# Household consumption and wealth responses to the risk of losing the job: evidence from differences in firing costs[1]

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**Abstract**

Economic theory predicts that individuals exposed to the risk of losing their job postpone their consumption and accumulate more assets to build a buffer stock of saving. We provide a new test of the hypothesis using substantial variation in severance payments across contracts in the Spanish labor market. While the fraction of workers covered by a high severance payment contract that transit into unemployment is below 2% per quarter, the corresponding estimate among workers covered by high firing cost contracts exceeds 10%. Using the 2002 and 2005 waves of a new survey of wealth and consumption we estimate the link between the probability that several household members lose their job and the wealth and consumption of that household. We instrument the type of contract using regional variation in the amount, timing and target groups of subsidies given to firms to upgrade low severance payment contracts into high severance payment ones. We find that workers covered by fixed-term contracts accumulate more financial wealth. An increase of one standard deviation in the probability of losing the job increases average financial wealth by 2.5 months of income.

**Keywords:** precautionary savings, household wealth and consumption, labor firing costs.

**JEL codes:** D12, D31, D91, J41.

# 1 Introduction

Economic theory predicts that households that are more exposed to the risk of losing their job postpone consumption and accumulate more assets to build a buffer that permit absorbing income losses associated to unemployment spells (see Caballero, 1990, or Carroll, 2001). The extent of precautionary savings has important consequences for the sensitivity of consumption to increases in income (Hall, 2006) and for the dynamics of household wealth. A large literature has used different methods to establish if households facing (or perceiving) higher chances of losing their job have lower consumption levels and/or accumulate higher levels of wealth. The results are not uncontroversial; Carroll, Dynan and Krane (2003) find that households with higher exposure to the risk of losing their job (and sufficiently high permanent income) have more wealth, consistent with the precautionary saving model. Fuchs-Schündeln and Schündeln (2005) use the reunification of Germany and the transition from a (possibly) risk-free environment to a capitalist economy to examine if affected households save more, finding evidence consistent with the hypothesis. Engen and Gruber (2001) document that unemployment subsidies crowd out private wealth accumulation, a finding that is consistent with the idea that workers accumulate precautionary savings. On the other hand, Guiso, Jappelli and Terlizzese (1992) or the survey of of Browning and Lusardi (1996) find little evidence for precautionary savings.

The discrepancy of the results may be due to several problems. First, it is hard to measure to what extent an individual is exposed to the risk of losing his or her job. Alternative measures range from subjective expectations of job loss (Manski and Straub, 2000) to occupation-specific averages of transitions from employment to non-employment. Second, even when one can find a group that does experience (or perceive) a higher probability of transiting into unemployment, it is not always the case that the higher probability is uncorrelated with other unobserved factors that correlate with either consumption or wealth (Lusardi, 1997). Third, even if a precautionary motive is present in the data, workers who are relatively more exposed to the risk of losing the job are also more likely to have used their wealth balances to sustain consumption during a recent unemployment spell.

We think that our study has three advantages that permit examining the relationship between the probability of losing the job and household decisions like consumption and wealth.

First, we exploit the fact that in several European countries easily identi-

fiable groups of the population face very different probabilities of transiting into non-employment. During the eighties, Italy, Spain, Germany, Sweden, Portugal and France among other European countries introduced low firing cost contracts as a way to fight against unemployment. Typically, countries that introduced fixed-term contracts already featured rigid labor markets with very high dismissal costs. Fixed-term contracts allowed firms hire workers paying a small firing cost in the event they needed to downsize (see Dolado, Garcia-Serrano and Jimeno, 2002, for an overview). The introduction of fixed-term contracts has generated labor markets where identifiable groups of individuals face very different probabilities of transiting into unemployment for reasons unrelated to their own choice, but to firm's labor demand. Among all countries that introduced fixed-term contracts, Spain is the country with the highest share of fixed-term contracts (30%), thus providing an ideal setting to analyze the saving decisions of households differently exposed to the risk of losing the job.

Secondly, we use an unusually rich wealth and consumption survey: the Spanish Survey of Household Finances (in Spanish, *Encuesta Financiera de las Familias*, EFF), conducted by the Banco de España. The EFF is one of the few surveys around the world containing detailed information on households' assets, consumption and on the labor market situation of each household member. For example, we do not need to construct saving rates (that are typically noisy), but can examine household wealth directly. In addition, the EFF contains both recall consumption questions and household balance sheets, so we can test the validity of our approach by examining both consumption and wealth responses to the risk of losing the job. Finally, the second wave of the EFF has a full panel component that we can exploit to analyse the impact of the risk of losing the job on household consumption and wealth growth.

And thirdly, due to regional regulations in the Spanish labor markets, the incidence of fixed-term contracts varies across regions and demographic groups. In particular, in 1997, out of the 17 Spanish regions, several implemented subsidies to firms that upgraded workers covered by low-firing cost contracts into open-ended contracts (with high firing costs). Different regions targeted different demographic groups and gave very different subsidies. As a result, legislated subsidies provide exogenous variation that permits a causal estimation of the impact of exposure to the risk of losing the job on household consumption and wealth.

Our strategy is the following. We first use an employment survey to docu-

ment that workers with fixed-term and with open-ended contracts have very different probabilities of transiting into unemployment, and those differences are present across skill levels. We then document that there is arguably exogenous variation in the type of contract held by a worker to be exploited by using the introduction of different subsidies to the conversion of fixed-term contracts into open-ended ones varying across regions, age groups and gender. Finally, we examine the response of various measures of wealth to the risk that the head of the household loses the job. Our preliminary results suggest that workers covered by fixed-term contracts accumulate more financial wealth. An increase of one standard deviation in the probability of losing the job increases average financial wealth by 2.5 months of income. Nevertheless, the responses are heterogenous over the wealth distribution, and we find little evidence of wealth responses at the 25th centile of the wealth distribution or below.

The paper is structured as follows. Section 2 presents some modelling issues and Section 3 the data sets we use. Section 4 describes our identification strategy. Section 5 presents causal estimates of wealth responses to employment risk. Section 6 provides suggestive evidence of the household consumption response to the risk of losing the job. Finally, Section 7 provides a research agenda.

# 2 Differences in dismissal costs across Spanish workers

Before 1984, and as a result of the legislation during the dictatorship, Spain had one of the most rigid labor markets among European countries. In 1984, in a context of high unemployment rates, the *Estatuto de los Trabajadores* introduced a menu of contracts that were exempted from the general rule of high severance payments. The legal figure used was the authorization of extending contracts that before 1984 were used to regulate seasonal jobs to other types of labor relationships.

The exposition to the risk of losing the job differs considerably between workers covered by different types of contract. A firm that wanted to dismiss a worker who was covered by an open-ended contract had to pay a severance payment of up between 22 days and 45 days per year worked. The former applied if the worker appealed to Court and the judges declared the dismissal

as "fair". Otherwise, the corresponding severance payment amounted to 45 days per year worked. Izquierdo and Lacuesta (2006) report that 75% of cases that arrived to court were declared "unfair" by Spanish judges.[1] Conversely, dismissing a worker covered by a short-term contract had a much lower cost: waiting for the expiration of the close-ended contract would basically carry no cost to the firm.

By 1994, 30% of workers reported to the Spanish Labor Force Survey (EPA, in its Spanish initials) being covered by a low-firing cost contract. While subject to certain fluctuations, the share has remained stable since (see Figure 1).

