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in Spain; Evaluating a Policy** [*]
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PROMOTING EMPLOYMENT OF DISABLED WOMEN IN SPAIN; EVALUATING A POLICY

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Abstract:

The Social Security system is Spain provides four different types of permanent disability pensions which are granted according to the severity of the disabling condition and the remaining capacity to work that is left for these individuals. Therefore, the system is designed to allow for a certain part of the disabled individuals to work while receiving the disability pension. However, the majority of these individuals do not effectively work and employment rates for this group of people have remained very low since 1996. The aim of this research is to evaluate the results of an employment promotion policy introduced in 2004 which increased the deductions of the Social Security contributions paid by employers that hire disabled women.
In order to do that we first analyze employment rates of disabled individuals in Spain from 1996 until 2007 followed by the estimation of a bivariate probit model to evaluate the existence of shifts in employment trends in the women relative to the men sample conditioning on the existence of preexisting trends. We find that the increase in the deductions of the Social Security contributions resulted in rises in employment rates for disabled women with respect to disabled men.

Keywords: Disability Benefits, Employment Promotion, Policy Evaluation.
JEL Classification: J14, J64, H55

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1   INTRODUCTION

1.1   RECENT DEVELOPMENTS

During the last years, disability policies have attracted particular attention in OECD countries both because they represent an important source of government expenditure and because societies are becoming more and more concerned about the need to strengthen the integration of disabled individuals in the society.

Countries in the OECD have tightened the conditions to access the unemployment and social assistance schemes introducing several work requirements while, at the same time, early retirement schemes have been limited (or even abolished) because of their well-documented work disincentives. These events have resulted in increasing numbers of pre-retirement individuals entering the disability schemes which, together with the ageing process of developed societies, raises concerns about the mid-term effects of disability expenses on the government's budget (OECD, 2007a, 2007b).

On the other hand, several studies and organizations of people with disabilities have stressed the need to promote the labor market integration of disabled individuals as a way of facilitating their broader integration in the society. The pre-conception that disability completely disables the individual for any kind of job is totally unfounded and some effort should be made in order to analyze how their abilities can be matched with labor market opportunities (OECD, 2003).

For these reasons, the possibility of increasing the number of disabled people that work is regarded as a good way to decrease the pressures on the financial stability of the social security system as well as to reach the social integration of disabled individuals.

As the OECD puts it; "Helping (disabled) people to work is potentially a "win-win" policy: it helps people avoid exclusion and have higher incomes while raising the prospect of more effective labor supply and higher economic output in the long term" (OECD, 2007a).

This seems to be a reasonable policy objective specially if we take into account two current developments that will provide new opportunities; on the one hand, medical advances will open up the possibilities for disabled people to stay healthier at older ages while, on the other hand, technological innovations will facilitate the adaptation of the working environment to the special requirements of the disabled.

However, there are several entry barriers to the labor market that individuals with disabilities face, which partially explain the low employment rates of this group of people:

1.   Physical barriers: adaptation of the working space.
2.   Stigma: prevents disabled individuals from receiving job offers.
3.   Mismatch: the job search process is more complicated as it is more difficult to receive the "adequate" job offer; employers don't know the specificities of the disabling condition nor the way in which they will affect the type of job that they offer.

Therefore, there is a need for new specific policies that take into account all the specificities explained above in order to ensure their effectiveness and the real integration of the disabled into the labor market and into society.

The promotion of employment of disabled individuals is particularly relevant for the Spanish case and, in 2007, the OECD identified it as the most "formidable" challenge facing the Spanish government with respect to disability policies, mainly due to two reasons: the significantly lower employment rates of disabled individuals in Spain with respect to other OECD countries and the higher proportion of older workers in the disability scheme (see figure 1). In that sense, 70% of all disabled individuals receiving disability benefits in Spain are on the age range of 50-64 years old (see figure 2).

In terms of employment rates of disabled individuals, they have remained quite low at a 30% level[2] even if GDP growth has been quite high at around 2-6% during the last ten years and the general unemployment rate has dropped from 20% to 9,2%[3]. This employment rate of 30% is one of the lowest in the OECD, where employment rates for disabled individuals are 45% in the UK, 40% in Australia, 50% in Luxembourg, 45% in Norway or 52% in Switzerland (see figure 3).

Furthermore, spending on disability benefits has been quite high in Spain and it stood at 1,2% of GDP in 2005. This is an important quantity as, for example, unemployment-related expenditures reached 2,5% of GDP in 2005. However, unemployment policies have traditionally raised much more attention among researchers and policy makers than disability policies.

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[2] The general employment rate has increased by 7% in the last 5 years. Employment rates stand at 65% (at the OECD average). 3,5% of the Spanish population is receiving disability benefits.
[3] Unemployment rates of disabled individuals have also remained constant at 15%.

Therefore, the aim of this paper is to understand the way in which a particular change in employer's incentives (an increase in the deductions of employer's social security contributions for hiring disabled women) affects employment rates of disabled women.

In order to do that, we first explore the characteristics and evolution of the group of individuals that is the focus of our research, i.e. individuals receiving a permanent disability pension, in order to get some insights on the evolution of their labor market participation from 1996 until 2007. In doing that, we realize the possibility of having differential trends between men and women in our sample before the policy is implemented in 2004. If this is so, the basic assumption of traditional difference-and-difference models would not be fulfilled. Therefore, when we proceed to the econometric analysis of the effectiveness of the policy measure in increasing employment of disabled women, we condition on any preexisting trends.

At the same time, another important issue to take into consideration is the crucial role that will be played by the different degrees of disability pensions available in the Spanish system that entail different working restrictions as well as pension amounts. For this reason, we choose a bivariate probit model as our estimation strategy to be able to model the employment situation and the type of pension received in a simultaneous way. The final goal of the research is to draw some conclusions on the type of policy initiatives that could be more effective in promoting employment among disabled individuals.

The present work contributes to the literature in two dimensions. First, it estimates the employment effects of a policy change that has never been analyzed before as an employment promotion tool for disabled individuals. Although there have been studies that have focused on the estimation of anti-discrimination legislation and quotas with respect to disabled workers, we are not aware of any studies that analyze the effects of deductions on the social security contributions for employers on the employment prospects of disabled individuals.

Second, we try to fill in the information gap existing in Spain with regards to the labor market behavior of disabled individuals and its evolution over time. There are only three cross-sectional surveys focusing on disabled individuals and only one of them pays special attention to the relation between disability and work. Therefore, there is a lack of information on employment rates of disabled individuals and their movements over time. To our knowledge, we are the first ones to use a longitudinal database on

disability pensions to shed some light on the composition and labor market situation of permanent disability pensioners in the Spanish economy.

The paper proceeds as follows: after some definitions and a brief discussion on the implications of using different degrees of disability, section 2 reviews the main literature focusing on the combination of disability pensions and a job and on the type of policies that can be introduced to foster employment of disabled individuals. Section 3 presents the data used together with some descriptive statistics which allow us to draw a number of conclusions from the evolution of the population receiving disability pensions in Spain. Section 4 explains the econometric approach used in the analysis and presents the main results and robustness checks. Finally, the main conclusions and policy recommendations are derived in the last part of the paper, section 5.

1.2   TYPES OF DISABILITY PENSIONS & COMPATIBILITY WITH A JOB

In Spain, permanent contributive[4] disability pensions are defined as the economic benefits that aim at compensating the individual for losing a certain amount of wage or professional earnings when the person is affected by a **reduction or a complete loss** of his/her working ability in a way that is assumed to be permanent due to the effects of a pathologic or traumatic process derived from an illness or an accident[5].

