ASSESING THE IMPACT OF PUBLIC POLICIES ON LABOR MARKET AND POVERTY

Lucía Gorjón García
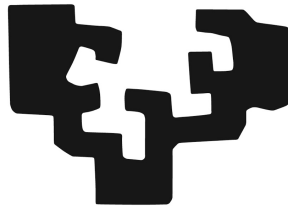Bilbao, 2017
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Assessing the impact of public policies on labor market and poverty

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PhD Thesis

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For my father, Amando and Carmina

Acknowledgments

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Abstract

This PhD thesis assesses the direct and indirect effects of two economic policies. The first one, analyzed in Chapter One, is the family-friendly law (Act 39/99) approved in Spain in 1999 which grants parents the right to reduce working time for childcare issues. We find an increase in work-time reduction by around 18%. In addition, we find that employers restrict indefinite contracts to potential users of the law so as to limit its use. Furthermore, we find that in the recent economic downturn the use of the law decreased by around 13% compared to the preceding upturn period. Chapters Two and Three assess the impact of a second economic policy: The Minimum Income Scheme (MIS), which has been operating in the Basque Country (one of Spain's 17 regions) for more than twenty years. In particular, Chapter Two assesses its impact, effectiveness, and efficiency in fighting poverty. Results show that MIS has had a strong impact in reducing all dimensions of poverty. However, only 59.2% of the benefit transferred effectively contributes to poverty reduction. The paper presents an alternative, more egalitarian design of the Minimum Income Scheme which, in line with an international standard of poverty, seeks to maximize its coverage and its impact in reducing poverty. Finally, Chapter Three assesses whether the policy delays entry into employment for recipients. In addition, we test the efficacy of active policies aimed at enabling recipients of the MIS to re-enter employment. Our results indicate that on average the Minimum Income Scheme, in addition to preventing social exclusion by providing financial support, does not delay entry into employment. However, the impact differs from one demographic group to another. Furthermore, Active Labor Market Policies designed for recipients of this benefit, in particular training, have a strong positive impact on finding a new job.

0. Introduction

Public policies are crucial to solving social problems, reducing inequalities, and tackling unfairness. Through the creation and application of social and economic policies, policy makers thus have a huge influence on society. However, those policies might sometimes either not achieve their objectives or achieve them inefficiently. Furthermore, policies may also produce indirect or unexpected effects.

To understand the consequences of public policies, it is essential to analyze their impact on society. Policy evaluation studies the direct and indirect effects of laws. This enables better decisions to be taken and better use to be made of public resources.

This essay is a contribution to that issue. My doctoral dissertation assesses two public policies. The first is a family-friendly policy, and Chapter 1 centers on evaluating its direct and indirect effects on the labor market. The second is a Minimum Income Scheme that operates in the Basque Country. Chapter 2 measures its effectiveness and efficiency in reducing poverty and Chapter 3 focuses on its indirect effects on the labor market. As shown below, this study covers several economic fields including the labor market, gender equality, and poverty, which are some of the most important topics currently under debate. All the evaluations in this thesis are conducted by applying advanced statistical and econometric techniques to various micro databases.

Specifically, Chapter 1 assesses a policy aimed at promoting gender equality and equity in the workplace which was implemented in Spain in 1999. Family issues play a crucial role in understanding the gender differences observed in the labor market. In spite of the huge progress that women have made, gender differences still persist. Governments and institutions can play an important role in creating the legal framework for improving women's choices and their participation in the economy, as well as in helping societies to break away from the more traditional gender role attitudes that affect women's behavior in many

countries. Indeed, in the past few decades many governments have adopted policies in this direction. The first policy under analysis here, called Law 39/99, was particularly aimed at giving parents with children under 6 years of age the right to reduce their working time with an equivalent wage reduction. The spirit of this law is to make it more affordable for parents to stay in the labor market and take care of their children by reducing their working time. The first analysis measures whether it has been successful in this. Furthermore, workers who avail themselves of this policy enjoy more protection against dismissals than the rest. This undoubtedly entails certain undesirable effects that the policy makers did not expect. Those effects are also addressed in Chapter 1. Some of the assessments are conducted by applying a differences-in-differences strategy using the Spanish Current Population Survey (SCPS), the most representative cross sectional sample of the labor force in Spain. The last analysis in this chapter conducts a within-cell estimation and makes use of the Continuous Sample of Work Histories, a dataset obtained from the Spanish Social Security system.

The second law assessed is a last resort scheme whose main objective is to guarantee individuals their basic right to a decent minimum standard of living. Specifically, I assess the Minimum Income Scheme (MIS) that has been place in the Basque Country continuously since 1989. The Great Recession has had severe consequences in terms of poverty, as it has placed many citizens at risk of social exclusion. As a result, such schemes are currently at the heart of public debate. The most widely used are the so-called "simple and comprehensive schemes", which basically cover every person/household in need of support, without confining their effects to particular categories of people. Since 2008, the European Council has endorsed the objective of combining adequate income support with labor market activation measures so as to facilitate re-entry of recipients into employment. In this line, Chapters 2 and 3 assess the impact of the Basque simple and comprehensive scheme called Renta de Garantía de Ingresos.

Chapter 2 focuses on whether MIS achieves its goal of ensuring a decent minimum standard of living for Basque citizens and the extent to which MIS is effective and efficient in its goal of reducing poverty. The different dimensions of poverty are explored using the Foster, Greer and Thorbecke (1984) family indexes. Beckerman (1979) provides a model used in measuring the effectiveness and efficiency indicators.

Chapter 3 first tests whether the Basque MIS delays entry into the labor market for its recipients, as empirical evidence has proven that passive policies tend to do. Finally, the efficacy of policies aimed at enabling recipients to re-enter employment is also assessed in Chapter 3. This is done using monthly longitudinal information on all individuals who were registered with the Basque Public Employment Service from February 2015 to January 2016. Propensity Score methods enable the causal effect of the policy to be measured, dealing with the confounding effects and different composition between treated and control groups.

Chapter 4 then summarizes the main results obtained in this dissertation, presents possible further research and ends with some policy recommendations. The document finalizes with an annex and the list of references.

1. The impact of family friendly policies in Spain and their use throughout the business cycle

1.1. Introduction

Women have made huge progress in the workplace, especially in the more industrialized countries. Goldin (2004) refers to the mass incorporation of women into the workforce during the seventies as the "quiet revolution". However, in spite of this revolutionary process, gender differences still persist.

Family issues play a crucial role in understanding the gender differences observed in the labor market. Women combine employment with home responsibilities to a much larger extent than their male partners. This is particularly so in some countries, such as those of Southern Europe, because of the lack of access to proper childcare provisions (Del Boca 2002), low levels of participation by men in household tasks (Bettio and Villa 1998; De Laat and Sevilla-Sanz 2011) and/or low levels of social assistance (Adserà 2004). This gender asymmetry in reconciling family life and work affects women's decisions with respect to labor supply, human capital accumulation, and hence their labor-market performance (see Ahn and Mira 2001; Bertola, Blau, and Kahn 2007; Adserà 2005; De la Rica and Iza 2005, among others).

The increase in the working-age population and the high education level achieved by women in the past few decades make it essential to consider women as a fundamental part of the workforce. Governments and institutions can play an important role in creating the legal framework for improving women's choices and their participation in the economy, as well as in helping societies to break away from the more traditional gender role attitudes that affect women's behavior in many countries. Indeed, in the past few decades many governments have adopted policies aimed at promoting gender equality and equity in the workplace. This paper seeks to evaluate one such policy implemented in Spain in 1999.

The policy under analysis, called Law 39/99, was particularly aimed at giving parents with children under 6 years of age the right to reduce their work schedule with an equivalent wage reduction. The spirit of this law is to make it more affordable for parents to stay in the labor market and take care of their children by reducing their work schedules. Furthermore, as explained below, workers who avail themselves of this policy enjoy more protection against dismissals than the rest. This may undoubtedly entail some undesirable effects that the policy makers did not expect. Those effects are also addressed in the paper.

The aim of the paper is twofold: First, we evaluate the immediate impact of the law, in particular its direct and indirect effects. By direct effects we mean the extent to which the law has led to an increase in part-time working among parents with children aged under 6. With respect to the indirect effects, we explore whether employers behave strategically towards potential users of the law in the following sense: If the family policy is costly for firms and in addition its users are more protected against dismissals than other workers some reaction from employers might be expected. In particular, they might tend to reduce the indefinite hiring of potential users of the law and instead offer fixed-term contracts – whose potential costs are much smaller. Hence, the question to be answered with regards to this indirect effect is whether the law increased the probability of being hired under a fixed-term (rather than an indefinite) contract for potential future law users. To answer these two questions, we focus on salaried employees using the Spanish Current Population Survey (SCPS), the most representative cross sectional sample of the labor force in Spain. We use individual information on working hours and compare the use of reduced hours among workers affected by the law (treatment group) with those not affected by it (comparison group) just before and after the passing of the law (diff-in-diff strategy).

The second aim of the study is to characterize the users who have resorted to the family friendly policy since its approval (1999) and measure the extent to which the Great Recession has led to a change in the number of policy users and in their personal and job profiles. In principle, it might be expected that in a recession framework uncertainty about the possibility of being laid off might lead to an increase in the use of work time reduction as a measure for providing higher job protection against dismissal. But work time reduction entails a proportional reduction in wages, and this negative effect on income is likely to be more important in a recession context. In addition, fear of reprisals at work during a period of economic instability for the firm might also discourage workers from requesting work reductions for childcare issues. To detect individuals who make use of the law, i.e., who change their time schedule for childcare issues, we need to follow workers over time. We use a rich longitudinal data set obtained from Spanish Social Security records (Continuous Sample of Work Histories (CSWH)) that covers workers' employment histories and census registration data including family characteristics. The dataset contains information on personal and job characteristics before and after workers have children and thus detects actual users of the law and their profiles.

Our results indicate, in the first place, that the law increased the likelihood of working part-time for eligible mothers – i.e. mothers with children under 6 – by 18% compared to the similar non-target comparison group. Furthermore, the law applied only to mothers with indefinite contracts. In addition, we find negative indirect effects for potential users of the law: When comparing hiring practices as regards potential users of the law (target group), i.e. non-mothers of childbearing age, with a similar non-target comparison group (non-fathers of fertile age) we find that the law increased the probability of the target group being hired under fixed-term contracts by almost 18%. Third, the 2008-2013 recession reduced the probability of the law being resorted to by about 13%.

The related literature on the evaluation of the Family-Friendly Law 33/99 is scarce. Fernández-Kranz and Rodriguez-Planas (2014) is closer to the first part of our study, although they use the 2010 Continuous Sample of Working Histories to evaluate the wage and employment effects of such law. As we describe below in the data section, we consider this dataset inappropriate to evaluate the impact of a law which took place in 1999, as administrative data of 2010 is not representative of Social Security records of more than 10 years before. They find that the law implied the substitution of fertile-age women away from good jobs and a decrease of their relative wages. In a different but related study, Fernández-Kranz and Rodriguez-Planas (2011) examine the implications of reducing time-schedule for women's subsequent earnings trajectories, distinguishing by their type of contract. Using the Continuous Sample of Work Histories and focusing on prime-aged women strongly attached to the Spanish labor market, they find that the PT/FT hourly wage differential is larger and more persistent among fixed-term contract female workers. However, this study does not explicitly address the use of Part-Time for childcare issues and hence, it is not related to the use of the Law.

Regarding related literature on the impact of the Great Recession on family-friendly policies, our study is, to the best of our knowledge, the first one to address the use of reduced-work schedule for childcare issues, although the crisis and subsequent austerity policies have reawakened debate on the gender impact of the economic cycle (see Rake, 2009; Swaffield, 2011). Rubbery and Rafferty (2013) explore the trends in women's employment position during the recession, providing the support that gender segregation across sectors is the prime factor shaping outcomes. The recession and its aftermaths are having differential but still damaging effects on different groups of women. Other studies, such as Aparicio and González (2014), focus on the impact of the crisis on the health of newborn babies. They find evidence that mothers-to-be engage in healthier behaviors when unemployment

is high, which might explain the observed improvement in their babies´ health during the recession. In addition, De la Rica and Rebollo (2015) analyze the different transitions from and to unemployment during different phases of the business cycle in the segmented Spanish labor market, using the Continuous Sample of Working Histories. The find very significant gender differences in these transitions because males are found to respond more intensively to the business cycle than women.

The paper is organized as follows. Section 2 describes the Spanish Law 39/1999. Section 3 presents the databases (SCPS and CSWH). Section 4 analyzes the effects of the family-friendly policy on employment outcomes for the eligible population and the unintended effects of the law after its implementation on the non-eligible population of the policy. Section 5 presents profiles of users and outlines the impact of the 2008 in Spain on the use of the law. Section 6 sums up and concludes.

1.2. Family friendly policy (Law 39/99) – Reduced work schedule for childcare

On November 6th 1999 the Spanish government passed a law which granted working parents with children under 6 years old the right to reduce their work schedules to reconcile work and family life. The work time reduction granted ranges from one third to one half of the usual full-time schedule, with an equivalent wage reduction. Workers also have the right to choose the time slot during the day when they want to work. The firm must either agree or go to court. Under this law worker dismissals for any reason related to pregnancy, maternity or paternity leave, and child-care were declared "unfair". When employers face "unfair" dismissals for reasons other than pregnancy, maternity or childcare they can solve them by either paying the severance payments stipulated for unfair dismissals (45 days per year worked at the time of the passing of the law) or by re-hiring the worker. In practically all cases

firms pay the severance payment and do not re-hire the worker. However, if dismissals related with pregnancy, maternity or childcare issues are declared unfair workers must be readmitted. The possibility of payment for unfair dismissals is not envisaged in this case, so in essence this law provides its users with greater protection against dismissals.

There are several issues to be pointed out: First, the fact that users of the law enjoy de facto higher protection against dismissals has raised some debate about the potential inflexibility regarding any future dismissals that firms face when hiring potential law users. Second, this protection against dismissal essentially applies only to workers under indefinite contracts. The law says nothing with respect to any obligation to renew fixed-term contracts. In principle, target workers with fixed-term contracts are also granted the right to use the policy and hence reduce their working hours. However, given that the situation with regard to job protection differs so much from one type of contract to another, we look at the potential impacts of the law for each type of contract separately here. Finally, as mentioned above, the policy was aimed at helping to reconcile work and family life for families with children under 6. However, we focus only on the potential impact on mothers, given that preliminary evidence indicates that the proportion of fathers who resorted to part-time work both before and after the passing of the law is consistently lower than 1%.

1.3. The Data

As mentioned in the introduction, we use two main databases to (i) measure the immediate direct and indirect effects of the policy; and (ii) characterize law users after the law is implemented and measure the extent to which their numbers have increased or decreased during the recession years. For the first purpose we use the Spanish Current Population Survey (SCPS) (Encuesta de Población Activa, EPA), and for the second we use the Continuous Sample of Work Histories (CSWH) dataset

from Social Security records (Muestra Continua de Vidas Laborales, MCVL), which has been collected on an annual basis since 2005.

Spanish Current Population Survey (SCPS)

SCPS is a cross-sectional database which provides the most representative information on the Spanish population. It contains demographic characteristics (age, gender, years of education, marital status, region of work and residence, etc.), employment characteristics (current status, type of contract, last work, tenure, duration of current contract if fixed-term, number of hours worked in the current job, current PT status, weekly hours of work, labor status last year, etc.), fertility information (such as number of children, demographic characteristics of children, etc.) and household information (number of adults and children in the household, information about grandparents, etc.). We use information for the second quarter of each year from two years before the law was implemented to two years after. Specifically, we denote as "before" the years 1998 and 1999 and as "after" the years 2001 and 2002. We disregard the year 2000 as we consider it as a reference period to guarantee a clear cut before and after.

To check for robustness we run the following sensitivity checks: (i) estimate the impact of the law using a placebo sample which includes 1996 and 1997; (ii) use only mothers with children born before the passing of the law as the treatment group in the "after" period, in order to avoid any potential endogeneity of law users; (iii) use the years 2003 and 2004 instead of 2001 and 2002 as the "after" group. This allows us to check, first, whether the results found before might be overestimated as a consequence of an anticipated effect of women who waited until just after the law was passed to have a child so as to use the family friendly policy. Second, by using 2003 and 2004 as the "after" period we check the extent to which the impact is sustained over time.

