	-0.0064 (0.0014)**	-0.0071 (0.0012)**
1997 regional unempl. rate	0.0078 (0.0027)**	0.0075 (0.0024)**	0.0089 (0.0038)*	0.0080 (0.0034)*	0.0135 (0.0027)**	0.0130 (0.0025)**
Age	0.0029 (0.0005)**	0.0028 (0.0005)**	-0.0006 -0.0008	-0.0007 -0.0008	-0.0012 -0.0011	-0.0013 -0.0010
Household size	0.0014 -0.0007	0.0014 -0.0008	0.0007 -0.0013	0.0007 -0.0014	-0.0003 -0.0016	-0.0003 -0.0018
Regional housing cost	0.0073 -0.0040	0.0049 -0.0037	0.0047 -0.0045	0.0028 -0.0041	0.0040 -0.0065	0.0030 -0.0061
Constant	0.0507 (0.0181)**		0.1765 (0.0315)**		0.1896 (0.0318)**	
Sample size	186448		83567		50794	
R- squared	0.03		0.03		0.04	
test subsidy=0	16.22	11.15	11.91	8.51	13.23	11.48
Pr. > dist	0.0001	0.0008	0.001	0.0035	0.0009	0.0007

Standard errors allow for arbitrary correlation between observations belonging to the same individual and heteroscedasticity across individuals

*, ** statistically significant at 5%(1%) confidence level

Additional covariates: region, gender, occupation, industry, schooling and year

Table 8: The impact of contract conversion on household formation

Dependent variable takes value 1 if new household is formed. Estimation method: TSLS

	20-25	25-35	25-35 males
Contract change from temporary into permanent	0.0244 (.0513)	-0.0445 (0.084)	-0.0323 (0.0628)
Male	-0.0019 (0.0009)*	-0.0021 -0.0013	0.0000 0.0000
Current regional unempl. rate	0.0006 (0.0003)*	0.0003 -0.0006	0.0004 -0.0004
1997 regional unempl. rate	-0.0005 -0.0004	0.0000 -0.0011	0.0013 -0.0008
Age	0.0008 (0.0002)**	-0.0002 -0.0002	-0.0003 -0.0002
Household size	0.0002 -0.0002	0.0001 -0.0003	0.0004 -0.0003
Regional housing cost	-0.0016 (0.0006)**	-0.0010 -0.0012	0.0002 -0.0009
Constant	-0.0128 (0.0042)**	0.0235 -0.0167	0.0251 -0.0134
Sample size	186448	83567	50794
F-test contract change=0	0.23	0.28	0.26
Pr. > dist	0.6362	0.5976	0.6104

Standard errors clustered by individuals

*, ** statistically significant at 5%(1%) confidence level

Additional covariates: region, gender, occupation, industry, schooling and year

Table 9: the impact of contract change on household formation

Estimation method: bivariate probit						
	20-25		25-35		25-35 males	
Dependent variable:	Contract change	New hhold	Contract change	New hhold	Contract change	New hhold
Subsidy amount	0.0270 (0.0081)**		0.0228 (0.0079)**		0.0340 (0.0110)**	
Contract was temporary, now permanent		-0.1133 (.2535)		-0.8681 (0.2877)**		-1.0039 (.5495)
Male	0.0211 -0.0175	-0.0452 (0.0225)*	0.0221 -0.0242	-0.0327 -0.0230		
Current regional unempl. rate	-0.0320 (0.0049)**	0.0159 (0.0036)**	-0.0345 (0.0049)**	0.0046 -0.0061	-0.0366 (0.0063)**	0.0040 -0.0133
Region Unempl. Rate in 1997	0.0404 (0.0129)**	-0.0095 -0.0082	0.0403 (0.0169)*	0.0016 -0.0242	0.0675 (0.0129)**	0.0430 (0.0173)*
Age	0.0152 (0.0026)**	0.0204 (0.0029)**	-0.0036 -0.0042	-0.0050 -0.0038	-0.0068 -0.0055	-0.0076 -0.0039
Household size	0.0078 -0.0044	0.0067 -0.0040	0.0035 -0.0071	0.0030 -0.0047	-0.0020 -0.0094	0.0069 -0.0058
Regional cost of housing	0.0264 (0.0198)	-0.0456 (0.0143)**	0.0136 -0.0207	-0.0207 -0.0217	0.0157 -0.0316	0.0059 -0.0192
Constant	-1.6006 (0.0927)**	-2.8753 (0.0798)**	-0.9564 (0.1491)**	-1.8823 (0.2026)**	-0.8731 (0.1599)**	-1.6681 (0.4274)**
rho		0.5918 0.3730		0.0344 0.1371		0.4866 0.1912
Sample size		186448		83567		50794
test subsidy=0; contract change=0						
Prob > chi2	11.14 0.0008	0.2 0.655	8.33 0.0039	9.1 0.0025	9.52 0.002	3.34 0.0677