There had been some attempts to reduce the share of employed workers. In this draft, we consider one of those to obtain exogenous variation in the fraction of the workforce that is exposed to the risk of losing the job. We focus on one that started in 1997: the introduction of regional subsidies to promote firms to hire workers using open-ended contracts. As of 1997, several of the 17 Spanish regions introduced lump-sum subsidies to firms that hired workers using high firing cost contracts. The average subsidy was about 1,000 euro, but the precise amount varied widely across gender and age groups (see Table A.2). Some major regions did not implement those subsidies between 1997 and 2004 (Madrid and Catalonia), while other regions offered them to particular age groups (Andalucia). Finally, other major regions offered them later than 1997 (see García-Ferreira and Villanueva, 2007 or, specially, García-Pérez and Rebollo-Sanz, 2009 for a detailed description of the subsidies to hire workers using open-ended contracts). Below, we exploit the features of the introduction of those subsidies to obtain exogenous variation in the share of the workforce that is covered by high firing cost contracts.

## 2.1 Modelling issues

We build on analytical results by Blundell and Stoker (1999). Assume that an individual lives for two periods, does not discount the future, and that there is a zero interest rate. The individual has an inelastic labor supply and is subject only to a single source of income risk: job loss. Namely, second-period income $Y$ can either be the unemployment benefit $b$ if the individual loses his or her job or the current level of earnings $y$ if the individual keeps his

[1] A subsequent reform in 1997 yet introduced another type of "high-firing cost" contract. Namely, it was the *contrato de fomento del empleo*, that reduced the maximum firing cost from 45 days per year worked to 33 days.

or her job. The first event happens with probability $p$. The utility function of the individual is the following:

$$\max_{c_1,c_2} \quad \log c_1 + E_1 \log(c_2)$$

Where the expectation is taken over the binary random variable $Y$, with mean, $pb + (1-p)y$, and variance, $Var_1(Y) = (1-p)p[y-b]^2$. Following Blundell and Stoker (1999), we define the present value of expected wealth in period 1 as the sum of the initial wealth in period 1 and the expected stream of income in period 2, as follows:

$$W = W_1 + pb + (1-p)y$$

and define the second-period shock $\zeta_2$ as the difference between the realization of second-period income and the expected value of the income stream

$$\zeta_2 = Y - [pb + (1-p)y]$$

We are implicitly assuming that the individual can borrow against the expected value of future income. While perhaps not a realistic assumption, it permits obtaining closed-form solutions. Blundell and Stoker (1999) linearize around the perfect-certainty solution of consumption (that is linear in first-period wealth) and obtain the following consumption levels in the presence of risk:

$$c_1 = \frac{1}{2 + \frac{Var_1(Y)}{W^2}} W \tag{1}$$

Equation (1) implies that when we compare two individuals A and B, with the same level of expected income, but where the first has a zero probability of losing the job but the second is exposed to a non-zero chance of unemployment, the second one must have a lower level of consumption.

A second implication is that the consumption growth of both individuals is different; the individual who is exposed to the risk of losing the job postpones consumption to the future and hence will exhibit higher consumption growth. Blundell and Stoker (1999) and others derive the following expression for consumption growth

$$\log(c_2) - \log(c_1) = \frac{Var_1(Y)}{W^2} + \frac{1}{c_1}\zeta_2 \tag{2a}$$

In Equation (2a), consumption growth of an individual exposed to the risk of losing the job is a stochastic variable. It may take positive or negative values depending on whether or not the individual experiences the unemployment shock. Now, taking expectations in Equation (2a) over the distribution of $Y$ one obtains the following expression:

$$E_1[\log(c_2) - \log(c_1)] = \frac{Var_1(Y)}{W^2} \tag{2}$$

That is, workers who, as of period 1, realize that they are exposed to a higher risk of losing their job are more likely to postpone consumption and thus experience higher consumption growth than workers in safer jobs.

Overall, the discussion thus far suggests three testable hypotheses:

- First, do workers who are more exposed to the risk of losing the job consume less?
- Second, do workers who are more exposed to the risk of losing the job exhibit higher consumption growth?
- Third, do workers who are more exposed to the risk of losing the job hold more (liquid) wealth?

# 3 Data sets

We use two main data sources: the Spanish Survey of Household Finances (in Spanish, *Encuesta Financiera de las Familias,* EFF) is a consumption and wealth survey conducted by the Banco de España in 2002 and in 2005, and the *Encuesta de Población Activa* (EPA) is the Spanish Labor Force Survey that we use for imputing the probability of losing the job.

## 3.1 The consumption and wealth survey: the Spanish Survey of Household Finances

The data used come from the 2002 and 2005 waves of the EFF. The EFF surveys around 5,000 households in each wave, obtaining detailed information about wealth holdings, debt, payment habits and consumption at the household level and individual information about demographics, income and labor income status. Based on the wealth tax, there is over-sampling of wealthy

households. Around 40% of the sample corresponds to households liable to the wealth tax. All the calculations reported in our study make use of the five multiple imputed data sets provided by the Banco de España as a way of dealing with item-non-response, taking into account imputation uncertainty and facilitating a correct use of the data –for details on the EFF imputations see Bover (2004) and Barceló (2006).

*The dependent variable:*

We use two measures of wealth. The first is "liquid" wealth, i.e., a subset of wealth that we assume to be easily cashed in the event of an emergency. It contains amounts held in checking and saving accounts, mutual funds, stock (either listed or not), all types of bonds and other financial assets. Nevertheless, there is a discussion regarding whether or not households are able to use housing equity to finance a period of unemployment. For example, Carroll, Dynan and Krane (2003) argue that US households have access to home equity loans that permit "cashing" housing wealth, while Engen and Gruber (2001) find evidence against that hypothesis. Thus, we also experiment with a second measure that includes, in addition to "liquid" wealth, the value of the main residence, other real estate properties. We substract the debts used to finance the purchases of real estate from the second wealth measure.[2] We assume that business wealth cannot serve a precautionary motive.

*Sample selection in the wealth survey:*

We will use two main samples within the EFF. The tests based on consumption are implemented on a pooled sample of the 2002 and 2005 waves containing all heads currently working and aged below 65.[3] Overall, that sample contains 5,294 households.

The test based on consumption growth is based on a subset of the previous sample. The EFF2005 followed a subset of the original households interviewed in 2002. We select a fraction of 976 panel households whose head and marital status did not change between waves. Importantly, we select households who were employed in 2002 (either as employees or self-employed), but did not screen out according to their status in 2005. I.e., the panel sample does include those households who, at the time of the 2005-2006 interview, were unemployed.

[2]We obtain debt by adding up outstanding debt for the purchase of the main residence, debt for the purchase of other real estate properties and other debts pending repayment.

[3]The definition of head of the household is not left to the household, but was determined based on the relative incomes of household members.

Finally, the sample used to study the response of household wealth to the risk of losing the job adds a further selection criteria and focuses on employees. The reason for such additional sample criteria is the reliance on that test on an instrument, for reasons stated below. Namely, our instrument exploits the introduction in different Spanish regions in 1997 of a subsidy to the conversion of specific forms of fixed-term contracts into permanent ones. As the subsidy was only available for employees, the sample is further restricted to 3,784 households.

*The probability of losing the job:*

The regressor of interest is the probability of losing the job, as predicted by the type of contract held by the individual, and other covariates like age of the household head, industry, gender and occupation.

The EFF is a panel, so we could obtain the probability of transiting into unemployment using the EFF sample. However, the dimension of the EFF panel is somewhat small to obtain precise estimates of average probability of transiting into unemployment for groups of the population characterized by the covariates mentioned above. In future versions of the paper, we plan to examine the sensitiviy of the results to EFF-based estimates of the probability of transiting into unemployment. Thus, for the current draft we have decided to use the Spanish Labor Force Survey (EPA) to obtain outside information about the probability of losing the job based on covariates that are present both in the EFF and in the EPA. To reiterate, the main identifying variable for the exercise is the type of contract held by the household head. Both the EFF and the EPA ask about the type of contract in the current job, according to three groupings: open-ended contract (including civil servants), fixed-term contract (without specification of the particular type of contract), and employees without formal contract.