In order to capture the different situations in which a person can be after suffering from a disabling condition, the Spanish Social Security administration differentiates between four degrees of disability that depend on the amount of working capacity that has been lost:

Permanent Limited disability for the usual job: is the kind of disability that, without reaching the level of partial disability, causes a decrease to the individual of at least 33% of the standard performance for his/her usual job but the individual is still able to develop the fundamental tasks of his/her usual job or professional activity.

Permanent Partial disability for the usual job (PD): is the kind of impairment that disables the individual to develop all or the fundamental tasks of his/her usual job or

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[4] Please note that, for the purpose of this paper, we only focus on contributive pensions, that is, economic benefits that require having contributed to the Social Security before becoming disabled (employed or receiving unemployment benefits). The reasons are; data availability problems for non-contributory pensioners and the idea that disabled individuals that have worked before are probably in a better position to find a new job.

[5] Own translation of the definition of permanent disability given by the Spanish Social Security administration at www.seg-social.es.

professional activity but the individual is still capable of developing a different job or professional activity.

Permanent Total disability for all jobs (TD): is the kind of impairment that disables the individual for the development of any kind of job or professional activity.

Severe disability: is the situation for which, as a result of anatomic or functional loses, the individual needs the assistance of a third person to develop the most essential acts of live such as eating, moving, etc…

Therefore, the degree of disability in which the individual is classified is set in relation to the working capacity lost as the goal of the benefits is to compensate for the reduction on wages or professional earnings caused by the disabling condition. The amount of pension received varies according to the disability degree in which the individual is classified. For example, individuals in the partial disability scheme receive, in general, 55% of the regulatory base (which is an average of the last salaries) because they are assumed to get some income from work that would allow them to reach a similar amount of money than before becoming disabled. On the contrary, total disability pensions provide a 100% of the regulatory base as the individual is considered to have lost all his/her ability to work and, thus, is (in principle) unable to get any extra income from work[6].

However, when defining the compatibilities of each of these kinds of pensions, the Social Security administration states that the receipt of a total disability pension will not impede the development of those activities (both paid and unpaid) that are compatible with the disability status of the individual and that do not represent a change in his working ability.

Therefore, it can be concluded from this revision of the legislation that both partial and total disability pensioners are entitled to take up a job if the characteristics of it are in accordance with the definition of the type of disability that has been described above. At the same time and in line with the definitions, it seems clear that total disability holders will have a lower capacity to work than partial disability pensioners.

However, as it will be shown in the descriptive statistics of the next section, even if disability pensioners in Spain are "legally" given the option to combine the disability

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[6] For individuals in the partial disability scheme, this 55% increases to a 75% at the age of 55 years old if the individual does not have a job. This disincentive to work is studied in a forthcoming paper by the same author. See table 8 below for a summary on the way in which the pension amount is calculated.

pension with a job, the data analysis reveals that most of the disabled individuals in Spain are, in fact, not working.

As our interest lies on the effectiveness of a policy initiative in increasing employment of disabled individuals, we restrict our analysis to disabled individuals in the partial and total disability schemes. We have included total disability holders because, even if these individuals have more restrictions to work, we observe in the data that some of them do work and we considered was important to include them. We don't include Limited disability holders because they are allowed to continue in their previous job and the benefit given is paid only in one installment so that there are really no incentives/disincentives to work to analyze.

2   DISABILITY AND WORK: A SURVEY

The literature that assesses the effects of policy initiatives that try to promote employment rates of disabled individuals has mainly focused on anti-discrimination legislation and has been concentrated both on the Americans with Disabilities Act (ADA), which was introduced in 1990 in the United States of America, and on the Disability Discrimination Act of 1995 in the UK.

Taking advantage of the different timing on the implementation of the ADA in numerous states, two groups of authors find opposing results of the effects of the introduction of this policy. On the one hand, DeLeire (2000), Acemoglu and Angrist (2001) and Beegle and Stock (2003) conclude that ADA has not increased employment for disabled individuals whereas, on the other hand, Kruse and Schur (2003) argue that these findings result from the imprecise information on disability status used by the authors and warn that the results must be interpreted with care and are not conclusive. Jolls and Prescott (2004) and Jolls (2004) find that the main effect of ADA was the increase in the returns on education which, in turn, raised education participation of disabled individuals as well as their employment prospects.

The results obtained by the first set of authors about the introduction of ADA in the USA coincide with the findings of Bell and Heitmueller (2005) for the UK Disability Discrimination Act in the sense that the authors are not able to find any significant impact on employment prospects for disabled individuals after the introduction of this new anti-discrimination legislation.

Another two studies focus on the evaluation of an alternative policy initiative to promote employment for disabled individuals; the introduction of disabled vs. non-

disabled quotas for employees. First, Wagner et al. (2001) analyze the impact of employment quotas on job dynamics in 400 small firms in Germany and they find no effect of the quota threshold. In a more recent paper, Lalive et al. (2009) analyze increases in the demand for disabled workers of an employment quota introduced in Austria in 1969 that required firms to hire at least one disabled individual per 25 non-disabled employees. If firms failed to comply with this obligation they were subject to the payment of a tax for each unfilled quota slot. The authors exploit the discontinuous change in financial incentives for firms below and above the quantities of the quota threshold (25, 50, 75…) with a regression discontinuity approach model and find that the elasticity of substitution between disabled and non-disabled workers is around 2.4 for the first threshold (and 0.7 for higher thresholds). However, they also note that this change does not occur in the short-term as firms need some time to comply with employment quota rules.

They also find different effects for different firms and sectors of the economy; firms paying higher wages seem to have a lower response to the quota requirements as the monetary non-compliance fine is defined per-head. Firms in the manufactures sector show the strongest effect to the quota requirements while services and construction firms lie below the average effect. The authors attribute these differences between sectors of the economy to the role of technology in facilitating the accommodation of disabled workers.

Even if the evaluation of policy initiatives to increase employment of disabled workers has captured some attention among USA and European researchers, in Spain the majority of studies that include an analysis of the disability system are centered on the evaluation of the use of the disability scheme as an alternative exit route from the labor force, particularly for older workers approaching retirement (see, for example, Blanco (2000), Jimenez et al. (2006 & 2009).

Yet these kinds of studies are exclusively focused on entries into disability, disregarding the labor market trajectory of these individuals once they are accepted in the scheme. We are aware of only one paper by Malo et al. (2007) that uses Spanish data and focuses on the possibilities for disabled individuals to combine the receipt of the benefits with the development of a job once the individual starts receiving a disability pension. Using a cross-sectional sample for 2006, they estimate logistic regressions in order to analyze the variables that affect the probability of combining a disability

pension with a job. However, their paper is mainly a descriptive study which does not include any analysis of employment promotion policies.

Therefore, there are no previous studies analyzing the effect of employment promotion measures for disabled individuals in Spain, which is partly due to the lack of data availability as well as to the lack of compliance of the 2% employment quota required for Spanish firms with more than 50 employees.

3 DATABASE AND SAMPLE SELECTION

The study will use the Continuous Sample of Working Lives ("Muestra Continua de Vidas Laborales", MCVL) which is a microeconomic data set based on administrative records provided by the Spanish Social Security Administration. It contains a random sample of 4% of all the individuals who, at some point during 2007, had contributed towards the social security system (either by working or being in an unemployment scheme) or had received a contributory pension. The random sample selected contains over one million people.

There is information available on the entire employment and pension history of the workers, including the exact duration of employment, unemployment and disability pension spells, and for each spell, several variables that describe the characteristics of the job or the unemployment/disability benefits. There is also some information on personal characteristics such as age, gender, nationality and level of education. The macroeconomic variables used to capture the economic business cycle are derived from the Spanish "Instituto Nacional de Estadistica".