Table 11. First stage regression (flow) The impact of legal limits on contract conversion

	OLS			
	20-35	25-35	25-35 females	25-35 males
d(3≥exp≤4)	0.0534 (0.0074)**	0.0658 (0.0107)**	0.0604 (0.0175)**	0.0702 (0.0135)**
Age	0.0047 (0.0007)**	0.0077 (0.0017)**	0.0088 (0.0029)**	0.007 (0.0021)**
Male	0.0173 (0.0056)**	0.0232 (0.0082)**		
exp	0.019 (0.0045)**	0.0149 (0.0067)*	0.0182 (0.0114)	0.0113 (0.0083)
expc	0.0201 (0.0087)*	0.0301 (0.0126)*	0.0241 (0.0208)	0.0351 (0.0157)*
Household size	0.0018 (0.0018)	0.0027 (0.0026)	0.0032 (0.0044)	0.0031 (0.0032)
Constant	-0.0607 (0.0296)*	-0.1347 (0.0565)*	-0.2414 (0.0970)*	-0.0695 (0.069)
# Individuals	29351	13800	4832	8968
Observations	69655	32145	11318	20827
test F d=0	51.93	37.75	11.85	27.09

·Standard errors allow for arbitrary correlation between observations belonging to the same individual and heteroscedasticity across individuals

*, ** statistically significant at 5%(1%) confidence level

. Dependent variable: binary variable that takes value 1 if contract changed from temporary into permanent.

·Additional covariates: region, gender, occupation, industry, schooling and year

Table 12. Flows. The impact of contract change on household formation.

	TSLS			
	20-35	25-35	25-35 females	25-35 males
Contract now permanent, was transitory	-0.012 (0.0385)	-0.0297 (0.0497)	-0.0263 (0.0951)	-0.0246 (0.0563)
Age	0.0012 (0.0002)**	-0.0008 (0.0005)	-0.0012 (0.0011)	-0.0007 (0.0006)
Male	-0.0035 (0.0015)*	-0.0017 (0.0025)		
exp	0.0055 (0.0018)**	0.0074 (0.0026)**	0.0105 (0.0049)*	0.0054 (0.003)
expc	-0.0075 (0.0020)**	-0.0102 (0.0031)**	-0.016 (0.0051)**	-0.0068 (0.0039)
Household size	0.0011 (0.0004)*	0.0014 (0.0007)*	0.001 (0.0011)	0.0018 (0.0008)*
Constant	-0.0165 (0.0081)*	0.0314 (0.016)	0.0242 (0.0356)	0.0327 (0.0174)
# Individuals	29351	13800	4832	8968
# Observations	69655	32145	11318	20827
test F				
contract change=0	0.10	0.36	0.08	0.19

Standard errors allow for arbitrary correlation between observations belonging to the same individual and heteroscedasticity across individuals

*, ** statistically significant at 5%(1%) confidence level

. Dependent variable: binary variable that takes value 1 if new household formed

. Additional covariates: region, gender, occupation, industry, schooling and year

Table 13. First-stage regressions. The impact of legal time limits on contract conversion

