

# **CAN FIXED-TERM CONTRACTS PUT LOW SKILLED YOUTH ON A BETTER CAREER PATH? EVIDENCE FROM SPAIN\***

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## **Abstract**

Fixed-term contracts have low firing costs and can thus help low skilled youth find a first job faster. But do these workers enjoy a more rewarding career? Using Spanish social security data, we compare the careers of native male high-school dropouts who entered the labor market just before and just after a large liberalization in the use of fixed-term contracts in 1984. Using a cohort regression discontinuity design, we find that the reform reduced accumulated employment up to 2006 by almost a year and accumulated wages by 12%. Widespread fixed-term contracts have therefore harmed the careers of low-skilled workers.

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\* We gratefully acknowledge the support from research projects SEJ-6882/ECON and ECO2010-21706. Our thanks to A. Hijzen, S. Bentolila, and A. Novo for all their comments and to the audience at the 3rd SEEK Conference at ZEW, Mannheim and at the 8<sup>th</sup> IZA/World Bank Conference on Employment and Development in Bonn. The usual disclaimer applies.

## 1 Introduction

European countries typically have a high level of employment protection legislation (EPL), making it expensive to dismiss workers on permanent contracts. While EPL does not reduce overall employment, it has an adverse effect on the employment of marginal workers such as youth or low-qualified individuals. To address this problem, a number of European countries have made it easier for firms to use fixed-term contracts with lower firing costs. It was hoped that fixed-term contracts would help improve the labor market outcomes of marginal workers in high EPL countries.

But do fixed-term contracts really help? In theory, fixed-term contracts, by decreasing firing costs, can help workers with uncertain credentials obtain employment. Moreover, fixed-term contracts may help workers accumulate human capital. Fixed term contracts may also help workers gain contacts that allow them to obtain better jobs in the future. On the other hand, there is a danger that marginal workers go from fixed-term contract to fixed-term contract, leading to lower employment stability without any progression towards better jobs (Blanchard and Landier, 2002). In theory, the impact of fixed-term contracts on the labor market outcomes of affected workers is therefore ambiguous.

The empirical evidence on the impact of fixed-term contracts and temporary work on the labor market outcomes of affected workers is also ambiguous. A number of papers examine the stepping stone hypothesis according to which temporary work helps workers land permanent jobs. The evidence at the European level is mixed, with some papers finding evidence of the stepping-stone hypothesis (D'Addio and Rosholm (2005); Booth, Francesconi and Frank (2002), among others) while some other papers find that temporary contracts do not improve access to permanent contracts (Zijl, Van Den Berg and Heyma, 2004). The evidence on temporary help jobs is also mixed with a quasi-experimental study finding a somewhat negative impact of temporary work on earnings and employment in the US (Autor and Houseman, 2010), while studies using European data find a positive effect of temporary help jobs on securing permanent employment (e.g. Ichino, Mealli, and Nannicini, 2008).

Even if fixed-term contracts can help workers secure permanent jobs, the long-term effects of easily available fixed-term contracts remain uncertain. Indeed, when workers lose a permanent job, they may be back on a fixed-term contract and their return to stable employment may be delayed. The current literature only addresses the impact of temporary work within a few months to a few years of the first temporary job, and the long-run impact remains indeterminate. Another limitation of the existing literature is that it compares people who did and did not use temporary contracts (or temporary help agencies) within a given regulatory framework. This research cannot therefore directly inform us about what happens when the regulation of temporary work becomes less stringent. With a laxer regulation of fixed term contracts, some unemployed workers may get a fixed term contract fairly quickly and then transition to a permanent contract. However, it is possible, that, were fixed term contracts not easily available, the same workers

would have transitioned to a permanent contract even more rapidly. Therefore, even if we believe the stepping stone hypothesis that, for an unemployed worker, taking a fixed term contract is better than staying unemployed, this does not imply that making fixed term contracts more easily available will increase the proportion of low skilled workers in permanent contracts and benefit their careers. Overall, both the long-term impact of temporary work on careers, and the overall impact of fixed-term contract regulation remain open questions.

In this paper, we use Spanish social security data to assess the long-term impact of fixed-term contracts on employment and earnings. Spain is an ideal ground for our research because fixed-term contract use has been liberalized early and Spain subsequently became the OECD country with the highest share of fixed-term contracts. To assess the impact of fixed-term contracts, we track cohorts of workers who enter the labor market before and after a 1984 reform that considerably liberalized the use of fixed-term contracts. We focus specifically on male high school dropouts as they are most likely to be affected by the liberalization of fixed-term contracts. Using a cohort regression discontinuity design, we show that, compared to workers who entered the labor market just before the reform, workers who enter the labor market right after the reform experience both lower accumulated days of work and lower accumulated earnings over their subsequent career up to the year 2006. The accumulated earnings loss is as high as 12%. Greater fixed-term contract availability at the beginning of a worker's career therefore has a negative impact on long-run career outcomes.

This paper makes two key contributions to the literature. First, while previous literature on the labor market impact of fixed term contracts has relied on regression adjustments and other non-experimental techniques for identification, we use a regression discontinuity design that exploits a large change in Spanish regulation. Second, our paper innovates by examining the long-term impact of fixed-term contracts on young people's career: Social Security data allows us to have more than twenty years of follow up while previous literature examined outcomes over at most a few years. Contrary to most of the previous literature on European labor markets, we find a negative impact of fixed term contracts on labor market outcomes. Our results are most similar to the quasi-experimental study of temporary help jobs in the US (Autor and Houseman, 2010). We conclude that the combination of examining long-run outcomes and using a quasi-experimental design allows us to uncover substantial and previously undocumented negative effects of fixed-term contracts on the long-term labor market outcomes of low-skilled youth.

There have been a number of previous papers examining the use of fixed-term contracts in Spain, but focusing on somewhat different issues from our paper.<sup>1</sup> First, the previous literature has examined the impact of fixed-term contract duration on the probability of finding a permanent job. Most of those papers

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<sup>1</sup> Some recent papers as Bentolila, Cahuc, Dolado and Le Barbanchon (2012) or Costain, Jimeno and Thomas (2010) analyze the effect of temporary contracts in Spain within the current context of economic crisis. The former explores the extent to which the significantly larger increase in unemployment in Spain, versus France, during the ongoing recession can be accounted for by the difference in EPL between the two countries. The latter studies the extent to which the coexistence of permanent and temporary jobs accounts for the volatility of employment in Spain.

(see for example Petrongolo and Guell (2007) or Garcia-Perez and Muñoz-Bullón (2011)) agree that the effect of temporary contract duration on the probability of finding a permanent job is slightly increasing with tenure at the temporary contract but mainly concentrated on specific durations of the temporary contract (6, 12, 24 – the typical duration of these contracts-, and specially at the 36<sup>th</sup>. month, the maximum duration of such contracts in Spain). Second, the paper by Rebollo (2011) stresses the idea that not only the number of temporary contracts and job interruptions are important in determining the chances of a worker to find a permanent contract but also the number of firms for which this person has worked is an important determinant. Therefore, accumulating temporary contracts with the same firm reduces the probability of getting a permanent contract while moving from one firm to another with a temporary contract increases the chances of getting a permanent contract. Third, the literature has examined the impact of fixed-term contracts on firms' outcomes. Using the simulations of a dynamic labor demand model, Aguirregabiria and Alonso-Borrego (2009) evaluate the effects of the same labor market reform we are analyzing: the liberalization of fixed term contracts in 1984. They find that both total employment and job turnover increased due to the reform in Spanish manufacturing firms.

Our paper is also related to a literature that examines the long-term labor market impact of entering the labor market under high unemployment. Kahn (2010) and Moulton (2011) both find negative long-run wage effects of entering the labor market under adverse economic conditions. Moulton's paper in particular uses a cohort regression discontinuity design to assess the impact of the Great Depression on subsequent wages on different cohorts. We use a similar regression discontinuity design but use the 1984 Spanish reform as a break point, and we control for the unemployment rate at labor market entry. The paper proceeds as follows. In section 1, we discuss the history of temporary contracts in Spain. Section 2 describes the data and the empirical strategy. Section 3 presents the results and section 4 concludes.

## **2 History and current rules of temporary contracts in Spain**

### **Historical background**

During the time of Franco's regime, the Spanish labor market was heavily regulated with a single trade union to which both employers and employees had to belong and with strong labor regulations to protect employment. This meant that, in reality, all jobs were full-time jobs of a permanent nature. After Franco's death in 1975 some changes were introduced to relax some of the previous regulations. The most important one was the legalization of free trade unions and the abolishment of the single trade union in 1977.

It was not until 1980 when the strongest modernization of the labor relations system was introduced in Spain with the approval of the Workers' Statute. This law assumed every contract to be an open-ended contract as a general case, whereas temporary contracts were intended to be used only for jobs whose nature were temporary (seasonal jobs, temporary substitution of permanent workers, etc). Furthermore, the Worker's Statute kept most of the restrictions on dismissals. Dismissed permanent workers would receive severance

payments that depend on whether the dismissal is fair or not. For fair dismissals, severance payments equal 20 days of salary per year of job tenure with a maximum of 1 year wages while for unfair dismissals this quantity amounts to 45 days with a maximum of 42 months of wages. The reasons for the dismissal to be considered as fair are twofold: either the firm argues that the employee is incapable of performing his/her tasks or it argues that there are economic or technological reasons that require the dismissal of the worker. If a worker is dismissed under a fair dismissal by the firm but he/she does not agree with the fairness of the process, he/she can sue the firm and a legal process begins in which the firm has to pay the legal costs (in any case) as well as the wages of the worker if the dismissal is finally judged to be unfair by the court. In reality, labor courts effectively ruled most dismissals as unfair and so the costs of the legal process were usually higher for the employer than the severance payment for unfair dismissals. Although temporary contracts had a much lower severance payment (8 days per year of seniority), the restrictions on the use of this type of contracts meant that their use was very limited during the first half of the 1980s (Aguirregabiria and Alonso-Borrego, 2009; Garcia-Perez and Muñoz-Bullón, 2011).

