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Abstract

The rate of new household formation among young adults who live with their parents has decreased in the last twenty years, specially in Southern Europe. At the same time, exposure to the risk that a young adult loses his or her job has increased. We use differences in firing costs across contract types in the Spanish labor market to identify if there is a causal link between both developments. Our first identification strategy exploits a legally-induced sharp increase in firing costs 3 years after the starting of a fixed-term contract between 1987 and 1996. The second uses variation in regional incentives to promote high-firing cost contracts between 1997 and 2001. Both strategies fail to detect a causal impact of job insecurity on the probability of forming a new household. Tentative evidence supports the notion that lower job insecurity has an impact on the form of tenure of the first house of residence, favoring home-ownership over renting.

JEL Codes: J1, J2.

Keywords: Job security, household formation.

There are large country differences in the rate of household formation among young adults, leading to very different household structure. While among Scandinavian and Anglo Saxon countries, the fraction of adults between 18 and 35 years of age who live with their parents is below 50%, the corresponding fraction in Southern Europe 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; the Netherlands (20%), the United Kingdom (21%) and Ireland (22%) fall in the opposite extreme of the spectrum -see Becker, Bentolila, Fernandes and Ichino (2007b). This paper investigates whether or not exposure to the risk of losing the job explains differences in household formation of Southern European young adults.

The pattern of household formation of young adults has important consequences both for resource allocation in an economy and for the effectiveness of public policy aimed at redistributing income between generations. First, living with parents confines young adults to focus their job search in a limited geographical area, thus limiting the possibilities of finding a good match at a point of the life-cycle where workers are typically most mobile (Neal, 1999). Second, the decision to form a household and to have a child tend are lumped in Southern Europe (Billari et al., 2001). Understanding the determinants of household formation helps us to understand the recent stark drop in fertility rates in Southern Europe. Third, high rates of coresidency put into question who benefits from public programs, like Social Security, that redistribute income from the young to the elderly. The reason is that young adults living with their parents potentially share consumption of housing and food costs. Under such implicit resource sharing, intergenerational redistribution from young to elderly may not be effective because any euro that a young adult passes on the elder member through public redistribution may be given back through private resource sharing. Fourth, understanding whether young adults react to income risks by delaying household formation helps us to assess how vulnerable workers cope with the risk of falling into poverty (McGarry and Haider, 2005).[1]

[1] Recent research has tried to address the question: why do young adults in some countries

A widespread explanation of the incidence of coresidency between young adults and their parents is the increase of job insecurity faced by young adults. Becker et al. (2007a) present a theoretical model predicting that, under certain conditions, coresidency rates are positively related to employment risk faced by young adults and are negatively related to the employment risk of their parents. More generally, economic theory predicts that the presence of uncertainty about a future income stream tends to delay hard to reverse decisions with respect to a situation of perfect certainty. Unfortunately, the evidence of the literature that examines the link between employment risk and household formation does not deliver clear-cut conclusions. Gutierrez-Doménech (2005) and De la Rica and Iza (2004) use the European Community Household Panel to document that variation in firing costs due to changes in the type of contract makes young females more likely to form a new household and to become mothers. Ruiz-Castillo and Martínez-Granado (2002) document that unemployment rates are positively related with rates of cohabitation. Becker et al. (2007b) find that *parental* job insecurity has an stronger effect on young adult's household formation than youth's exposure to the risk of losing a job. Several reasons account for the discrepancy of results in the literature. First, it is generally hard to find good measures of employment risk. Second, even when good measures of employment risk are available, it is difficult to find variation in exposure to employment risk that is uncorrelated with other variables that correlate with household formation.

This study 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. Our contribution is to use the explosion of fixed-term contracts to identify jobs with high probability

stay so long with their parents. Rosenzweig and Wolpin (1994) support the notion that low-income children are more likely to live with parents (holding parental income constant). Manacorda and Moretti (2006) document that parents with higher income levels are more likely to live with their children, consistent with the predictions of an exchange model of the extended family. Giuliano (2007) studies the role of culture in household formation. Martins and Villanueva (2006) study the impact of borrowing costs on household formation.

of transition into unemployment. Workers with jobs regulated by a fixed-term (temporary) contract face a much higher probability of transiting into unemployment than workers with jobs regulated by a "permanent" (high firing cost) contract.[2] The reason is that firms pay 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 arguably 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 identifies possibly exogenous variation in contract changes associated to legal limits in the time a worker could be fired by a firm using a fixed-term contract. Between 1984 and 1994, firms could only employ a worker and regulate the employment relationship with a fixed-term contract (*contrato de fomento del empleo*) for a period of time that could not exceed 3 years. Three years after signing the first fixed-term contract, the firm was legally obliged to either dismiss the worker or to convert the contract into a permanent one (i.e., high-firing cost one). Building on the ideas and methods of Güell and Petrongolo (2007), we provide evidence that the three-year-limit is binding. Like Güell and Petrongolo, we document a peak in the rate of conversion of contracts into permanent ones three-years after the signing of a contract. Thus, we use the 3-year discontinuity as an instrument for contract conversion. Our strategy is then to examine the evolution of household formation by young adults in the proximity of the period in which the mandatory contract change is due. Changes around mandatory conversion of contracts have the advantage of being induced by legal changes, and less by other confounding factors (more active local labor markets, promotions of better workers) that also signal higher lifetime income prospects and also affect the chances of youth emancipation.

The second strategy exploits variation across Spanish regions in the introduction and amount of subsidies to firms to convert temporary contracts into

[2] Italy, Portugal, France and Spain are countries where fixed-term contracts have been widely used. Spain is, by far, the country with a most important share of such contracts. See Dolado et al. (2002).

permanent ones. Those 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. Using the 1997-2001 waves of the Spanish Employment Survey (EPA) we construct a sample of young adults first observed living with their parents and working with a fixed-term contract. We first document that the mean subsidy in the region (holding regional characteristics constant) was positively related with the rate of conversion of fixed-term contracts into permanent ones.[3] We then relate the decision of starting a new household to changes in the type of contract, instrumenting the change in the type of contract with the mean subsidy in the region.

Overall, our results 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 Fixed-term contracts and living arrangements

1.1 Living arrangements and fixed-term contracts

Differences in living arrangements between Southern and Northern Europe have been present for several decades (Billari et al., 2001) and seem to persist even among second-generation migrants in the US (Giuliano, 2007). Yet, as Bentolila et al. (2007) discuss, cross-country differences in the rate of household formation have widened since the mid 80s. For example, and focusing on the Spanish case, Graph 1a displays the evolution of the fraction of Spanish adults between 16 and 35 years of age who lived with their parents between 1987 and 2001.

[3] Rebollo and García-Pérez (2007) study the impact of the amout of the subsidy on worker flows using administrative data and document similar findings.

The graph suggests a steady increase from 56% in 1987 until 64% in the early nineties. Graph 1b shows the incidence of a particular type of job contract with very low firing costs: fixed-term contracts. The resemblance between Graphs 1a and 1b, together with the basic prediction of economic theory that in the presence of increased risk of losing the job, consumers tend to delay hard-to-reverse decisions, invite investigation of the link between exposure to employment loss and delay in the formation of a new household. Before doing that, we briefly review the salient characteristics of fixed-term contracts (see Dolado et al., 2002 or Güell and Petrongolo 2007, for a more in-depth analysis).

1.2 Fixed term contracts: legal framework

Fixed term contracts were introduced in various European countries as a way of introducing flexibility-at the margin in labor markets with severe firing costs. That is, contracts with lower firing costs were introduced only for entrants into new contracts while not changing firing costs of existing contracts. Spain was the European country with a strongest prevalence of such fixed-term contracts. In that sense, Spain provides a laboratory to examine the consequences of high exposure to the risk of losing the job. The reform in 1984 operated through the extension to any type of contractual relationship of a contractual figure originally thought for seasonal workers. Those contracts featured very low indemnities at termination. Table A.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 ("permanent") contract.

In 1997 a national-wide reform reduced the cost of firing permanent workers (from 45 wage-days per year worked to 33 wage-days).[4] At the same time, some of the 17 regional authorities decided to subsidize firms who signed permanent contracts, possibly in response to the growing incidence of fixed-term contracts

[4] Kugler et al. (2005) provide more detail on the legal implications of the reform.

among vulnerable workers - see García-Pérez and Rebollo (2007), who also examine the impact of those subsidies on labor market flows. Subsidies to contract conversion were typically lump-sum amounts given to firms that proved that a new permanent contract was signed (either by an existing worker whose job was regulated by a fixed-term contract or by a new worker who was unemployed). In some cases, the subsidies took the form of a reduction in the payroll tax . Table A.1, taken from Garcia and Rebollo (2007) shows the subsidies by region and demographic group. Table A.1 also documents that the size of subsidies varied over time (for example, Galicia removed them in 1998), and also among demographic groups; Andalucia 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).

1.3 Are fixed term contracts a good proxy for employment risk?

Workers hired under a fixed-term contracts were much more likely to experience a transition to non-employment than comparable workers hired under a permanent contract. Own computations from the Spanish Employment Survey suggest that employment risk does vary substantially between both types of workers; while workers covered by a fixed-term contract faced a probability of transiting into unemployment of about 12% in a given quarter, the corresponding probability for a worker covered by a permanent contract was about 3%.[5] A pertinent question is whether or not workers covered under a fixed-term contract actually perceive a higher chance of transiting into unemployment than workers covered by a permanent contract. For example, workers whose job is covered by a permanent contract may perceive that if they lose their job, there are few chances of finding a comparable one, because most exits from unemployment typically happen through fixed-term contracts (see Bover and Gomez, 2004).