	OLS			
	20-35	25-35	25-35 females	25-35 males
d(exp≥3)	0.0648 (0.0082)**	0.0726 (0.0103)**	0.0358 (0.0175)*	0.0928 (0.0127)**
AGE	0.0098 (0.0004)**	0.0065 (0.0007)**	0.0075 (0.0012)**	0.0058 (0.0009)**
MALE	0.0478 (0.0034)**	0.0514 (0.0041)**	-- --	-- --
Exp	0.0648 (0.0123)**	0.018 (0.0164)	0.0671 (0.0278)*	-0.0134 (0.0203)
Exp, squared	0.2093 (0.0196)**	0.263 (0.0257)**	0.1679 (0.0435)**	0.3173 (0.0317)**
Ecp, cubed	-0.087 (0.0079)**	-0.1034 (0.0102)**	-0.0634 (0.0173)**	-0.1254 (0.0126)**
Exp-3	0.3162 (0.0327)**	0.3295 (0.0411)**	0.1497 (0.0697)*	0.4249 (0.0509)**
Exp-3, squared	0.2763 (0.0301)**	0.3256 (0.0382)**	0.2005 (0.0647)**	0.3932 (0.0472)**
Exp-3, cubed	0.0881 (0.0080)**	0.1041 (0.0103)**	0.061 (0.0176)**	0.128 (0.0128)**
Household size	-0.0111 (0.0011)**	-0.0143 (0.0013)**		-0.0143 (0.0013)**
Constant	0.2202 (0.0183)**	0.2811 (0.0262)**	0.2278 (0.0458)**	0.3675 (0.0323)**
# Individuals	88462	58439	21754	36685
Sample size	257345	169442	60531	108911
test F d=0	62.49	49.67	4.19	53.34

d(exp>3) is a binary variable that takes value 1 if potential tenure exceeds one year

·Standard errors allow for arbitrary correlation between observations belonging to the same individual and heteroscedasticity across individuals

·Working adults between 20 and 35 years of age

*, ** statistically significant at 5%(1%) confidence level

·Additional covariates: region, gender, occupation, industry,

Table 14. The link between contract type and household formation, evidence from legal limits

	TSLS				
	20-35	25-35	25-35 females	25-35 males	25-35 males
Permanent contract	-0.1795 (0.0736)*	-0.1042 (0.0855)	-0.4762 (0.3786)	-0.0125 (0.0802)	-0.0254 (0.0801)
Age	-0.0291 (0.0008)**	-0.0253 (0.0009)**	-0.0168 (0.0031)**	-0.0291 (0.0010)**	-0.0287 (0.0010)**
Male	0.0264 (0.0046)**	0.0204 (0.0058)**	--	--	--
exp	0.0185 (0.0104)	-0.0039 (0.0113)	0.0613 (0.0393)	-0.0312 (0.0128)*	-0.016 (0.0127)
exp2	0.0055 (0.0127)	0.0057 (0.0184)	0.0032 (0.0509)	0.0204 (0.0212)	0.0091 (0.0215)
exp3	-0.0015 (0.0045)	0.0009 (0.0062)	0.0044 (0.017)	-0.0053 (0.0071)	-0.0021 (0.0071)
expc	0.0111 (0.0176)	-0.007 (0.0207)	-0.0707 (0.0419)	0.0286 (0.025)	0.0209 (0.0248)
expc2	-0.0085 (0.0147)	-0.0214 (0.0193)	-0.0341 (0.0498)	-0.0023 (0.0229)	-0.0092 (0.0227)
expc3	0.002 (0.005)	-0.0005 (0.0066)	-0.0063 (0.0171)	0.0067 (0.0077)	0.0031 (0.0077)
Household size	0.1885 (0.0014)**	0.238 (0.0019)**	0.2361 (0.0054)**	0.2366 (0.0023)**	0.2384 (0.0023)**
Constant	0.7418 (0.0232)**	0.4512 (0.0349)**	0.3617 (0.0988)**	0.5358 (0.0432)**	0.5219 (0.0442)**
Sample size	257345	169442	60531	108911	105768
F-test					
permanent contract=0	5.94	1.49	1.58	0.02	0.10