Continuous sample of work histories (CSWH)

This dataset is compiled annually from 2005 to 2013. It consists of 4% of the population registered with the Social Security (SS) system either as workers, unemployed receiving benefits or pensioners for at least one day of the current year of the sample (over a million work histories). The complete labor market history is reported for all individuals. This database provides highly detailed information about their past and present labor activities, including monthly wages, type of contract, receipt of unemployment insurance benefits, reasons for job termination, and several characteristics of hiring firms such as size, age, ownership, location, and sector of activity. Individual characteristics such as age, gender, residence, nationality and household characteristics such as gender and date of birth of household members are also provided in the database – they are obtained from census records. Every individual in the sample is followed if they maintain any relationship (working, being unemployed receiving benefits or as pensioners) with Social Security records. There are several characteristics that make the CSWH an appropriate database for this aim. Firstly, it is an administrative dataset that provides highly accurate information on employment for a random sample of 4% of all Social Security records. The data can be combined with census information on each year so that it is possible to obtain information about family members. Secondly, it is longitudinal so it is possible to obtain information on the worker's entire labor market history. Furthermore it assigns an employer identification code that enables firms, sectors, numbers of workers and locations to be identified. Type of contract, entry and leaving date, and hours worked are also known. We pool all the information registered in CSWH from 2005 to 2013. Hence, any individual who is included in this dataset for at least one day from 2005 to 2013 appears in our sample. The fact that this dataset is compiled only from 2005 onwards disregards it to evaluate the immediate impact of the law, which is the aim of the first part of the paper. The sample of parents that can be observed reducing working hours due to childcare

issues in the years previous to the passing of the law is very small and not representative, given that workers are restricted to have any contact with Social Security in 2005.

We use quarterly data from 2000 to 2011, keeping the information on all variables from the CSWH on the last day of the chosen months (January, April, July and October), i.e. we create a new panel of data with 48 observations per individual. We focus only on salaried workers (as they are the only ones affected by the law). As CSWH provides information on the complete working life, if there is no information on any date we consider the individual in question as unemployed without receiving benefits or inactive. For our study we only keep work episodes. Furthermore, we can capture the existence (and age) of children, if any, as we have the birth-rates of all household members. Given all the information available, this dataset is highly suitable for recognizing users of the law and analyzing the impact of the crisis on the use of the policy.

1.4. The impact of the law – Direct and indirect effects

1.4.1. Direct effect

The main question to be answered here is whether the implementation of the law resulted in an increase in the use of reduced working hours (part-time work) by parents with children under 6, as its spirit intended. As mentioned above, we investigate this using the Spanish Current Population Survey for the two years prior to the passing of the law and the two years following it. We first describe the specific sample used to address this question:

First, we focus on salaried employees with indefinite contracts. In principle the right to ask for work time reduction also applies to fixed-term contract workers who are parents of children under 6 years of age. However, evidence from the CSWH reveals that there are almost no

female workers under fixed-term contracts who have children fulfilling the conditions for them to be potential users of the law. Hence we restrict our study to workers with indefinite contracts. We also restrict it to individuals aged between 25 and 45, i.e. of fertile age. Over 45s with very small children or with no children may be outliers in terms of their behavior in the labor market (they account for 11% of the whole sample). We drop workers younger than 25 because some of them might be students or live with their parents, which would change their profiles: we want to avoid parents who are students in the analysis (2.5% of the sample of parents). In addition we focus on married people, as single mothers might face different personal circumstances from the rest in resorting to the law.

Preliminary evidence indicates that the proportion of fathers who use part-time work is consistently lower than 1%, both before and after the introduction of the law, we focus on the impact of the law on mothers. Hence, our reference (treatment) group is mothers working under indefinite contracts who have children under 6 years old.

As a comparison (control) group we select women without children, i.e. people under very similar conditions (with indefinite contracts, married and of fertile age) but not affected by the law. The discussion of what group is the most appropriate for comparison purposes is not trivial. In principle, another potential control group might be mothers with children who also need childcare (for example between 6 and 8 years old) but are not affected by the law . To justify our choice of a comparison group, we compare the use of part-time work by the three potential groups – the target group and the two potential control groups, before and after the passing of the law. Figure 1.1 depicts that trend:

Figure 1.1. Part-time rate. SCPS (1992-2004)
Married women between 25 and 45 years old under indefinite contract
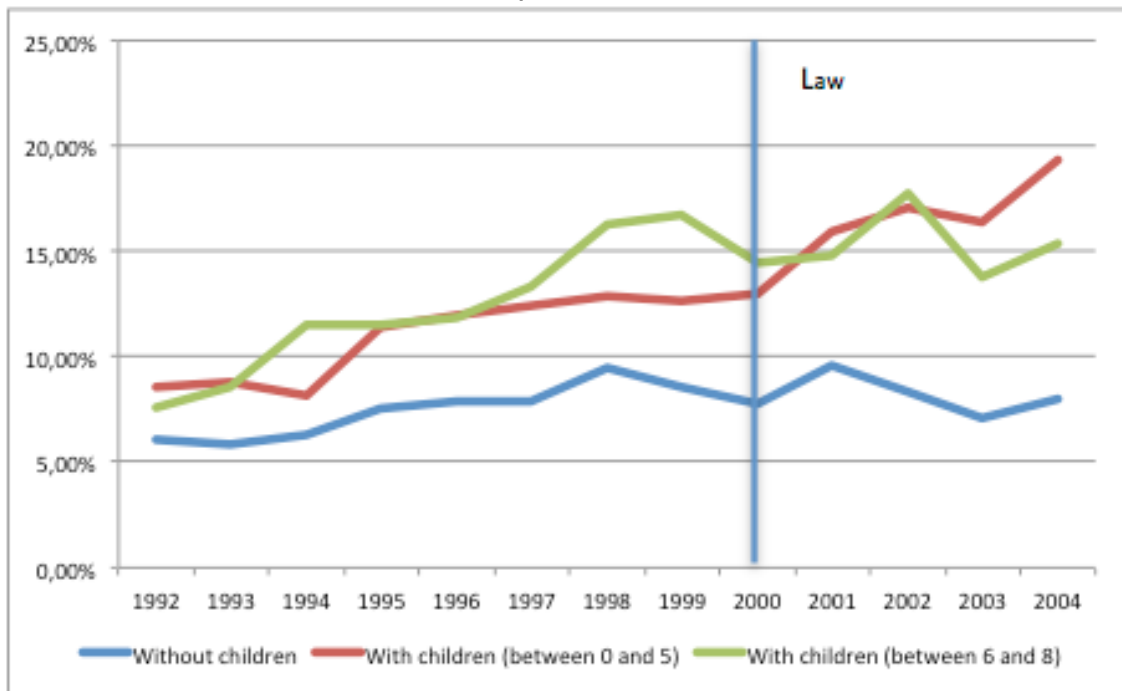
The red line depicts the proportion of part-time (PT) workers for our target group of mothers with children between 0 and 5 years old. A steady increase in PT can be observed, which becomes clearly more pronounced from 2000 onwards. The green line represents PT for mothers with children between 6 and 8 years old and the blue line shows PT for women with no children . It is immediately apparent that the proportion of PT workers who are mothers with children between 6 and 8 shows a significant increase around the years when the law was passed which is not mirrored in the other two groups. This means that the parallel trends assumption is not satisfied. This different behavior does not disappear when we control for other observable covariates such as education, age, and type of job. Indeed the target or treatment group seems to follow a similar trend to that of women without children: the proportions of PT workers run parallel before the implementation of the law, with a consistent gap of approximately 4 percentage points. This gap remains the same when observable individual and job characteristics are controlled for, but it is consistent in the years prior to

the passing of the law. This is the main reason why we choose women with no children as the control group.

Our final sample covers 9520 female workers aged between 25 and 45, all of whom are married and hold indefinite contracts. 6329 of them have children under 6 years old (treatment group) and 3191 have no children (control group).

Methodology

To conduct this analysis we use the Spanish Current Population Survey. The main disadvantage of cross-sectional data is the lack of longitudinal information on individuals. To address this drawback we use a difference-in-differences (DiD) method. The DiD design is usually based on comparing two de facto different groups before and after the occurrence of the treatment, i.e. a total of four groups. Three of these groups are not affected by the treatment. Time is an important variable in distinguishing between the groups. Besides the group which has already received the treatment (mothers after the passing of the law in our analysis) these groups are the following: (i) those treated prior to the current treatment (mothers before the implementation of the policy); (ii) those not treated, i.e. the control group, just before the treatment is applied to those treated (non-mothers before 2000); and (iii) those not treated after the treatment (non-mothers after 2000). The idea of this empirical strategy is that if the two treated groups and the two control groups are subject to the same time trends, and if the treatment has no effect before the passing of the policy, then an estimate of the 'effect' of the treatment in a period in which it is known to have none can be used to remove the effect of interference factors to which a comparison of post-treatment outcomes of treated and non-treated subjects may be prone.

This empirical strategy consists of estimating the following probability equation for the likelihood of working part-time.

$$PT_{it} = \alpha + \beta \cdot treated + \gamma \cdot after + \delta \cdot (treated * after) + X'_{it}\pi + \varepsilon_{it} \qquad [1.1]$$

where t indexes the year and i the individual; and where $D_i = 1$ if individual i receives the treatment (mothers with children under 6) and zero otherwise (women without children); $D_t = 1$ if observation is after the treatment (2001, 2002[1]) and zero if the observation is before the treatment (1998 and 1999)[2]. X_{it} is a vector of covariates where we include demographic, employment and family information as: age, level of education, a dummy indicating whether the individual is the family-head, birth, unemployment, temporary and partiality rate by region of work and year and sector of work. Finally, ε_{it} is a zero mean disturbance.

The intercept β is the non-treatment effect. That is the gap we observe before policy implementation, i.e. those non-observable variables that affect differently treatment and control group after controlling for the covariates (shown in Figure 1.1). γ captures the difference in the probability of the dependent variable between after and before for the control groups. That is, how the law affects non-mothers. Finally, δ is the **treatment effect**. This is the diff-in-diff estimator. It shows the increase in the gap coming specifically for the policy implementation on target group and not for external factors.

Results

Before presenting the results of the direct impact of the law, we present some descriptives which help characterize the main demographic and

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1 If we estimate using three years as *after* group in case workers need some time to be informed about the policy, the result is 28,57% stronger (3,6% versus 2,8%). In order to check the robustness of this analysis, it has been also done taken as before period between 1997 and 1999; as after period between 2001-2004 or 2001-2003. Also periods has been modified in the placebo test. In general the results are broadly the same.
2 Rodriguez-Planas, N. and Fernández-Kranz, D. 2011 have different periods, as before they include six years from 1994 to 1999 and as after group three years from 2001 to 2003.

job characteristics of the treatment and control groups before and after the law was passed. These are presented in Table 1.1.

Table 1.1. Descriptive Statistics. SCPS (1998–2002)				
	Treated		Control	
	Pre-Law	Post-Law	Pre-Law	Post-Law
Part Time rate	12.76	16.53	8.94	8.93
	(0.33)	(0.37)	(0.28)	(0.28)
Age	34.27	34.87	32.39	32.61
	(3.99)	(4.05)	(5.09)	(5.20)
Head	10.22	12.16	14.8	16.64
	(0.30)	(0.32)	(0.35)	(0.37)
Education				
Low	24.68	21.56	27.14	23.4
	(0.43)	(0.41)	(0.44)	(0.42)
Medium	33.46	24.17	39.4	25.69
	(0.47)	(0.43)	(0.49)	(0.44)
High	41.86	53.73	33.46	50.9
	(0.49)	(0.50)	(0.47)	(0.50)
Sector				
Primary	0.53	0.32	0.46	0.24
	(0.07)	(0.06)	(0.07)	(0.05)
Industry	11.6	12.42	13.18	14.78
	(0.32)	(0.33)	(0.34)	(0.35)
Construction	0.97	2.04	1.44	1.81
	(0.10)	(0.14)	(0.11)	(0.13)
Services	86.89	85.22	84.93	83.17
	(0.34)	(0.35)	(0.35)	(0.37)

The sample contains married females under indefinite contract between 25 and 45.
Treated group: Mothers with children between 0 and 5 years old.
Control group: Non-mothers.

The first two columns present changes for the treatment group before and after the passing of the law. The dependent variable is the proportion of part-time workers, and their number increases by 29.5%, from 12.7% to 16.5%. With respect to the covariates, it can be seen that the proportion of heads of household also increases (remember that this law aims to help people to combine child-care and work, so mothers in particular seem to increase slightly their roles as heads of households).

Another noticeable feature is that education levels increase significantly, with the proportion of highly educated mothers up from 41.86% to 53.73% (a rise of 28.35 percentage points), probably because of the increasing trend in the educational attainment. Such a big increase is partly due to the increasing trend in educational attainment outcomes, although most of the change is due to a methodological change introduced in 2000 with the codification of the variable "Educational Level". Unfortunately, there is not an exact correspondence between the two codes, and this is reflected in a higher proportion of individuals with university degree which were codified as having "secondary education" studies before 2000. Fortunately, such methodological change does not affect the results of our estimations, as we have tried several empirical specifications and none of them change the results. The construction sector also becomes more common for mothers.

Comparing mothers with non-mothers, note that before the passing of the law the proportion of mothers working PT was 3.82 percentage points (p.p.) higher than that of non-mothers (control group), as shown in Figure 1.1. However, after 1999 this difference rises to 7.6 p.p., i.e. 3.78 p.p. higher than before, which means a 100% increase. This increase can be related to the effect of the law. With respect to differences in demographic characteristics, the treatment group is somewhat older than the control group, which is expected as we impose the condition that the latter must be non-mothers. Finally, non-mothers were employed more in the construction and industry sectors before the law but after the law treated mothers increased their participation in construction.

Table 1.2 presents the main coefficients of interest from the estimation of equation [1.1]. The first column displays the results from the unconditional estimation – no covariates are included. The second presents the conditional results of the analysis, where controls are included. These are the results from estimating equation [1.1].

Table 1.2. Results of direct effect. SCPS (1998–2002)

VARIABLES	Equation [1] Part-time	Equation [2] Part-time
treated	0.0409***	0.0516***
	(0.0101)	(0.00914)
after	−0.000131	−0.0162
	(0.0128)	(0.0227)
treatedafter	0.0351**	0.0286**
	(0.0161)	(0.0150)
Covariates	No	Yes
obs. P	0.1272059	0.1272059
pred. P	0.1244879	0.1058416
R-square	0.0115	0.084
Observations	9,520	9,520

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Control variables include age, a dummy indicating whether the individual is the household head, sector, level of education, tenure, unemployment, partiality, temporary and birth rate by region and year. Marginal effects are reported.

The first issue to be pointed out is that the unconditional (column 1) and conditional (column 2) impacts are very similar. This suggests that the covariates are uncorrelated with the treatment and just generate more precise estimates of the causal effect of interest.

More specifically, and consistent with Figure 1.1, conditional on observables, before the enactment of the law mothers of young children were more likely to work PT than non-mothers, as the variable *treated* (β) is statistically significant at the 1% significance level and stands at 5.2 percentage points (marginal effects shown in the Table), which represents the gap in the figure. The coefficient of interest reported in the third row (*treated*after*), δ, estimates the effect of the policy on PT work for eligible mothers compared to non-mothers. It can be clearly observed that the law affects the target group. All else being equal, after the implementation of the law a woman with small children and an indefinite contract is around 3 percentage points more likely to work

PT). This is equivalent to an increase of 18% in the likelihood of working part-time for the target group, considering that the predicted probability (controlling for covariates) of working PT before the implementation of the law for the treatment group is 15.74% (10.58 + 5.16). The table also shows that the law did not affect non-target women under indefinite contracts because the variable after (γ) is not statistically significant. This means that is can be strongly argued that the unobservables in the control group remain constant, which makes our comparison more robust.

To obtain the probability of working part-time for treated mothers after the law all effects (β + γ + δ) must be added together. After the law treated women were 8 percentage points (5.16 + 0 + 2.86) more likely to work PT than similar women without children, i.e. they show a predicted probability of 18.6%.

Robustness Check

As a robustness check we implement several tests, all of which are shown in Table 1.3.

Column 1 present the results of a placebo test, conducted to ensure that the impact estimated is caused by the family friendly policy and not by other, external factors correlated with it. This placebo analysis consists of "pretending" that the treatment happened earlier and then measuring the outcome after the pretend treatment but before the actual treatment takes place. If this artificial treatment is found to have an effect then that effect becomes a specification test for the common trend assumption, because any estimated nonzero effect would have to be interpreted as selection bias and thus would cast serious doubts on the validity of the identifying assumptions.