During the first half of the 1980s, the Spanish unemployment rate experienced a rapid growth and it went over 20%. This event prompted the Spanish government to introduce a new reform in 1984. This was the first reform designed to liberalize the use of temporary contracts and to reduce dismissal costs for this type of contracts. The most important element of the reform is the fact that it eliminated the requirement that the activity associated with a temporary contract had to be of a temporary nature. Therefore, firms whose activities are not of a temporary nature could sign temporary contracts with any type of worker after the reform of 1984. These contracts can be signed for a period between a minimum of six months and a maximum of three years. After the three years, the contract cannot be renewed, and the worker must either be fired (in this case, the employee cannot hire any other worker for that job and has to wait for at least one year to hire the same worker) or must be offered a permanent contract by his/her current employer. Furthermore, another advantage of this type of contracts is that firing costs at termination are very low (8 days per year of tenure but they can even be zero in some cases) and this termination cannot be appealed in front of the courts. The reform in 1984 did not alter any of the conditions for permanent contracts explained above (Aguirregabiria and Alonso-Borrego, 2009), which made temporary contracts even more appealing for firms.

As a result of this legislative change, the proportion of employees under temporary contracts increased from 10% during the 1980's to over 30% in the early 1990's, as it can be seen in Figure 1.<sup>2</sup> Between 1985 and 1994, over 95% of all new hires were employed through temporary contracts and the conversion rate from temporary into permanent contracts was only around 10% (Güell & Petrongolo 2007). Thus, the main concern with the liberalization of temporary contracts after 1984 was that it generated a huge segmentation

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<sup>2</sup> The data in figure 1 is taken from the Spanish Labor Force Survey, which only reports information on the type of contract (temporary/permanent) from 1987. In the following section, we present evidence to show that the use of temporary contracts was very small before the 1984 reform.

in the Spanish labor market between unstable low-paying jobs and stable high-paying jobs, without helping to reduce unemployment.

Shifting direction in light of these concerns, in 1994 new regulations limited the use of temporary employment contracts to seasonal jobs. In addition, the 1994 reform slightly relaxed dismissal conditions for permanent contracts. In particular, the definition of fair dismissals was widened by including additional “economic reasons” for them. In practice, however, employers continued to hire workers under temporary contracts for all types of jobs and not just for seasonal jobs. This perceived ineffectiveness of the 1994 reform led to a new reform in 1997, which was eventually extended in 2001. As with the 1994 reform, the goal of the 1997 and 2001 reforms was to reduce the use of temporary contracts. The 1997 reform created a new type of permanent contract, with lower severance costs in case of unfair dismissal (33 days per year of seniority) and with fiscal incentives in the first two years of the contract (i.e., reductions of employers’ payroll taxes).<sup>3</sup> However, rather than trying to limit the use of temporary contracts by further possibly ineffective regulation, these new reforms widened the employers’ incentives to hire workers from certain population groups under permanent contracts.<sup>4</sup> The 2001 reform essentially extended the 1997 reform by applying lower subsidies to more worker groups than the previous reform (Garcia-Perez and Muñoz-Bullón, 2011). The consequences of these subsidies, however, have not been a reduction in the use of temporary contracts or an increase in workers’ stability but, on the contrary, only negligible effects on both dimensions because of the important side-effects (basically substitution effects) such subsidies have entailed (see García-Pérez and Rebollo, 2009)

### **Evolution of temporary contracts in Spain**

Although the Spanish Labor Force Survey only reports information on the type of contract from 1987, some data from a report published in 1988 (Mateos & Sebastián, 1988) show that temporary contracts represented a very low percentage of the total number of non-agricultural private sector employees in 1983 (below 3% until 1986). We can see in Figure 2 that the number of temporary contracts increased from the last trimester of 1984 when the new legislation on temporary contracts was passed.

On the other hand, taking data from the Spanish Labor Force Survey we can see in Figure 1 that the proportion of temporary contracts as a percentage of total employment was around 10% at the beginning of 1987 and was already around 35% in the mid-1990s. Therefore, very soon after the introduction of the 1984 reform, Spain was the country in Europe with the highest proportion of temporary contracts and this rate has been approximately 3 times larger than the average in OECD countries and approximately 2.5 times higher than the average in Europe until the second half of the 2000s (see Figure 1)

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<sup>3</sup> This was the first time (in 1997) since the Workers’ Statute in 1980 that severance costs were changed for permanent workers in Spain.

<sup>4</sup> In particular, the 1997 reform reduced dismissal costs for unfair dismissals by about 25% and payroll taxes between 40% and 90% for newly signed permanent contracts and for conversions of temporary into permanent contracts after the second quarter of 1997 for workers under 30 years-old, over 45 years-old, the long-term unemployed, women under-represented in their occupations, and disabled workers (see, in this respect, Kugler et al. 2005)

It has been widely recognized that the group of workers that has been most affected by the widespread use of temporary contracts in the Spanish economy is the youngest group of workers that enters the labor market. If we look at data from the OECD in Figure 1, we can see that the share of temporary contracts for the group of workers aged 15-24 was already 37.48% in 1984 (as opposed to 15.59% for the whole population of workers). If we restrict this age group even further, in Figure 1 we can see that temporary contracts represented almost 50% of total employment for the age group 16-19 already by 1987 (as opposed to 15.59% for the whole population).

Again, data on temporary contracts before the introduction of the 1984 reform for the group of young workers is difficult to find but the same report mentioned above (Mateos & Sebastián, 1988) contains data on the number of apprenticeship contracts (which represent one part of the group of temporary contracts) from 1981 to 1986 as well as data on the percentage of these contracts with respect to the group of employees in the non-agricultural private sectors aged 16-19. We can see in Figure 3 that the percentage of these contracts for the group of individuals aged 16-19 increased from around 2% before 1984 to 15-16% in 1985 and 21% in 1986. Again, this represents only one type of temporary contracts (apprenticeship contracts) and for one group of workers (non-agricultural private sector workers) but it is quite impressive how the use of these contracts has increased since 1984.

Therefore, as our aim in this paper is to disentangle the long-term effects of the 1984 reform we will use a regression discontinuity strategy comparing high-school dropout men that reach the labor market entry age of 16 before and after the reform. As we have seen that this group of individuals is the most likely to be affected by the 1984 reform, we will compare individuals that entered the labor market when temporary contracts were not widely available with individuals that had their first labor market experience when the main restrictions for the use of temporary contracts were abolished. Therefore, even if we do not have individual information on the type of contract held in the first job, we know from previous evidence that just 2% of young workers had a temporary contract before the reform while 21% of them had a temporary contract by 1986 and almost 50% by 1987. Our aim is to understand whether entering the labor market under two very different labor market situations (with or without widely available temporary contracts) had any effect on long-term labor market outcomes.

### **3 Data and empirical strategy**

#### **Data**

This study will use the Continuous Sample of Working Lives (“Muestra Continua de Vidas Laborales”, MCVL) which is a microeconomic dataset based on administrative records provided by the Spanish Social Security Administration. Each wave contains a random sample of 4% of all the individuals who had contributed to the social security system (either by working or being on an unemployment scheme) or had received a contributory pension during at least one day in the year the sample is selected. Hence, the sample

is not including those individuals without any contact to Social Security in such a year. This may create some risks of sample selection, especially among women, immigrants or young workers. Hence, in order to minimize the potential selection effects, we combine the database for 4 waves, from 2006 to 2010. That is, we have everybody that had a relationship of at least one day during this four year period with the Social Security administration. For them, we have their complete labor market history observed in the data. In our sample, we select the cohorts from 1960 until 1975 so that individuals are aged 31-50 during 2006-2010. Therefore, it is very rare for native men at these ages not to have any relationship of at least one day with the Social Security administration during a four year period. This may be a potential problem, however, for women or immigrants in the sample as they have a more interrupted and discontinuous labor market trajectory. Therefore, we restrict the analysis to the native male sample.

There is information available on the entire employment and pension history of the workers, including the exact duration of employment, unemployment and disability or retirement pension spells, and for each spell, several variables that describe the characteristics of the job or the unemployment/pension benefits. There is also some information on personal characteristics such as age, gender, nationality and level of education.

Our sample includes all high-school dropout native males who were born between 1960 and 1975. We determine their year of labor market entry to be the year they turn 16 so that we can compare cohorts who experienced the same labor market conditions, except that some entered the labor market in a tightly regulated fixed term contracts regime while others entered the labor market in a laxer fixed term contract regime.<sup>5</sup> It is important to realize that we are not comparing a whole career spent under restrictive or lax fixed term contract use, but two careers, both exposed to lax fixed term contract use for most years, but that differ in the fixed term contract regulation in the first year of the career. As the reform was introduced in 1984, individuals born between 1960 and 1967 are used to determine what happens with a tight regulation of fixed-term contracts at entry whereas individuals born in 1969 and 1975 are used to assess what happens with a lax regulation of fixed-term contracts as they reach the age of labor market entry after the implementation of the reform.<sup>6</sup>

We have 29.060 native males in the sample, 18.033 workers born between 1960 and 1967 and 11.027 born between 1969 and 1975.<sup>7</sup>

We will look at the effect of the reform on several long-term labor market outcomes measured over the individual's labor market career and up to 2006. These outcomes include the number of days worked, the

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<sup>5</sup> 16 is the minimum legal age for working in Spain since 1980. Before that year the minimum working age was 14.

<sup>6</sup> We drop individuals born in 1968 as they reach the labor market entry age of 16 years old in the same year that the reform is implemented.

<sup>7</sup> Descriptive statistics of the variables included for our sample can be found in Table 1.



number of employment spells, the number of unemployment spells, the number of firms worked for and the logarithm of the accumulated wage over the career and the number of temporary (fixed-term contracts).<sup>8</sup>

## Empirical strategy

As explained in the previous sections, our strategy relies on the use of a regression discontinuity design. The year of birth is our running variable and we use the liberalization of fixed term contracts in 1984 as the cutoff point. We will compare high school dropout native males aged 16 in 1983 (cohort born in 1967) with high school dropout native males aged 16 in 1985 (cohort born in 1969)<sup>9</sup>.