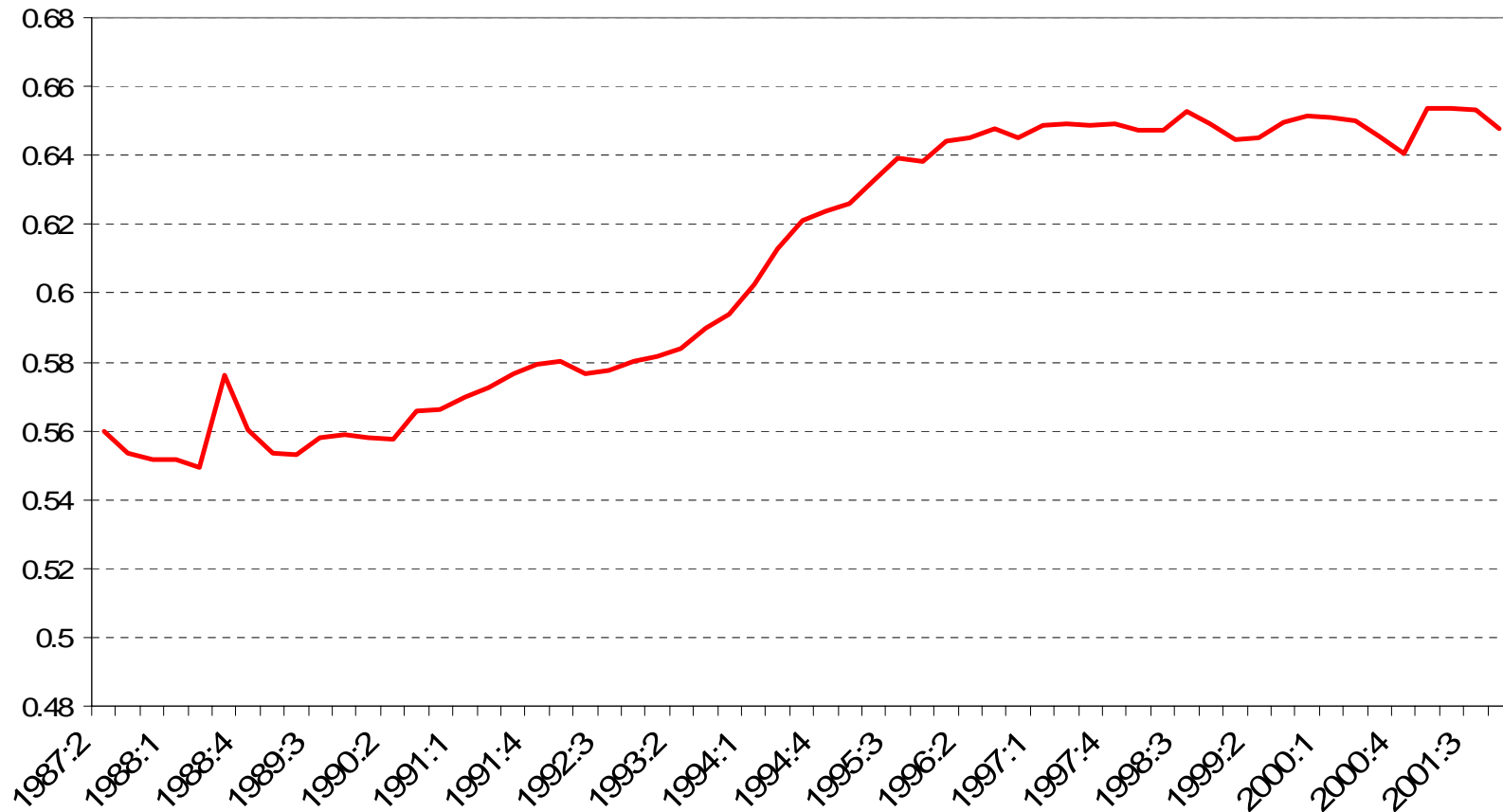
·Standard errors allow for arbitrary correlation between observations belonging to the same individual and heteroscedasticity across
*, ** statistically significant at 5%(1%) confidence level
·Additional covariates: region, gender, occupation, industry, schooling and year

Table 15. Summary results: the impact of type of contract on household formation

Regional subsidies. Dependent variable: new household formation.				
Estimation method: Bivariate Probit				
	20-25	25-35	25-35 females	25-35 males
Contract was temporary, now permanent	0.0487 (0.2327)	-0.4028 (0.3951)	-0.5315 (0.4148)	-0.6638 (0.9523)
Average treatment effect	0.0024	-0.0195	-0.0264	-0.0274
RDD. Flows. Dependent variable: new household formation				
Estimation method: TSLS				
	20-35	25-35		25-35 males
Contract was temporary, now permanent	-0.012 (0.0385)	-0.0297 (0.0497)	-0.0263 (0.0951)	-0.0246 (0.0563)
RDD. Stocks. Dependent variable takes value 1 if young lives with parents.				
TSLS				
	20-35	25-35		25-35 males
Permanent contract	-0.1795 (0.0736)*	-0.1042 (0.0855)	-0.4762 (0.3786)	-0.0125 (0.0802)