## 3.2 The labor force sample: *Encuesta de Población Activa*

The *Encuesta de Población Activa* (EPA) is a quarterly labor force survey with a rotating panel component. Our main purpose using the EPA is quantifying the probability that an individual experiences a transition into non-employment, and relating that probability to the type of contract. The rotating panel component permits us tracking the (short-term) labor market transitions of individuals, as it tracks households for up to 6 quarters. The

current draft uses the waves spanning the period between the first quarter of 1998 and the fourth quarter of 2001.

The sample contains workers between 16 and 65 years of age. There is an issue about whether self-employed workers should be included or not. On one hand, those workers cannot be covered by our key identifier of exposure to employment risk (a fixed-term contract). On the other hand, some self-employed workers are substantially exposed to risk of no demand for their services, and thus we also include them in the sample.

## 3.3 Summary statistics

We start by documenting that the type of contract held by a worker does correlate with the probability of transiting into unemployment. We then present summary statistics comparing the income, wealth and consumption of households headed by workers with open-ended and with fixed-term contracts.

### 3.3.1 Differences in exposure to the risk of losing the job

Table A.1 in the Appendix shows the results of (gender specific) *logit* regressions of the probability of transiting into unemployment on several covariates and, most importantly, a measure of whether or not the individual has a fixed-term contract. The omitted group in the regressions are self-employed workers. Clearly, employees with an open-ended contract face a much lower probability of transiting into non-employment than either employees with a fixed-term contract and similar to that of self-employed workers.

We show various measures of exposure to the risk of losing the job in Table 1. Each cell in the Panel A of Table 1 represents the predicted probability of transiting from employment to unemployment in a quarter for groups of the population defined by the type of contract. The probabilities are estimated using the estimates in Table A.1. Panel B provides an alternative measure of job insecurity. The EFF asks in each wave the number of months that each member of the household was working during the year prior to the interview (2001 in the case of the 2002 wave and 2004 for the 2005 wave). Using the fact that the EFF has a longitudinal component, we estimated a *logit* model of the probability of spending at least one month in unemployment in 2004 for each employee in 2002 that was also successfully interviewed in the 2005 wave. The explanatory variables are basically the same as in the model

specification of Table A.1. While the statistics in Panel A of Table 1 measure high-frequency moves from employment to unemployment, the statistics in Panel B measure long-run exposure to the risk of losing the job.

Employed heads of household that are employees covered by a fixed-term contract are 8.8 percentage points more likely to move next quarter from employment to unemployment than similar workers with open-ended contracts. From a longer-run perspective, workers covered by a fixed-term contract were 18.7 percentage points more likely to experience a spell of unemployment of at least one month two years later than workers with an open-ended contract. Panel C shows that the difference in the probabilities of transiting into unemployment in the long run is larger among the family head's spouses. The differences are present for all levels of skill. Table 1 suggests that the differences in the exposure to the risk of losing the job are substantially different according to the type of contract, forming the basis for our test of the relevance of precautionary savings.

### 3.3.2 Differences in income, wealth and consumption

The summary statistics of the EFF sample are presented in Table 2. There, we split the sample according to our measure of "exposure to unemployment risk". The first group are households whose the head is an employee with an open-ended (or high firing cost) contract. The group also includes either spouses who do not work or those who, if employed, are covered by an open-ended contract. In our definition, that is a group with low exposure to the risk of losing the job. The second group is exposed to the risk of losing the job. That group is composed by households where one of the members is an employee with a fixed-term contract. Finally, the third group is that of self-employed workers that also face with high exposure to income risk.

The summary statistics in Table 2 suggest that the group of households headed by an employee with an open-ended contract are older and wealthier than the group of households where a member has a fixed-term contract. Households headed by an individual with an open-ended contract consume and earn more than those in which a member has a fixed-term contract. While more exposed to risk, self-employed workers earn and consume more than any of the other groups. Those differences highlight the need of controlling for an extensive number of covariates when examining the link between exposure to the risk of losing the job and consumption and/or wealth.

# 4 Identification strategy

There are several well-known problems in estimating the link between the risk of losing the job and the amount of wealth accumulated by the worker for a precautionary motive. Among other problems, several authors have convincingly argued that workers less averse to risk are more prone to end up in a job or industry where transitions into unemployment are less prevalent (Lusardi, 1997, and Fuchs-Schündeln and Schündeln, 2005). Even controlling for risk aversion, another paramount issue is that workers who are more exposed to the risk of losing the job will most likely have experienced recent unemployment spells and used the accumulated buffer of wealth to sustain consumption during the spell. Thus, in a cross-section, such workers will show little wealth holdings, even if a precautionary motive is present. Carroll, Dynan and Krane (2003) present simulations that document the stark drop in household wealth after an unemployment spell.

We handle the problem by examining differences in the propensity to hold open-ended contracts that is uncorrelated with previous unemployment spells. In particular, instead of using variation in whether a worker is covered by a fixed-term or an open-ended contract, we use variation in contract-type that is associated to the fact that several regions in Spain introduced in 1997 a system of subsidies to firms to convert fixed-term contracts into open-ended ones. In other words, we instrument the type of contract held by a worker by the statutory amount of the subsidy that was present in the region and the demographic group of the worker when that worker was hired. We describe the exact identification strategy below.

## 4.1 The first stage: Do regional subsidies increase the pool of workers covered by high firing cost contracts?

We first examine whether the variable "subsidies to hire workers using high firing cost contracts" is a good instrument for the prevalence of high firing cost contracts. Namely, our identification strategy is the following. We compare two workers who started to work at the same time in two different regions. Is the worker who was hired in a region that implemented the subsidy for converting fixed-term contracts into open-ended ones more likely to have attained a permanent contract? The exact regression we run is the following:

$$Open\_ended_{it} = \alpha_0 + \alpha_1 Subsidy_{r,it} + f(Tenure_{it} - 4) + X'_{it}\gamma + \varepsilon_{it}^{open} \quad \text{(C.1)}$$

$Tenure_{it}$ is the time spent working at the current firm. $f()$ is a fourth-order polynomial, intended to capture non-linearities in the rate of conversion of fixed-term contracts into open-ended ones. $X$ is a vector of covariates, including age dummies, educational level and gender. The key variable is $Subsidy_{r,it}$, denoting the statutory amount a firm could get by converting a fixed-term contract into an open-ended one in its region $r$ and in the year when the worker was first hired. Note that regional subsidies varied across time, demographic groups, gender and region. Thus, identification of the impact of regional subsidies on the type of contract held by the worker is also obtained by variation across demographic groups within the region. We are able to identify demographic effects separately because we observe workers in the region when the subsidies were not introduced or because there were regions that did not implement the subsidy.

We also experiment with an alternative strategy that also includes controls for region dummies (denoted by $D_r$):

$$Open\_ended_{it} = \beta_0 + \beta_1 Subsidy_{r,it} + g(Tenure_{it} - 4) + X'_{it}\gamma + \sum_{r=1}^{r=17} \gamma_r D_r + \varepsilon_{it}^{open} \quad \text{(C.2)}$$

In this case, identification is obtained by comparing two workers hired in the same year by a firm within the same region. Is the worker who belonged to a demographic group covered by the subsidy more likely to hold an open-ended contract?

Arguably, the dependent variable is binary, and linear methods may present problems of extrapolation outside the 0-1 range. Still, we present results from linear probability model specifications because the literature has provided a variety of tests of quality of instruments in a linear setting (Staiger and Stock, 1997).