As explained above, we take individuals that are high-school dropouts and compare the labor market outcomes of those who turn 16 years old before the introduction of the reform to the outcomes of individuals that turn 16 after the reform is implemented. We analyze the effect of the reform on a set of long-term career variables measured at the individual level and in the same year, 2006. Although we have data until 2010, we take the year 2006 to evaluate the outcomes because we want to avoid the years of the strong financial and economic crisis in Spain, which began in 2008 and is still strongly affecting the economy. Furthermore, stopping the follow up period in the same year for all cohorts ensures that workers who entered the labor market just before and just after the 1984 reform faced the same labor market conditions after the first few years in the labor market.

The outcome variables we analyze include the number of days worked, the number of employment spells, the accumulated wage over the career and the number of fixed-term contracts. We use the following regression discontinuity model to estimate the effect of reaching the labor market entry age when the generalization of fixed-term contracts is implemented<sup>10</sup>:

$$\begin{aligned} Outcome_i = & \alpha + \beta_1(BirthYear_i - C) + \beta_2(BirthYear_i - C)I(BirthYear_i \geq C) + \\ & \beta_3I(BirthYear_i \geq C) + SectorFE_i + UnemRateEntry_j + \beta_4(BirthYear_i - C)^2 + \\ & \beta_5[(BirthYear_i - C)I(BirthYear_i \geq C)]^2 + \beta_6 X_i + \varepsilon_i \end{aligned}$$

The model includes a linear and quadratic time trend consisting of a birth year cutoff (C) subtracted from the individual's birth year ( $BirthYear_i - C$ ) which estimates the trend in the outcome variable analyzed, for all birth cohorts.  $\beta_1$  is the slope of the pre-cutoff trend. There is a second time trend  $(BirthYear_i - C)I(BirthYear_i \geq C)$  which includes an additional indicator variable that equals 1 when

<sup>8</sup> We have information on the type of contract (permanent/temporary) from 1991 onwards. This is the reason why we can use this information as the dependent variable in the year 2006 (accumulated wage from 1991 until 2006) but we do not have this information for our cohorts at age 16.

<sup>9</sup> Therefore, the running variable in our model is age. We follow an identification strategy similar to the one that Card and Shore-Sheppard (2004) used to identify the effects on low-income children of expansions in medicaid. This is also documented in Lee and Lemieux (2010).

<sup>10</sup> We follow a similar specification to the one found in Moulton, 2011.

the individual is born at or after the cutoff. Therefore, the slope of the post-cutoff trend is  $\beta_1 + \beta_2$ . The variable that captures the effect of the policy is an indicator variable that equals 1 if the individual is born at or after the cutoff,  $I(\text{BirthYear}_i \geq C)$  so that  $\beta_3$  is the shift in the intercept of the post-cutoff trend which represents the effect of the treatment. Therefore,  $\beta_3$  represents the trend “jump”.  $\beta_4$  and  $\beta_5$  introduce the quadratic time trend in the model and are included to increase the fit of the pre and post cutoff trends.<sup>11</sup>  $X_i$  is a set of controls. Specifically, our baseline specification includes the unemployment rate of the region ( $j$ ) where the individual lives at the time of labor market entry (at age 16).<sup>12</sup> Some of the specifications also include dummies for the sector of the economy in which the individual works in 2006 (or in the last job if not working in 2006) to better control for possible differential labor market characteristics for different sectors of the economy.<sup>13</sup>

In order for the effect to be correctly identified regression discontinuity models require that the running variable (in our case the year of birth) cannot be manipulated so that the probability of being on each side of the discontinuity is exogenous. This is obviously satisfied in our sample for the year of birth<sup>14</sup>. However, as we also select individuals that are high-school dropouts in order to assume that they enter the labor market at age 16, it could be the case that the reform affected the probability of individuals studying more or less. In this case, we would observe a jump in the number of individuals in our sample for the cohort entering the labor market after the implementation of the reform. We can see in Figure 4 below that this is not the case, as the percentage of men of each cohort who are high-school dropouts and therefore are in our sample, declines over time. This is a steady decline due to the progressive increase in the amount of education for each subsequent cohort and we can observe that there is no discontinuity for individuals born in 1969. In Figure 6 we can see that the share of individuals who find their first job at age 15 or before (red line) strongly decreases for the cohorts analyzed here being this share almost zero for those born after 1965. The reason for this is the change in the legal working age in 1980 from 14 to 16 years old. But we can also observe in this graph that the percentage of individuals finding their first job at age 16 (blue line) substantially increases for cohorts born after 1967. This could be another consequence of the reform that liberalized the use of temporary contracts in 1984, that is, the reform could have increased the probability of younger individuals to find a job<sup>15</sup>.

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<sup>11</sup> We have also estimated the models with only a linear trend. However, the graphs of the real data and the predicted data from the model show that the fit of the model is much better with the quadratic than with the linear trend. Therefore, we only report the results with the quadratic trend. The graphs and regressions with the linear trends are available from the authors on request.

<sup>12</sup> We include the unemployment rate of 17 Autonomous Communities in Spain. This information is obtained from the Spanish National Institute of Statistics (INE). Ceuta and Melilla are included in the Andalusia region.

<sup>13</sup> A detailed description of the sectors of the economy included in the model is given in Table 6.

<sup>14</sup> Furthermore, for the RD model we also need to check that predetermined characteristics of the pre-reform and post-reform groups are balanced in a small neighbourhood. This can be corroborated in Table 12 of the appendix in which we show that observables are balanced on both sides of the discontinuity for the cohort right before the reform (1967) and the cohort just after the reform (1969). As the sample is restricted to native high-school drop-out men we cannot include in this table the variables gender, education or immigration status.

<sup>15</sup> We can see in the last column of table 2 that this is, indeed, the case.

## 4 Results

We are interested in evaluating the long-term impact of entering the labor market under a regime where fixed term contracts are easy for firms to use. Specifically, we would like to answer the following question: does greater availability of fixed term contracts lead to more days of employment and higher accumulated earnings in the long run? We first investigate whether the reform led to a greater number of fixed-term contracts. In a first graph (Figure 6), we show that men who entered the labor market in 1985 accumulated all other things equal more fixed term contracts between 1991 and 2006 than men who entered the labor market in 1983. Regressions confirm that this effect is statistically significant: entering the labor market under a lax fixed term contract regulation increases the number of fixed term contracts by 1.07 (Table 2). This result implies that men who entered the labor market under lax fixed term contracts regulation were more likely to be on fixed term contracts even years after their entry into the labor market.

Before examining long-run employment effects, we start by showing the impact of the introduction of fixed term contracts on the initial labor market insertion of youth. Labor market conditions were deteriorating rapidly prior to the reform (Figure 1). Thus, each cohort managed to accumulate fewer days of work during the year they turned 16 than the previous cohort (Figure 7). However, just at the time when the liberalization of fixed term contracts took place (in 1984), this trend was reversed as the data in Figure 6 also showed us. From 1984 onwards, each subsequent cohort accumulated more days of work during the year they turned 16 than the previous. Is this change due to the reform introduced in that year? Table 2 is saying that this is not the case. Once we control for a quadratic term in the dependent variable, the effect of the policy change on number of days worked at age 16 is estimated to be insignificantly different from .. Nonetheless, on the other hand it seems that the reform did have a positive effect on the probability of finding a job did at age 16 (as can be observed in the last column of Table 2 and also in Figure 6). Therefore, the reform increased the probability of finding a job for low educated native males after 1984 but these jobs were probably short-term jobs as the number of days worked at age 16 did not increase due to the reform. Therefore, the positive trend in the number of days worked at age 16 observed in Figure 6 for the cohorts that entered the labor market after the reform has to be due to other reasons not connected to the one analyzed here (the reform) but to the change in the economic situation of the country.

We now look at employment outcomes over the long-run. Before analyzing the results in detail, it should be noted that the declining trend showed in the following graphs is due to each cohort having less labor market history by 2006 because each cohort is one year younger than the previous one. Therefore, the key point for identifying the effect of the reform in these long-run labor market outcomes is to analyze whether there is a jump up in the outcome variable for the generation entering the labor market under laxer fixed term contract regulation.

Results for the number of days worked show that men who entered the labor market under a lax fixed term contract regulation accumulated, all other things equal, fewer days of employment from their entry into the

labor market and up to 2006. This can be seen both in graphs (Figure 8) and in the regressions. The regression in Table 3 indicates that entering the labor market under a lax regulation of fixed term contracts results in 313 days worked less (330 days if sector dummies are not considered). Presumably, this happens because under a lax fixed term contract regulation, more fixed term contracts are used, which means that people lose employment more often. To verify this, we also look at the impact of the liberalization of fixed term contracts on the number of spells of employment. Both graphs (Figure 9) and regressions (Table 4) show that men who entered the labor market under a laxer regulation of fixed term contracts experienced 1.6 additional spells of employment. Similarly, Figure 10 and Table 4 show that the number of unemployment spells also increases by 1.6 due to the introduction of the reform. Overall, entering the labor market under a lax fixed-term contract regulation leads to more spells of employment and unemployment, and almost a year less of accumulated days of employment.

We can further explore the reasons behind the negative employment effect of fixed term contracts by investigating the number of employers that individuals have worked for. Results in Table 5 seem to suggest that the higher mobility of these workers in the labor market is also due to these individuals moving between more different firms as the number of firms that individuals have worked for increases by 0.6 after the reform. Figure 10 also shows that the number of firms increases after 1984, which suggests that the reform may allow low skilled workers to access a more varied work experience by accumulating more employment spells in different firms.

Finally, we look at accumulated wages up to 2006. Graphs (Figure 12) and regressions (Table 3) both show that men who entered the labor market under a laxer regulation of fixed term contracts accumulated lower earnings. The earning loss is estimated to be 11.9% of total accumulated wages. Can this earnings loss be explained by the lower days of employment accumulated by the cohort entering the labor market during a lax fixed-term contract regulation (cohort born in 1969)? Based on the trend estimated from cohorts entering the labor market prior to the reform, the 1969 cohort should have accumulated 10.6 years of employment by 2006. We found however that the cohort had 0.86 years less of employment due to the reform. The employment loss is therefore  $0.86/10.6=8.1\%$ . Therefore, about 2/3 of the large earnings loss experienced by the cohort entering the labor market after the reform could be explained by the fewer days of work accumulated by this cohort. The rest might be connected to the well-known wage gap between permanent and temporary workers observed in Spain since the beginning of the nineties (See Jimeno & Toharia, 1993).