We select in our sample all individuals who are receiving a partial or total disability pension in 1996-2007. The pooled sample contains 49.989 individuals, of which 34.357 are men and 15.632 women. As new individuals become disabled and start receiving disability pensions each year, the sample is growing from an initial size of 19.961 individuals in 1996 up to 31.737 individuals in 2007[7]. We include individuals from 17 to 64 years old. We don't include ages above 64 years old as all disabled individuals are automatically transferred to old-age pensions when they reach age 65. Therefore, individuals leave the sample mainly because they reach age 64 and also, few individuals leave because they stop receiving the disability pension (only 0,15% of the sample).

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[7] See table 1 in the appendix to see the number of individuals each year in the sample.

3.1 DESCRIPTIVE STATISTICS

Table 2 shows the summary statistics of some of the variables used for the analysis, from where we can derive the main characteristics of the sample. It is composed by a majority of men, as only 28.8% of the observations are from women, and by low educated individuals, as half of the observations come from individuals who dropped out of education before finishing high school, 23% of the individuals hold a high school diploma (or equivalent) and only 9% of the sample is composed by people with a bachelor's degree and other higher education[8]. Our data confirms some of the observations highlighted in the OECD report such as the fact that disabled individuals in Spain are relatively old, as the average age of disabled individuals in our sample is 53.4 years old. They also appear to be a relatively poor group, as our data shows that the average monthly pension is 624 euro. However, this quantity varies substantially among individuals, as 55% of them receive a pension below 500 euro/month, 40% get between 500 and 1500 euro/month and 4.6% receive a pension above 1500 euro/month.

Therefore, if these individuals do not have any other source of income, such as a job, we can expect to have high poverty rates among disabled individuals, as more than half of the sample earn a monthly pension well below the Spanish minimum wage, which was set at 624 euro for 2009[9].

At the same time, according to our data, the financial resources available to disabled individuals that work are, on average, 46% higher than those of disabled without a job. Therefore, a policy that is effective in increasing the labor market prospects of disabled individuals and that helps them in finding a job, not only increases their social integration, but it also prevents them from falling into the poverty trap.

Table 3 presents the summary statistics according to working/not working observations. It can be observed that disabled individuals that work are mainly men, a bit more educated, young and with a slightly lower pension amount, who become disabled at a younger age. Thus, both the current age as well as the age at which he/she becomes disabled appear to be important factors in determining their chances to find a job.

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[8] These percentages are very close to the ones found in the EDAD-1999 and EDAD-2008 surveys of disabled individuals in Spain, which are based on a broader sample of the disabled population than our sample (as our sample only includes permanent & contributory disability pensioners).
[9] The minimum wage in Spain was 390,18 euro in 1996; 424,8 in 2000 and 490,80 in 2004.

If we make use of the time series dimension of the data, we can see that the number of disabled individuals (both men and women) has increased over time since 1996 (see table 1) but the percentage of disabled men/women has remained quite stable. Similarly, the proportion of individuals with a partial/total disability pension in the sample has also remained constant during these years (see figure 4). This stability in the composition of the sample reinforces the idea that no major changes have occurred in the evolution of the characteristics of the sample during this period.

The probability of working for disabled individuals has also increased over the sample period, both for men and women. This probability has been calculated performing a series of cross-sectional probit estimations and predicting the probability of working for each year and for each sub-group of the population studied[10].

Even if it is increasing, the probability of working for disabled individuals is quite low and it reaches its maximum value, which is only 12%, in 2007 (see figure 5). Disabled women have a much lower probability of working than disabled men (approximately half), which can be compared in figures 6 and 7. This observation reinforces the idea of the need to introduce policy initiatives that are particularly targeted to disabled women and are designed to increase their labor market prospects in order to reverse this discrimination problem that they suffer in the Spanish labor market.

4   ECONOMETRIC ANALYSIS

4.1   THE BASELINE MODEL

Given that, as explained above, individuals can receive two different types of pensions which are defined according to the remaining capacity to work kept by the disabled individual and, in order to take into account in the estimation the number of individuals in each of these two types of pensions, we have chosen to use a bivariate probit model as the estimation method. This model allows us to estimate movements in the labor market and between types of pension simultaneously and to incorporate the correlation in residuals of the two equations due to unobserved characteristics (such as the effective remaining "capacity to work").

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[10] Please note that no covariates are included in this model so that there are no controls for the several different sources of heterogeneity, which will be introduced in the econometric section below.

In order to introduce the policy variables, we have constructed a table (table 8) which contains a summary of the major reforms implemented by the Spanish central government in order to provide incentives for firms to hire disabled individuals. The majority of these incentives were first established in 1983 following what was ruled in 1982 by the (very important) law "Ley de Integracion Social de los Minusvalidos" (Social Integration of the Disabled). The LISMI, as it was later called, set up the basic pillars of public policies towards disabled individuals in terms of anti-discrimination and employment promotion measures which were later converted into concrete measures in 1983 in the form of a statutory order. In terms of employment protection, the 1983 statutory order introduced the requirement for firms with more than 50 employees to have at least 2% of disabled workers among their employees[11]. On the other hand, as employment promotion measures, it established a subsidy of 500.000 pessetas (3.012 euros) for each disabled worker that the firm hired, as well as a 70% deduction of the social security contributions for each disabled worker younger than 45 years old that was hired or a 90% deduction if the individual was older than 45 years old.

After the LISMI was implemented, only some minor changes were introduced up until 2004, when the deductions to the Social Security contributions to hire disabled women were increased from 70 to 90% for women below 45 years old and from 90 to 100% for women aged 45 and over. Apart from this reform in 2004, there was a substantial reorganization of the packet of firms' incentives in 2006 when deductions were changed from a percentage to a fixed amount of the monthly contribution that the employer has to pay to the administration for each disabled individual. However, this reform in 2006 did not involve any increase in the deductions previously given and, instead, it only changed the way in which these deductions were computed from a percentage to a fixed amount. Therefore, we are confident that this reform did not entail changes in the hiring behavior of employers and will not interfere in our identification strategy of the policy effects of the increase in the deductions for disabled women in 2004.

Figures 6 and 7 plot the probability for individuals in the sample to have a job for each calendar year from 1996 until 2007. These figures seem to suggest an acceleration of the increase in the probability for disabled women to have a job from 2004 onwards

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[11] However, it is well known in Spain that this employment quota is not implemented by employers and there are no monitoring or punishment mechanisms in place.

while the probability for disabled men to have a job seems to grow at a relatively constant rate for the entire period.

Therefore, in order to identify whether the policy introduced in 2004 induced a differential change in employment for disabled women relative to disabled men, we estimate a series of difference-in-differences models. The key identifying assumption in traditional difference-in-differences models is that the change in the outcome variable of interest, Y in recent years would have been the same for women as it was for men in the absence of the 2004 policy change. If this assumption is correct, then the parameters β's capture the policy-induced change in the outcome variable Y. However, to the extent that differential trends in Y between the group of men and women are present even prior to the policy change, this would suggest that the identifying assumptions are questioned. Therefore, and following the methodology in Autor & Duggan (2008), we estimate a model that evaluates the existence of any shift in the trend of the outcome variable in the women relative to men sample following the policy change and conditional on any preexisting trends.