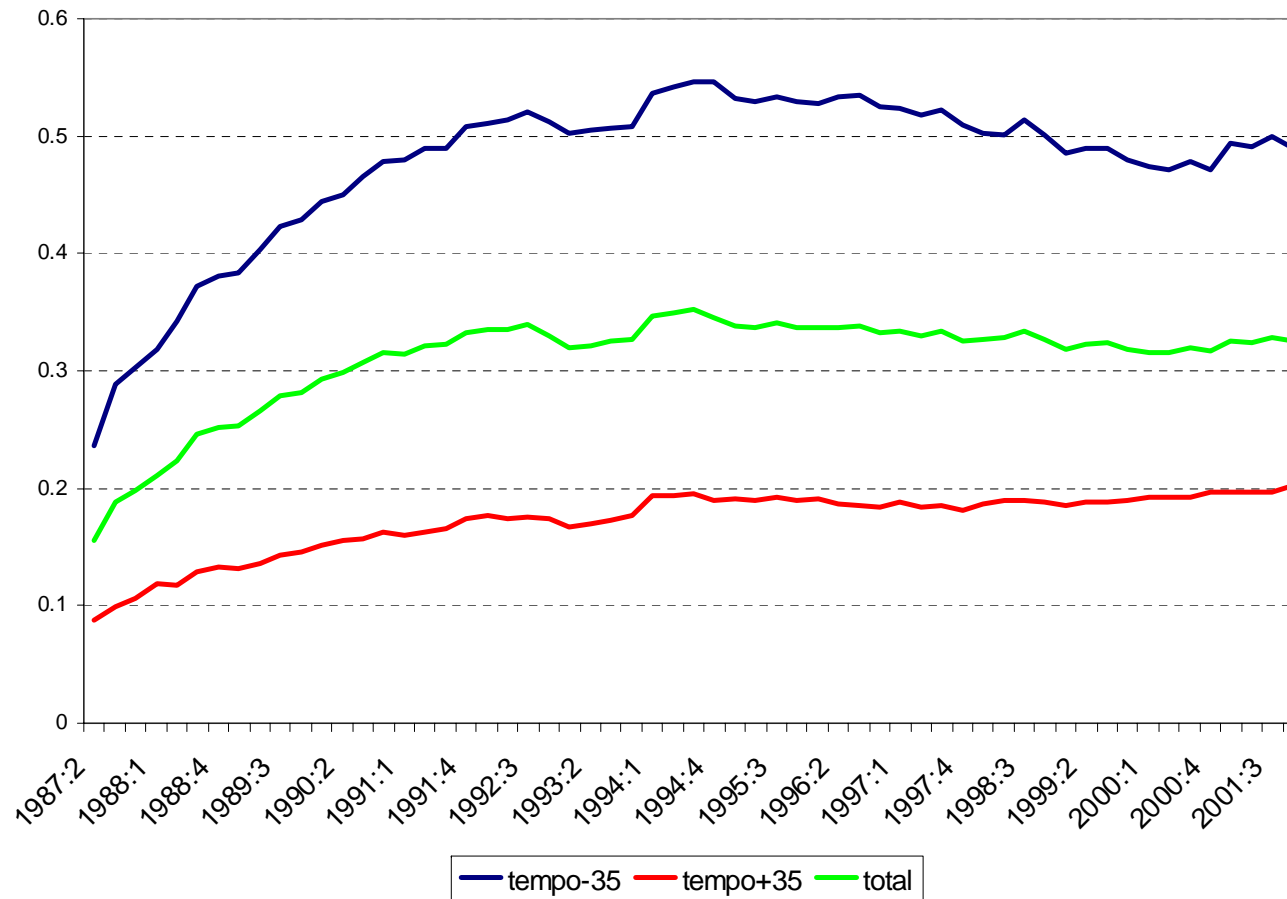
*,** statistically significant at 5%, 1% confidence level