## **5 Discussion and robustness checks**

Our results differ from some of the findings in prior literature. In particular, our results differ from the ones in Aguirregabiria and Alonso-Borrego (2009) in the sense that they find an increase in job turn-over, as we do, but also an increase in total employment. This may be due to the fact that they analyze the firm's

maximization problem for a sample quite different from the one we have.<sup>16</sup> They find that these firms react to the reform by substituting permanent workers by temporary ones, all this process resulting in a 3.5% increase in total employment but a null effect on productivity. We also find an increase in turn-over what makes easier to exit from unemployment, especially for high-qualified workers who may be working more in equilibrium as the former paper finds. But, at the same time, this process makes much easier, specifically for low-skilled workers, to be unemployed what results in a less stable career for this type of workers, the ones we analyze in this paper.

We now perform some robustness tests for our main results. As explained above, in our sample we include all native male who are high-school dropouts as we determine their year of labor market entry to be the year they turn 16. In this way, we compare cohorts who experienced the same labor market conditions, except that some entered the labor market in a tightly regulated fixed term contracts regime while others entered the labor market in a laxer fixed term contract regime. However, it could be the case that some of the individuals in our pre-reform group do not effectively start working at the age of 16 even if they are high-school dropouts. If that is the case, some of the individuals in our pre-reform group may have begun working at later ages once the reform was already adopted.

In order to explore the robustness of our results to delayed labor market entry, we further restrict the sample to include only all native male who are high-school dropout and who began working before the reform (for our pre-reform cohort) or after the reform (for our post-reform cohorts) at the ages 14-16. As expected, the results of these regressions (tables 7-10) are giving us much stronger results for all the outcomes analyzed. For example, the number of fixed term contracts or the number of employers that individuals have worked for almost tripled in this restricted sample. The number of employment and unemployment spells also increases substantially. All this has the effect of enlarging the estimated reduction in accumulated days worked and earnings in the long run. Indeed, the point estimates in our main results are likely to be attenuated due to the fact that some workers belonging to cohorts we labeled “pre-reform” only entered the labor market after the reform.

Finally, in order to check whether our results are changing throughout the worker's labor career, we have also estimated the same models as in the previous paragraph but measuring each outcome six years earlier, that is, in the year 2000. We find that the effect of entering into the labor market under the lax fixed-term contract regime means a smaller effect in all the outcomes analyzed but in the case of accumulated wages,<sup>17</sup> where we find a larger penalty by the year 2000 than by 2006. This is basically signaling that as time passes the effect of entering into the labor market under a lax fixed-term contract regime is getting worse in terms of trapping workers into a vicious circle of unemployment and instable contracts. As workers in these

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<sup>16</sup> They analyze the results of introducing temporary contracts with a sample of 2,356 Spanish manufacturing firms during the period 1982-1993. Hence, they focus on a group of firms larger than the average for the Spanish economy and where the typical worker is a medium-high qualified one with a permanent contract, both before and after the 1984 reform. As Table 1 shows, we have just 17.4% of workers in our sample working in manufacturing firms.

<sup>17</sup> The results for these exercises are available upon request.

cohorts are more likely to be working under fixed-term contracts, the previously mentioned wage penalty for temporary contracts is more likely to be present earlier than later in the worker's career.

## **6 Conclusion**

In this paper, we have investigated the impact of entering the labor market under a lax regulation of fixed-term contracts on subsequent labor market outcomes. Using Spanish social security data, we found that cohorts of native male high school dropouts who entered the labor market under a lax regulation of fixed-term contracts experienced worse labor market outcomes than cohorts that just preceded them. Specifically, entering the labor market under a lax regulation of fixed-term contracts leads to a 12% reduction in accumulated days worked and earnings in the long run.

Hence, our findings suggest that, on balance, making fixed-term contracts more readily available reduced the welfare of low skilled workers. Even though these contracts seem to allow low skilled workers to find a first job earlier and to access a more varied work experience by accumulating more employment spells in different firms, the long-run consequences are negative, with lower fewer worked and lower earnings. By promoting less stable employment, fixed-term contracts ultimately reduce the long-run employment prospects of low skilled workers. Far from being a stepping stone, fixed-term contracts are a stumbling block for the career of low skilled workers.

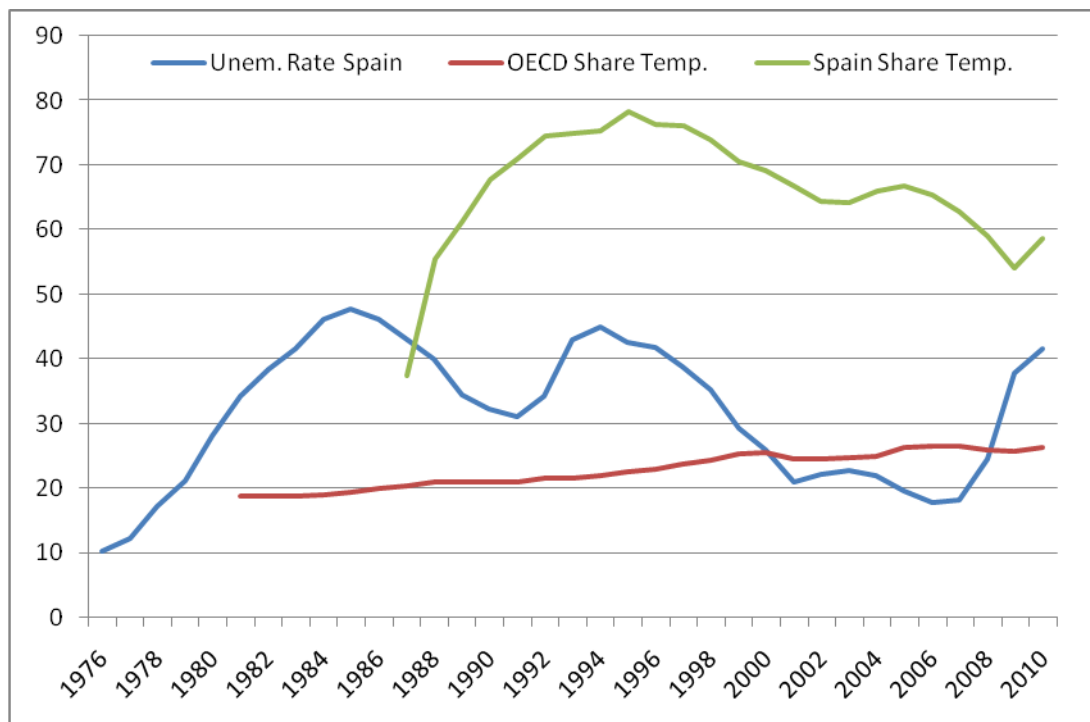
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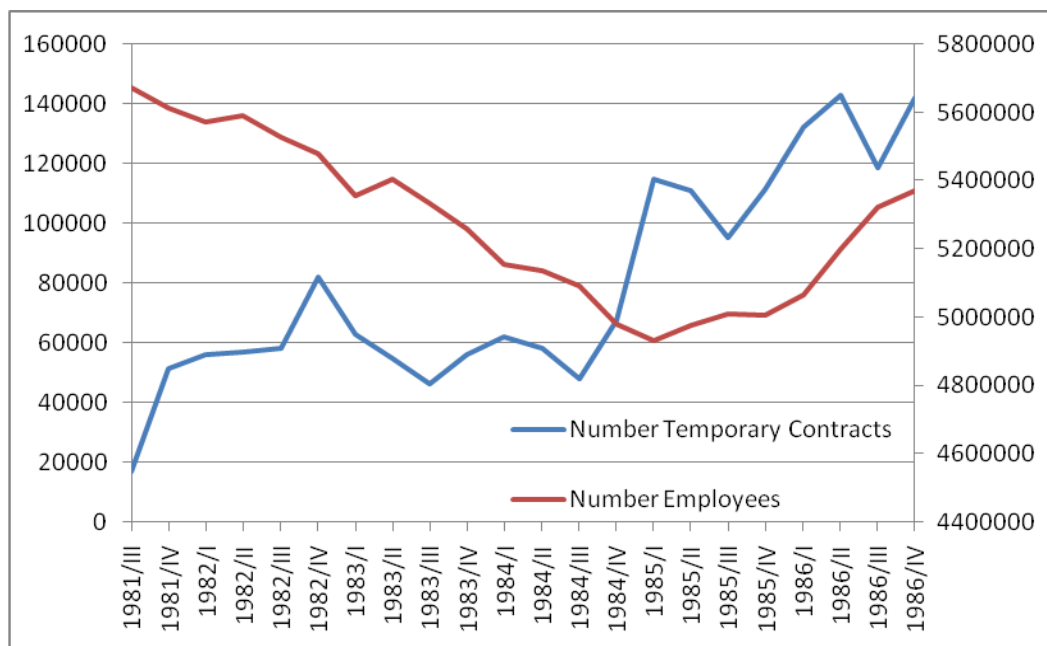


Figure 1. Unemployment rate in Spain for workers with less than 25 years old; share of temporary contracts for men aged 15-24 in Spain and average share of temporary contracts for men aged 15-24 in the OECD.