[5] Regressions of the probability of transiting into unemployment on an indicator of Fixed-Term contract and age, occupation and industry dummies deliver similar results.

Alternatively, one may claim that some workers may be covered by a fixed-term contract, but see little chances of being in unemployment, due to strong local demand for their skills. While the Spanish EPA has little information about worker's perception of job insecurity, we have done an out-of-sample experiment to examine if subjective perceptions are affected by the type of contract. The European Community Household Panel contains some information about the worker's satisfaction with job insecurity. Below, we report some suggestive evidence suggesting that subjective satisfaction with insecurity on the job experiences a peak when a fixed-term contract is upgraded to a permanent one.

2 The identification strategy

The correlation between contract type and household formation is confounded by several omitted concurrent factors, summarized in a footnote.[6] Thus, our study exploits variation in contract type that is weakly correlated with either the ability of the worker or the local labor market. We discuss each source of exogenous variation in contract type below.

2.1 First strategy: Exploiting legal time limits

Our first strategy exploits the discontinuity a legally-induced change of probability of obtaining a permanent contract three years after signing a temporary contract.[7] Our basic assumption is that as time progresses in a job, information

[6] 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, in a context of limited worker mobility, young adults may face different local labor markets (Topel, 1986) . 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.

[7] As mentioned in the 1984 Worker's Act, no worker could work for the same firm for more than three years with a fixed-term contract. Of course, large firms could avoid such regulations by using legal loopholes, like transferring workers covered by a fixed-term contract to other firms of the group when the three-year limit binds. All we need for our instrument to work (i.e., to predict contract changes) is that transferring workers within the same firm carries a cost that makes it more likely for firms to upgrade the contract. Loss of position-specific

about the worker, experience and outside options accumulate in a continuous fashion. A young worker who has been working for a firm for two years and eleven months has revealed virtually the same kind of information to the market as a young worker that has been working in his or her position for three years and one month. Nevertheless, in terms of job security, there is an unambiguous mean increase. At three years, firms have an incentive to convert some contracts into high firing cost ones if they want to retain workers.[8] Thus, the pool of workers three years after having started working with a firm will contain workers who got this permanent contract, and another set that will be essentially in the same situation as before the three years (they still can get a contract covered by a fixed-term contract, see Bover and Gomez (2004), who document that the main way out of unemployment is a fixed-term contract). Our methods use such time discontinuity in the pool of workers to examine the impact on living arrangements.

Two reasons lead us not to use actual time spent in the firm as our "running" variable in the regression discontinuity design. First, focusing on "actual" time spent with the firm may lead us to analyze the selected group of workers who stay in a particular firm three years (those that the firm is specially interested in). Second, the characteristics firms use to retain fixed-term workers may be correlated with the propensity to establish a new household (higher-ability workers with higher income prospects). Instead, we construct a new variable called "potential tenure". The variable 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. To reinforce our argument, three years after signing a temporary contract, the worker has a chance of experiencing a decrease in the probability of losing his or her job. Our strategy only exploits exposure to the option associated to the time limit, but not the actual take-up of the option of getting a high firing cost contract.

human capital may be one example of such costs.

[8] The incentive may not only be ability-related, there may be temporary shortages of a specific type of human capital or skill level that leads firms to hire workers with a high firing cost contract.

We start by relating our variables of interest (whether or not the young adult lives with parents and the type of contract he or she is covered by) to time spent in the position. We use data on young adults (between 20 and 35 years of age) to estimate the following model.

$$Y_{it} = \alpha_0 + \alpha_1 TREAT_{it} + f(time_{it}) + g(time_{it} - 3.25) * TREAT_{it} + \beta_1 X_{it} + \varepsilon_3 \quad (1)$$

Y_{it} denotes the two binary outcomes we are interested in: working with a high firing cost contract and living with parents. The key variable is $TREAT_{it}$,a dummy indicating whether or not more than three years have passed since a worker started working in a firm. $time_{it}$ denotes potential tenure (time elapsed since the worker reports having signed a contract with a firm), and it is measured in quarters. Ideally, one would like to know the number of days the worker has been working with the firm. Unfortunately, the Spanish survey only asks about the number of years spent in the job, if these exceed one. We thus add a random variable taking four values to the reported "time at a firm" the first time we observe a worker, and then accumulate the number of quarters as we observe the worker in subsequent waves of the survey we use (our sample is a rotating panel of young workers followed at most for six quarters).[9] The functions $f()$, and $g()$ are two flexible functions of potential tenure and capture any impact of time on separate regressions having "working under a fixed-term contract" and "living with parents" as dependent variables. We model $f()$ and $g()$ using global polynomials of order two, but the results are not affected much when we use a third order global polynomial.[10]. Finally, X_{it} contains controls like age, gender, schooling attainment, family size, industry and regional dummies, included to reduce the standard errors of $TREAT_{it}$. The standard errors in all specifications are clustered at the level of quarters elapsed since a fixed-term

[9] We follow Güell and Petrongolo (2007) in their measurement of tenure at the firm. We are aware that our procedures introduce measurement error in our "running" variable. While this version does not fully address the measurement error problem induced by our strategy, we discuss the consequences of variables measured with error below.

[10] Given the coarseness of the running variable (number of quarters), we chose not to work with local polynomial regressions, as Hahn, Todd Van der Klaauw (2001) suggest.

contract is signed. We follow most of the literature on regression discontinuity design in estimating (1) using OLS - see Angrist and Lavy (1999) or Van der Klaauw (2002).

The coefficient of interest is α_1 in a specification that has "living with parents" as a dependent variable. α_1 is an intention-to-treat parameter that measures the impact of the discontinuity in the incentive to convert a contract into permanent on the living arrangements of young adults. If exposure to the risk of going into nonemployment does affect the probability that a young adult forms a new household, the coefficient would be negative and significantly different from zero.[11]

To examine more closely the dynamics of the household formation and contract conversion, we also perform an analysis of changes. Namely, we use a sample of young adults whom we observe living with parents and working covered by a fixed-term contract, and then examine the rate of leaving each of those status. We estimate the following regressions:

$$\begin{aligned} \Delta perm_{it} &= \beta_0 + \beta_1 TREAT^1_{it} + f_1(time_{it}) \\ &\quad + g_1(time_{it} - 3.25) * TREAT^1_{it} + u^1_{it} \end{aligned} \tag{2}$$

$$\begin{aligned} new\_hh_{it} &= \gamma_0 + \gamma_1 TREAT^1_{it} + f_2(time_{it}) + \\ &\quad + g_2(time_{it} - 3.25) * TREAT^1_{it} + u^2_{it} \end{aligned} \tag{3}$$

$\Delta perm_{it}$ is a binary variable that takes value 1 if young adult i has a permanent contract in quarter t but not in quarter $t-1$. $TREAT^1_{it}$ is defined as a dummy that takes value 1 in all the quarters between 3 and 4. $TREAT^1_{it}$ is

[11] A 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, 2003). Thus δ_1 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, δ_1 is most likely to be an upper bound on the impact of a fall in employment risk on household formation (see Rosenzweig and Wolpin, 1994; Aasve et al., 2001, Haider and McGarry, 2005 or Martins and Villanueva, 2006 among others)

again an intention-to-treat parameter that measures the impact of any event that happens in the third year after a worker signs a fixed-term contract with a firm. Strictly speaking, in model (2), we would only want the dummy that takes value 1 in the first quarter after the third year, because this is when the legal limit binds. Still, the pattern of reporting error we introduce in the data leads us to allow an effect that lasts for four quarters. In model (3), we use a variable that takes value 1 for four quarters to allow for some lags in the impact of contract conversions on household formation, as the latter can be a slow process. In all specifications, we work between years 1 and 4.75 in the life of a fixed-term contract. In previous versions of the paper, we have experimented using 5.5 and 7.25 as further limits, with qualitatively similar results.

The coefficient of interest is γ_1, that measures the impact of any development between 3 and 4 years after a fixed-term contract is signed on new household formation (above and beyond of what a smooth function of time would predict). γ_1 would be positive if a contract with higher firing costs reduces employment risk and young adults react to higher security by establishing a new household. One concern about models (2) and (3) as that we use selected samples (we discard young adults whom we do not observe living with their parents, who are not working or who are covered by a permanent contract). This version does not address the issue of initial sample selection, but we note that such considerations will not bias our estimates as long as they are a smooth function of time passed since signing a fixed-term contract.