The baseline model is given by the following two equations:

$$y_{jt}^1 = \alpha^1 + \sum_{t=1997}^{2007}(a_t^1 \times J_t^1) + \gamma^1 F_j^1 + \sum_{t=1997}^{2007}(\beta_0^1 \times F_j^1 \times (t-1996)) +$$

$$+ \sum_{t=2005}^{t=2007}(\beta_1^1 \times F_j^1 \times (t-2004)) + \sum_{t=1997}^{2007}(\eta_t^1 \times YOB \times J_t) + \varepsilon_{jt}^1$$

$$\text{with } y_{jt}^1 = \begin{cases} 1 \text{ if total disability pension} \\ 0 \text{ if partial disability pension} \end{cases}$$

$$y_{jt}^2 = \alpha^2 + \sum_{t=1997}^{2007}(a_t^2 \times J_t^2) + \gamma^2 F_j^2 + \sum_{t=1997}^{2007}(\beta_0^2 \times F_j^2 \times (t-1996)) +$$

$$+ \sum_{t=2005}^{t=2007}(\beta_1^2 \times F_j^2 \times (t-2004)) + \sum_{t=1997}^{2007}(\eta_t^2 \times YOB \times J_t) + \varepsilon_{jt}^2$$

$$\text{with } y_{jt}^2 = \begin{cases} 1 \text{ if he/she is working} \\ 0 \text{ if he/she is not working} \end{cases}$$

$$[\varepsilon_{1i}, \varepsilon_{2i}] \text{ distributed BVN}[0,0,1,1,\rho]$$

The first dependent variable, y_{jt}^1, captures the type of pension that the individual j is receiving at time t and equals 0 if he/she receives a partial disability pension and 1 when it is a total disability pension. The second dependent variable, y_{jt}^2, is 0 if the individual j is not working at time t and 1 when he/she has a job.

F_j is an indicator variable that equals 1 if individual j is a female and 0 otherwise, while J_t is a vector of twelve indicator variables for each of the years included in our sample. We also include interactions of these year dummies with the person's year of birth (YOB) in order to account for the different effect of the macroeconomic environment on labor force participation of disabled individuals of different cohorts (or years of birth). The ε's characterize the corresponding BVN error terms.

The parameters of interest are captured by the β's; β_0 represents the pre-existing trend in the women relative to the men group just before the policy change and β_1 captures any change in the women relative to the men trend following the policy change[12]. Furthermore and to the extent that the policy introduced different deductions of the SS contributions for women above and below 45, we could expect to detect a differential effect of the policy for these two age groups. We will examine this possibility by estimating separate models of the bivariate probit for two separate groups of disabled individuals (< or => age 45).

In a next step, we introduce a number of covariates to the previous model to control for some personal observable characteristics that could affect both the labor market situation of disabled individuals as well as the type of pension that they receive. These covariates are the level of education, age, age at which they became disabled, immigrant from other regions of Spain, the level of the disability benefit, 3 dummies for special professional schemes (agriculture, self-employed and working accident), regional fixed effects for each of the 17 Autonomous Communities in Spain and a dummy that is 1 if the individual lives in a town of less than 40.000 citizens[13]. Apart from those variables that are included in both equations of the model, we also include in the first equation two more variables that are only related to the type of pension received and act as exclusion restrictions in order to improve the identification of the parameters of the model. These variables are the percentage of Disability Evaluation Offices (DEO),

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[12] We take 2005 to be the first year after the policy but the results don't change that much if we use year 2004 as the first year after the policy.
[13] These variables are explained in more detail in the appendix section.

which is obtained by dividing the number of disability evaluation offices in each of the 52 provinces by the population in that province, and the percentage of disability pensions granted in each Autonomous Community (AC), which is obtained by dividing the number of pensions granted each year in each AC (17) by the population in each autonomous community. This last variable is introduced with the aim of capturing the way (rigorous/flexible) in which the health conditions are evaluated in each region[14].

This choice of exclusion restrictions is based on two things; first, it seems reasonable to us to accept the assumption that these two variables will have an effect on the probability for disabled individuals of being classified as partial/totally disabled while not affecting their employment probabilities. Second, we've run simple probit models for both equations separately and have checked that these variables are, in effect, not significant when included in the employment equation.

Finally, for both the model with and without covariates we also do another variation in which we include the type of pension received as an explanatory variable in the employment equation in order to test for the potential endogeneity of this variable (recursive bivariate probit). This test is done in order to explore the possibility that the type of pension received also affects employment prospects of disabled individuals in a direct way (as well as indirectly through the unobserved heterogeneity term).

4.2 RESULTS FROM THE BASELINE MODEL

Table 6 presents the results of the models without the variables that capture personal characteristics. The first column provides results from the bivariate probit model for all the sample of individuals aged 17 to 64. As the results show, employment was significantly lower for women than for men at the start of the sample period in 1996. This labor market disadvantage widened between the two genders in the years prior to the policy change although the coefficient is not statistically significant (β_0). After the policy was launched, this trend reversed considerably with a positive and significant coefficient for β_1 suggesting the fact that the policy introduced the necessary incentives for employers to hire disabled women vis-à-vis disabled men.

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[14] We have also test to estimate the models with only one of the two exclusion restrictions and results remain the same.

At the same time, results show that the policy had also an impact on the probability of receiving a total disability pension for women. At the beginning of the period, women were receiving less total disability pensions than men. However, the positive and significant β_0 coefficient suggests that this disparity was reduced during the years before the introduction of the policy with women receiving more total disability pensions than men. Nevertheless, once the policy was initiated, this trend reversed and women received less total disability pensions vis-à-vis men.

The estimated correlation coefficient between the two equations is negative and very significant which suggests the existence of unobserved factors that are relevant and that affect the probability of finding a job and the probability of receiving a total disability pension in opposite directions.

In the second column of table 6 we report the results of a similar model to the previous one but taking into account the potential endogeneity of the type of pension received on the probability of working. For that, we include the dependent variable of the first equation as a covariate in the second equation. Results are almost the same than in the simple bivariate probit specification. However, the model may not be well identified as no exclusion restrictions are included in this specification. Results of the Wald test suggest that we cannot reject the hypothesis of a correlation coefficient which equals zero. In the following table of results (table 7) we report results of the recursive bivariate probit model including exclusion restrictions.

The third and fourth column of table 6 show results for the bivariate probit specification for two separate samples of individuals; younger than 45 years old, and individuals who are 45 or older. The effect of the policy in reversing a negative employment trend and increasing the labor market opportunities for disabled women are much stronger and very significant for the age group of individuals below age 45. On the other hand, the impact of the policy seems to be insignificant for individuals who are 45 years or more.

Table 7 includes results of the specifications with the variables that capture personal characteristics in the model[15]. In general, the results are very similar than the models

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[15] Covariates include the level of education, age, age at which they became disabled, immigrants from another region in Spain, the level of disability benefit, 3 dummies for special professional schemes (agriculture, self-employed and working accident), regional fixed effects, dummy for a city/town and the two exclusion restrictions: percentage of Disability Evaluation Offices in each province and the percentage of disability pensions granted in each Autonomous Community.

without personal characteristics. However, for both the simple and the recursive bivariate probit models, the β_1 coefficients for the effect of the policy on the probability of finding a job for disabled women vis-à-vis disabled men are no longer significant when we include these new covariates. As there are two variables that act as exclusion restrictions (which are only included in the type of pension equation), the results of the recursive bivariate probit model are better identified than in table 6. We can see that in table 7 the hypothesis of no endogeneity can be rejected so that the type of pension received affects employment prospects of disabled individuals both directly and through unobserved factors (as the correlation coefficient is still negative and significant).

It is important to note that the coefficients that capture the effect of the policy and its significance levels of this specification of the recursive bivariate probit are very similar to the ones obtained in the bivariate probit model of the first column.