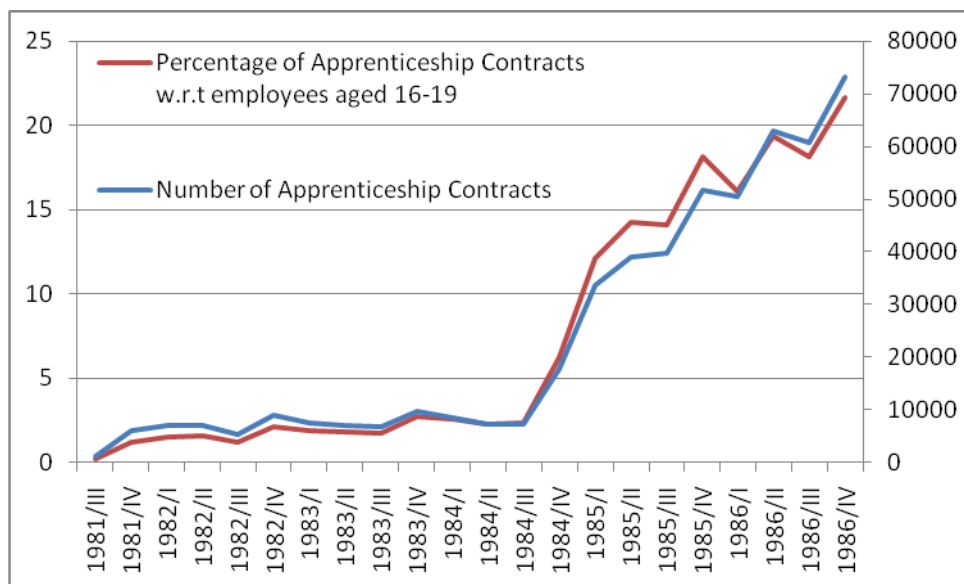
Source: Own elaboration from data from the OECD and the Spanish National Institute of Statistics (EPA).

Figure 2. Total number of temporary contracts and total number of employees in non-agricultural private sectors.



Source: Own elaboration from data from the Spanish National Institute of Statistics (EPA).

Figure 3. Number of apprenticeship contracts and percentage of apprenticeship contracts with respect to employees in non-agricultural private sectors aged between 16 and 19 years old.



Source: Own elaboration from data from the Spanish National Institute of Statistics (EPA).

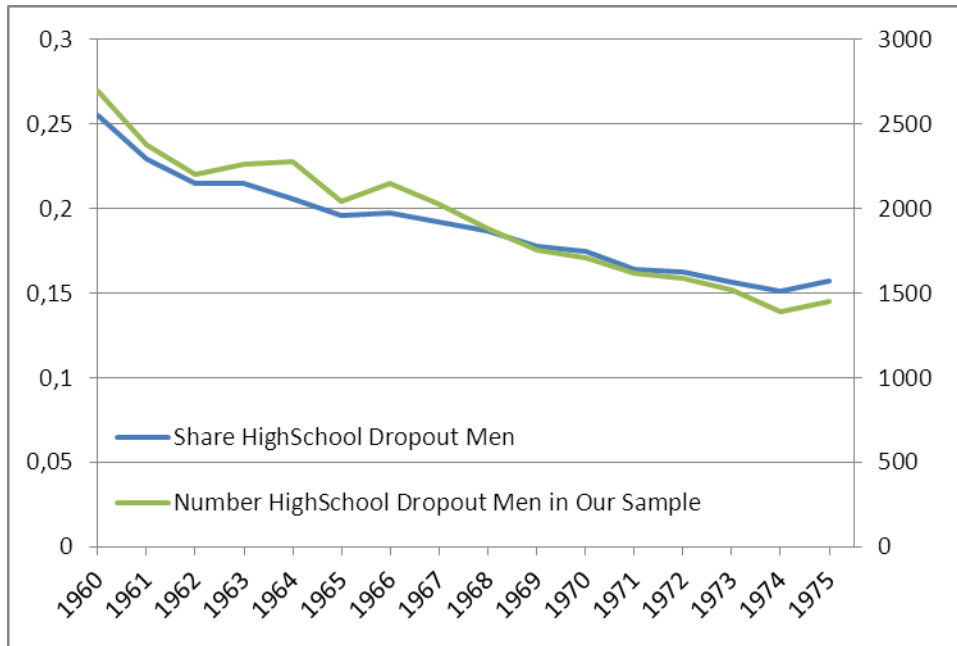
Table 1. Descriptive Statistics<sup>18</sup>.

Variable	Obs	Mean	Std. Dev.	Min	Max
Unempl. Rate Region at Entry	29060	14,386	7,333	1,42	30,49
Andalucia	29060	0,233	0,423	0	1
Aragon	29060	0,017	0,128	0	1
Asturias	29060	0,020	0,141	0	1
Baleares	29060	0,023	0,151	0	1
Canarias	29060	0,075	0,263	0	1
Cantabria	29060	0,011	0,105	0	1
Cast.Leon	29060	0,051	0,219	0	1
Cast.Mancha	29060	0,055	0,228	0	1
Catalunya	29060	0,144	0,351	0	1
Valencia	29060	0,118	0,323	0	1
Extremadura	29060	0,037	0,188	0	1
Galicia	29060	0,064	0,245	0	1
Madrid	29060	0,083	0,277	0	1
Murcia	29060	0,033	0,178	0	1
Navarra	29060	0,007	0,082	0	1
PaisBasco	29060	0,026	0,158	0	1
Rioja	29060	0,004	0,064	0	1
High Tech. Manufacturing	29060	0,094	0,292	0	1
Low Tech. Manufacturing	29060	0,080	0,271	0	1
High Tech. Services	29060	0,060	0,238	0	1
Trade	29060	0,125	0,330	0	1
Hotels and Catering services	29060	0,065	0,246	0	1
Other Low Tech. Activities	29060	0,121	0,326	0	1
Construction	29060	0,344	0,475	0	1
Public Admin. & Real State	29060	0,057	0,231	0	1
Missing	29060	0,006	0,076	0	1

Source: Muestra Continua de Vidas Laborales (MCVL).

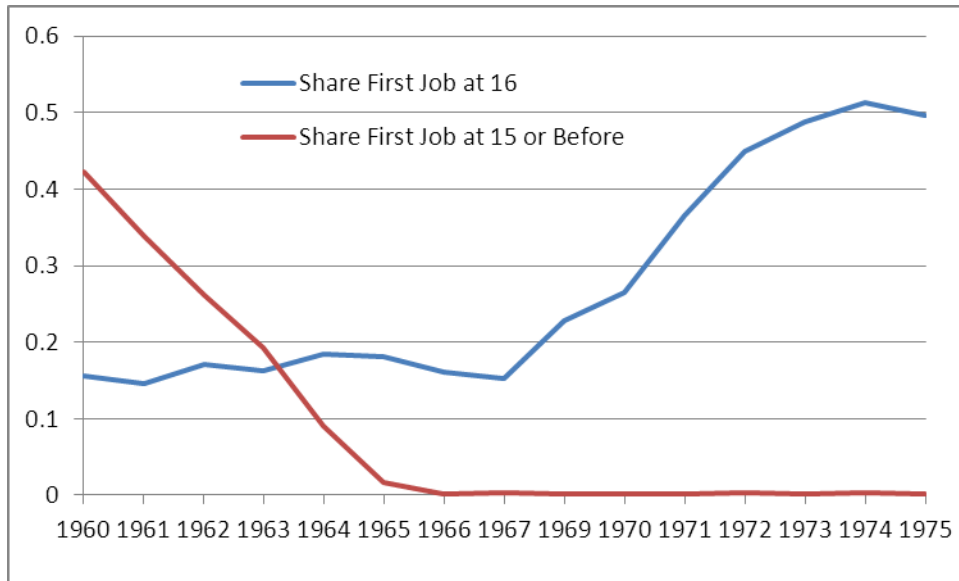
<sup>18</sup> See table 8 in the appendix for a more detailed explanation of each sector.

Figure 4. Total number of men in our sample for each birth cohort and share of males who are high-school dropouts for each cohort.



Source: Muestra Continua de Vidas Laborales (MCVL).

Figure 5. Share of individuals who find the first job at age 16 by cohort and share of individuals who find the first job at age 15 or before by cohort.



Source: Muestra Continua de Vidas Laborales (MCVL).

Table 2. Accumulated number of fixed-term contracts (temporary) until the year 2006 and probability of working and number of days worked at age 16.

VARIABLES	Acc.Fixed-Term	Acc.Fixed-Term	Days Work 16	Days Work 16	Probability Work16
Effect of the Reform	0.993***	1.066***	-1.154	-1.473	0.0635***
	(0.247)	(0.246)	(4.162)	(3.872)	(0.0144)
Linear Trend	-0.554***	-0.521***	15.77***	14.07***	0.0370***
	(0.136)	(0.128)	(2.371)	(1.947)	(0.00783)
Linear Post-Trend	1.000***	0.958***	-1.907	-0.327	0.0327**
	(0.159)	(0.155)	(3.132)	(2.735)	(0.0110)
Quadratic Trend	-0.0332**	-0.0322**	2.003***	1.846***	0.00440***
	(0.0121)	(0.0118)	(0.133)	(0.0995)	(0.000475)
Quadratic Post-Trend	0.0488**	0.0425*	-3.171***	-2.946***	-0.0109***
	(0.0195)	(0.0215)	(0.266)	(0.240)	(0.00114)
Unem-Rate Entry	0.190***	0.162***	-3.950***	-3.500***	-0.0144***
	(0.0217)	(0.0189)	(0.599)	(0.509)	(0.00177)
Dummies Sector of Activity		X		X	X
Constant	2.014***	2.105***	118.8***	107.7***	0.454***
	(0.551)	(0.572)	(15.57)	(13.64)	(0.0481)
Observations	29,060	29,060	29,060	29,060	29,060
R-squared	0.016	0.053	0.093	0.144	0.144
Robust standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Table 3. Number of days worked until 2006 and accumulated wage (logs) until 2006.

VARIABLES	Days Worked	Days Worked	Wage	Wage
Effect of the Reform	-329.9*	-313.2**	-0.132*	-0.119*
	(155.1)	(138.4)	(0.0643)	(0.0592)
Linear Trend	267.4***	241.5***	0.113***	0.104***
	(78.81)	(69.97)	(0.0286)	(0.0271)
Linear Post-Trend	-482.4***	-455.6***	-0.189***	-0.181***
	(91.14)	(81.99)	(0.0326)	(0.0310)
Quadratic Trend	29.12***	28.16***	0.00832***	0.00801***
	(5.710)	(5.224)	(0.00232)	(0.00226)
Quadratic Post-Trend	-33.93***	-31.89***	-0.00744**	-0.00669**
	(7.447)	(7.404)	(0.00300)	(0.00302)
Unem-Rate Entry	-88.10***	-80.11***	-0.0290***	-0.0271***
	(10.88)	(9.308)	(0.00174)	(0.00149)
Dummies Sector of Activity		X		X
Constant	5,830***	5,807***	12.04***	12.02***
	(342.9)	(357.2)	(0.0896)	(0.0967)
Observations	29,060	29,060	27,316	27,316
R-squared	0.126	0.157	0.033	0.056
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table 4. Number of employment and unemployment spells until 2006.