Graph 1: evolution of % adults living with parents (20-35 years)



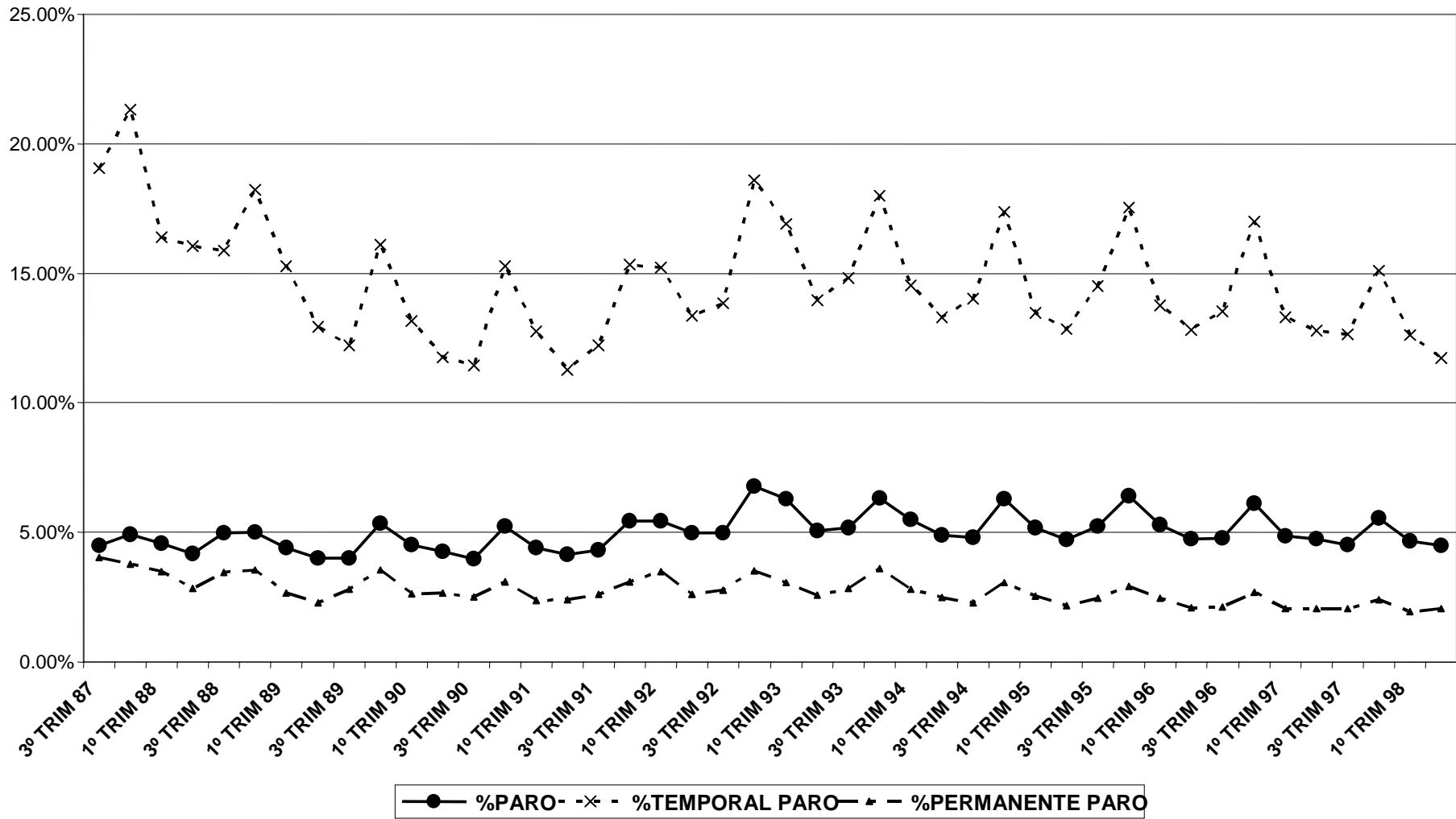
- Source: Spanish EMployment Survey

Graph 2: Evolution of fraction workers with a temporary contract