Columns 3 and 4 of table 7 report the results of the estimations for the sample of individuals younger than 45 years old and for the sample of individuals of 45 years or more. Again, results are pretty similar than the ones obtained in table 6 when no personal characteristics were introduced. The main results is that β_1 is still positive and significant for the sample of disabled individuals below 45 years old, implying that the deteriorating trend in employment prospects that existed for disabled women before the implementation of the policy was reversed by the introduction of the policy and employment increased for women with respect to men from the year 2004 onwards for this younger group of workers.

4.3 ROBUSTNESS CHECKS

4.3.1 THE DEFINITION OF DISABILITY

As we have explained above, our definition of disability includes only disabled individuals who are receiving a permanent contributory disability pension, as this administrative dataset is the only source of data available for disabled individuals in Spain which is presented as a panel. However, the disadvantage of this kind of data relies on the fact that it does not cover all the population with a disabling condition (like surveys do), as it only includes disabled individuals who have worked (and contributed) at some point in their life and who have qualified to receive a disability pension.

On the other hand, administrative data has the advantage of reducing the problems involved in self-reported measures of disability, which are commonly found in surveys.

If we compare our results with the ones obtained in EDAD (survey on disabilities, deficiencies and health status), which was conducted in Spain in 1999 and 2008, we can see that employment rates[16] of self-reported disabled individuals are calculated to be 24% (16% for women and 32% for men) in 1999 and 27% (22% for women and 32% for men) in 2008. Both figures are higher than the ones we find in this paper. This is quite reasonable if we take into account that there are many individuals that report having a disability in EDAD which will not qualify for receiving disability pensions (and will not be included in our sample) for two main reasons:

1. Their disability level does not reach the medical threshold to become a pensioner.
2. They have not worked the required time to be eligible for the pension[17].

Therefore, we think that our results have to be taken with care and interpreted as only being representative of the population receiving a permanent disability pension and not representative of the whole population with some kind of disabling condition.

4.3.2 ALTERNATIVE POLICY MEASURES

The EDAD survey conducted in 2008 also allows us to explore a bit more the utilization of other policy measures that have been introduced to promote employment of disabled individuals in Spain. The survey is answered by 22.795 disabled individuals (only 9055 below age 65), from which only 2669 are receiving a disability pension (29.5% of disabled persons below age 65).

Table 11 shows that only 0.8% of respondents say that they have benefited from an employment quota for disabled individuals in the public sector and 0.68% in the private one, 2.20% say that they have benefited from an employment contract for disabled individuals, 0.84% report having benefited from a deduction to the Social Security contributions for disabled workers and 1.07% from another mechanism targeted to

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[16] This is calculated for the population aged 16-64.

[17] The amount of contributory time required in order to be eligible for this type of pensions depends on the source of the disabling condition. If it is originated by an ordinary illness, eligibility to the pension requires having contributed 1/3 of the time between turning 20 and the appearance of the disabling condition, with a minimum of 5 years of contribution. There is no contributive requirement if the disability is caused by an accident (whether or not work-related or by a professional illness), but you need to have contributed.

promote employment among disabled individuals[18]. Therefore, the incidence of these policy initiatives is rather small and, even if they are available, they seem to play a secondary role in determining employment probabilities for the disabled.

5   CONCLUSIONS AND POLICY RECOMMENDATIONS

The analysis above has filled in an important information gap as it has presented the first evaluation of an employment promotion policy for disabled individuals in Spain. We make use of the availability of a 12 year bracket in our dataset in order to investigate the employment effects for disabled women of the introduction of a policy reform in 2004 which increased the deductions to the Social Security contributions for employers who hired a disabled woman.

In order to do so, we have first drawn a picture of a number of personal characteristics and of the labor market situation of disability pensioners in Spain and its evolution from 1996 to 2007.

Our findings suggest that this type of reforms provide the right incentives to employers as they increase the probability of finding a job for disabled women in Spain. This kind of political incentive proves to go in the right direction for reversing the negative double discrimination problem that disabled women suffered in the Spanish labor market before the implemention of the policy in 2004.

The result that the policy increased employment for disabled women with respect to men appears to be pretty stable across the different estimation techniques that we have implemented in this paper and this effect is particularly strong and significant for the younger group of individuals below age 45. The question still remains with regards to finding the best policy mechanism to obtain similar positive employment results for older groups of disabled individuals as results are not significant for individuals of more than 45 years old. We find that the policy is unable to increase employment prospects for older women, which constitute the majority group on the disability rolls.

Furthermore, the introduction of these measures should also be complemented by other labor market initiatives. The improvements provided by isolated policy measures are prone to be rather limited in size if they are not accompanied by a more comprehensive

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[18] Of course, these numbers are probably bigger in reality as some of the respondents may not be aware (or may have forgotten) that the employer made use of one of these policies.

and far-reaching packet of measures. This is particularly important in countries like Spain, which exhibit very low employment rates of disabled workers. At the same time, utilization of all the available policy measures targeted to increase employment for disabled workers seems to be rather small and a biggest effort should be made from the administration to advertise and promote their use, as results from the EDAD survey show that there is room to improve employment prospects of disabled workers in Spain: 23.85% of the disabled do not look for a job because they think that it will be difficult for them to find one as a disabled worker and 43.65% of the disabled who are looking for a job think that they cannot find one because of the disability (see table 11).

Special employment centers that would support and guide the job search process of disabled workers could also bring good results as 41.4% of the disabled report having found their current or last job through a friend or family while 18.7% dealt directly with the firm and only 2.62% used a public employment service.

As more updated databases become available, it will be interesting to assess the effects of more recent reforms as well as to evaluate the extent to which employment rates of disabled individuals have been affected by the economic crisis of 2008-2010.

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APPENDIX AND TABLES

Covariates included:

1) Characteristics of the individual and the pension:

   - Level of education: The education variable has 3 levels: The first one captures individuals who cannot read or write or who dropped out of education before finishing high school. The second one includes individuals holding a high school diploma (or equivalent) whereas the third one is for people with a bachelor's degree and other higher education.

   - Age

   - Age at which he/she became disabled: even if we only have information on the characteristics of the pension from 1996, we do have an extra variable which captures the year in which the pension was granted. This is a very important piece of information as the age at which the individual became disabled proves to be a strong determinant of the labor market behavior of the individual during his/her disability spell.

   - Internal Immigrant: A dummy variable that is 1 if the province in which the individual lives is different from the province in which he/she was born. Therefore, we are only considering internal migration.

   - Amount of disability pension: There are 3 dummy variables capturing the amount of pension received by the individual in the last period (lagged values). Pension low is for values between 0-500 euros/month, pension high for individuals receiving between 500 and 1500 euro/month and pension top for amounts above 1500 euro/month.

   - Regime of the pension: Dummy variables that identify the group of workers in which the individual has been included during his/her professional live: self-employed, agriculture (includes fishing and mining) and individuals that become disabled due to a work accident or professional sickness. The reference category excluded from the regressions is the general regime.

   - Regional fixed effects: dummies for each of the 17 CCAA[19].

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[19] There are 19 Autonomous Communities (CCAA) in Spain. However, we include both Ceuta and Melilla inside Andalucia because these are two small cities in the north of Africa that do not have enough

- Town: is a dummy variable which is 1 if the town in which the individual lives (independently of the province or autonomous community) is smaller than 40.000 habitants. This variable captures spatial constraints affecting disabled individuals from small towns which make it more difficult for them to reach the Disability Evaluation Office, which are usually placed in the biggest cities of the province, or to find a job.