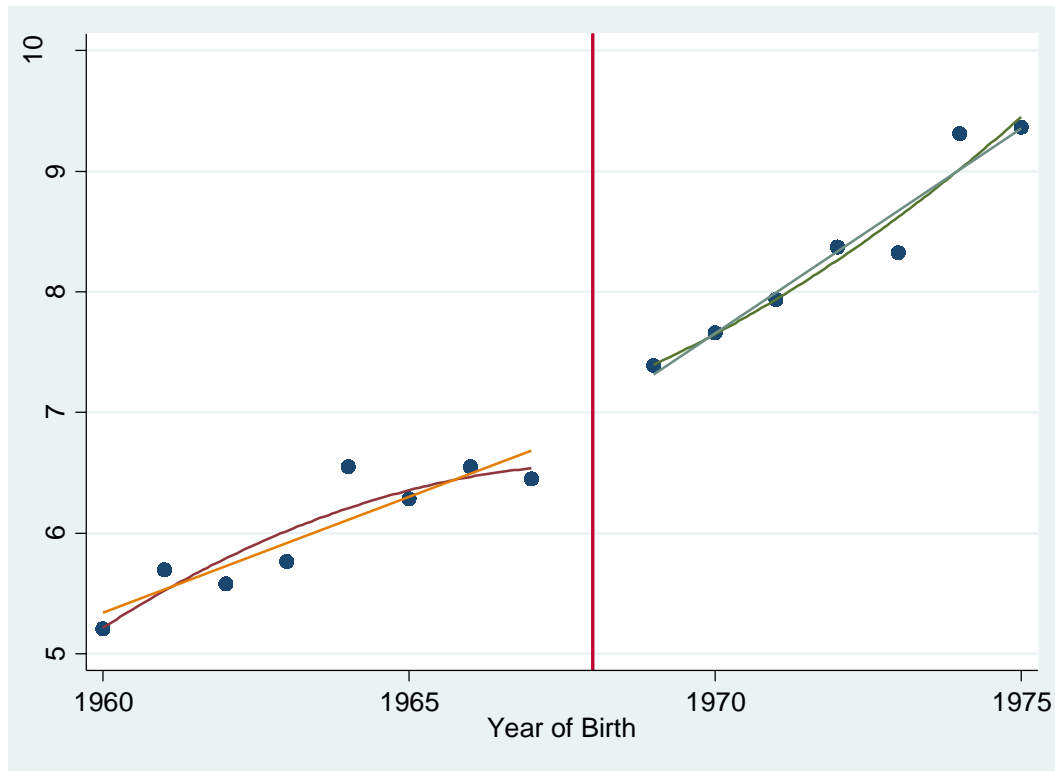
VARIABLES	Empl.Spells	Empl.Spells	Unem.Spells	Unem.Spells
Effect of the Reform	1.445***	1.554***	1.453***	1.566***
	(0.461)	(0.504)	(0.461)	(0.506)
Linear Trend	-0.652**	-0.608**	-0.676**	-0.633**
	(0.227)	(0.239)	(0.227)	(0.240)
Linear Post-Trend	0.445	0.387	0.507*	0.449
	(0.260)	(0.275)	(0.258)	(0.273)
Quadratic Trend	-0.0349	-0.0336	-0.0371*	-0.0357
	(0.0206)	(0.0222)	(0.0207)	(0.0224)
Quadratic Post-Trend	0.0370	0.0300	0.0359	0.0287
	(0.0238)	(0.0266)	(0.0238)	(0.0265)
Unem-Rate Entry	0.0703*	0.0356	0.0797*	0.0441
	(0.0379)	(0.0354)	(0.0384)	(0.0357)
Dummies Sector of Activity		X		X
Constant	11.14***	11.04***	10.44***	10.37***
	(0.908)	(1.016)	(0.914)	(1.017)
Observations	29,060	29,060	29,060	29,060
R-squared	0.001	0.028	0.001	0.029
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table 5. Number of firms worked for until 2006.

VARIABLES	Number Firms	Number Firms
Effect of the Reform	0.508*	0.580**
	(0.240)	(0.253)
Linear Trend	-0.206	-0.165
	(0.118)	(0.122)
Linear Post-Trend	0.207	0.149
	(0.166)	(0.170)
Quadratic Trend	-0.0178*	-0.0165
	(0.0100)	(0.0107)
Quadratic Post-Trend	-0.00616	-0.0113
	(0.0172)	(0.0182)
Unem-Rate Entry	-0.0149	-0.0433**
	(0.0193)	(0.0179)
Dummies Sector of Activity		X
Constant	8.781***	8.627***
	(0.504)	(0.547)
Observations	29,060	29,060
R-squared	0.001	0.036
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		



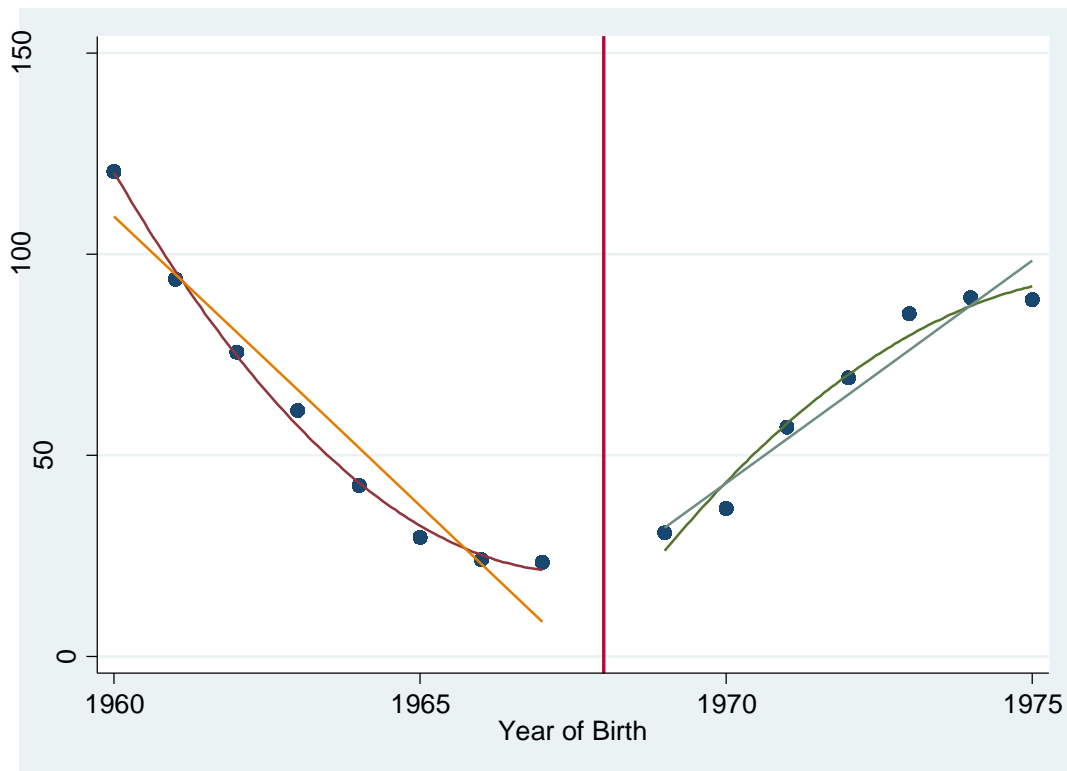
Figure 6. Accumulated fixed-term (temporary) contracts until 2006. Raw data (scatter plot) and prediction of the linear and the quadratic model without covariates (line graph).



Note: The predictions are from a regression of the accumulated number of fixed-term contracts from 1991 until 2006 with a linear and with a linear and quadratic trend.

Source: Muestra Continua de Vidas Laborales (MCVL).

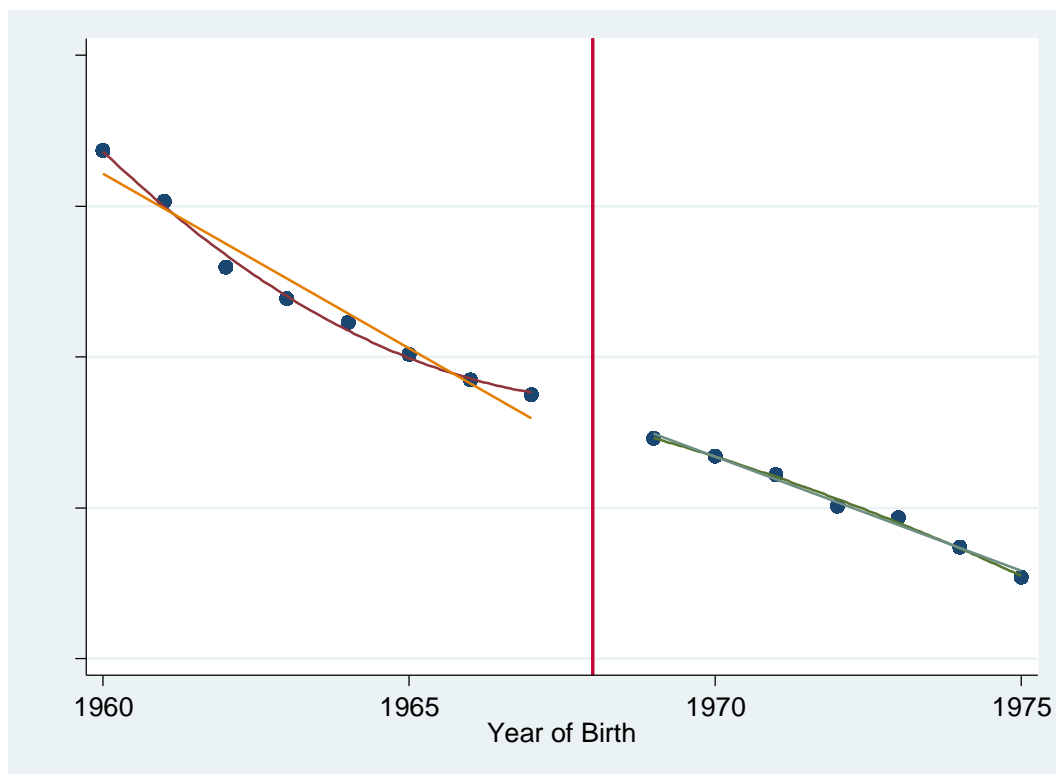
Figure 7. Days of employment during the year between 16 and 17 years old.