2.2 Second methodology: regional variation in subsidies to contract conversion

Our second strategy uses the regional variation in incentives to convert fixed-term contracts into permanent ones documented in Section 2 as a source of identification. Basically, 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.[12,13]

We focus the analysis on a sample of young adults in the Spanish Employment survey whom we observe living with their parents, working on a job covered by a fixed-term contract. We measure the causal impact of a change of contract from fixed-term into permanent, using the following bivariate probit of the probability of forming a new household as a function of the contract type.

$$new\_hh_{it} = 1[\delta_0 + \delta_1 \Delta perm_{it} + \beta X_{it} + \varepsilon_1 > 0] \tag{2}$$

$$\Delta perm_{it} = 1[\gamma_0 + \gamma_2 subsidy + \gamma_1 X_{it} + \varepsilon_2 > 0] \tag{3}$$

new_hh_{it} is a binary variable that takes a value of 1 if we observe the young adult establishing a new household in that quarter and 0 otherwise. $\Delta perm_{it}$ is a binary variable that takes a value of 1 if we observe the individual's contract changing from temporary into permanent, and zero otherwise. Note that it is rather unlikely to find an instantaneous impact of contract conversion on household formation, as there are likely lags associated to, for example, finding appropriate accommodation. Thus, we set $\Delta perm_{it}$ to 1 in any observation following the conversion of a fixed-term contract into a permanent one.

X_{it} contains the age of the young adult, family size in the original household, year dummies and the regional unemployment rate when we observe the individual and the regional unemployment rate when the subsidies were introduced. X_{it} also includes the regional quality-unadjusted price of housing.

The key variable identifying the system of equation is *subsidy*, that measures the economic incentive a firm in a given region faces to upgrade a contract from fixed-term into permanent and is measured in thousands of 1995 euro. Note that we do not observe whether the firm for which the young adult works actually got

[12] As mentioned above, 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.

[13] Large regions like Catalonia and Madrid decided not to implement those subsidies in 1998. 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.

the subsidy, and use only variation in subsidy that is presented in Table A.1. $\varepsilon_1, \varepsilon_2$ are random disturbances, distributed as a bivariate normal with mean zero.

The parameter of interest in this specification is β_2, that measures the causal impact of a decrease in the probability of losing the job on the propensity to establish a new household. The system of equations (1) and (2) is identified by the joint normality of the error terms and by the assumption that the regional amount of the subsidy only affects the probability that a young adult forms a new household through its impact on the propensity of the firm to sign a new contract.

The "average treatment effect" can be defined as $\Phi(\widehat{x\beta}_1) - \Phi(\widehat{x\beta}_0)$. where $\widehat{x\beta}_1$($\widehat{x\beta}_0$) is the linear prediction setting $\Delta perm_{it}$ to 1 (0). Finally, to assess the impact of functional form assumptions on our estimates, we also report TSLS estimates, assuming linear probability models for both events (forming a new household and obtaining a high firing cost contract.

3 Data

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

First, we need to define the variables "establishing a new household" and "conversion of a temporary contract into a permanent one". In principle, the second variable is easy to construct as long as we can keep track of changes in the type of contract a worker has in different moments of 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 original parental 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.[14] Below, we compare our measure to rates of household formation among young adults obtained using panels that do track individuals as they leave their original household. Our sample is restricted to young individuals who are between 20 and 35 years of age and who 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.

3.1 Sample used for the first 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 use the strategy in Güell and Petrongolo (2007) who draw 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.

Of course, by construction, our measures of "actual" and "potential" tenure will coincide if the individual stays with the same firm. Otherwise, actual tenure

[14] Linking individuals and households over time is not an obvious task. The Spanish Statistical Agency provides two versions of EPA. The first is a series of cross-sections with detailed individual and family information, but in which all identifiers that would allow tracking an individual over time are scrapped before releasing the data. The second is a longitudinal file in which the information that allows tracking an individual over time is released, but all the identifiers that identify the houshold the individual belongs to are scrapped before releasing the data. Thus, to construct measures of household formation in the longitudinal version of the EPA one needs to identify the household an observation belongs to. We have benefitted from the invaluable help of Ildefonso Mendez, who has developed a software (using strictly public information) that allows identifying individuals belonging to the same household. We have done some coarse checks to ensure that our matching make sense, like cross-checking the number of families reported by our matching and those in the cross-section version of the EPA, and checking if the number of household members provided by our measure is not larger than the number of family members reported by the EPA.

will always fall below potential tenure. We use two samples, whose summary statistics are reported in Table 1.

3.2 Sample used for the second strategy, using regional variation in subsidies to conversion

The second sample is described in Table 2. A key variable in this second strategy is the amount of the subsidy that a firm qualifies for after converting a transitory contract into a permanent one (we ignore much higher subsidies because of contracting an unemployed as a permanent worker). Table 2 presents summary statistics of subsidies, quarterly rates of contract conversion (from fixed-term into permanent) and quarterly rates of household formation. The rates of household formation range between 1.4 percent and 2.8 percent per quarter. The yearly rate of household formation for the same period estimated in Martins and Villanueva (2006) using the European Community Household Panel is 8 percent. Regions with a higher fraction of permanent contracts tended to have lower subsidies (see the case of Catalonia, Madrid or Baleares). Thus, in all our specifications, we control for regional unemployment rate prior to the passing of the laws establishing subsidies.

4 Results

Table 3 presents OLS regressions of the event "establishing a new household" on the variable "the contract changes from transitory into permanent", holding constant the age, region, gender, year and regional housing price. The coefficient of "contract changed into permanent" in model 1 is .0057 and implies that once a young worker living in a two-person family and between 25 and 29 years of age obtains a permanent contract, his or her chances of establishing a new household in the following quarters increase from 2.2 percent to 2.77 percent. The coefficient drops a bit once we control for provincial dummies. Models 3 and 4 distinguish between the events "contract upgraded in this quarter", "contract upgraded last quarter" and "contract upgraded two quarters ago". The pattern of results suggest that most of the statistical association between both variables

happens in the quarter of contract conversion and the next one. As mentioned above, the results in Table 3 cannot readily be interpreted as a causal impact of employment risk on household formation, given a number of confounding factors: local labor markets or unobserved variation in young adult's maturity.

4.1 Results using legal limits to conversion

We start by illustrating our empirical methods in Graphs 2 and 3. Our identification strategy amounts to examining if the degree of "bunching" in contract upgrades (from fixed-term into permanent) at three years after a labor relationship is started is mirrored by a discontinuous change in the patterns of household formation observed. Graph 2 displays the time pattern of contract upgrades since the moment a labor contract starts with a firm, estimated using a second-order global polynomial in time and a dummy indicating whether or not more than 3.25 years elapsed since signing a contract. The time window used to estimate the model is between 1 and 4.5 years after signing a contract. Perhaps due to accumulation of experience in the labor market, firm's learning about the ability of the worker, or due to a speedier rate of arrival of job offers as experience is accumulated in the labor market, the time profile of contract conversion is positive both before and after the three year limit. Still, we detect a 4 percent jump in the fraction of contract conversions at the three-year limit. The jump is clearly out of the 95 confidence bands of the predictions at either side of the discontinuity. Graph 3 displays exactly the same predicted values for regressions where the dependent variable is whether or not the young adult lives with parents. Either at the 3-year limit or in the quarters immediately after, we fail to detect a drop in the fraction of young adults who live with their parents. The visual evidence in Graphs 2 and 3 provide little evidence for a causal link between the type of contract and the household formation by young adults.

Table 4, Panel A shows selected estimates of the coefficients of model (1), with the dependent variable being the type of contract (1 if permanent, 0 if fixed-term).[15] The coefficient of interest is the intervention dummy $d(time \geq .25)$,

[15] The standard errors are clustered at each level of year elapsed since contract was first

indicating whether or not more than three years have passed since the contract was signed. The magnitude of the estimate in Model 1 of Table 4 is .0429. That means an estimated "jump" of contract conversions of 4.29 percentage points at the legal limit of three years. The 4.3 percentage points "jump" in contract conversions is relatively stable across specifications: see Models 2-4. Table 4, Panel B shows the coefficients of the intervention dummy on a regression with the dependent variable being "the young adult lives with his or her parents", and otherwise identical to that shown above. For all sample splits, the estimated coefficients are small, positive and statistically not different from zero (a positive estimate would imply that the fraction of young adults living with parents *increases* following an increase in job stability). Thus, we fail to detect a change in the living arrangements of young adults around the time of mandatory contract conversion.

Next, we explore more closely the dynamics of contract conversion and new household formation exploiting the panel aspect of the Spanish employment survey. That is, we focus on individual changes in contract conversion and changes in living arrangements. Focusing on individual changes is helpful because we are dealing with low probability events, and detecting changes in stocks may be difficult. To detect in a simple way if there is a change in either contract conversion or in living arrangements at any particular time after signing a fixed term contract, we fit a second-order global time polynomial in time elapsed since signing a contract to each of the variables of interest: contract conversion and formation of a new household through youth emancipation. We plot the residuals of each of those regressions averaged by quarter elapsed since the contract started in Graph 4. The full line in Graph 4 connects the residuals from the contract conversion equation, and the dotted line those of the household

signed with the firm (see Card and Lee, 2006). Additional covariates (not shown), are year dummies (1990 omitted), a dummy for whether the young adult is between 20 and 24 years of age and another dummy for 25-29 years of age, 1-digit industry dummies, three dummies of educational attainment ("does not read", "primary school" and "professional training") and region dummies (Andalusia is omitted). Note that we do not control for covariates like family size in this specification due to its mechanical correlation with the dependent variable "the child lives with parents".

formation equation. While the series are very close to each other up to the year 1.75 (i.e., quarter 7 after contract conversion), the residuals of the contract change equation become positive and rather stretched between 3 and 4 years after signing the FTC, suggesting that there is some event at year 3 that leads to more conversions. We identify such event with mandatory conversions at the third year. Conversely, the series of residuals of new household formation do not exhibit such stretching at three years. If anything, household formation seems to lead contract conversion, a finding that we discuss below.