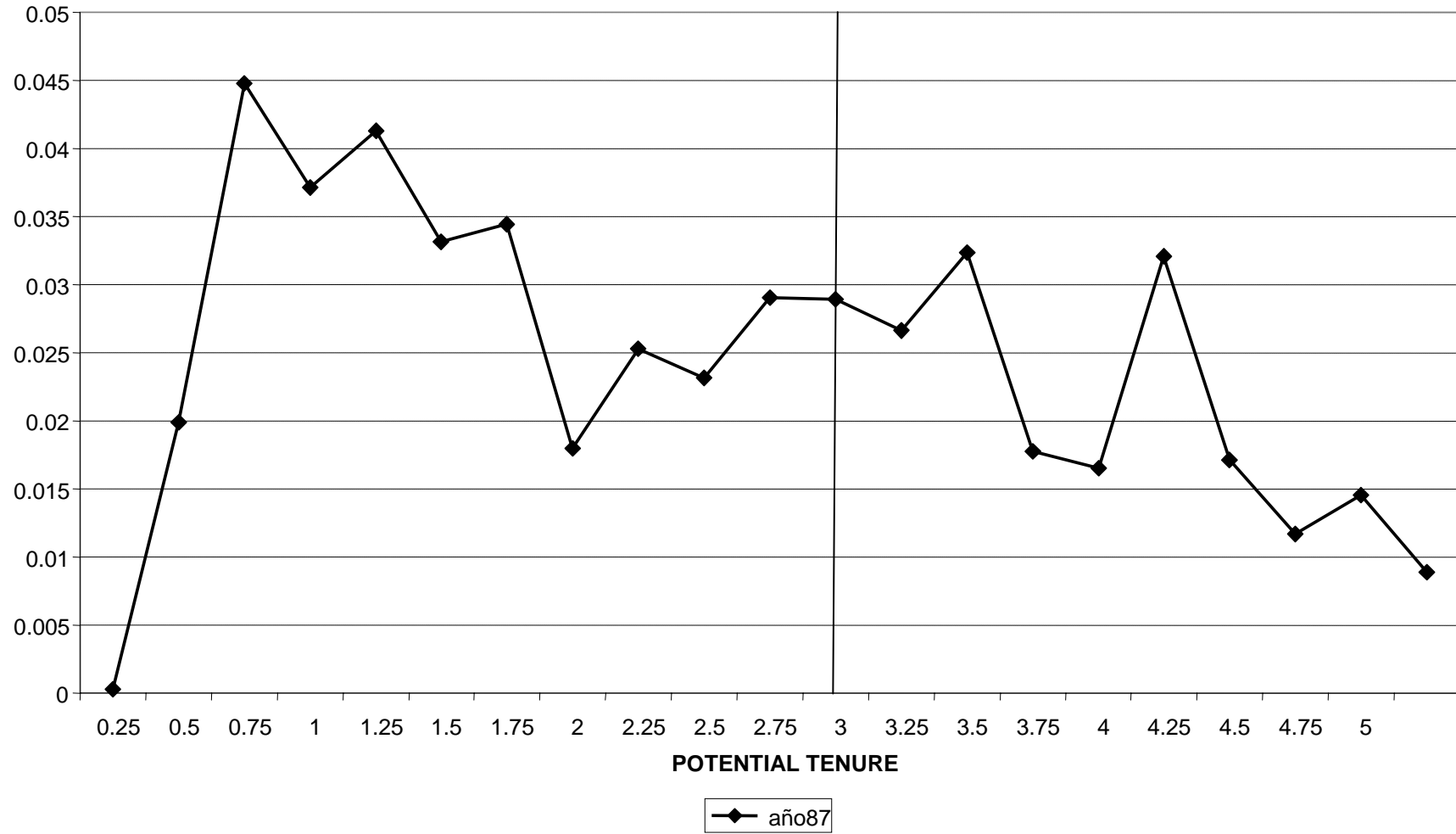
- Source: own computations from SPanish Employment Survey

Graph 3: Fraction of workers who transit into unemployment, by contract type.