Note: The predictions are from a regression of the number of days worked at the age of 16 with a linear and with a linear and quadratic trend.

Source: Muestra Continua de Vidas Laborales (MCVL).

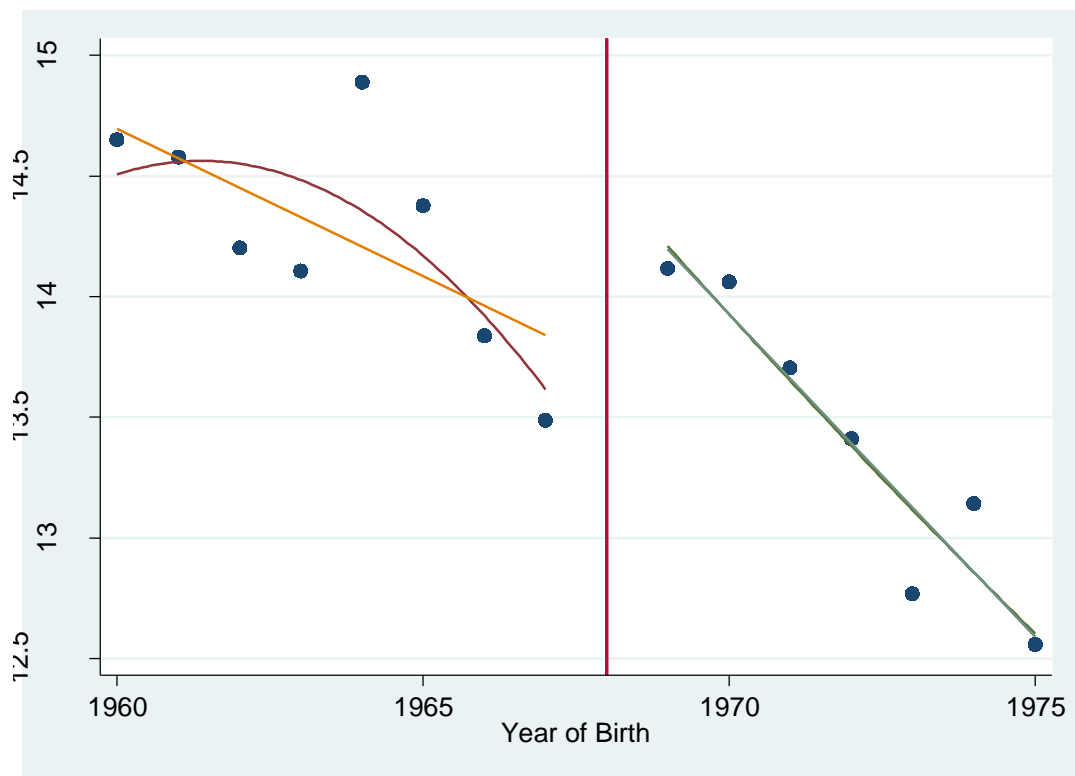
Figure 8. Accumulated number of days worked until 2006. Raw data (scatter plot) and prediction of the linear and the quadratic model without covariates (line graph).



Note: The predictions are from a regression of the accumulated number of days worked until 2006 with a linear and with a linear and quadratic trend.

Source: Muestra Continua de Vidas Laborales (MCVL).

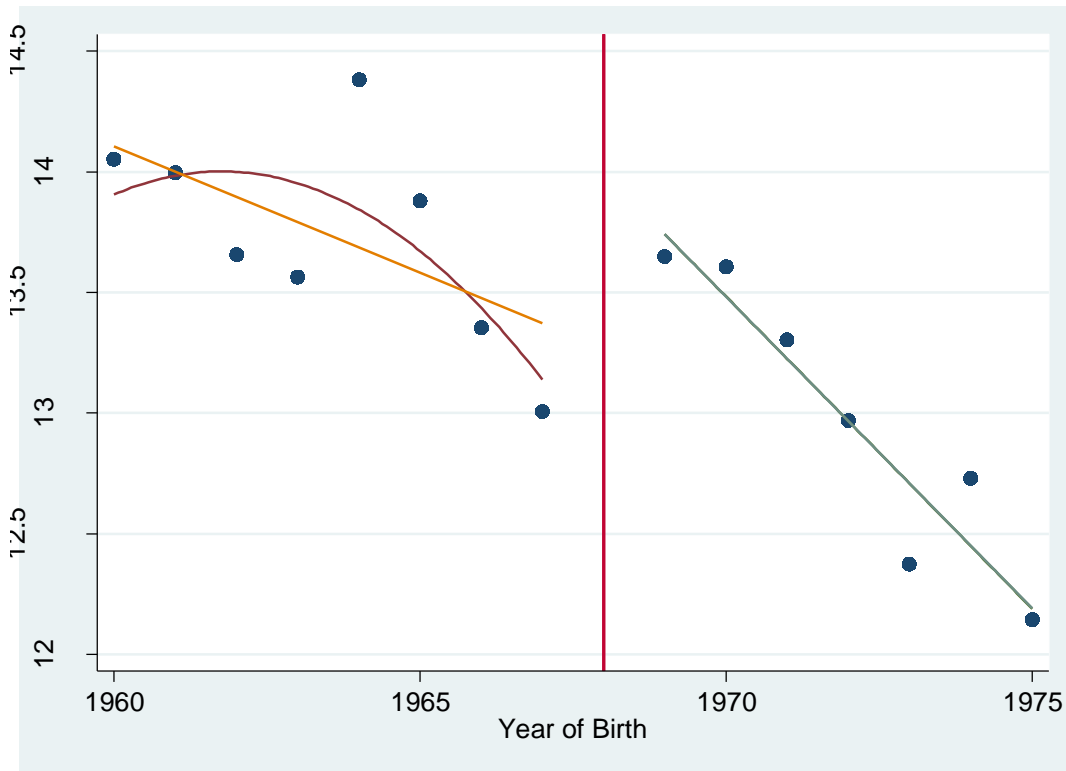
Figure 9. Accumulated number of employment spells until 2006. Raw data (scatter plot) and prediction of the linear and the quadratic model without covariates (line graph).



Note: The predictions are from a regression of the accumulated number of employment spells until 2006 with a linear and with a linear and quadratic trend.

Source: Muestra Continua de Vidas Laborales (MCVL).

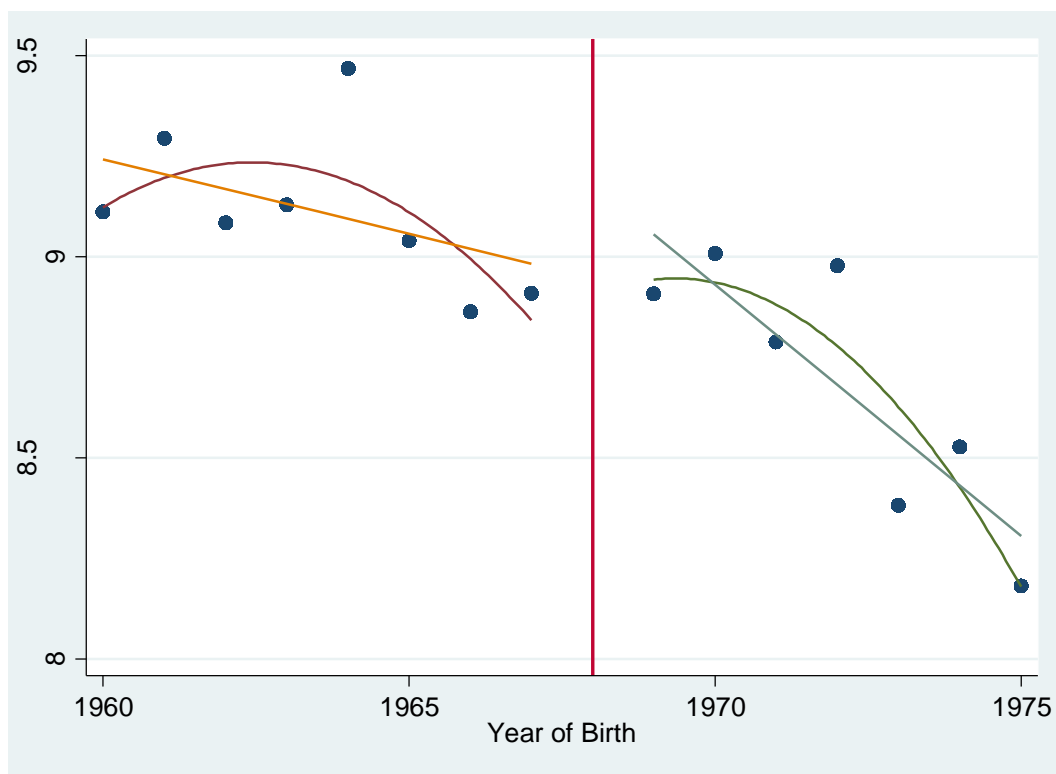
Figure 10. Accumulated number of unemployment spells until 2006. Raw data (scatter plot) and prediction of the linear and the quadratic model without covariates (line graph)



Note: The predictions are from a regression of the accumulated number of unemployment spells until 2006 with a linear and with a linear and quadratic trend.

Source: Muestra Continua de Vidas Laborales (MCVL).