Hence, we estimate the same difference-in-differences models for a period in which no change in family-friendly laws took place. We use the

same pre-reform period of 1998–1999 (excluding post-1999 data) for these estimates but we simulate a false post-reform period. For the placebo test we consider the periods "after" 1996 and 1997. This period is chosen in order to find the most similar group to 1998–1999 (nearest in time) for comparison, and to avoid changes in the likelihood of part-time work for external reasons. For the placebo test the sample includes 8,784 females: 6,078 mothers and 2,706 non-mothers.

Table 1.3. Robustness checks of direct effect. SCPS (1996–2004)

	[1]	[2]	[3]
VARIABLES	Part-time	Part-time	Part-time
treated	0.0462***	0.0519***	0.0530***
	(0.00803)	(0.00919)	(0.00936)
after	0.000437	–0.00549	0.0734
	(0.0124)	(0.0232)	(0.0552)
Treated*after	0.00510	0.0327**	0.0592***
	(0.0142)	(0.0154)	(0.0159)
obs. P	0.1125911	0.1260045	0.1300417
pred. P	0.0916341	0.1042417	0.1097903
R-square	0.0865	0.0863	0.0816
Observations	8,784	8,960	10,066

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Additional controls include age, a dummy indicating whether the individual is the household head, sector, level of education, tenure, unemployment, partiality, temporary and birth rate by region and year. Marginal effects are reported.

Columns:
[1] Placebo: "after" period includes years 1996 and 1997.
[2] Treated group includes only mothers with children born before the pass of the law.
[3] Medium-term effect: "after" period includes years 2003 and 2004.

The results of the placebo regression are shown in column 1 of Table 1.3. It can be seen that the coefficient of interest – treated*after, is not

significantly different from zero, which means that if the 1996–1998 period had been the "after-the-law" years, no differential use of part-time work would have been found across mothers with children younger than 6 years of age and non-mothers. This implies that if the law had not actually been implemented no changes would have been observed in the incidence of PT versus full-time work for mothers with children younger than 6 years old compared to non-mothers. This confirms that the result presented above is caused by the implementation of the law and not by any spurious or unobservable factor.

The second robustness check looks for any bias as a result of potential endogeneity of the treatment group: This might arise if some non-mothers, knowing that the implementation of the family friendly policy is imminent and attracted by its advantages, decide to become mothers and hence switch from the control to the treatment group. To check whether this potential effect plays any role, we eliminate from our treatment group those mothers with children born just after the passing of the law, i.e. those with children under 1 year old in 2001 and under 2 in 2002. The result is shown in the second column. There is hardly any change with respect to the result in Table 1.2. Therefore, it seems that women do not decide to become mothers attracted by the advantages offered by the policy.

The third and last robustness check is intended to evaluate whether the impact reported above is just a short-run effect or is sustained over time. To that end we use the 2003-2004 as the "after" group. Results are shown in Column 3. The treatment effect (δ) in the medium-term is statistically significant at the 1% significance level and amounts to 5.92 percentage points. This is equivalent to an increase of 36.4% in the likelihood of working part-time for our target group in the medium-term, considering that the predicted likelihood (controlling for the covariates) of working part-time for the treatment group before the implementation of the law is 16.28% (10.98 + 5.3). It can be concluded

that the effect is not transient. Indeed, the likelihood of resorting to the law seems to increase over time. One possible explanation for that increase is that it takes time for knowledge of the existence of the policy to spread, and its use has increased as it has become progressively better known. Therefore, the main conclusion regarding this first, direct impact of the law is that the passing of the policy increased the use of part-time work by target mothers by about 18%. To some extent, thus, the law succeeded in its main aim.

1.4.2. Impact of the law: indirect effect

Next we analyze the extent to which the passing of the law has had perverse effects on its potential future users (what we denote by its "indirect effect"). The potential users of the law are non-mothers of fertile age, given that it is mothers with small children who account for the increase in the use of part-time work for childcare reasons after the passing of the law, as shown in the previous section.

The pervasive effect analyzed in this section is whether this law has led employers to behave strategically in the sense of anticipating the law when hiring workers, depending on whether they are potential users or not. This might be the case if employers feel that the use of part-time reduced and the increased protection from dismissal that these workers may enjoy impose additional restrictions on them. If so, and if the family friendly policy is costly for firms, employers might be more likely to hire potential users of the law under fixed-term rather than indefinite contracts. Under fixed-term contracts employers are not forced to renew the contracts when workers become eligible to use the law, so those workers would not enjoy the greater protection against dismissal. Therefore the treatment group in this analysis comprises non-mothers (who are potential future users of the law) and the outcome variable is the probability of having a fixed-term contract, measured before and after the law. As before, we focus on salaried workers of fertile age (between 25 and 45 years old).

As the control group, we use non-fathers in the same age bracket. Another potential control group might be all male salaried workers, not only non-fathers. To decide which of the two control groups seem more appropriate, we compare the trends in the proportions of fixed-term contracts for these two groups (non-fathers and all male salaried workers) and the treatment group. Figure 1.2 depicts those proportions. It can be seen that the trends for non-fathers and non-mothers look very similar before the passing of the law (30.5%) but diverge after it: They increase for non-mothers but not for non-fathers. This is not the case for all salaried workers, who exhibit remarkable differences in the use of fixed-term contracts in the years previous to the passing of the law. Hence, we find it more appropriate to use the group of non-fathers aged between 25 and 45 as the control group. Our final sample covers 20,118 individuals: 11,332 non-fathers and 8,786 non-mothers.

Figure 1.2. Fix-term rate. SCPS (1992-2004). Individuals between 25 and 45 years: non-fathers and non-mothers without children and all men
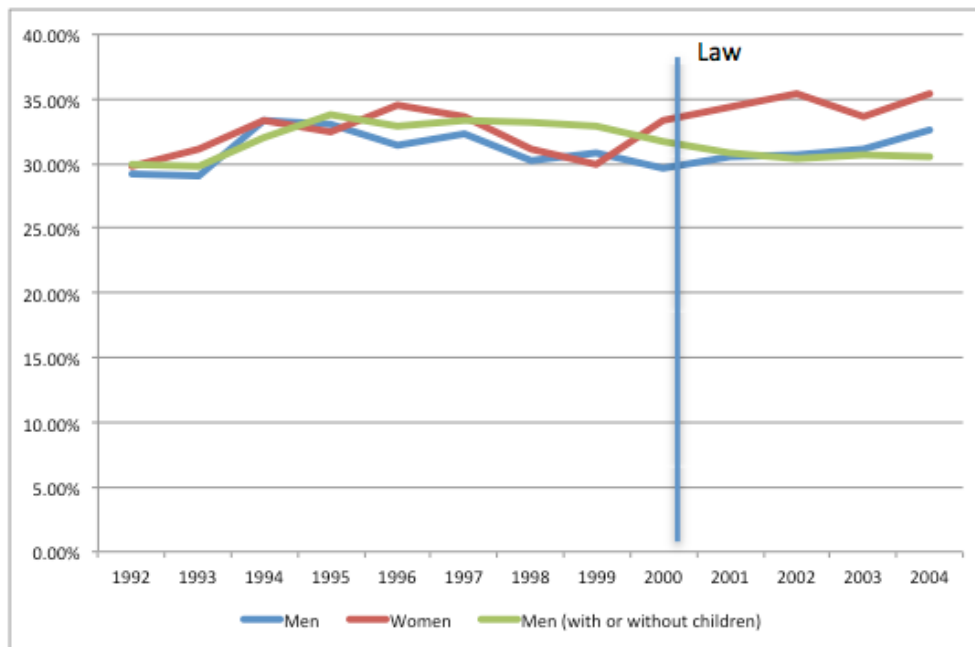
Methodology

To conduct this second analysis we again use SCPS and a difference-in-differences method. The regression is the same as in the previous

analysis but now the dependent variable is the probability of being hired under a fixed-term contract. And as mentioned, we now focus on a sample of non-mothers (treatment group) and non-fathers (control group) aged between 25 and 45.

$$Prob. temporary\ contract_{it} =$$

$$= \alpha + \beta \cdot treated + \gamma \cdot after + \delta \cdot (treated * after) + X'_{it}\pi + \varepsilon_{it} \qquad [1.2]$$

where t indexes the year and i the individual; and where $D_i = 1$ if individual i receives the treatment (potential mothers) and zero otherwise (potential fathers), $D_t = 1$ if observation is after the treatment (2001 or 2002) and zero if the observation is before the treatment (1998 and 1999). X_{it} is a vector of covariates (same as in previous analysis). Finally, ε_{it} is a zero mean disturbance.

β is the non-treatment effect. A non-significantly different from zero coefficient would reveal that, all else being equal, the treatment and control groups exhibited similar proportions of fixed-term contracts before the passing of the law. γ captures a potential indirect impact of the law on non-fathers – i.e. a change in the probability of fixed-term hiring. δ is the treatment effect, i.e. the change in the likelihood of being hired under fixed-term contracts for non-mothers after the law versus before the law compared to non-fathers. A significant positive coefficient would indicate that the law increased the probability of non-mothers being hired under fixed-term contracts as compared to the corresponding non-fathers.

Results

Before presenting the results of the estimation, we present some descriptive statistics. Table 1.4 shows the proportions of fixed-term contracts and other average values of the independent variables for the treatment and control groups before and after the passing of the law.

Table 1.4. Descriptive Statistics. SCPS (1998–2002)

	Treated		Control	
	Pre-Law	Post-Law	Pre-Law	Post-Law
Fixed-Term rate	30.48	34.91	30.55	30.64
	(0.46)	(0.47)	(0.46)	(0.46)
Age	32.82	32.91	33.27	33.46
	(5.55)	(5.56)	(5.27)	(5.35)
Head	36.82	39.01	80.28	82.17
	(0.48)	(0.48)	(0.40)	(0.38)
Educ				
Low	27.74	24.74	42.36	38.88
	(0.45)	(0.43)	(0.49)	(.49)
Medium	34.63	22.85	35.49	24.38
	(0.48)	(0.42)	(0.49)	(0.43)
High	37.62	52.41	22.15	36.74
	(0.48)	(0.50)	(0.42)	(0.48)
Sector				
Primary	1.05	1	3.87	3.97
	(0.01)	(0.01)	(0.04)	(0.04)
Industry	11.8	11.16	24.4	23.85
	(0.32)	(0.31)	(0.43)	(0.43)
Construction	1.2	1.72	11.49	14.89
	(0.11)	(0.13)	(0.32)	(0.35)
Services	85.95	86.12	60.24	57.28
	(0.35)	(0.35)	(0.49)	(0.49)

Individuals without children between 25 and 45 years old
Treated: Potential mothers. Control: Potential fathers.

A comparison of non-mothers (treatment group) before and after the law shows a significant increase in the proportion of fixed-term contacts – from 30.48 to 34.91% (15.5%). We discuss below whether this increase is due to the "indirect effect" of the law that we seek to test. In regard to the covariates, it can be seen that the education level is higher after the passing of the law than before for non-mothers aged between 25 and 45. The proportion of non-mothers with university degree increases from 37.6% in 1998–1999 to 52.4% three years later. As mentioned before, such a big increase is mostly due to a methodological change introduced in 2000. As before, we have checked with different

specifications on the educational indicator, and observed that results are not affected by this methodological change.

A comparison between non-mothers and non-fathers (control group) reveals that before the passing of the law the proportion of fixed-term contracts is the same for both (30.5%), but for non-fathers it remains unchanged afterwards. This reinforces our confidence in the suitability of this group as a control group. Sectorial separation is noticeable when non-mothers are compared with non-fathers, both before and after the passing of the law. This is also the case with the whole sample of female and male workers. Women are highly concentrated in services, and their incidence in industry and construction is really low.

Table 1.5 presents the main coefficients of interest from the estimation of equation [1.2]. Column 1 displays the unconditional impact, i.e. with no additional covariates. Column 2 shows the conditional impact on the observable covariates.

The coefficients of the two estimations are very close, which indicates that the set of covariates are uncorrelated with the treatment. On the other hand, the estimation fit increases notably, as indicated by the increase in the R-square.

From Column 2 it can be concluded that firms seem to behave strategically: all else being equal, after the passing of the law non-mothers between 25 and 45 years are 5.33 percentage points more likely to be hired under a fixed-term contract than the corresponding non-fathers. This increase is significantly different from zero, which means that an unintended and unexpected effect of this law has been to increase the hiring of potential mothers under fixed-term contracts to prevent them from having the right to reduce their working hours and enjoy greater protection against dismissal. That increase makes the likelihood of women being hired under fixed-term contracts around 18%

higher, given that before the crisis that likelihood was 30%. In addition, given that the impact of the variable treated is not significant, it can be concluded that similar non-mothers and non-fathers were equally likely to be hired under indefinite contracts before 1999. Finally, as the impact of the indicator "after" is not significant either, it can be concluded that for non-fathers the law had no impact on the likelihood of being hired under indefinite contracts.

Table 1.5. Results of indirect effect. SCPS (1998-2002)

	[1]	[2]
VARIABLES	Fixed-term	Fixed-term
treated	-0.000753	0.0197*
	(0.00981)	(0.0110)
after	0.000831	0.000818
	(0.00880)	(0.0101)
treatedafter	0.0435***	0.0533***
	(0.0136)	(0.0140)
Covariates	No	Yes
obs. P	0.3159331	0.3159331
pred. P	0.3157668	0.3007602
R-square	0.0013	0.0919
Observations	20,115	20,115

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note: Control variables include age, a dummy indicating whether the individual is the household head, sector, level of education, tenure, unemployment, partiality, temporary and birth rate by region and year. Marginal effects are reported.

Robustness Check

The tests shown in Table 1.6 were conducted as robustness checks on the estimated indirect effect.

As before, we first run a placebo test, presented in the first column. In particular, we use 1996-1998 as a fictitious "after" interval, as we did with the direct effect. For the placebo test the sample includes 16,858 individuals: 9,565 men and 7,293 women. Column 1 indicates that the

treatment effect – the δ coefficient – is not statistically significant. So if a fictitious "after" period is used no significant increase is found in the use of fixed-term contracts for non-mothers with respect to non-fathers. This supports the assumption that our previous results on the effects of the family-friendly law were not spurious, and adds robustness to the previous result that the passing of the law made it more likely for non-mothers than for non-fathers to be hired under fixed-term contracts.

Table 1.6. Robustness checks of indirect effect. SCPS (1996-2004)

VARIABLES	(1) Fixed-term	(2) Fixed-term
treated	0.0319***	0.262
	(0.0113)	(0.376)
after	0.0113	-0.00484
	(0.0103)	(0.0115)
treatedafter	0.0131	0.0457*
	(0.0149)	(0.0252)
obs. P	0.3155334	0.3201716
pred. P	0.2967836	0.3068873
R-square	0.1024	0.0834
Observations	16,854	21,907

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note: Additional controls include age, a dummy indicating whether the individual is the household head, sector, level of education, tenure, unemployment, partiality, temporary and birth rate by region and year. Marginal effects are reported.
Columns:
[1] Placebo: after period includes years 1996 and 1997.
[2] Medium-term effect: after period includes years 2003 and 2004

The second robustness check evaluates whether the impact is felt only in the short run or is sustained over time. Again, we use the years 2003 and 2004 as the "after" group. Results are shown in Column 2. The

treatment effect (δ) is statistically significant at 10%. This may arise if the anticipatory behavior by employers vanishes over time. Therefore, the main conclusion reached concerning the indirect impact of the policy is that its passing made it more likely for non-mothers than non-fathers in similar circumstances to be hired under fixed-term contracts, but it seems that the effect disappears over time.

1.5. Family friendly policy: Profiles of users of the law and the impact of the Great Recession

The second aim of the paper is to characterize the personal and job profiles of users of Family Friendly Law 39/99 (referred to hereafter as "users of the Law") and to quantify the extent to which the Great Recession has changed the number and characteristics of the users of the Law. As mentioned in the introduction, on one side it might be expected that in an economic downturn increased fears of being dismissed would lead to an increase in the use of work time reduction as a way of obtaining greater protection against dismissal. By contrast, income effects might have a negative impact, as work time reduction entails proportional wage reduction, and this negative income effect is likely to be more important in a recession.