Tables 5 and 6 show the estimates of equations (2) and (3). For two reasons, we choose to work with an intervention variable that lasts for four quarters, instead of one. The first reason is that new household formation is possibly a time-consuming process (it may involve the purchase of a durable good, like housing), and there is little reason to expect that an instantaneous impact that just operates during the same quarter when the contract conversion happens (the evidence in Table 3 suggests statistical association between contract conversion and new household formation for two quarters). Second, and due to the type of information in the Spanish employment survey, there is some measurement error in the timing of the conversion of the fixed-term contract. Thus, we allow the intervention variable in both specifications to take up to 4 quarters.[16] Finally, instead of dropping observations in which a young worker has had his or her contract upgraded into permanent in the past, we still maintain those observations in the sample with a value of the dependent variable in the contract conversion regression of 1. One reason for doing this is to allow the construction of simple Wald estimates of the impact of contract change on the chances of forming a new household by taking ratios of the impact of our intervention dummy (that spans for four quarters) on contract conversion (young workers with a new contract stay around 2-3 quarters in our sample) and the impact of

[16] The results are somewhat sensitive (in terms of precission) when we specify two or three quarters after the third year). We think that the randomization of the number of quarters biases the results against finding bunching at exactly 3 years in contract conversions, Due to lags in household formation, we find it less plausible that the measurement error in our intervention dummy obscures the coefficient of in the specification with new household formation as a dependent variable.

the intervention dummy on new household formation.

Table 5 presents OLS estimates of equation (1), assuming that $f()$ and $g()$ are quadratic functions. 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 3 and 5 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 threshold in Murray (2005). Table 6 presents OLS estimates of the link between household formation and the intervention dummy. The coefficient has even the wrong sign (contract conversion impacts negatively household formation), but the precision in our preferred sample (males, 25-35 years of age) is small.

4.2 Regional variation in subsidies to convert temporary contracts into permanent ones

Next, we turn to an alternative source of identification: the incidence of regional subsidies to contract conversion between 1998 and 2001. The reason for this alternative strategy is to reassure ourselves that the lack of an impact of contract conversion on household formation is not due to pitfalls in our dataset of in our identification strategy.

We start by examining whether regional differences in the subsidies different regions announce explain regional differences in patterns of household formation. 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) in explaining contract conversions.[17] As before, 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.

[17] The specification in this strategy focuses on "flows" (individual changes in the type of contract or living arrangements), as we did not get convincing evidence that subsidies changed the stock of young adults with permanent contracts.

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.[18]

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). As subsidies in the region can be correlated with other characteristics that affect both contract conversion and the labor market performance of young adults, we examine whether subsidies explain pre-1998 conversions in Table A.2. The coefficients of the variable *subsidy* reported in Table A.2 are positive, much smaller than those in Table 7, and not significantly different from zero.

Table 8 presents estimates of the link between contract conversion and household formation using two alternative specifications: Two Stage Least Squares and Bivariate Probits. The estimates are in some instances negative, imprecise and not significantly different from zero. Table 7, Panel B reports the coefficients of the link between contract conversion and new household formation using 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

[18] We also followed Bertrand, Mullainathan and Duflo (2004) clustering standard errors by incidence groups of the subsidy, but the standard errors were implausibly small.

sample is of 2.2 percentage points). Unfortunately standard errors are relatively large. Given this, we also computed intention-to-treat models (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 probability of household formation by .001.Overall, we infer that the type of contract does not seem to have an important causal impact on the living arrangements of the youth.

4.3 Potential explanations

We briefly consider what may underlie the lack of a causal impact of cost-of-firing on the decision to establish a new household among young adults. First, we examine the hypothesis that young adults whose job is covered by a fixed-term contracts do not perceive high chances to go to unemployment. Second, we consider whether or not there are differences in routes of household formation by type of contract. The evidence comes from the 1994-2001 waves of the European Community Household Panel, a survey much more comprehensive than the Spanish Employment Survey. The information in the survey does not permit us to construct our key instruments (the 3-year rule was not binding between 1994-2001, and we lack information on region to construct the variable "subsidy"). Therefore, the evidence presented in this subsection is mainly suggestive.

An explanation of the lack of an effect of contract type on living arrangements is young adults may anticipate that their labor market status is bound to change in a year's time, say, and that, while they hold nominally a fixed-term contract temporarily, the chances of losing the job are weak. While such a hypothesis is at odds with the data in the Spanish Employment Survey, we know little about how individuals process information and form their expectations about future events (see Manski and Straub, 2000). We use data from the 1994-2001 European Household Panel to examine the evolution of subjective satisfaction with job security around contract conversion. The European Community asks workers about their level of satisfaction with the security on

their job. The answer is a 0 to 10 variable.[19] Graph 5 plots the time profile of one-year differences in the perception of job insecurity. The x-axis contains the time to contract conversion, and the y-axis the average of the individual level of satisfaction with job insecurity minus the satisfaction last year. Graph 5 suggests an important increase at the time of contract conversion. Workers seem to feel more certain about their jobs when these are permanent, rather than fixed-term.

Table 9 provides additional evidence about the link between low-firing costs contracts and household formation on one hand and the type of housing demand on the other. It uses data from the European Community Household Panel, a survey that tracks young adults as they form their own household. The first column in Table 9 shows the rate of household formation among young workers in four European countries where fixed-term contracts are widespread; Spain, Italy, France and Portugal. The first column of Panel A in Table 9 documents household formation rates by type of contract. The second through fourth columns in Table 9 show the fraction of young adults who establish a new household distinguishing by three routes of tenure: owner, renter and rent-free accommodation. As in the Spanish Employment survey (see Table 3), we find differences of rates of household formation across workers with different contract types (.077 per year among workers covered by a fixed-term contract, compared to .0649 among workers covered with a permanent contract). The corresponding columns in Panels B through D display a contract-related gap in household formation in Portugal (Panel D, .068 for permanent contracts vs. .059 for fixed-term contracts), but the gap disappears in Italy (both set of workers have virtually the same rate of new household formation: .066) and the gap is even reversed in France. Thus, the link between contract type and the rate of household formation is not prevalent across European countries.

Second, we interpret from columns (2)-(4) of Table 9 that what fixed-term

[19] Subjective measures like satisfaction are likely to capture cross-sectional differences in perception of risks as well as individual variation in the perceptions of what is a "satisfactory level" of job security (that may mean different things for different workers). To alleviate the problem, we work with individual one-year differences in satisfaction.

contracts shape is not the rate of household formation, but the type of tenure arrangement in the first accommodation. The fraction of young workers covered by a high-firing cost contract who form a new household and own their accommodation is 69% (Table 9, Panel A, column 2 row 1), while 20% rent the house they move to (Table 9, Panel A, column 3, row 1). Conversely, among young workers who form a household and are covered by a fixed-term contract, the probability of owning is 16 percentage points smaller than among those covered by a high-firing cost contract: 53% (Table 9, Panel A, column 2 row 2). Young workers covered by a fixed-term contract who form a new household are 12 percentage points more likely to rent a new accommodation than those covered by a high-firing cost contract (32% of workers with a fixed term contract rent, instead of 20% with a permanent contract). Qualitatively similar results are present in the rest of the countries: young workers with a permanent contract are more likely to become home-owners and less likely to become renters than young workers with a fixed-term contract. Another tentative finding is that, in all countries, fixed-term contracts are less likely to become home owners paying a mortgage loan than young workers with a permanent contract. An interpretation of that finding is that the impact of firing costs on tenure arrangements may not work through postponement of hard-to-reverse decisions due to risk aversion, but to difficulties in accessing credit markets.

Overall, our interpretation of the evidence in Table 9 is that young adults react to the presence of employment risk by choosing routes of household formation that involve a lower adjustment costs in the case of an income drop. Renting involves small adjustment costs in face of an income downturn; in Spain the renter in the can break the contract at any time, just with one month's notice. Alternatively, selling a house in the event of an income downturn may be a costly process. Martins and Villanueva (2006) provide evidence consistent with the idea that sharp changes in the cost of owner-occupied housing do affect the living arrangements of the youth.

5 Conclusions

This study exploits two institutional features of the Spanish labor market to address the question: Does the growing incidence of employment insecurity among young adults account for their recent patterns of household formation? The advantage of working with Spanish labor market data is the widespread use of low-firing cost contracts, that allows us to identify which young adults are exposed to the risk of losing their job. We can also exploit legal changes that influence the labor demand of firms for workers with different contract types to obtain arguably exogenous variation in employment insecurity. Thus, we are able to estimate the link between obtaining a more secure jobs and the decision to establish a new household controlling for other confounding factors.

We use two strategies to identify the causal link between job insecurity and household formation. The first strategy exploits a legal limit between 1987 and 1994 that required firms to convert temporary jobs into permanent ones after three years of continuous relationship between a worker and a firm. That legal limit creates a discontinuity in the chances of obtaining a more secure job three years after signing a contract, that we use to identify the impact of changes in firing costs on household formation. The second strategy uses temporal and regional variation in subsidies to convert low-firing cost contracts into high firing costs ones between 1998 and 2001. Each strategy identifies the impact using a different group of the population and a different time period, but both consistently lead to the same conclusion; the link between job insecurity and household formation is at best weak.