## 4.2 Intention-to-treat effects: Do regional subsidies to high firing cost contracts reduce the amount of wealth held?

Second, we examine intention-to-treat responses of (the logarithm of) household wealth to the presence of regional subsidies when the worker was hired. In particular, the experiment we think of is the following. Imagine two comparable workers who start working at the same time. One started working in a region that subsidized the conversion of fixed-term contracts into open-ended ones, while the other worker was hired in a region that did not introduce such subsidies. Does the worker in the "subsidy" region hold a lower amount of wealth? If precautionary motives are present, the worker should hold less wealth, because workers in "subsidy regions" are more likely to end up being covered by high firing cost contracts and thus experience lower changes of transiting into unemployment.

The exact model we run is the following

$$\log(W)_{it} = \delta_0 + \delta_1 Subsidy_{r,it} + g(Tenure_{it} - 4) + X'_{it}\theta + \varepsilon^w_{it} \qquad \text{(W1)}$$

$$Med(\varepsilon_{it}|X_{it}, Subsidy_{r,it}, Tenure_{it}) = 0$$

*Dependent variable:* Household wealth ($W_{it}$). Given the strong skewness of the wealth distribution, we decided to work with logarithm of financial and net wealth selecting out of the sample a relatively small number of households that have zero "liquid" wealth: 128 out of 3,912 households (3.2 percent of the original household). We leave a full assessment of working with other transformations of the wealth variable, like the hyperbolic sine function to a future draft.[4] According to the model briefly discussed in Section 2, the coefficient associated with the risk of losing a job, $\delta_1$, should be negative: workers whose contract is protected by high firing costs (for exogenous reasons) need lower holdings of precautionary wealth.

[4]We have done a limited number of experiments using the hyperbolic sine transformation of the wealth variable (that preserves zeroes and negative values), obtaining qualitatively similar results. Still, a complete assessment of how to handle the skewness of the wealth variable is left to a future draft of the paper.

### 4.3 Assessing the magnitude: how much more wealth do workers covered by low firing cost contracts hold?

Intention-to-treat effects like $\delta_1$ give little information about how large wealth responses are. Thus, we implement Two-Stage Least Squares estimates (TSLS) of the impact of having a job covered by an open-ended contract on wealth accumulated. We estimate the systen of equations:

$$\log(\frac{W}{Y})_{it} = \gamma_0 + \gamma_1 Open\_ended_{it} + g(Tenure_{it} - 4) + X'_{it}\theta + \varepsilon^w_{it} \qquad \text{(W1)}$$

$$Open\_ended_{it} = \alpha_0 + \alpha_1 Subsidy_{r,it} + f(Tenure_{it} - 4) + X'_{it}\gamma + \varepsilon^{open}_{it} \quad \text{(C.1)}$$

The parameter of interest is $\gamma_1$, measuring the response of (the log of) household wealth to exposure to lose the job. Nevertheless, previous literature has estimated how many months of household income households keep as precautionary wealth. This amount is estimated by taking antilogs in W1 and comparing the household wealth relative to total income for two households having the same characteristics as the reference person in the estimates of W1, but one of them has a high exposure to the risk of losing the job ($\log\left(\frac{W}{Y}\right)^{fixed\_term} = \gamma_0$) and the other faces a low risk of income loss ($\log\left(\frac{W}{Y}\right)^{open\_ended} = \gamma_0 + \gamma_1$), as follows:[5]

$$\text{Precaut\_wealth} = \frac{W}{Y}^{fixed\_term} - \frac{W}{Y}^{open\_ended} = \exp(\gamma_0)[1 - \exp(\gamma_1)]$$

# 5 Results

## 5.1 The quality of the instrument

Table 3 presents OLS regressions of the type of contract held on our key identifying variable: the statutory subsidy amount that the firm could get

[5]The reference person in the estimates is a household formed by a male family head who is aged from 36 to 45 in 2002 and married without children. The spouse does not work and the couple have completed at most the degree of primary education. The family head has a private job in the service sector four years ago and started to work there after 1997.

in the year and region when the contract was started. In Table 3, row 1, column 1, the estimate is 0.089 (standard error: 0.032). The estimate implies that the presence of a subsidy to the conversion of fixed-term contracts into open-ended ones in the year when the contract starts increases the chances of observing an open-ended contract by almost nine percentage points. The estimate is significant at the 1 percent confidence level, and the F-statistic is about 9. In column 2, we experiment introducing the actual amount of the subsidy; a subsidy of 1,000 euro increases the probability of observing the worker covered by an open-ended contract by 1.03 percentage points. Introducing region dummies makes the estimate less precise, but still significant at the 5 percent confidence level. The magnitude looks small at face value (by construction, the subsidy cannot affect the distribution of contracts across regions if they were signed before 1997). Overall, we conclude that there is evidence that the subsidies increased the stock of workers whose job was covered by a high firing cost contract.

## 5.2 The response of wealth to the risk of losing the job.

Tables 4, Panel A documents the response of our measure of "liquid" wealth responses to our instrument for a high firing cost contract: $Subsidy_r$. Table 4 row 1 (columns 1 to 3) shows that in regions where the subsidies to high firing cost contracts were higher, households accumulated less liquid wealth. Table 4, Panel A, column 1, row 1 documents that the presence of a subsidy leads worker to reduce log median wealth by 0.208 (standard error: 0.138). The estimate is significantly different from zero at the 11 percent confidence level. In column 2, we introduce the amount of the subsidy as the regressor, and the coefficient is -0.064 again negative and significantly different from zero at the 5 percent confidence level. The estimate implies that a subsidy of 1,000 euro reduces "liquid" wealth holdings by 6 percent. We discuss the magnitude of the estimate below. Once we introduce region indicators, the estimate suggests again a response of about 5.8 percent. Our interpretation from the evidence is that households whose head is exposed to less risk of losing the job diminish their "liquid" wealth holdings. Such behavior is consistent with a precautionary wealth motive.

In Panel B of Table 4, we broaden the wealth measure by including wealth invested in real estate properties. The idea is that housing wealth is less likely

to serve a precautionary savings motive, as it is costly to convert housing wealth into liquid resources that can help to sustain consumption over an unemployment spell. Interestingly, once we include illiquid wealth, the effect of the subsidy on wealth disappears.

An interpretation of the evidence in Table 4 is that households react to a higher exposure to the risk of losing the job by accumulating savings and checking accounts, bonds and stock but not by accumulating illiquid housing wealth. Engen and Gruber (2001) document similar findings in the US in an experiment that focuses on the impact of the displacement effect of unemployment benefits on household wealth accumulation.

*Quantifying the response*

Table 5 examines the magnitude of the mean response of household wealth to the risk of losing the job for various subgroups. Panel A of Table 5 presents first-stage estimates of the response of the stock of open-ended contracts to regional subsidies. Panel B of Table 5 examines by how much households reduce their (log) wealth-income ratios looking at TSLS estimates. We comment mainly on the mean response of wealth-income ratios to the risk of losing the job, presented in row 3 of Panel B. When we use the full sample in the estimation, our estimates suggest that workers covered by fixed-term contracts have wealth holdings about 17 percent of their annual income higher than comparable workers covered by open-ended contracts. An interpretation of the estimate is that workers more exposed to the risk of losing the job keep about 2 months of (gross) household income as easy-to-cash wealth. The estimate is lower, but comparable to that in Carroll, Dynan and Krane (2003), who estimate that households in the US react to the risk of losing the job by accumulating around 2.5-3 months of income. Nevertheless, one must take into account that the differences in the chances of transiting into unemployment are much higher across Spanish workers covered by different types of contracts than within US workers.

The estimate becomes larger when we examine households headed by male workers: those covered by fixed-term contracts save about 25 percent of their annual income more than workers covered by open-ended contracts. It is even larger among mature workers (above 35), who keep 32 percent of annual income as additional wealth than comparable workers covered by open-ended contracts.