Data and Descriptive

The Continuous Sample of Work Histories enables individuals who make use of the law to be identified. As mentioned in the Data Section, we merge all the years in the CSWH from 2007 to 2013 and keep all individuals who register any work contract from 2000 onwards. We restrict our sample to workers who have had children at some time between 2000 and 2011. We compute a quarterly panel and divide the whole sample into two periods: contracts between 2004 and 2007 (denoted as the expansionary period), and contracts between 2008 and 2011 (denoted as the recession period). Accordingly, we only keep

episodes from 2004 in order to avoid possible bias caused when we require individuals to remain in the Social Security records in 2005.

Under the legal context in our reference period, employers cannot change their workers' working hours without the workers' consent. The 2012 Labor Reform changes the legal context and allows employers to reduce the working hours of their employees in some specific situations, so we only measure the impact of the crisis up to the end of 2011. Hence, for the period under consideration we assume that all changes from full-time to part-time in the same firm are voluntary. Therefore, in principle we identify any employee who uses the right to change her/his full-time contract to a part-time contract within the same firm when having a child of the permitted age as a user of the Law.

However, the number of men who declare that they work PT due to child-care issues is less than 1% , and this pattern seems to remain constant over time. Therefore, we exclude men from this analysis, as the proportion of users of the law among them is negligible.

Second, only workers under indefinite contracts are really protected against dismissal since under fixed-term contracts employers are not forced to renew workers' contracts. In fact, we find an insignificant number of fixed-term contract workers who reduced their working hours on having a child. For that reason we focus on workers with indefinite contracts in analyzing users of the Law and the impact of the recession.

To identify non-users of the Law we focus on all those potential users who decided not to change their working hours even though they were legal entitled to. We define a "non-user" as any mother with children of the permitted age with a full-time (indefinite) contract who maintains the same type of contract in the next period if she remains at the same firm.

The sample contains 2,578 different users. It covers 835,713 observations (woman per quarter), 20,259 of which are from users of the Law. Figure 1.3 depicts the proportion of mothers in the pool of eligible potential users who make use of the Law quarter by quarter. On average, in the period 2004–2007 the proportion of users is 2.46%, while in 2008–2011 it decreases to 2.40%. As Figure 1.3 shows, there is a sudden jump of 17% precisely when the law extends the permitted age of children by two years (23rd March 2007). This jump is due to the fact that the increase in the number of mothers eligible is greater than that in the number of actual users. Gradually, the proportion of users drops back to former levels because users of the Law extend their reduced working hours until their child turns 8 years old.

Figure 1.3. Proportion of Law Users. CSWH (2007–2013).
Mothers under indefinite contract that have changed to part-time in the same firm vs those that stayed working full-time.
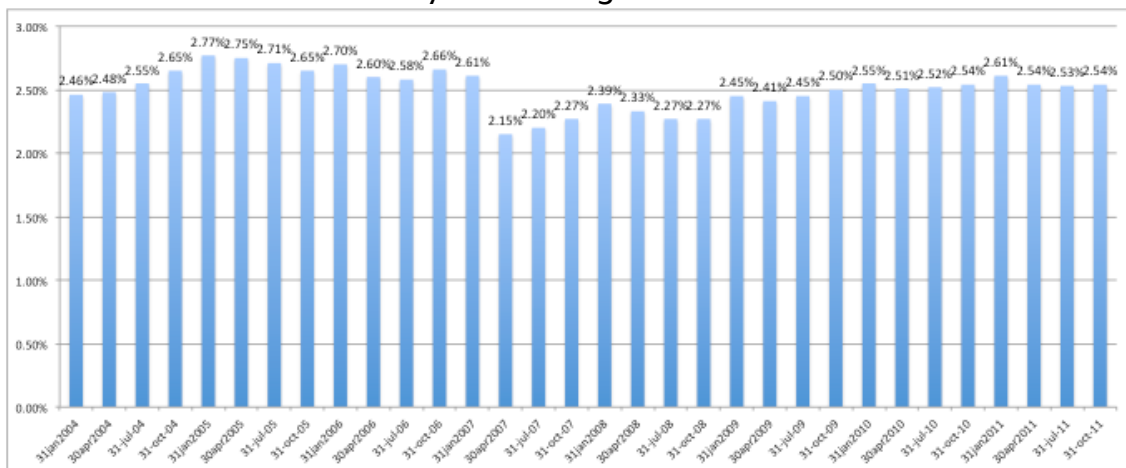
Table 1.7 characterizes users of the Law for different periods. In the upturn period the typical profile of a user of the Law is a women in her thirties, of Spanish nationality, with between 2 and 7 years of tenure, working as clerical officer or assistant in a small firm in the service sector. However, with the onset of the recession the profile changes to some extent: First, the proportion of over 40s increases relatively in the recession. Second, the proportion of foreign workers among users increases by 60% in the recession period. Third, the average tenure of

users of the Law also increases. In terms of occupational classification groups, users can be divided into white-collar (the first seven groups) and blue-collar (the last four groups). Except for technical engineers and experts and qualified assistants, a greater decrease in the number of users of the Law is observed among white-collar workers than among blue-collar ones in the recession, compared with the previous upturn. In addition, users of the law are over-represented in small firms (with fewer than 10 employees) before and after 2008.

As can be seen, the characteristics of users of the Law seem to change considerably in the recession period. This change is perfectly understandable if it is taken into account that although the large-scale dismissals brought on by the Great recession hit workers with fixed-term contracts harder, they also affected those with indefinite ones.

Methodology and Results

Our first aim is to estimate the determinants of "being a user of the Law" and how they change over the business cycle. We compare mothers who reduce their working hours in their firms (users) with those who decide to stay full-time (non-users) even though they are entitled to take reductions. Table 1.7 shows a compositional change in users, which must be controlled for when estimating the determinants of being a user of the Law. We do this by estimating two non-linear probit models separately. Among the covariates used in the estimations we include age (in intervals), a dummy indicating whether the mother is Spanish or a foreign national, tenure (in intervals), occupational classification group (white and blue collar), size of the firm (in intervals), 9 indicators of sector of activity, and regional fixed effects. Our reference profile is a woman between 30 and 34, of Spanish nationality, with 2– 7 years of tenure, in a white-collar job, and working at a small firm. Table 1.8 presents the results for the expansionary period (2004-2007) in its first column, and for the recession period (2008-2011) in its second.

Table 1.7. Descriptive Statistics. Panel from CSWH (2004–2011)

	Expansion 2004–2007		Recession 2008–2011	
N. of observations	8,032		12,227	
Proportion of users	2.46%		2.40%	
Age				
	34.25	(5.04)	35.436	(5.93)
< 30	15.39	(0.36)	15.02	(0.35)
30–34	36.89	(0.48)	29.49	(0.45)
35– 39	34.85	(0.48)	31.94	(0.47)
≥ 40	12.87	(0.33)	23.55	(0.42)
Foreign	6.47	(0.24)	10.39	(0.31)
Tenure (years)	5.143	(3.785)	5.778	(3.97)
< 2 year	20.06	(0.40)	15.57	(0.36)
2 – 7 years	57.26	(0.49)	51.44	(0.50)
≥ 7 years	22.68	(0.42)	32.98	(0.47)
Contribution group				
Graduates, engineers and senior management	6.47	(0.25)	5.47	(0.23)
Technical engineers, experts and qualified assistants	6.01	(0.24)	7.17	(0.26)
Administrative and workshop managers	2.64	(0.16)	1.87	(0.16)
Unqualified assistants	2.94	(0.16)	2.41	(0.15)
Administrative officers	22.34	(0.41)	18.25	(0.38)
Subaltern	5.39	(0.23)	4.24	(0.20)
Administrative Assistants	25.76	(0.44)	23.42	(0.42)
First and second officers	7.11	(0.26)	8.64	(0.29)
Third officers and specialists	9.51	(0.29)	11.3	(0.31)
Laborers	11.79	(0.32)	16.61	(0.37)
Workers under 18	0.04	(0.02)	0.61	(0.08)
Size firm				
< 10	34.77	(0.48)	36.68	(0.48)
10–49	24.91	(0.43)	23.8	(0.43)
50–499	24.02	(0.42)	25.71	(0.44)
≥500	16.3	(0.37)	13.81	(0.35)

Sector				
Primary	0.36	(0.06)	0.2	(0.04)
Industry	11.21	(0.31)	9.52	(0.29)
Construction	8.63	(0.28)	11.7	(0.32)
Wholesale	0.00	(0.00)	8.85	(0.28)
Housing	0.41	(0.06)	0.34	(0.06)
Administrative	2.29	(0.15)	5.49	(0.23)
Education	5.49	(0.23)	5.11	(0.22)
Health	15.29	(0.36)	15.29	(0.36)
Communication and transports	26.82	(0.44)	16.88	(0.37)
Finances	1.52	(0.12)	1.75	(0.13)
Other services	27.99	(0.45)	24.88	(0.43)

The sample contains females under indefinite contract that reduced time-schedule in the same firm, that is, users of the law.

Table 1.8 presents the different impacts of the covariates on the likelihood of being a user of the policy throughout the business cycle. After 2007 women under 30 use the Law more than our reference group, contrary to the situation before the crisis. Mothers over 40 are 56% more likely to use the Law in the recession period than the reference group of women. Having more than 7 years of tenure, being a blue-collar worker, and working at a small firm seem to be stronger determinants for using the Law in the recession than in the preceding period. Summarizing, Tables 1.7 and 1.8 reveal that there is not only a compositional change in the sample of non-users, but also a change in the impact of the determinants of being a user of the Law. This must be taken into account when estimating the impact of the recession on users.

The second aim of this section is to quantify the extent to which the Great Recession led to a change in the number of users of the Law. In other words, we seek to estimate the effect of the recession on the use of the Law. As mentioned above, on the one hand the Recession might be expected to lead more workers to use the Law to protect themselves

from dismissal, but on the other hand income effects and probably also a fear of reprisals might have the opposite effect.

Table 1.8. Probability of being a "39/99 Law User". Panel from CSWH (2004–2011)

VARIABLES	2004–2007 user	2008–2011 user
< 30	-0.00165**	0.00295***
	(0.000715)	(0.000643)
35– 39	-0.00168***	-0.00281***
	(0.000572)	(0.000444)
≥ 40	-0.00913***	-0.00397***
	(0.000586)	(0.000459)
Foreign	0.00559***	0.00403***
	(0.00122)	(0.000711)
< 2 year	-0.0213***	-0.0226***
	(0.000523)	(0.000397)
≥ 7 years	0.00102	0.0111***
	(0.000658)	(0.000567)
Blue collar	0.00392***	0.00753***
	(0.000609)	(0.000446)
10–49	0.000546	-0.00635***
	(0.000659)	(0.000414)
50–499	-0.00377***	-0.00842***
	(0.000608)	(0.000411)
≥500	-0.00284***	-0.0105***
	(0.000695)	(0.000408)
obs. P	0.0245996	0.0240249
pred. P	0.0209251	0.0185842
R-square	0.037	0.0563
Observations	326,509	508,931

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
The sample contains mothers under indefinite contract that stay in the same firm. The two columns estimate the probability of being a law user (have reduced time schedule) along 2004–2007 and 2008–2011, respectively.
Reference groups: belong to 30–34 age group, native, tenure between 2 and 7 years, white collar, small firms, health sector and working in Madrid.
Sector of activity and fix region dummies are also included in the estimations.
Marginal effects are reported.

To answer this question we estimate the probability of being a user of the Law, but include indicators for the recession period. Table 1.9 displays the results. Each column shows the effect of the family friendly policy allowing for differential impacts before and after 2008. The variable denoted by crisis takes a value of 0 if the observation belongs to the expansion period (2004-2007) and 1 if it belongs to any quarter in the recession (2008 onwards). Column (1) represents the effect of the crisis variable itself with no controls for observables (raw impact). In that context, the variable crisis does not capture any changes in use – notice that R-square is 0, which makes the model unreliable. In the second column we control for the same variables as in previous estimations (in Table 1.8) and maintain the profile of the reference group of woman. The impact of the variable crisis is statistically significant at 1% and the impacts amount to -0.0027; i.e. in the recession period mothers are 0.27 percentage points less likely to use the Law than in the expansion period. To measure the scale of the impact we need to compare it with the likelihood of using the Law in the pre-crisis period. For example, the average predicted likelihood of a woman in the reference group using the Law is 1.98% (predicted likelihood). Hence, the impact of the recession takes the form of a decrease in use of 13.6%.

This result assumes that the impact of each control variable is invariant to the period under consideration, i.e. pre-recession or recession period. However, this might not be the case. As shown previously, there is not only a significant compositional change in the group of users of the Law between the pre-crisis and recession years but also a change in the impacts of the different determinants. Hence, the impact of the recession found here might be biased as it might capture not only the impact of the recession itself but also compositional changes that have not been taken into account.

To control for these changes in composition, we conduct a within-cell estimation as follows:

We identify the cells for which relevant changes in composition (and in impacts) are observed in users of the Law before and during the recession, and then we estimate the likelihood of being a user within cells so as to compare women with very similar characteristics when measuring the impact of the recession on the use of the law. This means that the variable "crisis" captures the difference in the likelihood of using the Law among mothers within cells, hence preventing the coefficient estimated from capturing the effects caused by the change in composition or the non-normal distribution of the unobservables.

Table 1.9. Probability of being a "39/99 Law User" over the business cycle. Panel from CSWH (2004–2011)

VARIABLES	(1) user	(2) user	(3) user	(4) user
crisis	-0.000554	-0.00270***	-0.00262***	-0.00265***
	(0.000346)	(0.000318)	(0.000317)	(0.000313)
obs. P	0.0242416	0.0242416	0.0242416	0.0242416
pred. P	0.0242403	0.0197943	0.0197137	0.0193161
R-square	0	0.0451	0.0458	0.0498
Observations	835,713	835,713	835,713	835,713

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$
The sample contains mothers under indefinite contract that stays in the same firm. Group of age, foreign dummy, tenure, size, contribution group, sector of activity and fix region dummies are also included in the estimations. Marginal effects are reported.

Columns:
(1)   Without covariates.
(2)   Same covariates than in Table 1.8.
(3)   Group A: cells of foreign/native, 3 groups of tenure and blue/white collar. Rest of control variables included in the estimation in a vector of covariates.
(4)   Group B: cells of 4 groups of age, 4 groups of size, 3 groups of tenure and blue/white collar. Rest of control variables included in the estimation in a vector of covariates.

Given that compositional changes mainly affect the proportion of foreign/Spanish nationals, tenure and job qualifications, we create 12 cells with all possible combinations of (i) foreign/Spanish nationality; (ii)

tenure (three groups); and (iii) job qualifications (white collar/blue collar). In addition to controlling by cells, we also include indicators of age group, firm size, sector of activity, and regional fixed effects. The reference profile is the same as before. The results of the within-cell estimation and the rest of the covariates are shown in the third column. There is barely any change with respect to column (2): there is a reduction of 0.262 percentage points in the use of the Law during the recession. In other words, a woman in the reference group becomes 13.2% less likely to be a user of the Law.

Finally, the last column presents a similar analysis using a more restricted cell grouping. In particular, we add age groups (4) and firm size (4). Given that the group of foreign workers is not big, we do not include foreign/Spanish nationality as an additional characteristic for the cell so as to prevent empty cells. Hence, we end up with 72 different cells. Results of the within-cell estimation with more restrictive cell characterization are presented in column (4). The results do not change: 0.265 percentage points in the use of the Law after 2007. This means that during the recession likelihood drops by 13.7% for the reference group of women.

In summary, with regard to the impact of the recession on users of the Law we find that the recession has led to a decrease in their number of around 13%. This result suggests that negative income effects and perhaps fears of reprisal have outweighed potential greater protection against dismissal.

1.6. Summary and Conclusions

Family issues play a crucial role in understanding the gender differences observed in the labor market. Women combine employment with home responsibilities to a much larger extent than their male partners. Governments and institutions may play an important role in creating the legal framework for improving women's choices and their participation

in the economy, and in helping societies to break away from the more traditional gender role attitudes that affect women's behavior in many countries. Indeed, in the past few decades policies aimed at promoting gender equality and equity in the workplace have been adopted. The evaluation of one such policy implemented in Spain in 1999 is the aim of this paper.

The policy under analysis, called Law 39/99, was particularly aimed at granting parents with children younger than 6 years of age the right to reduce their working hours, with an equivalent wage reduction. The spirit of this law is to enable parents more easily to afford to stay in the labor market and take care of their children by reducing their working hours. Moreover, users of the Law enjoy greater protection against dismissal than other workers, which may encourage workers to use the law as a job protection particularly in recession periods.