2) Variables only affecting the type of pension:

- Percentage of Disability Evaluation Offices: this variable is obtained by dividing the number of disability evaluation offices in each of the 52 provinces by the population in that province. We introduce this variable in order to capture differences between provinces in the service provided to disability claimants and to explore how these differences affect the probability of receiving a total/absolute type of pension. This variable will also be used as exclusion restriction as it has a clear effect on the type of pension diagnosed but it does not have an effect on the probability of disabled individuals to find a job.

- Percentage of Disability Pensions granted: this variable is the result of dividing the number of pensions granted each year in each autonomous communities (17) divided by the population in each autonomous community. It describes the way (rigorous/flexible) in which the health conditions are evaluated in each region. As the previous one, this variable affects the type of pension that the individual receives but is not going to affect the probability of working for disabled individuals either.

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observations to be included in the model as a separate variable. That is the reason why we only have 17 dummies for the CCAA.

Figure 1. Calibration of the magnitude of several disability policy challenges.

The magnitude of the policy challenge in Australia, Luxembourg, Spain and the United Kingdom, 2007				
Seven key policy challenges[a,b]	Australia	Luxembourg	Spain	United Kingdom
1) Controlling incapacity-related public spending	++	+++	++	++
2) Raising employment rates for people with health problems	+++	+	++++	++
3) Tackling lower incomes of households with disabled people	+++	+	++	+++
4) Reducing the inflow into sickness and disability benefits	++	++	++	++++
5) Addressing the increasing medicalisation of labour market problems	++	++	+	+++
6) Raising the outflow from usually permanent disability benefits	+++	+++	++	++
7) Strengthening co-ordination across different benefit schemes	++	+++	+++	++
a) The scales should be interpreted as follows: + … minor challenge; ++ … moderate challenge; +++ … substantial challenge; and ++++ … formidable challenge. b) Public spending on sickness and disability benefits excludes employer-paid wage payments in the first weeks of absence. Relative poverty is defined as the share of persons with incomes below 50% of the median income of the entire population. Source: OECD, 2007a.				

Figure 2. Disability recipients by age, gender as a share of total disability recipients, 2005.
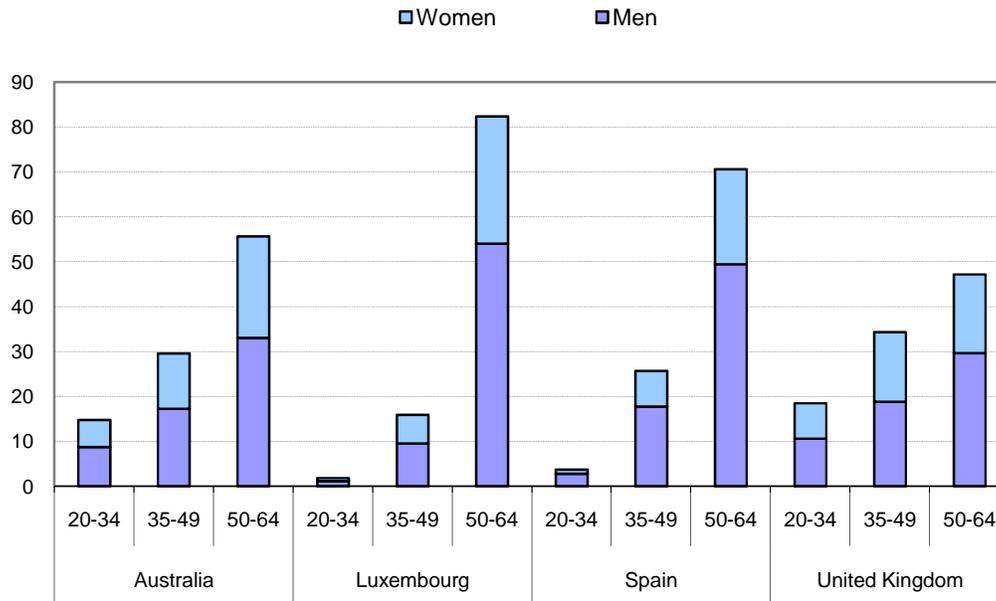
Source: OECD 2007a; National authorities: DEWR Australia; IGSS Luxembourg; MTAS Spain; DWP United Kingdom.

Figure 3. Employment rates of disabled individuals.
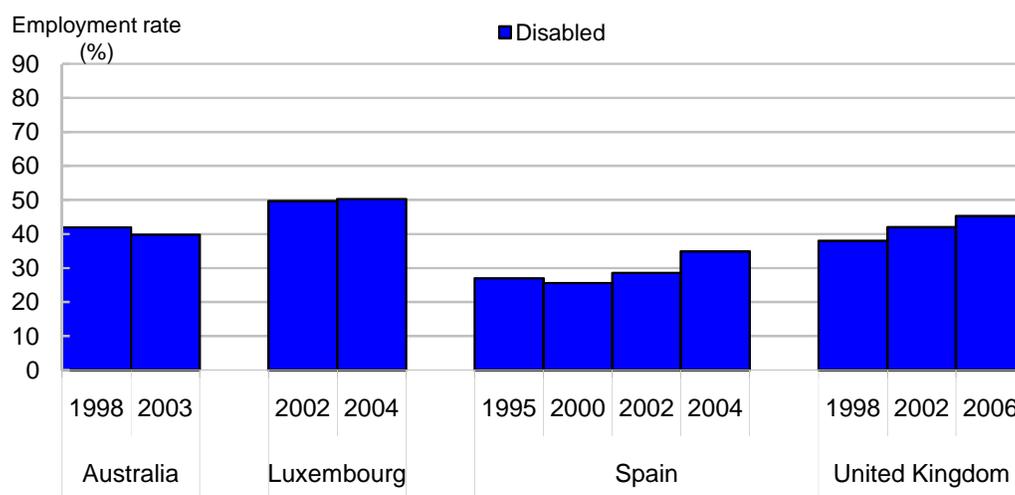
Table 1. Probabilities of working and number of individuals in the sample.

Year	Prob. Working	Number of Individuals	PrWork Women	Number Ind. Women	PrWork Men	Number Ind. Men	PrWork Total Disab.	Ind. Total Disab. Pensions	PrWork Absolute Dis. Pens
1996	0.0377	19961	0.0164	5279	0.0453	14682	0.0558	11825	0.0113
1997	0.0422	20259	0.0158	5348	0.0516	14911	0.0632	12216	0.0101
1998	0.0673	20803	0.0205	5505	0.0842	15298	0.1021	12565	0.0143
1999	0.0732	21530	0.0244	5776	0.0911	15754	0.1118	12954	0.0149
2000	0.0818	22293	0.0274	6075	0.1021	16218	0.1253	13428	0.0159
2001	0.0876	23140	0.0304	6402	0.1095	16738	0.1365	13886	0.0148
2002	0.0922	24121	0.0343	6839	0.1151	17282	0.1434	14324	0.0173
2003	0.096	25443	0.0383	7448	0.1198	17995	0.1488	15147	0.0182
2004	0.098	26978	0.0395	8082	0.1229	18896	0.1540	15892	0.0176
2005	0.101	28064	0.0424	8576	0.1268	19488	0.1606	16418	0.0171
2006	0.105	30037	0.0449	9388	0.1323	20649	0.1683	17520	0.0164
2007	0.1163	31737	0.0554	10099	0.1447	21638	0.1859	18438	0.0198

Table 2. Summary statistics selected variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
Female	294366	.2881345	.4528948	0	1
Educ. level1	294366	.5139962	.4998049	0	1
Educ. level2	294366	.2366748	.4250417	0	1
Educ. level3	294366	.0931018	.2905755	0	1
Age	294366	53.45321	8.801795	17	64
Pension	294366	624.0395	451.7436	0	17227.91
P. 0-500	294366	.5564365	.4968056	0	1
P. 500-1500	294366	.3967951	.4892337	0	1
P.Above 1500	294366	.0467683	.2111426	0	1
Age Disabil.	294366	46.12592	10.11334	10	64

Table 3. Summary statistics selected variables by working status.