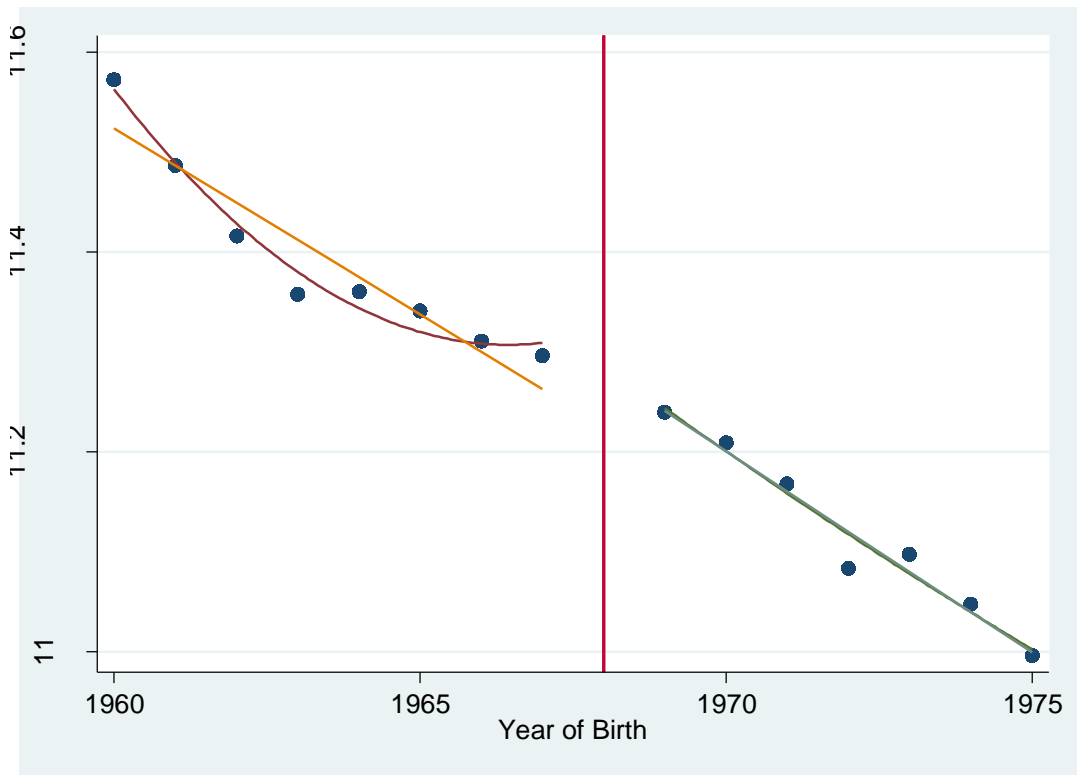
Figure 11. Accumulated number of firms worked for until 2006. Raw data (scatter plot) and prediction of the linear and the quadratic model without covariates (line graph).



Note: The predictions are from a regression of the accumulated number of firms that the individual has worked for until 2006 with a linear and with a linear and quadratic trend.

Source: Muestra Continua de Vidas Laborales (MCVL).

Figure 12. Logarithm of accumulated wage until 2006. Raw data (scatter plot) and prediction of the linear and the quadratic model without covariates (line graph).



Note: The predictions are from a regression of the logarithm of the accumulated wage until 2006 with a linear and with a linear and quadratic trend.

Source: Muestra Continua de Vidas Laborales (MCVL).

Table 7. Accumulated number of fixed-term contracts (temporary) until the year 2006 and number of days worked at age 16. Sample restricted to individuals working at the time of entering the sample (14 to 16 years old).

VARIABLES	Acc.Fixed-Term	Acc.Fixed-Term	Days Work 16	Days Work 16
Effect of the Reform	2.976***	2.591***	-2.717	-3.011
	(0.930)	(0.785)	(11.82)	(12.33)
Linear Trend	-1.422***	-1.389***	1.966	1.706
	(0.273)	(0.253)	(4.147)	(4.342)
Linear Post-Trend	2.382***	2.426***	8.631	8.963
	(0.431)	(0.388)	(5.052)	(5.176)
Quadratic Trend	-0.107***	-0.102***	1.009**	0.962**
	(0.0212)	(0.0198)	(0.348)	(0.364)
Quadratic Post-Trend	0.0723	0.0517	-1.796***	-1.710***
	(0.0492)	(0.0433)	(0.578)	(0.570)
Unem-Rate Entry	0.197***	0.198***	-2.308***	-2.301***
	(0.0329)	(0.0321)	(0.343)	(0.358)
Dummies Sector of Activity		X		X
Constant	-0.773	-1.361	205.6***	207.1***
	(0.937)	(0.942)	(12.69)	(13.46)
Observations	8,080	8,080	8,677	8,677
R-squared	0.039	0.093	0.080	0.091
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table 8. Number of days worked until 2006 and accumulated wage (logs) until 2006. Sample restricted to individuals working at the time of entering the sample (14 to 16 years old).

VARIABLES	Days Worked	Days Worked	Wage	Wage
Effect of the Reform	-901.4***	-790.8**	-0.282**	-0.257*
	(267.2)	(277.3)	(0.127)	(0.131)
Linear Trend	336.8***	296.3***	0.166***	0.152***
	(87.02)	(89.59)	(0.0371)	(0.0375)
Linear Post-Trend	-685.4***	-666.4***	-0.262***	-0.252***
	(99.77)	(111.1)	(0.0483)	(0.0518)
Quadratic Trend	42.24***	39.78***	0.0134***	0.0127***
	(6.616)	(6.726)	(0.00255)	(0.00258)
Quadratic Post-Trend	-32.26***	-25.98**	-0.00875*	-0.00707
	(9.404)	(10.84)	(0.00445)	(0.00495)
Unem-Rate Entry	-54.33***	-48.73***	-0.0207***	-0.0181***
	(6.089)	(5.477)	(0.00235)	(0.00236)
Dummies Sector of Activity		X		X
Constant	6,830***	7,150***	12.41***	12.50***
	(289.6)	(330.7)	(0.138)	(0.143)
Observations	8,080	8,080	7,933	7,933
R-squared	0.237	0.282	0.049	0.085
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				



Table 9. Number of employment and unemployment spells until 2006. Sample restricted to individuals working at the time of entering the sample (14 to 16 years old).

VARIABLES	Empl.Spells	Empl.Spells	Unem.Spells	Unem.Spells
Effect of the Reform	3.585**	3.122**	3.640**	3.163**
	(1.390)	(1.164)	(1.383)	(1.158)
Linear Trend	-2.101***	-2.079***	-2.109***	-2.084***
	(0.391)	(0.347)	(0.383)	(0.339)
Linear Post-Trend	2.434***	2.518***	2.479***	2.566***
	(0.551)	(0.476)	(0.548)	(0.474)
Quadratic Trend	-0.160***	-0.154***	-0.161***	-0.154***
	(0.0322)	(0.0290)	(0.0314)	(0.0283)
Quadratic Post-Trend	0.104	0.0768	0.102	0.0735
	(0.0649)	(0.0545)	(0.0652)	(0.0548)
Unem-Rate Entry	0.166***	0.166***	0.172***	0.171***
	(0.0478)	(0.0449)	(0.0474)	(0.0444)
Dummies Sector of Activity		X		X
Constant	8.249***	7.283***	7.509***	6.521***
	(1.266)	(1.285)	(1.249)	(1.281)
Observations	8,080	8,080	8,080	8,080
R-squared	0.004	0.070	0.004	0.073
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table 10. Number of firms worked for until 2006. Sample restricted to individuals working at the time of entering the sample (14 to 16 years old).

VARIABLES	Number Firms	Number Firms
Effect of the Reform	2.476**	2.085**
	(1.111)	(0.951)
Linear Trend	-1.019***	-0.974***
	(0.315)	(0.280)
Linear Post-Trend	1.045**	1.073***
	(0.412)	(0.349)
Quadratic Trend	-0.0872***	-0.0811***
	(0.0253)	(0.0230)
Quadratic Post-Trend	0.0571	0.0354
	(0.0437)	(0.0366)
Unem-Rate Entry	0.0259	0.0217
	(0.0290)	(0.0261)
Dummies Sector of Activity		X
Constant	7.559***	6.823***
	(0.969)	(0.896)
Observations	8,080	8,080
R-squared	0.002	0.086
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

## APPENDIX

Table 11. Aggregation of sectors in the economy.

<b>Sector of the economy</b>	<b>Description of sector</b>
High Tech. Manufacturing	Manufacturing using capital intensive and ICT technologies (Chemical industry, electrical industry, etc.)
Low Tech. Manufacturing	Manufacturing with low capital intensity (Furniture, Plastics, etc.)
High Tech. Services	Transport, Telecommunication, Finances, Education, Health, etc.
Trade	Wholesale trade, retail.
Hotels and Catering services	Hotels, restaurants, etc.
Other Low Tech. Activities	Labor intensive Services (water and waste treatment, personal services), Agriculture, Energy Industry
Construction	Building activities
Public Administration & Real State	All public activities but health and education. Real State activities
Missing	No information about sector of activity

Source: Muestra Continua de Vidas Laborales (MCVL).

Table 12. Means of Observables for Individuals at the cutt-off point (bornt in 1967 or 1969). Native males who are high-school dropouts.

	Pre-reform: Born in 1967	Post-reform: Born in 1969
High Tech. Manufacturing	10.20%	10.41%
Low Tech. Manufacturing	7.40%	7.00%
High Tech. Services	5.40%	6.00%
Trade	11.60%	12.00%
Hotels and Catering services	6.10%	5.80%
Other Low Tech. Activities	12.00%	11.60%
Construction	35.80%	35.00%
Public Administration & Real State	5.60%	5.52%
Missing	0.30%	0.39%
Andalucia (Ceuta+Melilla)	24.00%	24%
Aragon	1.67%	2.10%
Asturias	1.97%	1.36%
Baleares	2.80%	2.10%
Canarias	8.17%	9.33%
Cantabria	1.13%	1.42%
Castilla-Leon	4.58%	4.04%
Castilla-LaMancha	5.51%	3.70%
Catalunya	13.54%	14.62%
Valencia	11.82%	12%
Extremadura	3.70%	3.36%
Galicia	5.40%	6.31%
Madrid	7.80%	8.20%
Murcia	4.00%	3.75%
Navarra	0.60%	0.91%
PaisBasco	2.56%	2.33%
Rioja	0.49%	0.34%
Number of Observations	2030	1757

Source: Muestra Continua de Vidas Laborales (MCVL).