In this paper we evaluate the impact of the law, in particular its direct and indirect effects. Our results indicate first that the law increased the likelihood of working part-time for eligible mothers – i.e. mothers with children under 6 – by around 18% (almost 3 percentage points) compared to similar non-target groups. Second, we test whether the passing of the law led to strategic behavior from employers in the sense of offering fewer indefinite contracts to potential users of the law so as to limit the use of reduced working hours. A comparison of hiring practices involving potential users of the law (target group), i.e. non-mothers of fertile age, with a similar non-target group (non-fathers of fertile age) reveals that the law increased the likelihood of the target group being hired under fixed-term contracts by 5.33 percentage points (18%). From a policy point of view, we can conclude that the implementation of a well-intended policy that in principle is granted to both fathers and mothers, may have perverse effects if only a sub-group of workers -in this particular case mothers- makes use of the family-

friendly policy, given their traditionally higher responsibility for childcare issues.

The second aim of the study is to characterize the workers who have made use of the Law since its approval (1999) and measure the extent to which the Great Recession has led to a change in the number of users and in their personal and job profiles. We find that the profiles of users of the Law in the downturn have changed from those in the previous upturn. Before the crisis they are mainly women in their thirties in white-collar jobs, but during the downturn they are low-qualified workers older than 40 who work in small firms. The most important finding is that the Great Recession has reduced the likelihood of resorting to the Law by more than 13%. This is not consistent with the view that eligible workers use the Law during the recent recession mainly to protect themselves against dismissal.

2.The impact of the Minimum Income Scheme on Poverty in the Basque Country

2.1. Introduction

The Great Recession has had severe consequences in terms of poverty, as it has placed many citizens at risk of social exclusion[3]. As a result, Minimum Income Schemes are currently at the heart of public debate. Most European Union Member States currently provide some form of Minimum Income Scheme so as to ensure a minimum standard of living for households when they lack other sources of financial support. These schemes have been reinforced in recent times, but they first emerged back in 1992, when a European Council recommendation assessed the need to develop last resort schemes, which recognized the basic right of every individual to be guaranteed a decent minimum standard of living. These programs were part of comprehensive, consistent plans to combat social exclusion[4]. Since then, implementation of Minimum Income Schemes (MIS) across European Countries has varied in terms of coverage and target population. The most widely used are the so-called "simple and comprehensive schemes", which basically cover every person/household in need of support, without confining their effects to a particular group of people (de la Rica and Gorjón, 2017).

This paper assesses the impact of a simple, comprehensive scheme that operates in the Basque Country, a region of northern Spain[5], called Renta de Garantía de Ingresos. This region pioneered the introduction of MIS in Spain in 1989. The first aim of the paper is to assess whether MIS

3 The terms poverty and social exclusion are frequently used as if they were synonymous, but they describe different concepts. The concept of poverty is generally linked to the lack of the resources (income) needed to meet the minimum needs in a given society. The concept of social exclusion refers to a lack of or insufficient level of social integration (Rodrigues, 2001).

4 For more details, see Council Recommendation 92/441/EEC of 24 June 1992: http://publications.europa.eu/en/publication-detail/-/publication/9953c2cf-a4f8-4d31-aeed-6bf88a5407f3/language-en

5 The Basque Country is a small region in the north of Spain with a population of approximately 2 million (5% of the Spanish population). The active labor force is over 1 million and the employment rate is 50%. It is one of the richest regions in Spain, with the second highest GDP per capita and the third lowest unemployment rate (12.8%). The Basque Human Development Index is 0.924, the highest in the country, and at the same level as the Netherlands.

achieves its goal of ensuring a decent minimum standard of living for Basque citizens. The second question addressed in the paper is to assess the intensity to which MIS is effective and efficient in its goal of reducing poverty[6]. MIS costs around 450 million Euros per annum, 4.5% of total public expenditure, and equivalent to 0.69% of the region's GDP. Undoubtedly, from an economic point of view, it is pertinent to assess the degree of effectiveness and efficiency of such a costly public policy.

The data for this analysis is microdata sourced from the 2016 Survey of Poverty and Social Inequalities (referred to here by its Spanish acronym EPDS), which is the latest available wave at this time. According to this dataset, in 2016 the Basque population numbered 2.14 million, of whom 5.8% were MIS beneficiaries. 59,976 households received this aid and the benefit covered 124,493 people. Total expenditure on MIS in 2016, as reported by the EPDS, was 428.08 million Euros. This dataset includes variables for disaggregated monthly income, including the amount of MIS transferred to households. This means that a simulation of the implementation of MIS can be carried out. By comparing income distribution before and after the application of MIS, it is possible to measure the impact of the aid on poverty reduction.

Although poverty is understood as difficulty in accessing those goods and services that ensure the ability to live with dignity and lead a satisfactory social and personal life (Villar, 2017), there is no single, scientific, objective poverty line, i.e. no single threshold that determines who is poor and who is not. In this paper I work with three different poverty lines. The first is the poverty threshold used by the Basque Government in legislation to provide MIS. Eight types of household are defined and a different poverty threshold is specified for each one. The

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6 According to de la Rica and Gorjón (2017), the MIS does not cause any undesirable "delay in entering the labor market" effect, so the presence of the policy does not cause poverty to become chronic.

Minimum Income Scheme supplements household income for those households which all short of the particular threshold for their type.

Secondly, the paper also considers two relative poverty lines commonly found in the literature: 40 and 60 percent of the median income in the Basque Country[7].

But in addition to different thresholds, poverty can also be defined in terms of different dimensions such as incidence, intensity, and inequality. For each of these dimensions, different indices are drawn up, and this paper computes each one to learn more about the impact of MIS on different dimensions of poverty.

The results of the first part of the analysis show that MIS has a substantial impact in reducing poverty for the measures displayed. However, poverty is not completely eradicated, firstly because some poor people do not meet the requirements to be MIS beneficiaries; and secondly because sometimes the payments received are insufficient, particularly for some types of household, to bring them out of poverty given the standard poverty definitions commonly used in the literature.

The second part of the analysis uses the conceptual framework and empirical model developed by Beckerman (1979), where concepts of effectiveness and efficiency are defined. Results show that in terms of effectiveness (i.e. the ability to eradicate poverty) the policy works properly. For MIS beneficiaries poverty, as defined in Basque legislation, is 98% eradicated. However, in terms of efficiency (i.e. avoiding wastage of resources) only 63% of the benefit transferred effectively contributes to poverty reduction. Furthermore, 13.4% of total transfers were received by non pre-poor people. These results suggest that there is

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7 For more details of different thresholds see European Commission, Research findings – Social Situation Monitor – Risk of poverty on basis of different thresholds http://ec.europa.eu/social/main.jsp?catId=1050&intPageId=1894&langId=en

still room for improvement in the distribution of MIS to recipients. A similar study has been conducted for the Guaranteed Minimum Income Program in Portugal (Rodrigues, 2001). The author analyzes the effectiveness and efficiency of this aid, approved in 1996, in terms of poverty reduction, using the same conceptual framework.

In light of these results, the last section presents some policy recommendations. The poverty line established in the legislation of the Basque Country differs from those commonly found in the literature. The different criteria used to define these lines is key to understanding the weakness of the policy. I therefore suggest that attempts be made to achieve full effectiveness and efficiency, and present a new distribution of expenditure on MIS which seeks to maximize its coverage and its impact in reducing poverty.

The rest of the paper is organized as follows: Section 2 reviews institutional aspects of MIS implemented in the Basque Country. Section 3 gives describes the data. Section 4 defines poverty and its measures and presents the impact of the policy on reducing poverty. Section 5 analyzes the effectiveness and efficiency of MIS. Section 6 proposes some improvements to the policy. Finally, Section 7 summarizes and concludes.

2.2. The Minimum Income Scheme in the Basque Country Region

The Basque Minimum Income Scheme was introduced in 1989, with the so-called Integral Plan to Combat Poverty. Since then it has undergone several modifications. In 1998 it became a law. The quantity of benefits and the requisites for being a beneficiary have also been modified

several times. The latest version, on which this description is based, was implemented in 2011 (Act 4/2011)[8].

The first important aspect to note is that the Basque Minimum Income Scheme is household-based, i.e. the aid is transferred to family units rather than to individuals. To receive the aid, applicants must comply with the following eligibility requisites: first, they must show that their household income is insufficient to meet basic needs, which means inability to access the goods and services necessary for minimum welfare in society according to the Basque Government criterion of poverty detailed below. The second eligibility condition concerns residency in the Basque Country: In principle, the MIS recipient in the household must be registered on the census and actually have resided in the Basque Country for the last three years without interruption. If they can prove five years of paid work experience in the Basque Country, the residence requisite is reduced to one year instead of three. If none of the above requirements is met, recipients must have been registered for five continuous years out of the immediately preceding ten years. Moreover, both holders and other beneficiaries cohabiting in the same family unit who are able to work must commit to being available to do so and to actively searching for employment.

The Minimum Income Scheme is also understood as a last resort scheme, and as such applicants must already have requested all other income aids to which they are entitled. In principle, the scheme is compatible with other income aids or wages earned by a family member as long as they do not exceed the threshold. In addition, applicants must not own any property other than their usual residence.

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8 The complete order can be found here:
 https://www.boe.es/buscar/doc.php?id=BOE-A-2011-15732

Coverage: MIS is transferred to family units on a monthly basis. The amount set by the Basque Government to address basic needs varies depending on the minimum wage (MW), the number of people in the household, the number of pensioners and whether it is a single-parent household or not. Specifically, it is set at 88% of the MW for single-member households and varies up to 125% of the MW for households with three or more members. In the case of households with at least one pensioner the percentages are increased to 100% and 135% respectively. Single-parent households receive an additional subsidy of €45. In line with these guidelines, the legislation distinguishes between eight types of housing unit, as shown in Table 2.1 along with the amount of MIS for each one in 2016. These amounts establish the first poverty line used in this paper[9].

Table 2.1. Poverty line by type of household in 2016.

Type of household		€
1	1 adult	626.58
2	2 adults	803.31
3	3 or more people, at least 2 adults	888.62
4	Single-parent (1 child)	848.81
5	Single-parent (2 or more children)	934.12
6	1 retired people	710.89
7	2 adults, at least 1 retired	888.62
8	3 or more people, at least 1 retired	959.7

If there are incomes other than wages in the household, **MIS covers the shortfall up to these thresholds**. In order to encourage recipients to find work, if there are wage incomes in the household the legislation implements the so-called "Stimulus to employment". The latest version, implemented in 2001 (Order of 14 February 2001)[10], establishes that a

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9 The MIS has a supplement called "Supplementary Housing Benefit", which is a periodic financial benefit intended to cover the cost of renting a habitual residence for those households which are not owner-occupiers.
10 The complete order can be found here:
http://www.lanbide.euskadi.eus/contenidos/informacion/rgi_normativa/es_def/adjuntos/Orden%2014-02-2001.pdf

certain percentage of wages from self-employment or other jobs of the applicant or other members of the family unit will be excluded. The percentage of income from employment excluded is determined by the following formula:

$$\% \text{ excluded} =$$
$$= \frac{[\,(88\%\text{MW} * \text{eq. factor} - \text{pov. line}) + 0.1 * (\text{total wages in the household} - \text{pov. line})]}{\text{total wages in the household}} \quad [2.1]$$

The equivalence factor is 1.5 for single-member households and 1.8 for two-member households, with a further 0.1 being added for each additional member from 2 onwards, regardless of the type of household. The poverty line is as defined in Table 2.1 for each type of household. 88% of the Minimum Wage was €626.58 in 2016. Summarizing, the final MIS when there is wage income in the household is:

$$\text{MIS payment} = \text{pov. line} - (1 - \% \text{ excluded}) * \text{total wages in the household} \quad [2.2]$$

These formulas are important in the calculations of the efficiency of MIS in Section 4 below, as the amount excluded must not be seen as a waste of resources but as an incentive to employment.

2.3. Data Description

To carry out this analysis I use the Survey of Poverty and Social Inequalities (EPDS its Spanish acronym) for the Basque Country. The latest available wave is for 2016. This sample includes 10,316 individuals belonging to 4,327 households representative of the total population of the Basque Country. I use the weightings available to obtain population figures, which seem to coincide largely with official statistics.

The EPDS includes information on the households surveyed and their members. It contains personal information such as gender, age, census

status, number of years registered (if registered in the Basque Country), nationality, education level and place of origin. It also contains labor market information: labor status, type of contract if employed, etc. The last part of the survey deals with the economic situation of households. There is information available on all types of income (and the members that receive them), spending, and savings in each household. This includes on the one hand wages, benefits, retirement pension, loans, revenues, transfers, heritage assets, social aids and, especially, the amount of Minimum Income Scheme received; and on the other hand rent payment, mortgage, monthly bills, lending, etc. Thus, all income information is presented on a monthly basis. Finally, the EPDS includes a weighting factor that enables the sample to be weighted to give population figures, so all calculations are weighted by that factor. The basic figures obtained are very similar to the official ones, which make its use very robust.

With all this income information, the EPDS computes a monthly variable called *Total Household Income,* which is my first reference variable here. This income variable corresponds to the total income received by the different members and is equal to gross income including benefits minus taxes and minus insurance contributions, i.e. Total Household Income includes the amount of MIS paid[11]. I refer to this variable as (total) disposable income. The other variable of interest is the amount of MIS received by each household.

Income information in the EPDS is reported by individuals. Moreover, one household member may answer for another if he/she is not present during the survey. The official registration of family income according to which the MIS is given is not the same. It is very common for this kind of reported data and the official data not to coincide exactly. On the one

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11 Detailed information on the calculation of Total Household Income can be found in the Annex.

hand, total disposable income in the dataset includes transfers from family and friends to the members of the household that the official statistics do not include. Nor are payments for informal work included in the official data, though they may appear in the reported data. Furthermore, total disposable income in the EPDS includes a monthly average amount apportioned for running one's own company, for treasury refunds or for labor-related indemnities. Finally, the information is less precise when one individual in the household responds in regard to the income of others.

It is also important to highlight that the database does not include all the information needed to determine whether a household complies with the requirements to be an MIS beneficiary. For instance, ownership of second homes and the number of years worked in the Basque Country are not reported. Therefore, my analysis assumes that every household that receives MIS complies with those requirements which I do not observe, and that every household that does not receive MIS in spite of falling short of the income threshold fails to comply with one or more of the remaining requirements or has not applied for it. To draw up a more in-depth analysis of the impact of MIS it would be important to have full information related to the requirements.

In the empirical exercise, I simulate the scenario that reproduces household income in the absence of MIS. This enables me to compare this counterfactual situation with the real one and hence measure the impact of MIS on reducing poverty. The pre-benefit income situation is defined as the difference between disposable income and the amount of MIS received. Total disposable income in the sample is therefore the post-benefit income, as it already includes MIS. This gives two scenarios: pre and post-MIS. Note that when the direct impact on poverty is measured the indirect effects of benefits are ignored. No account is taken of the financing of social security benefits –i.e. the extent to which the redistributed effect of benefits may be offset by

taxes and social security contributions, or the indirect effect of either these taxes or benefits on the size or the economic circumstances of the population that receive the benefits (Beckerman, 1979). Furthermore, I also assume that there is no change in the behavior of individuals in response to the introduction of the Minimum Income Scheme (Rodrigues, 2001). That is to say, the rate of exit into employment of individuals would be similar if they were not MIS recipients. In other words, poverty does not become chronic because of MIS, which is a common fear, given that the Minimum Income Scheme itself does not delay the probability of finding a job. This is one of the main conclusions reached in the third Chapter of the thesis.

Table 2.2 shows the distribution of households in the Basque Country by type according to MIS provision. It also shows the incidence of individual and household MIS beneficiaries by type (%MIS). In all 124,481 MIS beneficiaries in 59,936 households are found.