NOT WORKING:

Variable	Obs	Mean	Std. Dev.	Min	Max
Female	268930	.3043245	.4601216	0	1
Educ. level1	268930	.5277507	.4992302	0	1
Educ. level2	268930	.2247165	.4173962	0	1
Educ. level3	268930	.0910572	.2876909	0	1
Age	268930	54.05436	8.509114	17	64
Pension	268930	635.1704	458.4892	0	17227.91
P. 0-500	268930	.5464507	.4978386	0	1
P. 500-1500	268930	.4038114	.4906614	0	1
P.Above 1500	268930	.0497378	.2174032	0	1
Age Disabil.	268930	46.90183	9.790287	10	64

WORKING:

Variable	Obs	Mean	Std. Dev.	Min	Max
Female	25436	.1169602	.3213792	0	1
Educ. level1	25436	.3685721	.482427	0	1
Educ. level2	25436	.3631074	.4809049	0	1
Educ. level3	25436	.1147193	.3186891	0	1
Age	25436	47.09734	9.317987	18	64
Pension	25436	506.3546	352.1352	0	10275.09
P. 0-500	25436	.6620145	.4730329	0	1
P. 500-1500	25436	.3226136	.4674855	0	1
P.Above 1500	25436	.0153719	.1230293	0	1
Age Disabil.	25436	37.92239	9.82861	15	64

Figure 4. Evolution of the Percentages of Women and Absolute Disability Pensioners in the sample.
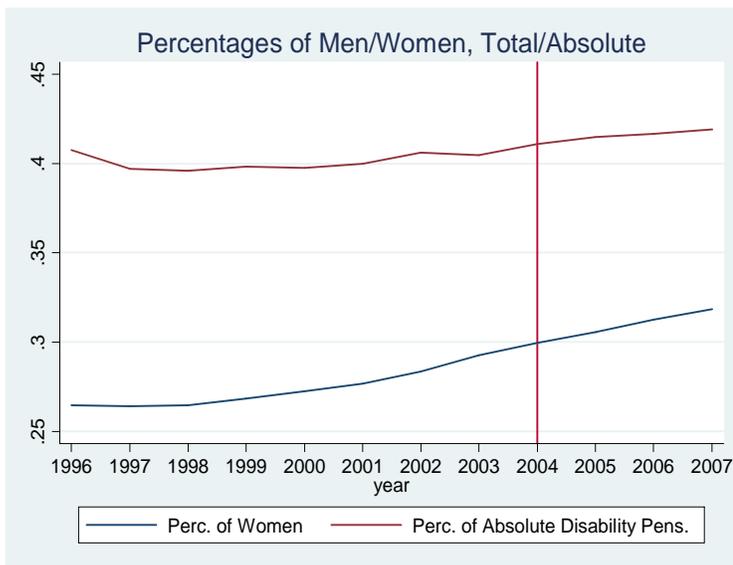
Figure 5. Evolution of the probability of working for disabled individuals.

Probability Working Disabled Individuals
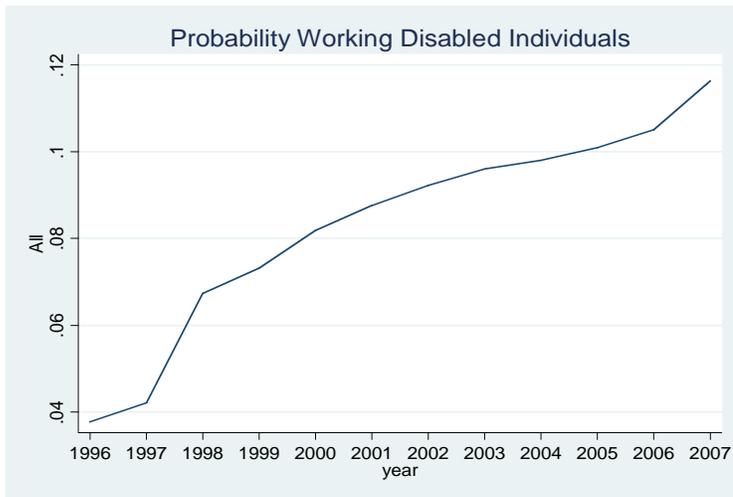
Figure 6. Evolution of the probability of working for disabled women.

Probability Working Disabled Women
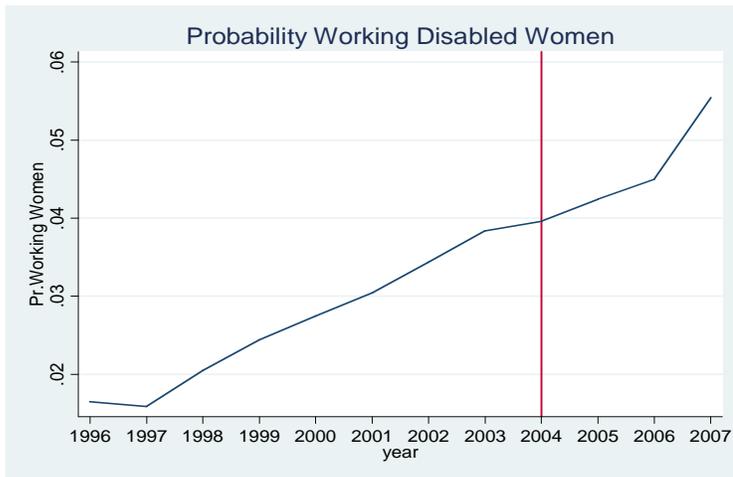
Figure 7. Evolution of the probability of working for disabled men.

Probability Working Disabled Men
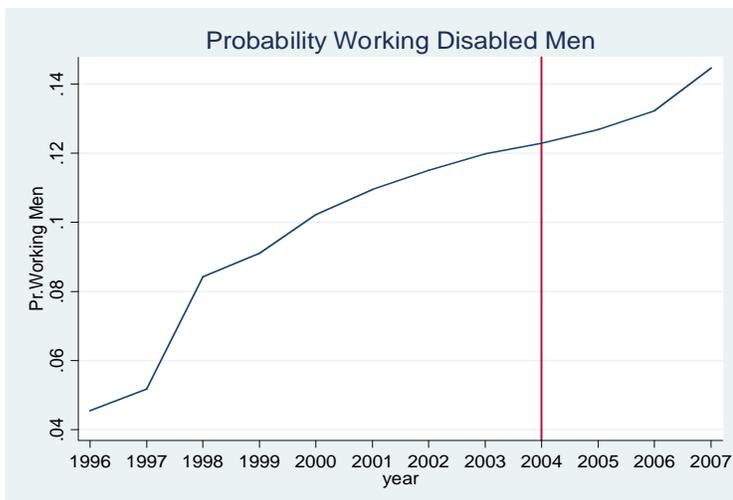
Table 4. Estimation bivariate probit model: All years and ages.