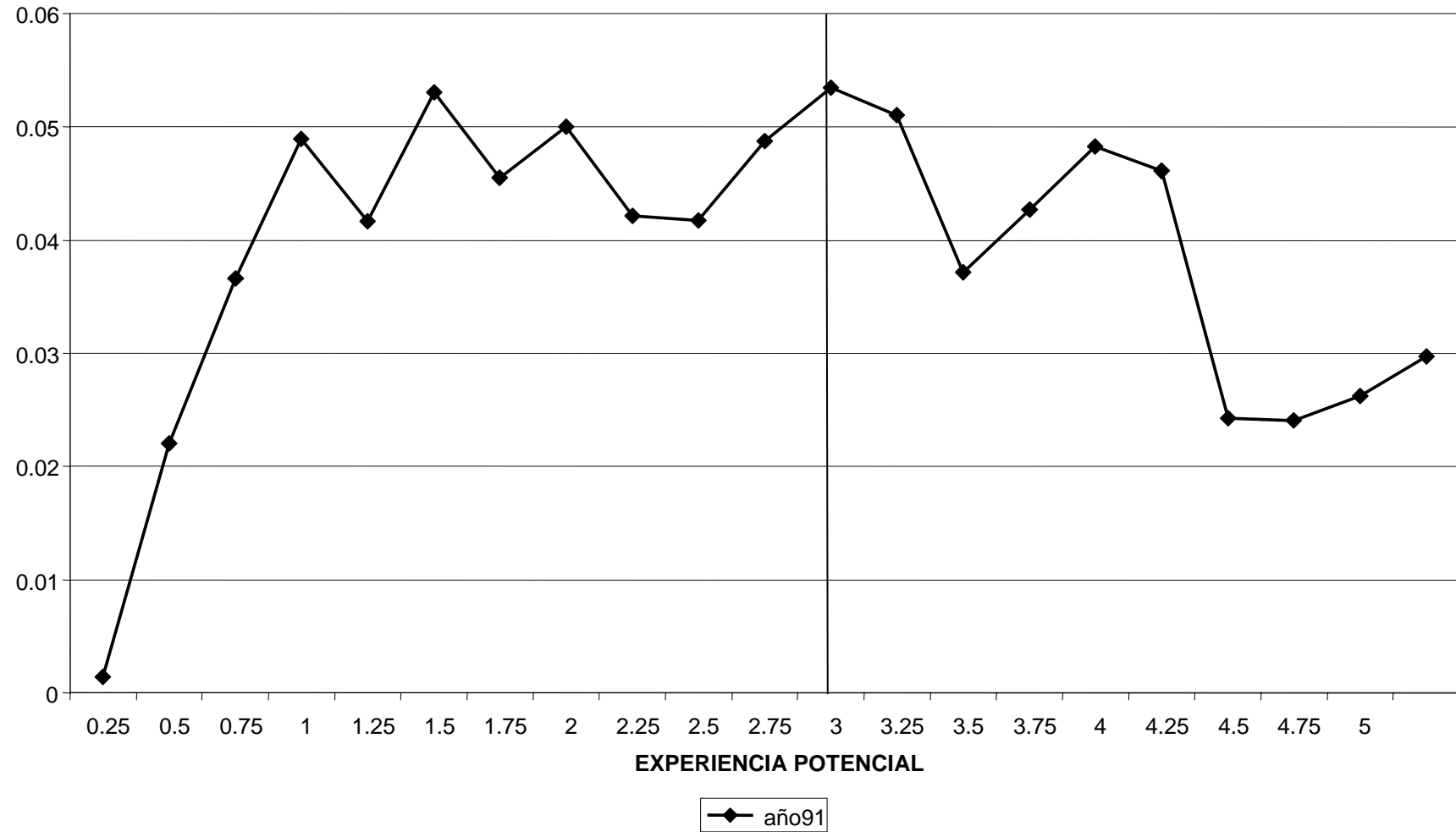


• Source: own computations using Spanish Employment Survey

GRAPH5 TRANSITION FROM TEMPORARY INTO PERMANENT CONTRACT BY TENURE, 1987



GRAPH5 TRANSITION FROM TEMPORARY INTO PERMANENT CONTRACT BY TENURE, 1991



GRAPH 6: HOUSEHOLD FORMATION AND CONTRACT CONVERSION BY POTENTIAL TENURE