Table 2.2. Distribution of individuals, households, and incidence of MIS beneficiaries by type

	Type	Individuals			Households		
		Total	%	% MIS	Total	%	%MIS
1	1 adult	146,994	6.86	15.07	146,994	16.78	15.07
2	2 adults	211,256	9.86	6.10	105,628	12.05	6.10
3	3 or more people, at least 2 adults	1,039,015	48.49	5.72	279,535	31.90	5.47
4	Single-parent (1 child)	17,947	0.84	34.63	8,974	1.02	34.63
5	Single-parent (2 or more children)	14,375	0.67	41.73	4,573	0.52	41.83
6	1 retired people	103,809	4.85	6.66	103,809	11.85	6.66
7	2 adults, at least 1 retired	269,998	12.60	2.07	134,999	15.41	2.07
8	3 or more people, at least 1 retired	339143	15.83	1.56	91,741	10.47	1.48
	Total	2,142,537	100.00	5.81	876,252	100.00	6.84

According to Table 2.2, the most frequent type of household in the Basque Country comprises three or more people, including at least two adults (type 3). Almost half of all individuals live in households of this type, though less than one third of households are of this type. Focusing on the other dimension of the table, i.e. the incidence of MIS recipients, 5.8% of the more than two million inhabitants of the Basque Country are MIS beneficiaries. However, the percentage of MIS recipients varies in line with the type of household where they reside. The type of

household with the highest incidence of MIS recipients is single-parent with two or more children (type 5) (42% receive MIS). By contrast only 1.6% of households with three or more people, at least one of them retired (type 8) are MIS recipients.

2.4. Assessing the Impact of MIS on Poverty Reduction

In this section, I assess the extent to which MIS fulfills its main objective, which is to prevent people from living in poverty. To that end certain basic concepts such as poverty and how it is measured have to be defined.

2.4.1. Basic Concepts

2.4.1.1. Definition of Poverty

There has been much discussion in the literature on how to define the poverty line and there is no objective, scientific, "correct" definition of poverty (Beckerman, 1979). It is generally accepted that poor people are those who live below the poverty threshold, i.e. the income level that permits a certain minimum standard of living, given the conventional necessities of society at that point in time and other social objectives (Beckerman, 1979). This is known as the *poverty line[12]*. However, there are different definitions of the term.

The legislation in the Basque Country establishes a limited payment for each type of family, i.e. eight thresholds, which is the maximum quantity of MIS assignable, as presented in Table 2.1. In this paper, the first definition of "poverty line" is marked by that maximum income for each family type.

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12 This paper uses the terms poverty "line", "threshold" and "limit" as synonyms.

However, in the relevant literature the term "poverty" is frequently defined on the basis of a percentage of the median income. The most commonly used definition at present considers the "poor" in a given society to be those whose income is less than 60% of the median income of that society (Villar, 2017). Similarly, 40% of the median is defined as "extreme poverty".

The needs of a household grow with each additional member, but due to economies of scale in consumption that growth is not proportional. With the help of equivalence scales, the literature on poverty assigns a factor to each household which weights its needs depending on its size (OECD, 2013). In this paper I use the *OECD–modified equivalence scale*, which is commonly used in the literature. It assigns a value of 1 to the first household member, 0.5 to each additional adult and 0.3 to each child under 14. I thus calculate what I call the *equivalent (or individualized) income*, dividing total disposable income in the household by its equivalence scale[13]. The figures taken as references are therefore the per capita income within the *consumption unit* (household adjusted according to size and composition). Once the equivalent income is calculated it is assigned to each member of the household. This assigns every member of the household the same equivalent income, so the whole household is be either poor or not[14].

Once the equivalent population income is known, the income distribution of the society and, therefore, the median can be calculated. For the Basque Country the 2016 figure is €1428, which means that 60% is €857 and 40% is €571. Note that the median income is the same before and after the MIS transfer because all beneficiaries are placed

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13 To a certain extent, equivalence scales are already taken into account in the Basque legislation when types of household and the corresponding amounts of MIS as defined, as presented in Table 2.1.
14 Housing costs are not included by attributing income, as they are taken into account in the legislation via Supplementary Housing Benefit.

below it, so the poverty line remains constant before and after the MIS scenario.

The analysis is now conducted for the three poverty limits defined: the one in the legislation of the Basque Country (BC), the standard definition in the literature of the extreme poverty line as 40% of the median (40%Me) and the standard poverty line in the literature of 60% of the median (60%Me). It is important to highlight that when I refer to the poverty lines in the literature, individualized disposable income is used. However, when I consider the Basque Country poverty line I apply the total disposable income of each household (as the legislation does). Hence, for the 40% and 60% poverty lines an individual is poor if his/her equivalent disposable income is less than €571 or €857, respectively. With the BC line an individual is poor if the total disposable income of his/her household is below the legislated limit for that specific type of household. This means that in all three lines either all individuals in the family unit are poor or none of them is.

Comparing the Basque and Standard Poverty Lines

Before proceeding to the analysis, it is important to compare the BC poverty line with the standard lines in the literature. This will enable readers to understand the findings in subsequent sections better.

As explained above, there are eight different types of household, each with its own poverty threshold. To compare them with the standard lines the eight equivalent poverty lines must be calculated using the equivalence scale, i.e. the amount of income shown in Table 2.1 must be converted into the equivalent individualized income using the OECD modified scale. For example, for a household with two adults the threshold is set at €803.31. The equivalence scale for such a household is 1.5 (1 + 0.5 for the second adult). Therefore, the equivalent poverty line for this type of household is €535.34 (€803.31/1.5). This figure is

37.5% of the median (535.31/1428), i.e. slightly below the extreme poverty line.

However, the Basque Country and the OECD modified-scale use different criteria for weighting each member of the household. In the Basque Country being a single parent or a retired person is assumed to result in a higher cost of living, so the poverty limit is shifted upwards, but the OECD-modified scale does not consider these exceptional conditions as particular cases. On the other hand in the Basque Country the poverty line does not change for each additional member of a household up to three, but under the OECD criterion every additional member counts. For that reason, some types of household under the Basque definition can be made up of different numbers of members: For example, two adults with one child is Type 3 but two adults with two children or more is also Type 3. Moreover, the modified-scale varies in each situation.

Figure 2.1 shows the ratio between the individualized BC poverty line and the median income in 2016 (€1428) per type of household. Given that some households do not consist of a single composition, several common variations are presented.

The equivalent poverty line for most cases does not exceed 40% of the median. Five types exceed it: 1, 4, 6, 7 and 5 only if there are at most two children in the family. In addition, type 6 (one retired) stands at approximately 50% of the median. Moreover, the bigger the household is, the further it is from the 40% poverty line. This result was expected since the criteria used in Basque the legislation differs from that of the OECD scale. This figure suggests that the Basque Country poverty line seems to be set somewhat low, considering that never covers 60% of the median and hardly ever 40%.

Figure 2.1. Equivalent poverty line as a percentage of the median income (€1428) for some examples of each type of household
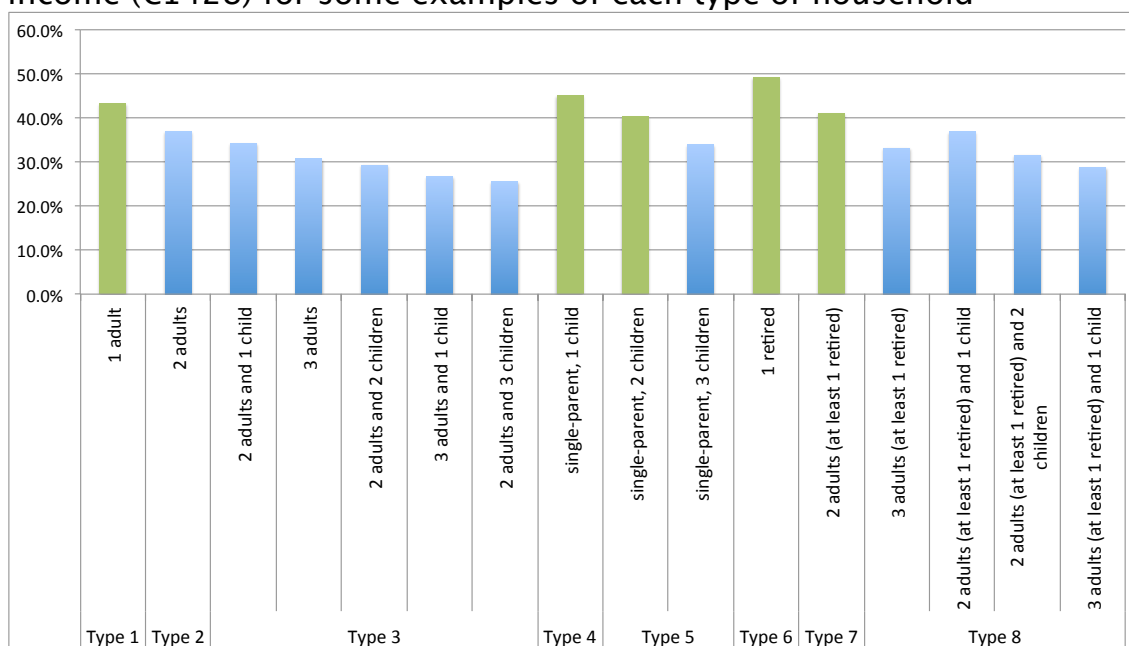
Note: Those households over 40% of the median are shown in green.

Following this methodology and in line with the number and characteristics of the families that live in the Basque Country, Figure 2.2 shows the equivalent poverty line as a percentage of median income for all MIS beneficiaries. The X- axis represents the percentage of the cumulative population, ranked from lowest to highest equivalent poverty line, i.e. individuals from large households are placed on the left while individuals from household type 6 are placed on the right. As shown in the figure above, this is the type that shows the highest equivalent poverty line, and therefore the highest ratio with respect to the median income.

This figure shows that for 63% of MIS beneficiaries (78,647 individuals) the BC poverty line lies below the extreme poverty line (40%Me) shown in red. In addition, for approximately one third of MIS recipients the line set by the BC falls below 30% of the median income. As shown in Figure 2.1, there is not a single case in which 50% is exceeded. The people above the red line – the remaining 37% – are those that live in households shown by green bars in Figure 2.1. Summarizing, in most cases the threshold set by the Basque Country is low compared to the

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extreme poverty line defined in the literature. Having defined, compared and clarified the poverty lines, I now proceed to explain how to measure them in a given society.

Figure 2.2. Equivalent poverty line as a percentage of the median income for MIS recipients in the Basque Country
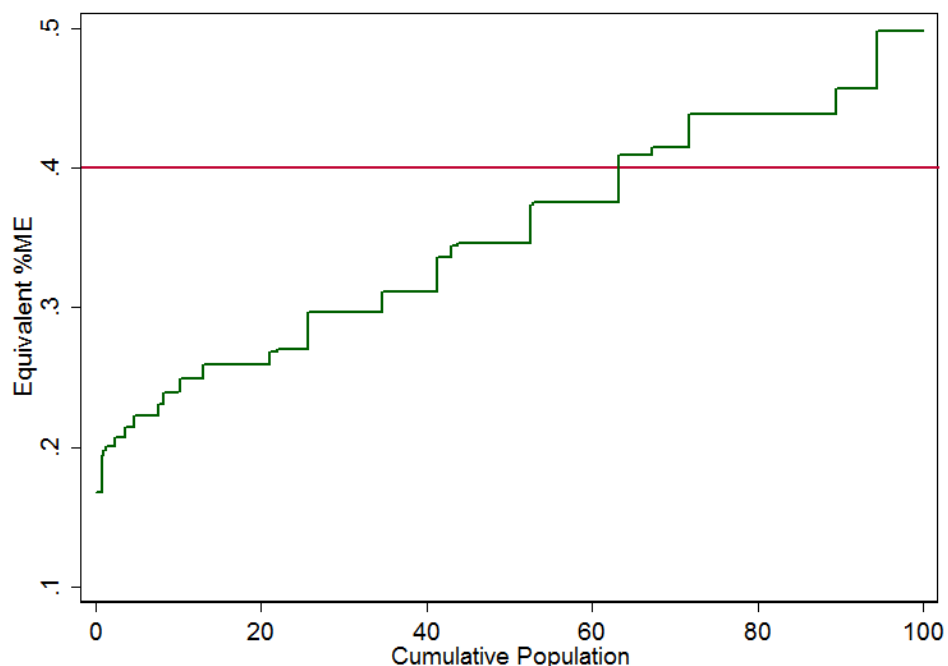
2.4.1.2. Measuring Poverty

The concept of poverty has different dimensions and can hence be measured in a number of ways. Each dimension of poverty is normally captured by a different index. In the empirical section below I compute each index before and after MIS in order to measure the impact of the policy on poverty reduction for each dimension.

There is an extensive literature on poverty indexes (see Chakravarty 2009, Villar 2017 for a discussion). Each index emphasizes some aspect of the poverty problem. It is customary to assume that poverty measurement involves a direct or indirect appraisal of the three different aspects, known as Sen's three I's of poverty (Sen 1976): Incidence, Intensity and Inequality. Here I approach the measuring of poverty by resorting to the FGT family of poverty indexes (see Foster, Greer and

Thorbecke, 1984). This is one of the most widely used poverty indices due to its intuitive nature, its decomposability properties, and the possibility of modulating concern for poverty by adjusting poverty aversion by a single parameter. Once the poverty line is defined, I determine the set of poor agents, $i = 1, 2,...,q$. For each of those agents I calculate the relative distance from the poverty threshold, $(z - y_i)/z$. This value can be enhanced or reduced by simply using a power on this fraction. The larger the power, the larger the impact on poverty of each individual observation. The overall assessment of poverty derives from adding up all the individual measurements and dividing the resulting figure by the population size, n. That is,

$$FGT_\alpha(y,z) = \frac{1}{n}\sum_{i=1}^{q}\left(1 - \frac{y_i}{z}\right)^\alpha \qquad [2.3]$$

The parameter α determines the impact on individual deviations of the poverty line, increasing them for $\alpha > 1$ and decreasing them otherwise. I denote the population size by n, the number of poor people by q, the income distribution vector by y, and the poverty threshold by z. This notation is maintained below.

This poverty index satisfies all standard requirements: scale independence, anonymity, focus, etc. (see Chakravarty 2009, ch. 2 for a detailed discussion).

Interestingly enough, some particular values of the parameter α yield simple, familiar formulas. The case of $\alpha = 0$ resolves into the well-known, elementary measure known as the *head-count ratio*. This is the conventional measure of the **incidence** of poverty, and it reveals the proportion of poor people in society as a fraction of the total population. That is:

$$FGT_0(y,z) = \frac{1}{n}\sum_{i=1}^{q}(1) = \frac{q}{n} \qquad\qquad [2.4]$$

Looking at the head-count ratio before and after the transfer of MIS it is possible to learn how far the percentage of poor people decreases thanks to the income scheme. The biggest advantage of this relative index is its simplicity. However, this index does not contain information on the situation of the poor, only on their weight relative to the total population.

The case of $\alpha = 1$ is also very interesting because it provides a combined measure of both the **incidence and intensity** of poverty. It is given by:

$$FGT_1(y,z) = \frac{1}{n}\sum_{i=1}^{q}\left(1 - \frac{y_i}{z}\right) \qquad\qquad [2.5a]$$

This expression can be rewritten as:

$$FGT_1(y,z) = \frac{q}{n} \times \left[\frac{1}{q}\sum_{i=1}^{q}\left(1 - \frac{y_i}{z}\right)\right] = \frac{q}{n} \times \left[\frac{\sum_{i=1}^{q}(z - y_i)}{qz}\right] \qquad\qquad [2.5b]$$

which says that FGT_1 can be expressed as the product two different terms: The incidence (head-count ratio) and the intensity of poverty, measured by the average relative distance from the poverty line, which informs about how poor the poor are on average. This is important because the mere fact that people are below the poverty line conveys no information about how far away from it they are. Note that the term $\sum_{i=1}^{q}(z - y_i)$, is the so-called *poverty gap index* (PGI), which captures the distance (in Euros) between the income of the poor and the poverty line. It measures the amount in Euros required to eradicate poverty in the society under analysis. Dividing this amount by the product of the total poor population and the poverty line, the conventional relative intensity measure is obtained. This measure reflects how far the average poor

individual is from the poverty line, relative to its level (i.e. the gap as a percentage). By focusing on that index before and after MIS, it is obtained information on the intensity of poverty through the situation of the average poor individual in each scenario.

The case of $\alpha = 2$ is usually interpreted as a measure of the *intensity of poverty*. This index is proportional to the squared sum of the income shortfalls of the poor.

$$FGT_2(y,z) = \frac{1}{nz^2} \sum_{i=1}^{q} (z - y_i)^2 \qquad [2.6]$$

Squaring the income shortfalls gives them progressively greater weighting, thus expressing a much higher concern for poverty (and, indirectly, making inequality worse among the poor)[15]. Deprivation depends on the distance between the actual income of the poor and the poverty limit: the further they are from the poverty threshold, the higher their weight in the index. Given an income distribution and a poverty line, this index will produce an assessment of poverty that is much higher than that derived from equation [2.5]. And, by the same token, it will prove much more sensitive to any transfer policy, thus making the outcome much better. This aspect is worth bearing in mind.