	Bivariate Probit: All		Recursive Bivariate Probit: All		Bivariate Probit: Age<45		Bivariate Probit: Age> 45	
	Total Dis	Work	Total Dis	Work	Total Dis	Work	Total Dis	Work
F_j	-.1197***	-.5325***	-.1223***	-.6161***	.1107*	-.4494***	-.1590***	-.5736***
$F_j$yr98	.0117***	-0.0087	.0113***	-0.0071	.0206**	-.0312**	.0090**	-0.0034
$F_j$yr05	-.0195**	.0314*	-.0188**	.0294*	-.0343*	.0799**	-.0152*	0.0179
DparDtot				-1.094***				
Constant	-.2046***	-1.662***	-.2067***	-1.412***	-.3072***	-1.215***	-.1852***	-1.794***
log-likelihood	-2.76E+05		-2.76E+05		-5.38E+04		-2.21E+05	
N	304040		304040		50389		253651	
Rho	-.6255***		0.0084		-.7963***		-.5717***	
YRS*YOB	Yes		Yes		Yes		Yes	
Year Dum	Yes		Yes		Yes		Yes	
Covariates	No		No		No		No	
Years	1996-2007		1996-2007		1996-2007		1996-2007	

* p<0.05, ** p<0.01, *** p<0.001

Table 5. Estimation bivariate probit model: All years and ages.

	Bivariate Probit: All		Recursive Bivariate Probit: All		Bivariate Probit; Age<45		Bivariate Probit; Age>45	
	Total Dis	Work	Total Dis	Work	Total Dis	Work	Total Dis	Work
F_j	-0.0177	-.5686***	-0.017	-.6125***	-0.006	-.4476***	-0.034	-.6229***
$F_j$yr98	.0157***	-0.0081	.0152***	-0.005	.0354***	-.0245*	.0139***	-0.004
$F_j$yr05	-0.006	0.0260	-0.006	0.027	-0.019	.0606*	-0.006	0.016
DparDtot				-.6839***				
Percentre	.1446*		.1460*		0.042		.1551*	
Percpen	-.0367**		-.0358**		-0.068		-.0367**	
Constant	1.688***	-.6874***	1.699***	-0.159	1.482***	-.4495***	1.819***	-.7478***
log-likelihood	-2.38E+05		-2.37E+05		-4.40E+04		-1.92E+05	
N	304040		304040		50389		253651	
Rho	-.6016***		-.2158***		-.7695***		-.5475***	
YRS*YOB	Yes		Yes		Yes		Yes	
Year Dum	Yes		Yes		Yes		Yes	
Covariates	Yes		Yes		Yes		Yes	
Years	1996-2007		1996-2007		1996-2007		1996-2007	

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Note: Covariates include the level of education, age, age at which they became disabled, immigrant from other regions of Spain, the level of the disability benefit, 3 dummies for special professional schemes (agriculture, self-employed and working accident), regional fixed effects for each of the 17 Autonomous Communities in Spain, a dummy if the individual lives in a town and the two exclusion restrictions: the percentage of Disability Evaluation Offices (DEO) in each of the 52 provinces and the percentage of disability pensions granted in each Autonomous Community (AC).

Table 6. **Rules for the determination of the pension amount.**

	TDP	ADP
Regulatory Base	Depends on the contributions in the last job (salary in the last job)	
	Depends on the source of the disability: common illness, non-work accident or working accident (or professional illness) [20].	
Percentage applied to Regulatory Base	Depends on age of the individual: 55% if <55 years old 75% if >55 years old & no job	100%
	Depends on the source of the disability: if working accident (or professional illness), 30%-50% more if employer broke safety regulations for the job[21].	
Income Taxes	Pay normal income taxes Exempted if Basc[22] country & no job	Exempted from income taxes
Reduction in employment income used to calculate the income tax	2.800 euros/year (if disability level between 33% and 65%) if working 6.200 euros (if disability more than 65% or below that but disabled with reduced mobility) if working	

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[20] In our database we don't observe the source of the disability, we only observe the regulatory base.

[21] Please note that in the case of an ADP, the final percentage applied could be more than 100% of the regulatory base if the employer is found guilty of not preserving the required safety conditions for the job and has to pay between a 30%-50% increase in the percentage of the regulatory base (over the 100% already established for ADP pensions).

[22] Disabled individuals in the provinces of Vizcaya, Alava and Guipuzcoa, which constitute the Basc country, are exempted of paying income taxes on Total Disability Pensions if they don't work.

Table 7. Selected results from EDAD survey 2008.

	Total	Men	Women
Percentage Working if ages 16-65	27% (2317)	32% (1287)	22% (1030)
Are you currently working or did you work in your last job in a Special Centre for Disabled workers?	1.7% (265)	1.97% (148)	1.44% (117)
Are you working or did you work in your last job in a non-for-profit institution related to the disability sector?	2.18% (341)	2.36% (177)	2.02% (164)
Have you ever benefited from an employment quota for disabled individuals in a public sector?	0.80% (125)	0.85% (64)	0.75% (61)
Have you ever benefited from an employment quota for disabled individuals in the private sector?	0.68% (106)	0.89% (67)	0.48% (39)
Have you benefited from an employment contract specific for disabled persons?	2.20% (344)	2.81% (211)	1.64% (133)
Have you benefited from an incentive for employment or deductions to the Social Security contributions for disabled workers?	0.84% (132)	0.92% (69)	0.77% (63)
Have you benefited from any other mechanism or intervention targeted to promote access to employment for disabled people?	1.07% (168)	1.15% (86)	1.01% (82)
How did you find your current job (or the last job you had)?	41.4% friend or family 18.7% directly to the firm 4.3% firm contacted him 2.62% public employment service 1.15% association people w/ disability		
Are you looking for a job? Only if age<65	10.16% (610)		
Why do you think you are not finding a job if you are looking for one? Only if age<65	43.65% (of these 10%) because disability		
Why you are NOT looking for a job if age<65? (5157)	23.85% thinks it will be difficult to find a job as a disabled 50% cannot work		
Have you felt discriminated because of your disability in your job in the last 12 months?	9.42% (out of 2462)		
Have you felt discriminated to find a job because of your disability in the last 12 months?	20.8% (out of 2462)		

Table 8. **Reforms in firms incentives**

Years	Type of Incentive	Permanent & Full-time contract	Temporary contract (part or full-time)	Permanent & Part-time contract	Self-employed
Status Quo: 1983	Subsidy1 Subsidy2	500.000 ptas/contract Avoid accidents			
	Deductions SS contributions	70% if < 45 90% if >=45			
1999 (Jan)	Subsidy1	650.000 ptas/contract		Proportional to h	
	Deductions SS contributions			70% if < 45 90% if >=45	
2002 (Dec)	Deductions in firm's taxes	6.000 euro for each person/year of increase over the mean of disabled workers wrt mean of non-disabled		6.000 for each person/year of increase over the mean of disabled workers wrt mean of non-disabled	
(April)	Deductions SS contributions				50% for 3 years
2004 (Jan)	Deductions SS contributions	90% if <45 & women 100% if >=45 & women		90% if <45 & women 100% if >=45 & women	
	Subsidy1	3.907 eur/contract (no change)		Proportional to h[23]	
	Subsidy2	Avoid accidents & adjust working space (max.901,52eur)	Avoid accidents & adjust working space		
2006 (Dec)	Deductions SS contributions	375 euro/month 425 if severe disability[24] +100 if >=45 years +70,83 if women	291,66 euro/month 341,66 if severe disability +50 if >=45 +50 if women	[25]100% of full-time if h=3/4 75% if 1/2>h<3/4 50% if 1/4>h<1/2 25% if h<1/4	50% for 5 years
2007 (June)	Subsidy3				Establish; max 10.000 euro External Services; 75% of cost, max 2.000 euro Education; 75% of cost, max 3.000 euro
	Interest rate reduction				4 points : loans for investment

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[23] Number of working hours

[24] I will not be able to identify individuals with a severe disability, as I don't have information on the specific disability of each individual.

[25] Also for temporary and part-time contracts.

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