We would like to flag two lines of research. The first is to embark in a full-fledged study of the impact of changes in the risk of losing the job in the decision to form a household by owning a house or by renting one. The second is to examine the impact of employment risk on outcomes like household consumption or portfolio composition.

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Table 1: Summary statistics of sample used to analyze the impact of legal time limits.

Panel A: Young coresidents first observed working with a FT contract

	Mean	Standard deviation	Minimum	Maximum
Contract changed from temporary into permanent	0.022	0.147	0	1
Young adult formed a new household	0.049	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 2: Sample used for analysis of the impact of subsidies: 1998-2001

	Sample (1), flows			Sample (2), stocks	
	Subsidy	Contract changed from transitory to permanent	New household formed	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

Source: Own computations from the 1998-2001 waves of the Encuesta de la Población Activa

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 3. Changes in type of contract and household formation.

Dependent variable takes value one if young adult leaves the house of parents, zero otherwise. Estimation method: OLS

	Model I	Model II	Model III
Change from fixed-term to permanent	.0057	.0051	--
	(.0011)	(.0010)	
Contract changed in the present quarter	--	--	.0104
			(.0016)
Contract changed last quarter	--	--	.0074
			(.002)
Contract changed two quarters ago	--	--	.0011
			(.0018)
Age between 20 and 25 years	-.0129	-.0128	-.012
	(.0008)	(.0008)	(.0008)
Age between 31 and 35 years	-.0063	-0.006	-.0062
	(.00012)	(.0012)	(.0012)
Female	.0033	.00339	.0033
	(.0008)	(.0008)	(.0008)
Family size equals 3	.0047	.0046	.0047
	(.0016)	(.0016)	(.0016)
Family size equals 4	.0047	.0047	.0047
	(.0015)	(.0015)	(.0016)
Family size equals 5	.0089	.0088	.0088
	(.0016)	(.0016)	(.0016)
Family size equals 6 or more	.0093	.009	.0092
	(.0017)	(.0017)	(.0017)
Constant	.022	.012	.0218
	(.0024)	(.003)	(.002)
Year dummies	YES	YES	YES
Province dummies?	NO	YES	NO
Observations	198,310		198,310

Notes: 1987-1995 waves of the Spanish Employment Survey (Encuesta de Población Activa). Sample of individuals between 18 and 35 of age observed living with their parents and with a temporary contract. Education, industry and region included in Models 1 and 2.
2. Constant is an estimate of the probability of forming a new household of a young adult between 25 and 29 years, who has completed at least high school, lives in a family of 2 persons, works with a temporary contract in the food industry in Andalusia

Table 4. The impact of legal time limits on type of contract

Estimation method: OLS Sample, by age and gender:	20-35 (1)	25-35 (2)	25-35 females (3)	25-35 males (4)
Dependent variable takes value 1 if young adult works under a permanent contract, 0 otherwise				
d(3<years since FTC)	.0429	.043	.043	.0426
	(.011)**	(.012)**	(.015)**	(.021)**
Female	-.037	-.040		
	(.004)	(.004)		
Years since FTC	.64	.616	.846	.47
	(.131)	(.082)	(.113)	(.16)
Years since FTC, squared	-.165	-.16	-.288	-.082
	(.067)	(.043)	(.057)	(.079)
Years since FTC, cubed	.0182	.0178	.04	.005
	(.011)	(.007)	(.009)	(.013)
(Years since FTC -3)*d(3<years since FTC<4)	-.123	-.122	-.244	-.051
	(.065)	(.067)	(.087)	(.11)
(Years since FTC -3) squared*d(3<years FTC<4)	.163	.137	.151	.12
	(.081)	(.081)	(.129)	(.14)
(Years since FTC -3) cubed*d(3<years FTC<4)	-.086	-.077	-.132	-.044
	(.029)	(.030)	(.053)	(051)
Sample size	171148	111111	39543	71568
test F d=0	16.38	12.84	12.84	4.12
Panel B: Dependent variable: Young adult lives with his or her parents				
d(3<years since FTC)	.000	.003	.0051	.0016
	(.001)	(.002)	(.0049)	(.007)
Female	-.0108	-.0132		
	(.0016)	(.0023)		
Sample size	171148	111111	39543	71568

1. d(exp>3) is a binary variable that takes value1 if more than three years have passed since a temporary contract was signed

2. Window used: between 1 and 4.5 years of time since fixed-term contract signed

3 Standard errors clustered at the level of years elapsed since a fixed-term contract was signed (in quarters).

4. Covariates included in all specifications but not shown: age dummies, industry, and schooling

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

Table 5. The impact of legal limits on contract conversion 1987-1994

Estimation method: OLS

Dependent variable takes value 1 if temporary contract upgraded into permanent, 0 otherwise

	Sample used, by gender and age			
	20-35, all	25-35, all	25-35 females	25-35 males
	(1)	(2)	(3)	(4)
d(3<years since FTC<4)	.0296	.0497	.0558	.0478
	(.0041)**	(.0088)**	(.0115)**	(.0105)**
Years since FTC	-0.0361	-.0781	-0.12	-0.058
	(.015)**	(.0196)	(.0308)	(.0144)
Years since FTC, squared	.0134	.0214	.0321	.0159
	(.0028)	(.0033)	(.0052)	(.0025)
(Years since FTC -3)*d(3<years since FTC<4)	.0455	-.0065	-.17	.0937
	(.0198)	(.0296)	(.025)	(.064)
(Years since FTC -3) squared*d(3<years FTC<4)	-.0236	.0218	.157	-.0641
	(.0201)	(.031)	(.0274)	(.0671)
Edad 20-24	-.0233	--		
	(.0058)			
Edad 30-34	.0388	.0388	.041	.0375
	(.0063)	(.0058)	(.009)	(.011)
Female	-.0063	-.0085		
	(.0027)	(.0055)		
test F d(3≥exp≤4)=0	52.12	31.90	25.92	20.72
Observations	64705	29458	10396	19062

1. d(3≥exp≤4) is a binary variable that takes value 1 if between 3 and 4 years have passed since the first time we observe a young adult working under a fixed-term contract.
2. "Potential tenure" is the time elapsed since the first time we observe the individual working with a fixed-term contract
3. Standard errors allow for arbitrary correlation between observations belonging to the same individual and heteroscedasticity across individuals
4. *, ** statistically significant at 5%(1%) confidence level
5. Dependent variable: binary variable that takes value 1 if contract changed from temporary into permanent.
6. Additional covariates: region, gender, occupation, industry, schooling and year

Table 6. The impact of legal limits on household formation.

Estimation method: OLS

Dependent variable takes value 1 if young adult forms a household in the quarter, 0 otherwise

Sample, by age and gender:	20-35	25-35	25-35 females	25-35 males
	(1)	(2)	(3)	(4)
d(3<years since FTC<4)	-.004	-.0052	-.0076	-.0040
	(.0012)**	(.0019)**	(.0032)**	(.0028)
Years since FTC	.021	0.0169	.0292	.0113
	(.0039)	-0.0044	(.0058)	(.0049)
Years since FTC, squared	-.0031	-.0019	-.004	-.0010
	(.0009)	(.0008)	(.0014)	(.0010)
(Years since FTC -3)*d(3<years since FTC<4)	-.0017	-.0113	-.0118	-.0073
	(0.013)	(.012)	(.0078)	(.0214)
(Years since FTC -3) squared*d(3<years FTC<4)	.0013	.0088	.0148	.0024
	(.0135)	(.012)	(.0085)	(.0212)
Edad 20-24	-.0145			
	(.0014)			
Edad 30-34	-.0061	-.0052	-.0087	-.0027
	(.0019)	(.0019)	(.0017)	(.0025)
Female	.006	.0059		
	(.0011)	(.0012)		

1. Standard errors clustered at the number of years since contract signed level.
2. *, ** statistically significant at 5%(1%) confidence level
3. Additional covariates: region, gender, occupation, industry, schooling and year

Table 7: The impact of regional subsidies on contract conversion (fixed-term into permanent)

Dependent variable takes value 1 if contract changes from fixed-term into permanent						
Estimation method:	OLS	PROBIT	OLS	PROBIT	OLS	PROBIT
Sample by age and gender:	20-25, all		25-35, all		25-35 males	
	(1)	(2)	(3)	(4)	(5)	(6)
Subsidy amount	.006	.005	.0057	.0045	.0079	.0066
	(.0015)**	(.0015)**	(.0016)**	(.0016)**	(.0022)**	(.0019)**
Male	0.0033	0.0039	0.0031	0.0044		
	(.0033)	(.0032)	(.0051)	(.0048)		
Current regional unempl. rate	-0.0053	-0.0060	-0.0062	-0.0069	-0.0064	-0.0071
	(0.0010)**	(0.0009)**	(0.0011)**	(0.0010)**	(0.0014)**	(0.0012)**
1997 regional unempl. rate	0.0078	0.0075	0.0089	0.0080	0.0135	0.0130
	(0.0027)**	(0.0024)**	(0.0038)*	(0.0034)*	(0.0027)**	(0.0025)**
Age	0.0029	0.0028	-0.0006	-0.0007	-0.0012	-0.0013
	(0.0005)**	(0.0005)**	-0.0008	-0.0008	-0.0011	-0.0010
Household size	0.0014	0.0014	0.0007	0.0007	-0.0003	-0.0003
	-0.0007	-0.0008	-0.0013	-0.0014	-0.0016	-0.0018
Regional housing cost	0.0073	0.0049	0.0047	0.0028	0.0040	0.0030
	-0.0040	-0.0037	-0.0045	-0.0041	-0.0065	-0.0061
Constant	0.0507		0.1765		0.1896	
	(0.0181)**		(0.0315)**		(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