One of the most appealing properties of the FGT indexes is that they are additively decomposable according to population subgroups, using the following formula:

$$FGT_\alpha(y,z) = \sum_{j=1}^{m} \frac{n_j}{n} FGT_\alpha\left(y^{(j)}, z^{(j)}\right) \qquad [2.7]$$

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15 A more in-depth analysis of the impact of MIS on inequality in the Basque Country is conducted by De la Rica, Gorjón & Revenga (forthcoming).

such that income vector y breaks down into subgroups of income vectors $y^{(1)},\dots,y^{(m)}$ and $z^{(j)}$ is the poverty line of the corresponding subgroup[16]. m is 8 in our analysis (the number of types of household). The population share weights ($\frac{n_j}{n}$) are those presented in Table 2.2.

The decomposability property is important when the population is made up of heterogeneous agents. Several poverty studies have demonstrated the usefulness of breaking down populations into subgroups. Given that MIS is based on household types, decomposing these indexes by household types is useful, as it enables the relative incidence of each type of household in total poverty to be determined by measuring poverty in any of the ways defined above. Thus, it reveals how the contribution of each type of household to total poverty changes with the application of MIS.

The next subsection assesses the extent to which MIS affects poverty in the Basque Country for the poverty thresholds and indexes presented.

2.4.2 Empirical Results – Impact of MIS on poverty reduction

The relative poverty indicators for the Sen's three I's are shown in Table 2.3. To measure the impact of the application of MIS, the indicators are presented before and after the transfer, thus enabling the two scenarios to be compared. Furthermore, a third column is added that computes the percentage of variation of each index due to MIS. This enables me to compare the relative changes in all dimensions of poverty. The results are presented using the three different poverty lines defined above: 40% and 60% of the median income (€571 and €857, respectively) and the Basque Country line (BC). For this last case I compute the indexes by using both individual units and household units. Using individual units

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16 Note that $z^{(j)}$ changes for each type of household when the BC poverty line is used but remains constant with the standard poverty thresholds.

facilitates direct comparison with the standard poverty lines and household size is explicitly taken into account. But results are also displayed at household level as this is the unit specified in the legislation of the Basque Country and the approach of the policy aimed at eradicating poverty.

Table 2.3. Head-count ratio, Relative Average Distance, Poverty-Gap ratio and FGT_2 index, before and after the MIS transference and the relative fall in absolute value (%)[17].

Poverty line	Units	Before	After	% change
		Incidence (Head-count ratio)		
40% Me	Individuals	7.83	4.88	37.70
60% Me	Individuals	17.41	16.34	6.16
BC	Individuals	6.50	2.73	57.99
BC	Households	8.44	3.92	53.55
		Intensity (RAD)		
40% Me	Individuals	49.01	24.93	49.13
60% Me	Individuals	38.39	26.16	31.85
BC	Individuals	49.67	25.09	49.48
BC	Households	48.82	26.31	46.10
		Incidence and Intensity (PGR)		
40% Me	Individuals	3.84	1.22	68.33
60% Me	Individuals	6.68	4.27	36.01
BC	Individuals	3.08	0.65	78.89
BC	Households	3.85	0.97	74.81
		Inequality (FGT_2)		
40% Me	Individuals	2.73	0.58	78.65
60% Me	Individuals	4.13	1.75	57.53
BC	Individuals	2.39	0.41	82.91
BC	Households	3.16	0.69	78.12

Incidence: Lines 1 to 4 present the result of applying formula [2.4] before and after MIS. According to the Basque Country poverty threshold, the incidence of poverty is reduced to less than 3% of individuals (and 4% of households). Hence, the aid reduces poverty

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17 Note that the poverty threshold under the BC line differs for each type of household type. In consequence, the average distance is calculated for each poor individual/household to their corresponding poverty line. The RAD divides the previous amount by the weighted average poverty lines for those poor individuals/households. In the same way, the denominator of the PGR is a weighted sum of the minimum income required to avoid poverty for each type of family unit. PGR can be also calculated as the product of the head-count ratio and the RAD. For the BC poverty line the figures do not coincide, as there is not a unique threshold. Finally, the FGT index is also a weighted sum of each type of household.

substantially but does not fully eradicate it. This is partly because some poor households do not meet the requirements for receiving MIS and also because the amount received is not enough to take them out of poverty. In particular, it is observed that 18.5% of them are MIS recipients.

The next question is how far MIS reduces poverty if the 40% ME threshold is considered instead of instead of the BC threshold. The first line of Table 2.3 gives the answer: Using this threshold the percentage of pre–MIS poor individuals is 8% of the population, and MIS reduces it to 5%. 34.6% of them are MIS recipients[18].

An analysis of the impact of MIS on eradicating poverty using the 60%ME threshold reveals that it hardly reduces it at all, which is expected given the comparative analysis between lines discussed above.

Intensity: lines 5–8 in Table 2.3 seek to measure how poor the poor are by calculating the RAD. These figures represent how far the average poor individual is from his/her corresponding poverty line. It can be seen that MIS notably reduces the intensity of poverty for all three poverty definitions. The results for 40%Me and the BC are quite similar, while the result for the 60%Me differs. For the 40%Me and BC lines, before the application of MIS the average poor individual is approximately in the middle of the poverty limit. However, after MIS the average poor person is located one–fourth of the way to the line, which reflects a drop of 50% in the intensity of poverty after MIS[19].

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18 By comparing the percentage of poor individuals after MIS under the 40%Me and BC line, I find that more than 2% of the Basque population (46,000 individuals) is not considered as poor under the Basque criterion but is considered so under the extreme poverty line.

19 However, it must be taken into account that only poor people are included in this calculation so those who exit poverty as a result of the transfer are not counted in intensity calculations after MIS. For that reason, it is interesting to distinguish whether

Incidence and intensity: Lines 9–12 in Table 2.3 show the poverty gap ratio (PGR) before and after the transfer of MIS using formula [2.5], which is a combination of the two previous dimensions. As explained above, it represents the proportion of the total amount required to eradicate poverty that is still needed in terms of the minimum amount for eliminating poverty in the whole society.

It can be seen that MIS notably reduces the figure for all three lines. For the BC and 40%Me, the remaining amount required is around 1% of the minimum income for avoiding poverty. Before the transfer, the poverty gap ratio is 3%–4%. Therefore, MIS brings society closer to putting an end to poverty.

Focusing on the PGR as a combination of incidence and intensity, it can be seen that for the 40%Me line the fall in the PGR is predominantly driven by a fall in the intensity of poverty, whereas for the BC line the opposite is true.

Inequality: Finally, the last four lines in Table 2.3 show the FGT_2 index (formula [2.6]) as a poverty aversion indicator. This sensitive index shows that MIS is a very pro-poor policy because it results in substantial drops in all three thresholds. In other words, the poverty of the poorest is greatly reduced.

As a first conclusion, it is noteworthy that the greater the degree of poverty aversion (α) shown by the indicators is, the higher the percentage drop resulting from MIS. It can therefore be asserted that MIS works well in helping those who are far below the poverty line.

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the RAD drops because MIS reduces the intensity of poverty but still leaves them poor or because it raises people out of poverty and non-recipients are less severely poor. In particular, around 2/3 of the 18.5% who remain poor as MIS recipients are less than €50 from the poverty line.

In light of these results, and using the information presented in Figures 2.1 and 2.2, it can be concluded that the standard poverty line in the literature (60%ME) is very far from the BC line. Hence, from now on the paper focuses only on the BC and 40%ME poverty thresholds. Moreover, it seems reasonable for MIS to seek to reduce extreme poverty.

In order to facilitate a deeper understanding of the impact of MIS on poverty, I take advantage of the properties of the indexes presented to decompose them into subgroups, specifically by types of household. This reveals in which type of household poverty is most severe.

Decomposition of poverty indexes by types of household

This section presents the FGT_0 head-count ratio ($\alpha = 0$) and the FGT_1 poverty-gap ratio ($\alpha = 1$) for each type of household and their contribution (in %) to total poverty before and after MIS for each index. This reveals where most attention should be focused for a more successful eradication of poverty, It also reveals how the contribution of each type of household to the total poverty changes with the application of MIS.

All results corresponding to the head-count and poverty-gap ratios are presented before and after the transfer of MIS, applying formula [2.7] for the BC poverty line in Table 2.4, and for the 40%Me line in Table 2.5[20]. Calculations at household level for the BC line are not displayed because the information is deemed to be of little interest, given that it is especially important in them to include household size. Nor are they

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20 Relative Average Distance is not considered as it only includes poor people, mainly non-MIS recipients, in the calculation. Nor is the decomposition FGT2 index presented for sampling reasons. The results might be not robust because certain households, specifically single-parent households, have few observations in the sample and a high incidence among MIS beneficiaries. Therefore, any small variation could affect the results drastically, especially if the households in question are far away from the poverty line, as the index varies exponentially.

comparable with the standard poverty lines in the literature. The units are therefore individuals in both tables.

At first sight, the weighted sum of the head-count and poverty-gap ratios coincides with the figure shown in Table 2.3, so the additively decomposable condition is satisfied. Moreover, the MIS notably reduces all three indexes for all types of household and poverty lines but the results are heterogeneous.

Table 2.4. Decomposition of the Poverty Indices by type of household and its weight using the BC Poverty line, before and after the MIS.

	FGT_0				FGT_1			
	Headcount ratio (%)		Weight (%)		PGR (%)		Weight (%)	
	Before	After	Before	After	Before	After	Before	After
1 adult	20.96	8.59	22.0	21.6	12.67	3.57	26.3	33.8
2 adults	7.70	3.66	11.6	13.2	3.46	1.18	10.3	16.1
3 or more people, at least 2 adults	5.47	1.59	40.7	28.2	3.12	0.42	45.8	28.2
Single-parent (1 child)	45.02	17.67	5.8	5.4	25.21	3.67	6.4	4.2
Single-parent (2 or more children)	40.49	7.64	4.2	1.9	23.42	4.78	4.8	4.4
1 retired people	7.87	5.66	5.8	10.0	2.20	0.79	3.2	5.3
2 adults, at least 1 retired	4.40	3.88	8.5	17.9	0.79	0.44	3.0	7.7
3 or more people, at least 1 retired	0.55	0.32	1.3	1.9	0.06	0.01	0.3	0.2
Total	6.50	2.73	100.00	100.00	3.08	0.65	100.00	100.00

Table 2.4 shows the impact of MIS on poverty, focusing on the BC poverty line. Incidence (head-count ratio) and intensity (poverty-gap ratio) are reduced mainly for single-parent and one-adult households. However, 17.7% of households comprising single-parents with one child are still poor even after the transfer. As mentioned above, most of those who remain poor after the MIS transfer are likely to be people who do not meet the requirements.

Contributions to total poverty are distributed over many types of household. In terms of contribution to incidence, the households that stand out most are those of type 3, and to a slightly lesser extent types 1 and 7. With respect to intensity, the stand-out households are types 1, 3 and 2.

Focusing on the 40% median poverty line (Table 2.5), a big fall in the incidence (head-count ratio) and intensity (PGR) of poverty can be seen

for single-parent households and households with one adult. The impact is substantial because the transfer that they receive is around the 40% Me line, as shown in Figure 2.1. In spite of the substantial reduction, these three types of household are still the ones furthest away from putting and end to poverty.

Table 2.5. Decomposition of the Poverty Indices by type of household and its weight using the 40%Me Poverty line, before and after the MIS.

	FGT_0				FGT_1			
	Headcount ratio (%)		Weight (%)		PGR (%)		Weight (%)	
	Before	After	Before	After	Before	After	Before	After
1 adult	19.02	6.54	16.7	9.2	12.19	3.18	21.8	17.9
2 adults	8.38	4.37	10.5	8.8	3.73	1.35	9.6	10.9
3 or more people, at least 2 adults	8.48	6.52	52.5	64.8	4.21	1.41	53.3	56.1
Single-parent (1 child)	40.99	9.69	4.4	1.7	22.66	2.44	4.9	1.7
Single-parent (2 or more children)	44.67	9.37	3.8	1.3	23.40	4.86	4.1	2.7
1 retired people	3.88	1.02	2.4	1.0	1.57	0.52	2.0	2.1
2 adults, at least 1 retired	2.70	2.18	4.4	5.6	0.68	0.35	2.2	3.6
3 or more people, at least 1 retired	2.61	2.34	5.3	7.6	0.51	0.39	2.1	5.1
Total	7.83	4.88	100.00	100.00	3.84	1.22	100.00	100.00

If we now focus on contributions to total poverty under these two different definitions, there is one type of household that clearly contributes more both before and after MIS: that formed by three or more persons, with at least two adults (type 3). The table shows that if poverty among this group were eradicated, in head-count terms 2/3 of total poverty would be eliminated.

In summary, it can be concluded that in terms of **incidence** the Basque MIS notably reduces the number of poor individuals and households. It also reduces the **intensity** of the poverty substantially: after MIS Basque society is notably closer to eradicating poverty altogether; in other words, the extra amount in Euros required to put an end to poverty is much lower. Furthermore, in terms of **inequality** the MIS proves to be a very pro-poor policy, as it alleviates the situation of the poorest individuals. By type of household, single-parent family units are the poorest but their contribution to total poverty is low because they are few in number and the amount of money that they receive exceeds the 40% Me line in most cases. By contrast, households with three or more members and at least two adults are not so poor but they are much

more numerous and they do not receive enough MIS, so their contribution to total extreme poverty is the highest.

2.5. Effectiveness and Efficiency of the MIS

This section seeks to measure the effectiveness[21] and efficiency of MIS in eradicating poverty. The question I try to answer here is whether MIS is allocated properly (according to the legislation) or whether the same amount distributed in a different way would reduce poverty more. It is essential to address this question in order to make the best use of public funding.

First of all, it is important to define both concepts. Effectiveness is understood as the ability to achieve a desired effect – eradication of poverty in this case. Efficiency is the ability to achieve that effect with the minimum cost, i.e. efficiency takes into account the "excess of resources" devoted to transfers delivered to the non-poor population.

In general, social benefits reduce the poverty gap depending on the total amount spent and the efficiency of its use. Effectiveness depends on the objectives. For example, if the goal is to minimize extreme poverty then spending should be concentrated on the poorest, i.e. those who have the largest poverty gap. If the aim is to maximize the number of people raised above the poverty line then it should be concentrated on the least poor. Finally, if the objective is to maximize the number of target groups who receive the benefit then it should be spread over as large a proportion of the poor population as possible (Beckerman, 1979). Theoretically, the aim of the MIS in the Basque Country is to eradicate poverty for all those who meet the requirements, independently of how large their poverty gap is.

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21 Effectiveness could be understood as bringing to zero all the measures presented in Section 4. However, this section presents a new model that measures effectiveness as the proportion in Euros by which poverty has been reduced.

To measure the efficiency and effectiveness of MIS it is therefore necessary to focus on the criterion of poverty set out in the scheme itself, as that is the one that it seeks to eradicate. Therefore, unlike the previous section, the analysis here focuses only on the BC poverty line. Moreover, the unit of measurement used is households, which is the reference unit in the BC legislation. I also limit this analysis to MIS beneficiary households, disregarding the 47,708 poor individuals who are not MIS beneficiaries. I assume that they do not meet the requisites, and are therefore not a target group.

The tool known as Beckerman's Model is used to conduct the analysis of efficiency and effectiveness of MIS.

2.5.1. Beckerman's Model

The concept of poverty reduction efficiency was developed by Beckerman (1979). Efficiency is defined in a manner that takes into account total expenditures as well as their impact on poverty gaps.