*Is the response homogenous over the wealth distribution*

We interpret from Table 5 that workers exposed to a higher risk of losing the job keep on average higher (liquid) wealth balances. Now, such average

response may reflect a situation in which all households exposed to the risk of losing the job keep uniformly higher balances or, alternatively, a situation in which most households keep small responses but a small fraction keep substantial amounts. In the second situation, precautionary motives would be present for only a minority of households/workers, leading to substantial consumption and welfare losses upon the event of unemployment. We distinguish between both situations by estimating Instrumental Variable-Quantile Regression Models of the response of wealth to the risk of losing the job following the estimation approach proposed by Chernozhukov and Hansen (2004 and 2008).

Table 5 shows the estimates and confidence intervals obtained by dual inference using the *instrumental variable* or *inverse quantile regression* (IVQR) proposed by Chernozhukov and Hansen (2008). While tentative (the results are still a bit imprecise), the results suggest a non-uniform response over the wealth distribution. The response of liquid wealth to the risk of losing the job is basically zero at the 25th centile of the wealth distribution, and is only positive at and above the median.

# 6 Additional evidence from consumption

This section provides evidence of the household consumption response to the risk of losing the job by testing the main hypotheses formulated in Section 2. In this version of the paper, we only give suggestive evidence of the consumption response looking at Ordinary Least Squares estimates that are affected by endogeneity biases as explained later. In the following version of the paper, we will implement the identification strategy explained in Section 4 to obtained causal estimates of the household consumption response.

The theoretical model suggests two hypothesis about the household consumption response to the risk. Firstly, workers more exposed to the risk of losing the job postpone their consumption to build a buffer stock against future unexpected income losses. Secondly, workers more exposed to the risk of unemployment will exhibit higher consumption growth once the uncertainty about the future is solved. Moreover, the model also predicts that the consumption growth of all workers exposed to the risk (independently of whether they will become unemployed or not) will be higher on average [see Equation (2)].

To constrast both hypotheses, we make use of the consumption informa-

tion collected in the EFF and exploit the panel component of the EFF to estimate the average household consumption growth. We use various measures of consumption. The first is a comprehensive PSID-like question about expenditure on food in a typical week. The second is a comprehensive question based on expenditure on non-durable goods. Finally, we also experiment with a broader definition of consumption that includes non-durable goods and the service flow of selected durables (jewellery, works of art, cars and other means of transport, furniture and housing equipment). The rates of depreciation in Fraumeni (1997), mostly based on the Hulten and Wykoff (1981) rates, are used to derive consumption measures from the household's stock of equipment and vehicles (see Bover, 2005, for a similar strategy).

The key regressor in our estimates that control for the risk of losing the job is the probability that an individual transits from employment to non-employment. This probability is estimated using the 1998-2001 waves of the EPA. The dependent variable takes the value of 1 if the individual is employed in quarter q but not in quarter $q+1$. The independent variables are common across both data sets: occupation, industry, age dummies and whether or not employment in quarter q was covered by a fixed-term contract. We run separate *logit* models for males and females (see Table A.1).

In a second step, we use those predicted probabilities to impute in the EFF the probability that the head of the household (and spouse, if one exists) loses his or her job over the following quarter. We then run regressions of the outcomes of interest on the predicted probability that the head and spouse (if one exists) lose their job.

## 6.1 Tests based on household consumption

The first outcome of interest is the logarithm of consumption. For the level of consumption, our main specification is:

$$\log C_{it} = \beta_0 + \beta_1 P_{it}(U_h = 1) + \beta_2 P_{it}(U_s = 1) + X_{it}^{'}\gamma + \varepsilon_{it}^{c} \qquad \text{(C1)}$$

$P_{it}(U_h = 1)$ measures the probability that the head of the household transits into unemployment. $P_{it}(U_s = 1)$ measures the corresponding probability for an employed spouse (if one is present).

$X_{it}$ contains various sets of regressors. First, it includes variables that are associated with transitions into unemployment but that we do not use for the identification of $\beta_1$ and $\beta_2$. These include dummies with the head

and spouse's schooling, industry and occupation dummies.[6] We also include a dummy for spouse not employed, to properly interpret the magniture of $P_{it}(U_s = 1)$. In the estimates, the reference person is a married head of household whose spouse also works. Finally, we include a dummy for the kind of self-employment [an independent professional or self-employed worker (omitted category), an owner of a family business, and a partner in a non-family partnership]. Second, we include variables that pick up life-cycle accumulation of assets due to aging, income and demographic shifters: four dummies in 10 year age bands, three separate intercepts for single, divorced and widow head and female-head, and 5 dummies capturing different household sizes. $X_{it}$ also contains total household income accrued last year. Finally, Equation (C1) is identified by assuming that the variable "type of contract" held by the household head and spouse enters the consumption equation only through its impact on the probability of losing the job.

According to the life-cycle model including the risk of losing a job, $\beta_1$ and $\beta_2$ should be negative, as explained in Section 2. We experiment with two measures of consumption: total non-durable consumption and a broader measure that includes durables.

A possible source of biases regarding the test in Equation (C1), $\beta_1 < 0$ and $\beta_2 < 0$, is that workers covered by an open-ended contract are more likely to have had continued labor market spells and lifetime income, which we cannot fully control for. The omission of lifetime income creates a negative link between $P_{it}(U_h = 1)$ and $\varepsilon^c_{it}$ and between $P_{it}(U_s = 1)$ and $\varepsilon^c_{it}$ biasing the OLS estimates of $\beta_1$ and $\beta_2$ toward a more negative number. In other words, the estimates of the consumption equation (C1) may be biased in favor of the null hypothesis, which is the reason we turn to alternative tests.

Our second test examines if households headed by a worker who has a higher probability of transiting into unemployment in 2002 had higher consumption *growth* between 2002 and 2005. Using the household panel sample, we estimate an equation for the household consumption growth with the following functional form:

$$\begin{aligned} \log C_{i,2005} - \log C_{i,2002} = \alpha_0 + \alpha_1 P_i(U_h = 1|year = 2002) + \\ + \alpha_2 P_i(U_s = 1|year = 2002) + X_i^{\Delta c'}\alpha_3 + \varepsilon_i^{\Delta c} \end{aligned} \qquad \text{(DC1)}$$

[6] See Lusardi (1997), for a detailed analysis of why occupation-specific variance in income does not properly identify the income risk an individual is exposed to.

Equation (DC1) does not come from transforming consumption equation (C1) into first differences. The variable $P_i(U_h = 1|year = 2002)$ is the probability that the head of household $i$ employed in 2002 loses her or his job next quarter. The same applies to $P_i(U_s = 1|year = 2002)$ when the household head's spouse was employed in 2002. The vector of explanatory variables, $X_i^{\Delta c}$, contains household and personal characteristics in levels and in first-differences, such as an indicator of whether the spouse did not work in 2002; the family head's gender, age band, marital status, economic sector and nature of the business if self-employed; and the education level of the couple. The covariates in first-differences control for a three-year change in the household size and the number of children by age, and the three-year household income growth. Finally, the error term of the equation is denoted by $\varepsilon_i^{\Delta c}$, which may also include measurement errors in the consumption growth.

According to the Euler equation governing the consumption growth in (DC1), households exposed to risk postpone consumption to the future. Thus, individuals who hold low firing cost contracts should experience higher consumption growth over a two year horizon than workers whose job is regulated by a high firing cost contract. Three comments are in order.

First, rather than modelling the variance of the income process, we only include the probability of losing the job, so our test is a very reduced form of the second-order approximation to the Euler equation. Second, we include a set of covariates that do not belong to an Euler equation, like the growth of total household income. The reason for doing so is to avoid biases associated to reversion to the mean: workers covered by fixed-term contracts have lower incomes and may mechanically experience higher income and consumption growth than higher-income workers. Third, note that we do not condition on labor market attachment in 2005. The prediction of higher average consumption growth holds after averaging across all states of the world, including unemployment.