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

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

3. 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 young adults forms a new household in the quarter, 0 otherwise			
Sample, by age and gender:	20-25, all	25-35, all	25-35 males
Panel A: Model estimated by TSLS (only second stage shown)			
Change fixed-term contract - permanent contract	0.0244	-0.0445	-0.0323
	(.0513)	(0.084)	(0.0628)
Male	-0.0019	-0.0021	
	(0.0009)*	(.0013)	
Current regional unempl. rate	0.0006	0.0003	0.0004
	(0.0003)*	(.0006)	(.0004)
1997 regional unempl. rate	-0.0005	0.0000	0.0013
	(.0004)	(.0011)	(.0008)
Age	0.0008	-0.0002	-0.0003
	(0.0002)**	(.0002)	(.0002)
Household size	0.0002	0.0001	0.0004
	(.0002)	(.0003)	(.0003)
Regional housing cost	-0.0016	-0.0010	0.0002
	(0.0006)**	(.0012)	(.0009)
Panel B: Model estimated by bivariate probit (only coefficients of the outcome equation shown)			
Change fixed-term contract - permanent contract	-0.1133	-0.8681	-1.0039
	(.2535)	(0.2877)**	(.5495)
Male	-0.0452	-0.0327	
	(0.0225)*	(.023)	
Current regional unempl. rate	0.0159	0.0046	0.0040
	(0.0036)**	(.0061)	(.0133)
1997 regional unempl. rate	-0.0095	0.0016	0.0430
	-0.0082	(.0242)	(0.0173)*
Age	0.0204	-0.0050	-0.0076
	(0.0029)**	(.0038)	(.0039)
Household size	0.0067	0.0030	0.0069
	(.004)	(.0047)	(.0058)
Regional housing cost	-0.0456	-0.0207	0.0059
	(0.0143)**	(.0217)	(.0192)
Correlation unobservables in outcome and selection	0.5918	0.0344	0.4866
Sample size	186448	83567	50794

Table 9: Forms of household formation

Panel A: Household formation and tenure at first accomodation, by contract type (SPAIN)

	All new households	New household (owner)	New household, (owner - borrower)	New household, (renter)	Free-rent accomodation
	(1)	(2)		(3)	(4)
Perm. contract	.077	.692	.622	.206	.094
FT contract	.065	.533	.393	.323	.131

Panel B: Household formation and tenure at first accomodation, by contract type (ITALY)

	All new households	New household (owner)	New household, (owner - borrower)	New household, (renter)	Free-rent accomodation
	(1)	(2)		(3)	(4)
Perm. contract	.066	.55	.23	.28	.15
FT contract	.067	.48	.12	.32	.19

Panel C: Household formation and tenure at first accomodation, by contract type (FRANCE)

	All new households	New household (owner)	New household, (owner - borrower)	New household, (renter)	Free-rent accomodation
	(1)	(2)		(3)	(4)
Perm. contract	.110	.168	.155	.79	.04
FT contract	.132	.10	.07	.808	.088

Panel D: Household formation and tenure at first accomodation, by contract type (PORTUGAL)

	All new households	New household (owner)	New household, (owner - borrower)	New household, (renter)	Free-rent accomodation
	(1)	(2)		(3)	(4)
Perm. contract	.068	.54	.41	.237	.222
FT contract	.059	.507	.408	.25	.24

Own computations using the 1994-2001 Waves of the European Community Household Panel

Table A.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 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

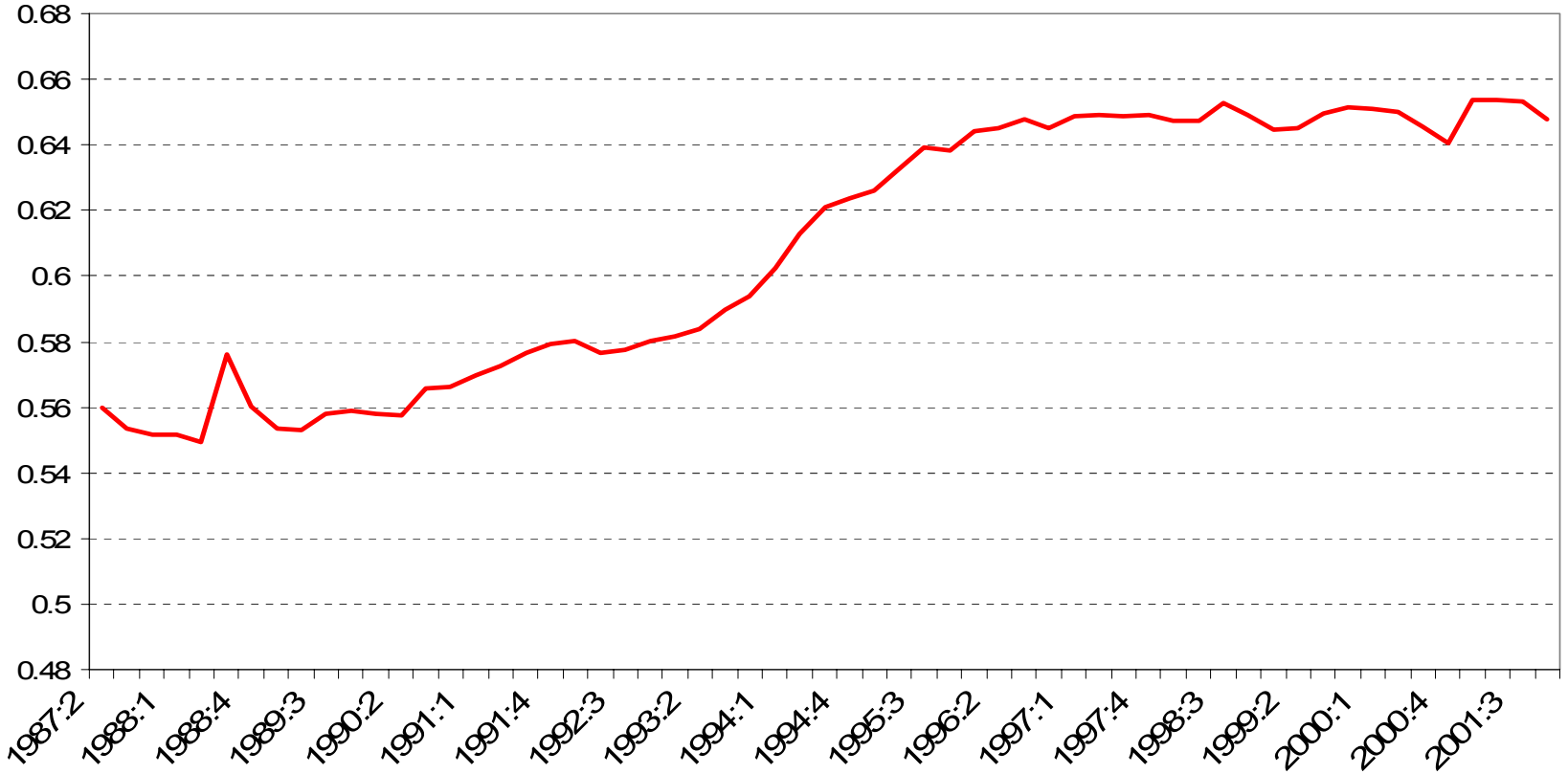
Table A.2: Minimum amd maximum duration of temporary contracts, by contract type