## 6.2 Empirical results of the consumption responses

### 6.2.1 Consumption levels

Table A.3 shows the relationship between the probability of losing the job on two measures of consumption. The first is a measure of (recall) non-durable consumption. The second is a broader measure that adds to non-durable consumption an estimate of the flow value of services from car and furniture

holdings. The rationale is to allow for adjustments to the risk of losing a member of the couple's job by delaying the purchase of durable goods. We report both the impact of the probability of losing the job on mean consumption (using OLS) and median consumption (using median regressions).

The coefficient of "the probability that the head of the household loses the job over the next *quarter*" is -.004 (standard error: .004), shown in the first column, first row in Table A.3. The negative sign implies that a higher exposure to the risk of losing the job correlates negatively with non-durable consumption. In our sample, the change from the 50th centile to the 90th centile in the probability of transiting into unemployment in the following quarter is about 4 percentage points. Thus, the estimate in row 1 of Table A.3 implies that households would cut non-durable expenses by 1.44 percent as a response to a 4 percent increase in the probability of losing the job. The estimate seems small.

The coefficient measuring the impact on non-durable consumption of the probability that an employed spouse in a married household loses his or her job over the next *quarter* is -0.002 (standard error: 0.003). It is shown in the first column, second row in Table A.3. The specification contains controls for a dummy that takes the value of 1 if the secondary earner does not work. The estimate is positive, contrary to the precautionary savings hypothesis. Neither estimate of the impact of the risk of job loss is very precise.

In column (2), row 1 of Table A.3, we turn to the impact of the probability that the head transits into unemployment on *total* consumption. The coefficient is now -0.010 (standard error: 0.003), significantly different from zero at the 1 percent confidence level. The magnitude suggests that households react to the risk that the household head transits into non-employment by either cutting or delaying durable expenses, like cars or housing equipment. We quantify the magnitude of the estimate as in the case with non-durables: an increase in the quarterly probability that the head loses the job of 4 percentage points per quarter (basically, from the 50th to the 90th centile of the distribution of the probability of entering an unemployment spell in the next quarter) leads to a drop in durable consumption of 4 percent. The magnitudes of estimates of the impact of unemployment risk on median consumption are similar to mean impacts, and we do not comment them in detail.

Overall, the evidence in Table A.3 is consistent with the notion that households respond to the risk that the head loses his or her job by cutting mainly durable expenses. The response for the risk that the spouse loses

her job (when a spouse is present and works) is somewhat smaller and also confined to durable goods. As we mention above, the potential biases in the previous specifications go in favor of finding evidence supporting precautionary savings, which is the reason we now turn to examine consumption growth and balance sheet responses.

### 6.2.2 Consumption growth

Table A.4 presents estimates of the impact of exposure to the risk of losing the job on various measures of consumption growth. The results in column 1 suggest that a 1 percent increase in the chance of losing the job of the head over the next quarter led households to increase food consumption growth by 3.3 percentage points between 2002 and 2005. Taking the 4 percent difference between open-ended and fixed-term contracts, one obtains a 13.2% relative increase in consumption growth, but the estimate is very imprecise.

Now, the estimates are much more reliable when we examine total non-durable consumption and total consumption. The estimate in row 1 and column 2 of Table A.4 implies that a shift of 4 percentage points in the exposure to lose the job leads to an increase in non-durable consumption of 13.2 percentage points. The relative increase in the growth of our broadest measure of consumption (including the flow of services from cars and housing equipment) following a 4 percent increase in the probability that the head loses the job is smaller, around 9%. Again, the evidence in Table A.4 is consistent with the idea that households exposed to the risk of losing the job delay mostly non-durable and durable consumption. The evidence for changes in food consumption is much less clear-cut. We find little evidence for responses of household consumption growth to the spouse's risk of losing the job.

# 7 Summary and work ahead

This draft has used the huge dispersion in firing costs in the Spanish labor market to estimate the link between the probability of losing the job and household consumption and wealth. Our results to date suggest that households exposed to the risk of losing their job accumulate wealth holdings between 2 and 4 months of annual income in excess of comparable workers who hold contracts with high firing costs. Nevertheless, wealth responses to

unemployment risk are heterogeneous and a substantial amount of workers seem to keep a small amount of resources.

A number of issues is still pending. First, we need to develop a theoretical framework to properly assess sources of biases and how to interpret magnitudes. Second, our current strategy cannot distinguish between precautionary saving and the alternative hypothesis that households headed by an individual with a fixed-term contract are liquidity constrained. We plan to examine those issues in the next draft.

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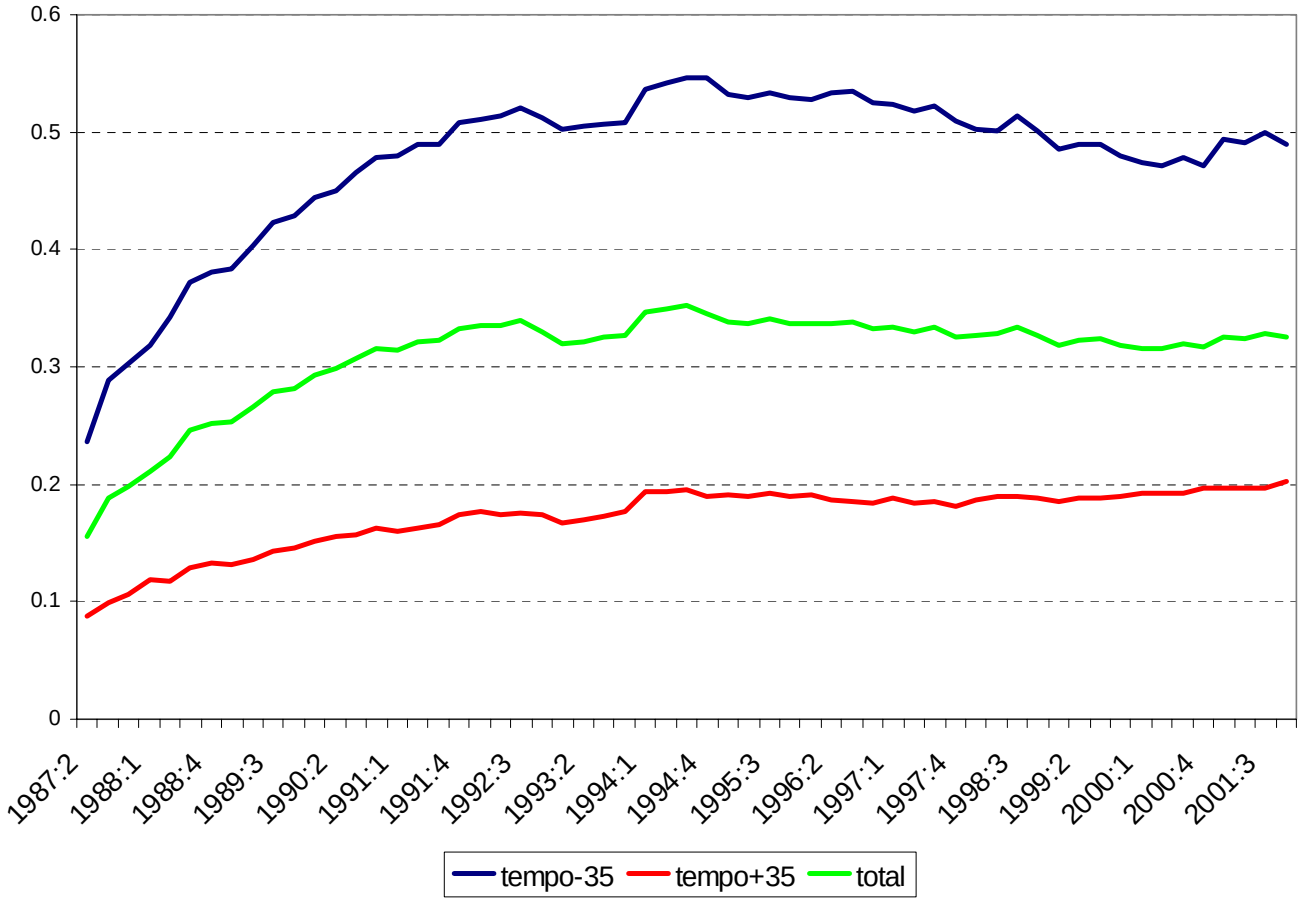
# Figure 1: Evolution of fraction workers with a temporary contract




Source: own computations from the Spanish Labor Force Survey

**Table 1: The distribution of the probability of losing the job, by education**

*Panel A: Probability of head transiting into unemployment in the next quarter (Source: EPA-Quarterly Employment Survey)*

| | Open-ended contract | Fixed-term contract |
|---|---|---|
| Total | 0.011 | 0.088 |
| Primary school | 0.018 | 0.111 |
| Secondary school | 0.012 | 0.082 |
| Upper secondary school | 0.009 | 0.074 |
| College | 0.006 | 0.062 |

*Panel B: Probability of head experiencing a non-employment spell in 2004 by the type of contract in 2002 (Source: EFF -Panel component of Wealth Survey)*

| | Open-ended contract | Fixed-term contract |
|---|---|---|
| Total | 0.055 | 0.187 |
| Primary school: | 0.117 | 0.289 |
| Secondary school | 0.050 | 0.138 |
| Upper secondary school | 0.046 | 0.130 |
| College | 0.027 | 0.079 |

Mean predicted values by cell using the predicted probabilities of transiting into non-employment, by occupation and education, computed using the coefficients in Table A.1. The probabilities in Panels B and C are predicted from weighted logit estimates obtained separately for the head and the spouse and using the type of contract and the level of education as explanatory variables.

**Table 1: The distribution of the probability of losing the job, by education (Contd.).**

*Panel C: Probability of spouse experiencing a non-employment spell in 2004 by the type of contract in 2002 (Source: EFF)*

| | Open-ended contract | Fixed-term contract |
|---|---|---|
| Primary school: | 0.170 | 0.589 |
| Secondary school | 0.148 | 0.550 |
| Upper secondary school | 0.112 | 0.469 |
| College | 0.057 | 0.300 |

Mean predicted values by cell using the predicted probabilities of transiting into non-employment, by occupation and education, computed using the coefficients in Table A.1. The probabilities in Panels B and C are predicted from weighted logit estimates obtained separately for the head and the spouse and using the type of contract and the level of education as explanatory variables.

**Table 2: Summary statistics, combined 2002 and 2005 waves of Wealth Survey (EFF)**

| | Total sample | Open-ended contract | Fixed-term contract | Self-employed |
|---|---|---|---|---|
| Head is self-employed | .189 | | | |
| | (.391) | | | |
| Head with open-ended contract | .648 | | | |
| | (.477) | | | |
| Head with fixed-term contract | .164 | | | |
| | (.370) | | | |
| Age of household head | 43.666 | 44.572 | 39.903 | 45.58 |
| S.D. | (9.857) | (9.666) | (9.537) | (9.525) |
| Married | .807 | .813 | .718 | .864 |
| | (.394) | (.389) | (.477) | (.342) |
| Prob. job loss (quarter),head | | | | |
| Mean: | .0148 | .0065 | .0574 | .0064 |
| S.D. | (.0214) | (.0036) | (.0241) | (.0038) |
| # Years at current job | -- | 14.16 | 3.529 | -- |
| | | (10.42) | (5.187) | |
| Household income | 40.232 | 41.264 | 25.586 | 49.341 |
| | (38.590) | (33.251) | (17.548) | (59.690) |

**Table 2: Summary statistics, combined 2002 and 2005 waves of Wealth Survey (EFF) (Contd.)**

| | Total sample | Open-ended contract | Fixed-term contract | Self-employed |
|---|---|---|---|---|
| Non-durable expenditure | 12.962 | 13.298 | 11.406 | 13.969 |
| S.D. | (8.241) | (7.833) | (6.222) | (10.550) |
| Net worth | | | | |
| Median | 121.42 | 126.192 | 57.95 | 184.476 |
| Mean | 181.88 | 173.188 | 83.409 | 296.99 |
| Net worth to income ratio | | | | |
| Median | 3.587 | 3.587 | 2.188 | 4.999 |
| Mean | 8.832 | 4.865 | 4.849 | 7.341 |
| Financial wealth | | | | |
| 25th centile | 1.097 | 1.185 | 500 | 2.000 |
| Median | 3.957 | 4.120 | 1.646 | 7.442 |
| Mean | 23.477 | 19.339 | 5.927 | 52.912 |
| Financial wealth to income ratio | | | | |
| Median | .133 | .130 | .077 | .235 |
| Mean | .67 | .408 | .277 | .807 |

Sample size: 5289 households in two EFF waves (2002 and 2005). S.D. are standard deviations (in parentheses)
Monetary variables are in 2002 thousand euros.
Net worth: value of real assets (excluding jewellery, cars and furniture) plus "liquid" financial assets (saving and checking accounts, all types of bonds and stocks, mutual funds and other financial products). Business, pension schemes and life insurance excluded.

**Table 3: First-stage estimates of a linear probability model of whether the family head is an employee with an open-ended contract.**

| | Whether head eligible at beginning of contract (1) | Subsidy amount at start of contract (2) | Amount (3) |
|---|---|---|---|
| Subsidy to contract conversion: | | | |
| 1. Head | .0886 | .0103 | .013 |
| | (.0323)** | (.0045)** | (.006)** |
| 2. Head * Aged below 30 | -.0543 | -.0157 | -.007 |
| | (.0492) | (.0078)** | (.009) |
| 3. Head * Female | -.0475 | -- | -.011 |
| | (.0472) | -- | (.008) |
| 4. Spouse | .052 | .0468 | .048 |
| | (.0086) | (.009) | (.008) |
| Tenure on the job, head | .0588 | 0.0547 | 0.025 |
| | (.0034) | 0.0029 | (0.001) |
| Region dummies | NO | NO | YES |

Notes: The sample size is 3,898 in a sample of employees formed by family heads. Standard errors corrected for heteroscedasticity. Other covariates (not shown) are: age dummies, industry, occupation and gender. R squared is 0.30

**Table 4A: Financial wealth responses to regional subsidies to contract conversion.**

| Dependent variable: | Logarithm of wealth held in "liquid" financial assets | | |
|---|---|---|---|
| Estimation method: Median regression | | | |
| Instrument: | Whether head was eligible at beginning of contract | Amount head was eligible at beginning of contract | Amount |
| | (1) | (2) | (3) |
| Subsidy to contract conversion: | | | |
| 1. Head | -.208 | -.0638 | -.058 |
| | (.138) | (.0254)** | (.034)* |
| 2. Head * Aged below 30 | .368 | .076 | .075 |
| | (.215)* | (.038)** | (.058) |
| 3. Head * Female | .116 | .057 | -- |
| | (.25) | (.035) | |
| Logarithm of household | 1.232 | 1.07 | 1.144 |
| income | (.0685)** | (.064)** | (0.056) |
| Region indicators | No | No | Yes |

Panel A : Sample size: 3,784. Standard errors are in parentheses. (Pseudo) R-squared is 0.23 in all specifications.
The median of liquid financial wealth in the sample of employees is 3,292€.