	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

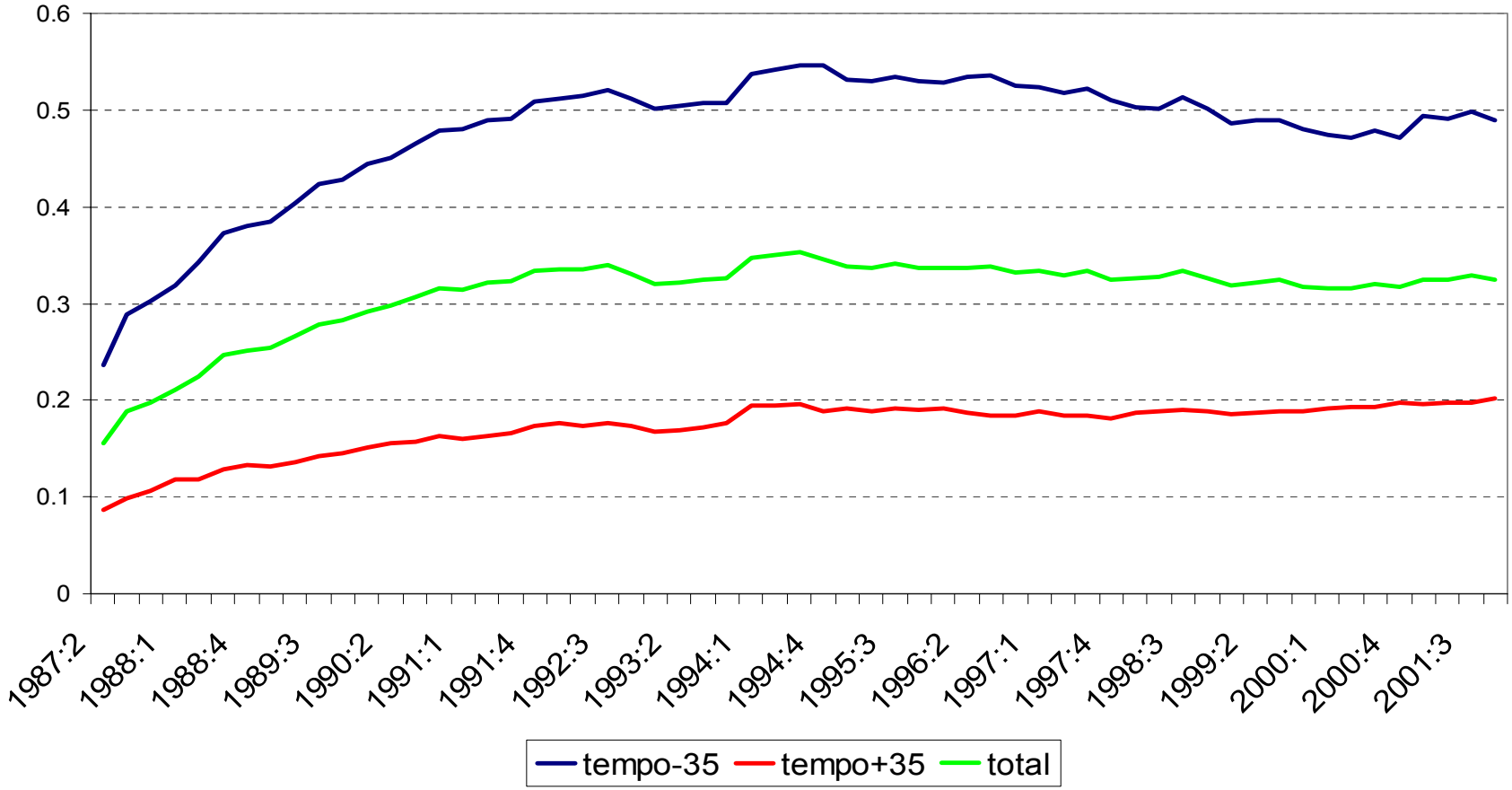
Table A.3. Do1998 subsidies explain pre-1998 contract upgrades?

Dependent variable takes value 1 if contract changed from fixed-term into permanent		
Estimation method:	OLS	PROBIT
Subsidy	0.0009	0.0082
	(0.0008)	(0.0075)
Male	-0.0014	-0.0097
	(0.0023)	(0.0189)
Current regional unempl. rate	-0.0005	-0.0039
	(0.0001)**	(0.0009)**
1997 regional unempl. rate	-2.2056	-22.0520
	(0.3911)**	(5.7145)**
Age	0.0015	0.0129
	(0.0002)**	(0.0021)**
Household size	0.0012	0.0109
	(0.0006)*	(0.0052)*
Regional housing cost	0.2543	2.5209
	(0.04503)**	(0.6577)**
# Young adults	51203	
Observations	187768	

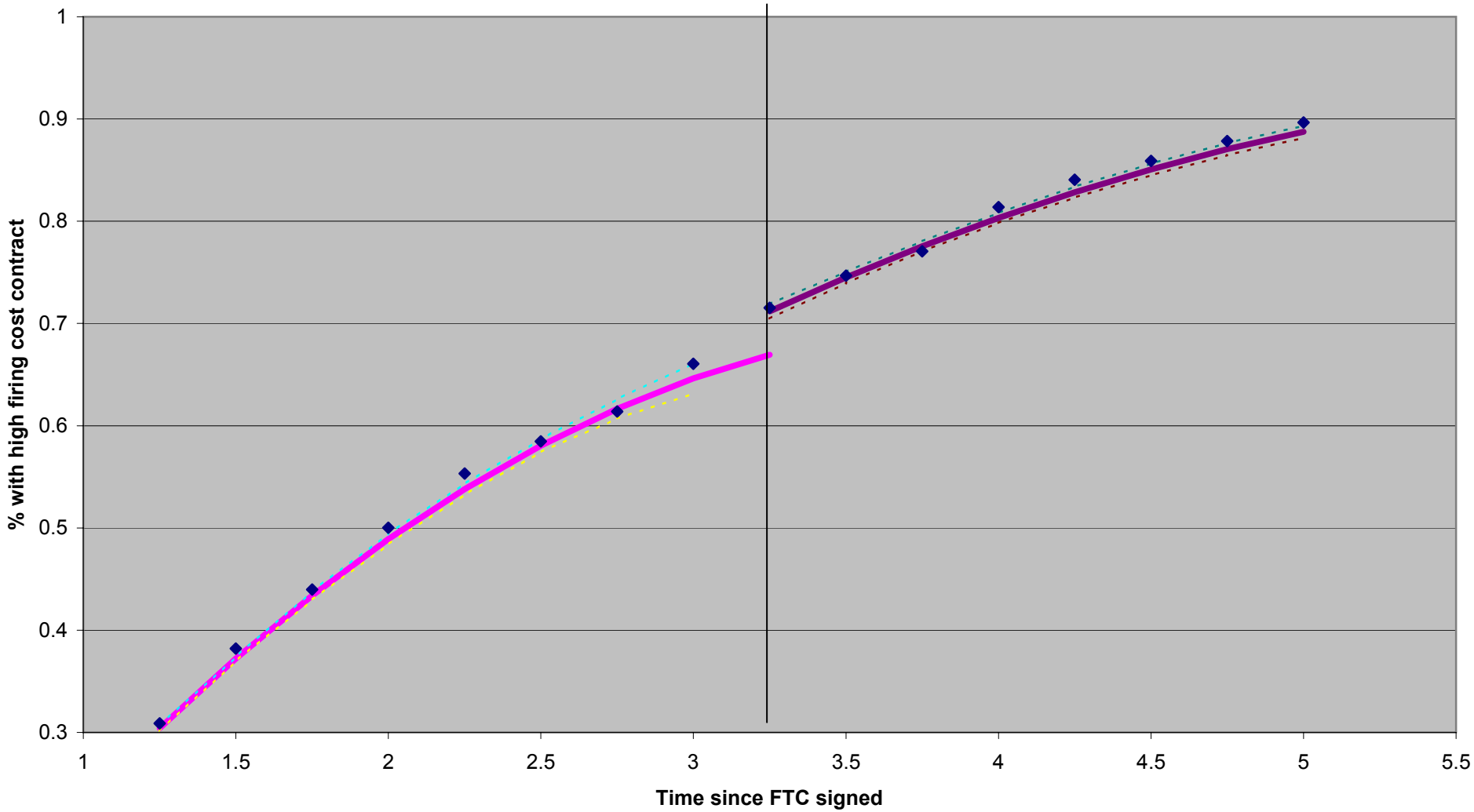
Graph 1a: The evolution of the fraction of young adults living with parents



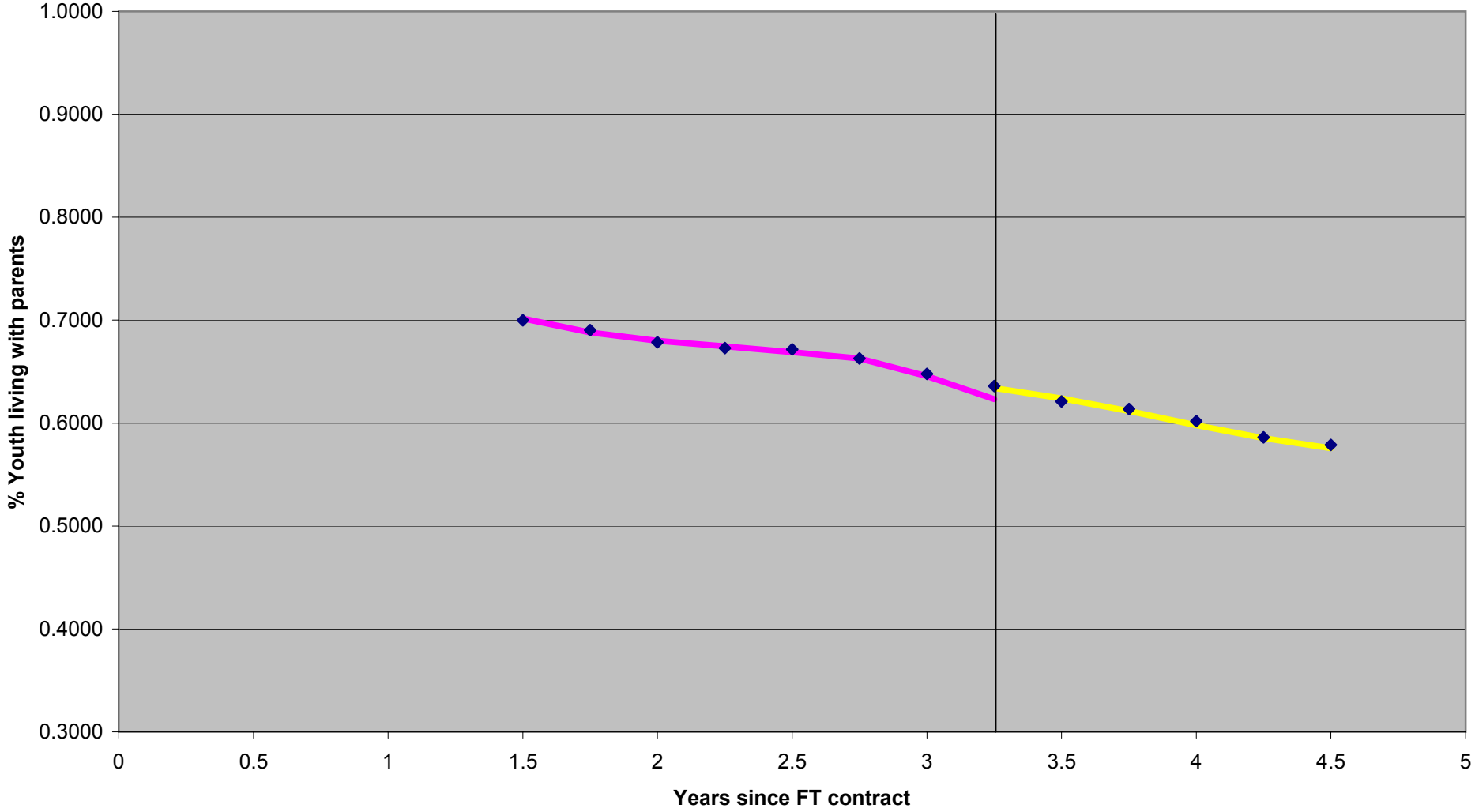
Graph 1b: Fraction of young workers covered by a fixed-term contract, by age.



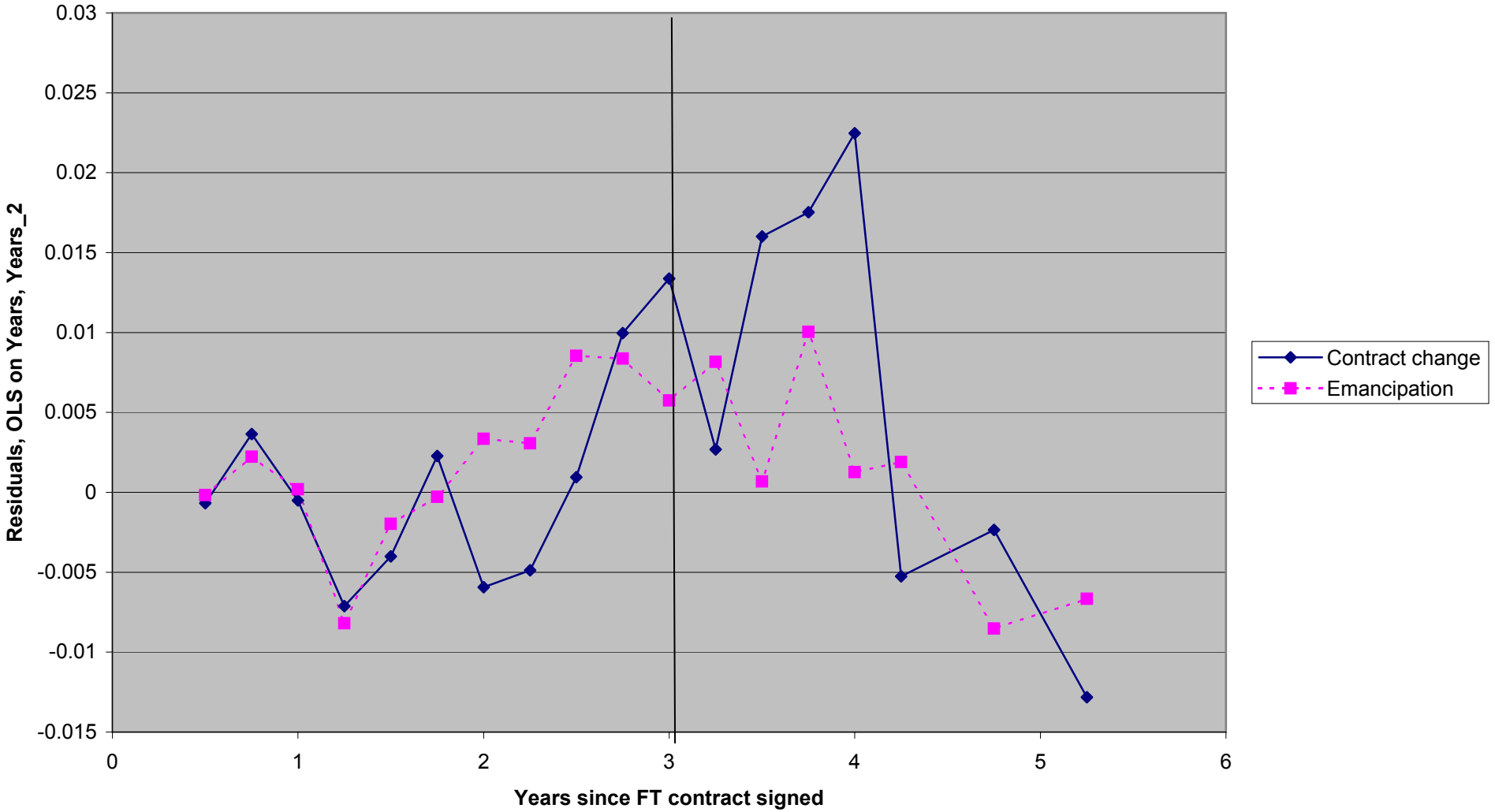
Graph 2: Fraction of youth with high firing cost contract



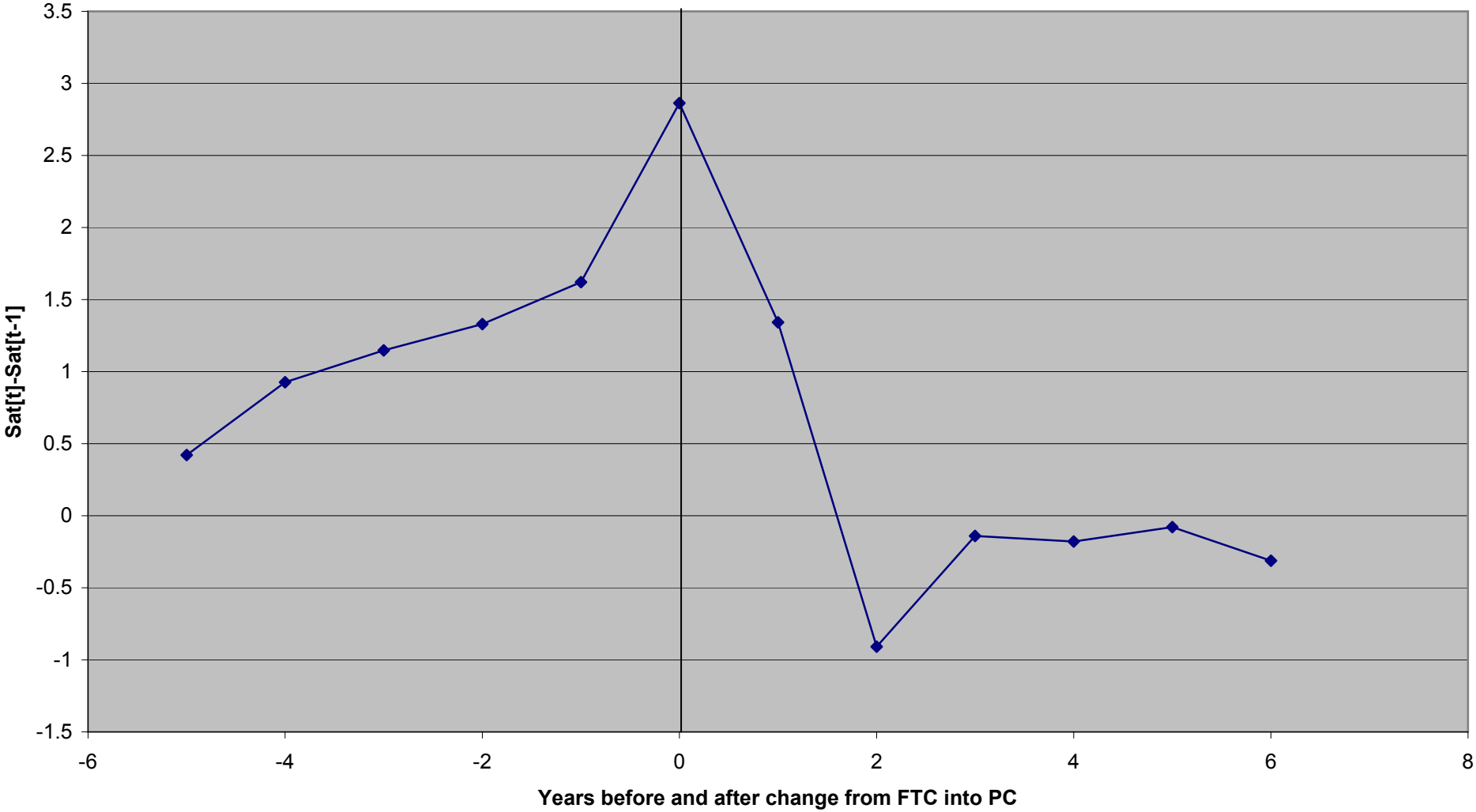
Graph 3: Living arrangements since signing a FT contract



Graph 4: Contract change and household formation, 1988-1995



Graph 5: One-year change in satisfaction with job security



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