**Table 4B: Net wealth responses to regional subsidies to contract conversion.**

| Dependent variable: Logarithm of net wealth (liquid financial assets + net housing) | | | |
|---|---|---|---|
| Estimation method: Median regression | | | |
| | Whether head was eligible at beginning of contract | Amount head was eligible at beginning of contract | Amount |
| | (1) | (2) | (3) |
| Subsidy to contract conversion: | | | |
| 1. Head | .0812 | .0176 | .0207 |
| | (.0712) | (.0130) | (.015) |
| 2. Head * Aged below 30 | -.186 | -.046 | -.051 |
| | (.104)* | (.0191) | (.024)** |
| 3. Head * Female | -.155 | -.0269 | |
| | (.105) | (.018) | |
| 4. Spouse | -0.026 | -0.039 | |
| | (0.014) | (0.014) | |
| Region indicators | No | No | Yes |

Sample size: 3,831. Standard errors are in parentheses.
The median of net wealth in the sample of employees is 128,821€.

**Table 5: TSLS estimates of the effect of an open-ended contract on financial wealth**

| Dependent variable: Logarithm of wealth held in "liquid" financial assets | | | |
|---|---|---|---|
| Sample: | All households | Headed by a male | Headed by a male above 35 |
| *Panel A Dependent variable 1 if the household head has an open-ended contract* | | | |
| 1. Subsidy amount the head was eligible for | .0155<br>(.0045)*** | .0170<br>(.0047)*** | .0177<br>(.0047)*** |
| 2. Subsidy amount * (Age <=35) | -.0121<br>( .0068)* | -.0242<br>(.008)** | -.0225<br>(.0091)*** |
| 3. Subsidy amount * (Head is female) | -.0101<br>(.0066) | -- | -- |
| *Panel B Dependent variable is the logarithm of financial wealth over household income* | | | |
| 1. Open-ended contract | -2.199<br>(1.65) | -2.323<br>(1.497)* | -2.824<br>(1.662)* |
| 2. Constant | -1.639<br>(.928)* | -1.292<br>(.905) | -1.089<br>(1.042) |
| **3. Differential in the fraction of gross income held as financial wealth by fixed-term workers** | **0.172** | **0.247** | **0.316** |
| Sample sizes: | 3766 | 3222 | 3058 |

**Table 6: The effect of an open-ended contract on financial wealth over income ratios**

Estimation method: IV-Quantile regression by dual inference (Chernozhukov and Hansen, 2008)

| | 25th centile | 50th centile | 75th centile |
|---|---|---|---|
| *Panel A Instrument: Whether head was eligible for subsidy when contract started* | | | |
| 1. Covered by an open-ended contract | .20 | -1.8 | -2.1 |
| 90% confidence interval | [-4.8, 2.8] | [-3.1, .7] | [-10, 5] |
| 2. Constant | -4.538 | -1.690 | -0.452 |
| Fraction of gross yearly income held as wealth | **0.00** | **0.154** | **0.558** |
| *Panel B Instrument: Amount the head was eligible when contract started* | | | |
| 1. Covered by an open-ended contract | -1.2 | -2.2 | -6.3 |
| 90% confidence interval | [-5.9, 2.7] | [-4.6, .9] | [-10, 2.6] |
| 2. Constant | -3.134 | -1.341 | -- |
| Fraction of gross yearly income held as wealth | **0.030** | **0.233** | **--** |

Additional controls: education of the head and wife, log household income, age dummies, region dummies.

**Table A.1: Determinants of the transition from employment to unemployment (EPA)**

Dependent variable takes value 1 if there is a transition from employment to unemployment
Estimation method: Logit

| | (1) | (2) |
|---|---|---|
| Sample: | Males | Females |
| Employee with open-ended contract | -0.937 | -0.880 |
| | (0.017) | (0.018) |
| Open-ended contract after 1997 | 0.285 | 0.190 |
| | (0.023) | (0.024) |
| Employee | 0.922 | 0.836 |
| | (0.022) | (0.032) |
| Public sector | 0.148 | 0.086 |
| | (0.027) | (0.021) |
| Public sector * Open-ended contract | -0.358 | -0.286 |
| | (0.041) | (0.033) |
| Constant | -2.408 | -2.002 |
| | (0.038) | (0.037) |
| Sample size: | 326,648 | 176,633 |

**Table A.2: 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 | 2,100 euro, all workers | 2,100 euro, all workers | None |
| | | 2,400 if "learning contract" | 2,400 euro if "learning contract" | 2,400 if "learning contract" | |
| | | 600 extra if female in male job | 600 extra if female in male job | plus 600 if female in male job | |
| 4. Baleares | | | None | | |
| 5. Canarias | None | 3,600 if age<25 or if female | None | None | None |
| 6. Cantabria | None | 1,800 | None | None | None |
| | | 2,400 if age<30 or female | | | |
| | | 3,600 if above 40 | | | |
| 7. Castilla-Leon | None | 1,800 euro | 1,800 euro | 1,803 if age<30 | 1,803 if age<30 |
| | | 2,400 if apprenticeship contract | 2,400 if apprenticeship contract | | 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 | None | None | None |
| | | 4200 if female in male job | None | None | None |
| 13. Madrid | | | None | | |
| 14. Murcia | 1800 | 2100 if age<=30 | 2100 if age<=30 | 2100 if age<=30 | 2100 if age<=30 |
| | 2400 if age<30 | 1500 if age>30 | 1800 if age>30 | 1800 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 | 3000 for age<40 | Both years: Former+ 6009 euro if age<30 | |
| | None | 150 extra if female | 150 extra if female | 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.

**Table A.3: Consumption responses to the risk of losing the job**

| Dependent variable: | Non-durable consumption (log) | Total consumption (log) | Non-durable consumption (log) | Total consumption (log) |
|---|---|---|---|---|
| Estimation method: | OLS | | QR | |
| | (1) | (2) | (3) | (4) |
| 1. (Prob job loss, head - .012) | **-.004** | **-.01** | **-.003** | **-.008** |
| *100 | **(.004)** | **(.003)*** ** | **(.005)** | **(.004)** ** |
| 2. (Prob job loss, spouse - .032) | **.002** | **-.002** | **.006** | **0.000** |
| *100 | **(.003)** | **(.003)** | **(.004)** | **(.004)** |
| Spouse does not work | 0.052 | 0.043 | 0.062 | 0.042 |
| Constant | 2.132 | 2.476 | 2.175 | 2.507 |
| | (0.036) | (0.032) | (0.044) | (0.043) |

Notes: Sample size: 5294. Standard errors corrected for heteroscedasticity.
Additional covariates not shown: household income, family head's age, gender, education, economic sector, number of years contributed to Social Security, indicators of whether the family head works self-employed, nature of the business if self-employed and marital status; and the following covariates referred to the family head's spouse: education, economic, number of years contributed to Social Security and the indicator of whether she or he worked continuously last year.

**Table A.4.: The impact of the risk of losing the job on 3-year consumption growth**

| Dependent variable: | Log (Food t+3) -Log(Food) | Log(Non durables t+3) -Log(Non durables t) | Log(Total Cons. t+3) -Log(Total Cons. t) |
|---|---|---|---|
| Estimation method: | OLS | OLS | OLS |
| | (1) | (2) | (4) |
| **1. (Prob job loss, head -.012)** | **.033** | **.033** | **.023** |
| ***100** | **(.019)** | **(.013)***** | **(.011)**** |
| **2. (Prob job loss, spouse -.032)** | **.006** | **.008** | **.01** |
| ***100** | **(.012)** | **(.007)** | **(.006)** |
| Spouse does not work | -0.047 | 0.062 | 0.077 |
| | (0.062) | (0.052) | (0.043) |
| Constant | 0.078 | 0.023 | 0.028 |
| | (0.088) | (0.069) | (0.059) |

Notes: Sample size: 976. Standard errors are in parentheses.
Other covariates included but not shown: family head's age bands of 20-25, 26-35, 46-55 and 56-65, and three-year changes: in logarithm of household wealth, household size and number of children by age groups.