Figure 2.3. Beckerman diagram
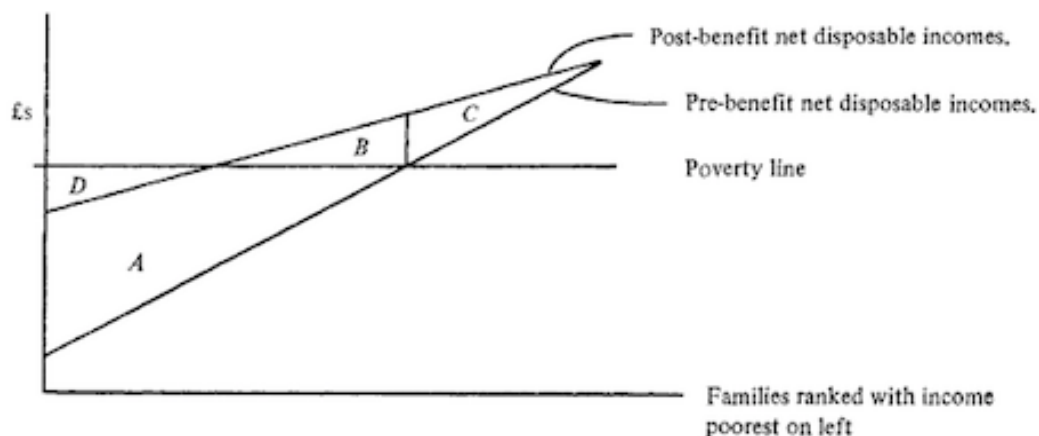
The horizontal axis represents individuals ranked in increasing order of disposable income (poorest on the left) and the vertical axis represents their income. The diagonal lines represent the pre–MIS income and the post–MIS income of the population. The horizontal line is the poverty threshold.

Area C can be interpreted as total amount of MIS received by pre–MIS non-poor considered as "badly distributed". This amount of money is transferred inefficiently because it neither takes people out of poverty nor reduces the poverty gap. Area B is the excess amount of benefits received by the pre-poor, i.e. the difference between the amount of benefits received by the poor and the amount by which their poverty gap is reduced. If the sole objective of the MIS is to reduce poverty (which is not, as it tries to incentivize exits into employment too) the spillover could be considered as "excess" payment. Area D represents the extra income that post-poor households need to get out of poverty. Area A can be interpreted as the total amount of MIS received by pre–MIS poor considered as "well distributed", i.e. that effectively reduces the poverty gap. Finally, the amount of benefits needed to eradicate poverty can be obtained from the areas D–B–C. Therefore, from an optimal point of view in terms of effectiveness and efficiency in eradicating poverty, areas D, B and C should be zero.

Summarizing, the areas correspond to the following figures:

> A+B+C = total expenditure on MIS.
> A + B = total amount of benefits received by pre–MIS poor.
> A + D = pre–MIS poverty gap
> D = post–MIS poverty gap.

Beckerman presents one effectiveness and two efficiency measurements:

Overall poverty reduction effectiveness (OPRE): The proportion of the pre-benefit poverty gap reduced by transfers.

$$OPRE = \frac{A}{A + D}$$

Therefore, OPRE is 100% when D = 0

Vertical expenditure efficiency (VEE): The proportion of benefits accruing to people who would have been poor in the absence of

benefits, i.e. proportion of total transfers received by those individuals that were poor before the program.

$$VEE = \frac{A + B}{A + B + C}$$

Poverty reduction efficiency (PRE)**:** The net extent to which benefits reduce poverty. That is to say, the proportion of transfers that effectively contributes to a reduction in poverty, expressed by the poverty gap. Note that only the A amount contributes to reducing the pre-transfer poverty gap.

$$PRE = \frac{A}{A + B + C}$$

Therefore, the PRE is 100% when B+C = 0.

These concepts of efficiency take into account the "waste of resources" associated with the transfers made to the non-pre-poor population and the excess payment to the non-post-poor population[22].

Stimulus to employment

One aspect of the legislation with regard to the amount of MIS which must be taken into account when assessing efficiency is the incentives for the beneficiaries to find a job, i.e. the so-called "stimulus to employment". These incentives are established in order not to discourage MIS recipients from looking for a job. If there are wage incomes in the household (and the total disposable income does not exceed the poverty line), a certain percentage is excluded when the

22 It should be noted that a high level of efficiency of the program does not imply that poverty is greatly reduced (for example, when the amount of money transferred is low); nor does a low level of efficiency imply that there has been an insignificant reduction in poverty (giving more than required to poor individuals). Efficiency explains why the program has had a certain impact given the amount of money spent (Rodriguez, 1997).

corresponding MIS transfer is calculated. The dataset does not include a variable that indicates which part of the MIS corresponds to the stimulus to employment. However, know whether there are wage incomes in each household and what their amount is. Therefore, following equation [2.1], it is possible to calculate the amount of the stimulus to employment that corresponds to each household.

In Beckerman's diagram the post-benefit line does not include the stimulus to employment calculated for households with wage incomes, for the sake of clarity of exposition. Thus, only the fraction of the MIS that is intended to eradicate poverty (and not that which is to accelerate job finding) is represented, in line with the purpose of the diagram.

When calculating efficiency measures, stimulus to employment must be also taken into account, as it cannot be interpreted as an overpayment. Given that it is not possible to distinguish which part of the MIS corresponds to such stimulus and which to the legal amount of MIS to be received by the household, I proceed as follows:

– Area C includes all MIS transfers received by non-pre-poor households, regardless of whether they correspond to the stimulus to employment or not, as such households should not receive any payment because they are not poor.

– Areas A and D reflect the poverty gaps. Stimuli to employment are not supposed to affect them since they should be interpreted as an extra payment beyond the poverty line. Area A might include some stimulus to employment but it is not possible to distinguish whether the lack of measurement comes from the incentives or from the legal amount of MIS that each household should obtain. Therefore, stimulus to employment does not affect the effectiveness of the policy.

– Area B (the excess amount of benefits received by the pre-poor) is the one affected by the stimulus to employment, as it cannot be interpreted

as an overpayment. In order to take the stimulus into account, area B is re-calculated as follows: for pre-poor households with wage incomes the poverty line is shifted upwards according to formula [2.2]. The new poverty line for these households is the previous one plus the stimulus to employment that theoretically corresponds to them given the wages earned. Therefore, only the MIS amount that exceeds this re-calculated poverty line is taken as an overpayment, which compounds Area B.

2.5.2. Empirical Results – Effectiveness and Efficiency of the MIS

This section shows the results obtained from Beckerman's model. First, some introductory figures are shown; then Beckerman's diagrams are given, and finally the measures of effectiveness and efficiency calculated are presented.

In total, we find 14,456 beneficiary households with 32,491 individuals who are not poor in the absence of MIS, which represents 26% of all MIS beneficiaries. The stimulus to employment calculated is €1,176,938, corresponding to 16,240 households with employed individuals (approximately 27%).

Beckerman's diagrams should be used with caution. The legislation presents eight different poverty lines, one for each type of household, so a different figure is required for each type. They are all presented in Figure 2.4. As explained, only households that receive MIS are shown. They are sorted from the poorest (left) to the richest (right). The green line represents pre-benefit disposable income and the orange line post-benefit disposable income. To make the diagrams clearer, stimuli to employment are deducted from the post-disposable income line for those households with wage incomes, as indicated. Notice that the ordering of the households can change from one line to another, i.e. the poorest households before the MIS transfer might be not the same ones which are the poorest afterwards.

At first sight, it can be seen that MIS almost eradicates poverty (under BC criteria and for MIS recipients) as the orange line is only below the poverty line in a very few cases. In other words, the post-poverty gap (Area D) is very small in most cases. Hence, most poor households that meet the requisites for MIS are lifted out of poverty. This is reflected in the effectiveness measure. Notice that the post-benefit poor households represented by the segment of the orange line below the poverty line are those described in the previous section. The second noteworthy fact shown by these figures is that the area between the poverty line and the orange lines (B and C) is often large, even after stimuli to employment are discounted. Specifically, all the households whose pre-MIS disposable income (green line) is above the poverty line are households which were not pre-poor. This brings to light the scale of the waste of resources, which must be reflected in the efficiency indexes.

The final step is to quantify the efficiency and effectiveness. Table 2.6 presents these measurements by type of household and Table 2.7 displays them for MIS beneficiaries all together.

Table 2.6 shows that effectiveness (OPRE) is high for all household types: the lowest is that of type 7 (2 adults, at least 1 retired) where 94% of poverty is eradicated among MIS recipients. However, efficiency is not so high, as already anticipated by the figures. Household 8 is the stand-out case: only 22% of the households that receive MIS were poor before the transfer and only 12% of the money invested in this type of household actually helps to reduce poverty. In terms of the number of each type of household, those which on which most resources are wasted are type 1 followed by type 3, as shown in the last column, mainly because only around 2/3 of the payments go directly to reducing poverty.

Figure 2.4. Beckerman's diagram by type of household.
Stimuli to employment are deducted in post-MIS line
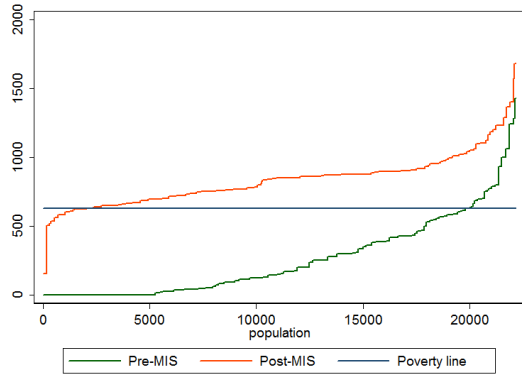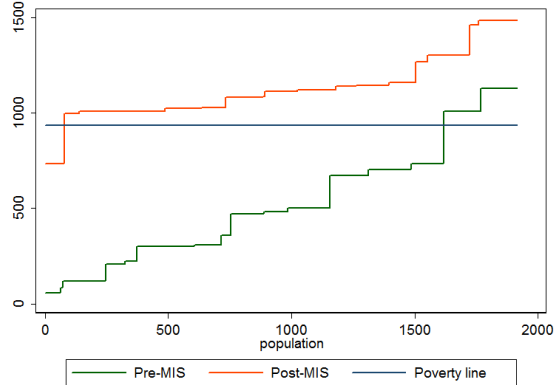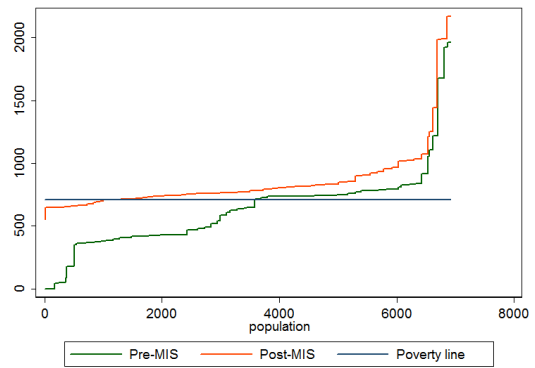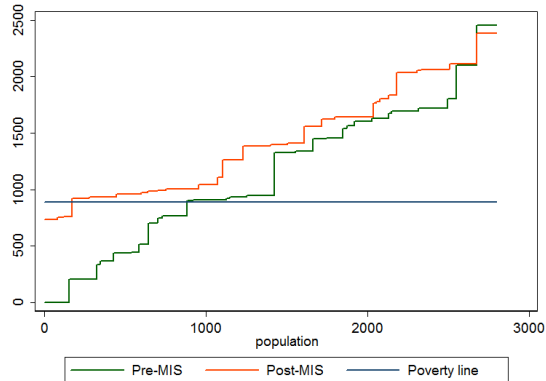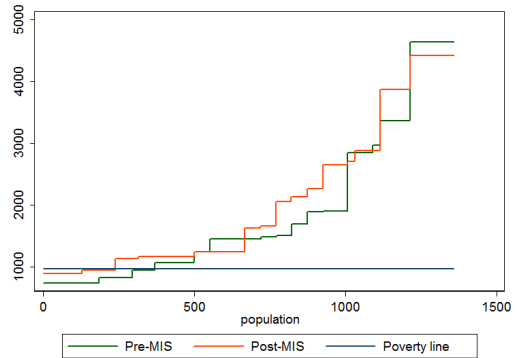
Table 2.6. Beckerman measures of effectiveness and efficiency by type of household.

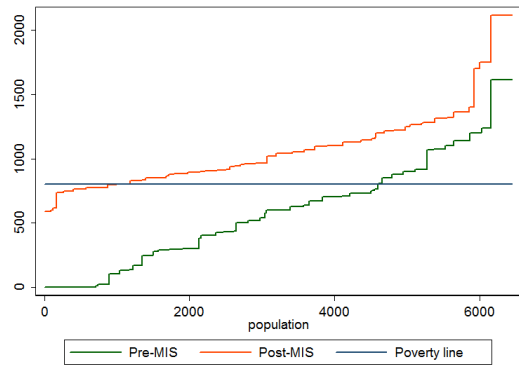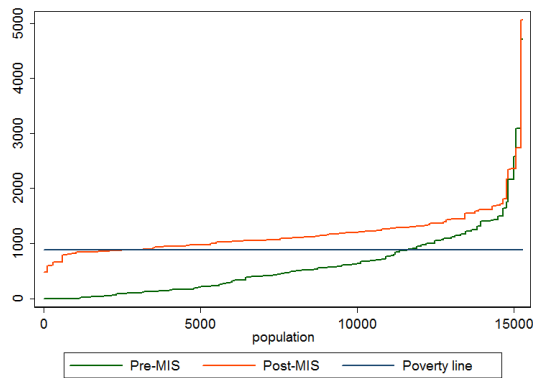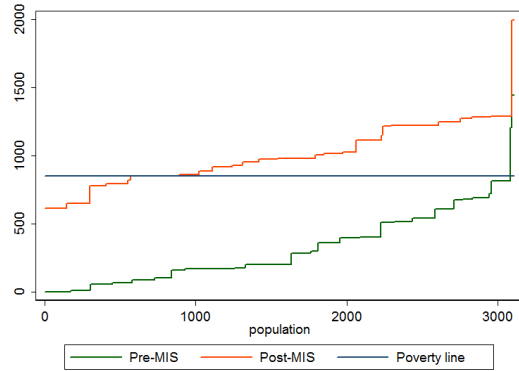|	Household type	OPRE	VEE	PRE	Eradicate poverty
1	1 adult	98.52%	94.79%	65.99%	-4302861 €
2	2 adults	99.35%	73.52%	53.25%	-1686180 €
3	3 or more people, at least 2 adults	98.63%	84.37%	63.55%	-3602027 €
4	Single-parent (1 child)	97.37%	99.54%	76.67%	-454740 €
5	Single-parent (2 or more children)	98.11%	93.99%	65.79%	-403338 €
6	1 retired people	95.41%	82.14%	67.63%	-449274 €
7	2 adult, at least 1 retired	94.33%	48.03%	41.52%	-552622 €
8	3 or more people, at least 1 retired	95.65%	22.37%	11.82%	-413384 €

To assess MIS as a whole, the table 2.7 shows efficiency and effectiveness for all MIS recipients together.

Table 2.7. Measures of efficiency of the Beckerman's diagram

Overall poverty reduction effectiveness	98.27%
Vertical expenditure efficiency	86.55%
Poverty reduction efficiency	63.11%
Euros to eradicate poverty	-11864426 €

Table 2.7 reveals that the Basque Country is very close to eradicating poverty for its definition of the term. The effectiveness in the eradication of poverty under the BC criteria for those households that meet the requisites for MIS is 98.3% (OPRE). The table also shows that 86.55% of total transfers were received by pre-poor people (VEE). Therefore, 13.45% of total transfers were given to non pre-poor people. Moreover, 37% (100−63) of the amount of MIS is not actually used to eliminate poverty and, in terms of efficiency, represents a "waste of resources". These figures are in part expected in view of the figures given above. Finally, the last column of Table 2.7 shows the amount of money necessary to eradicate poverty with 100% efficiency and effectiveness: the MIS budget used exceeds the amount required to put an ends to poverty by approximately €12 million each month.

This raises the question of the reasons for these ineffectiveness findings. The first obvious candidate is that our dataset comes from reported income figures by the individuals interviewed, whereas MIS is

assigned using official registered income. It may be that that these two sources of information on income do not coincide, as explained in the data section. There may also be some lack of supervision of MIS recipients. If information on MIS households is not updated very frequently, some households may continue to receive transfers even after changes in their labor market situation should exclude them from MIS transfers.

In conclusion, in terms of effectiveness, poverty as defined in the Basque Country is close to being eradicated for MIS recipients. However, there is room for improvement in terms of efficiency. In fact, more money is spent than should be needed to eradicate poverty under the BC definition. In other words, with the same cost the BC poverty line could be brought closer to the standard extreme poverty line used in the literature, especially for those that are furthest away from the line.

In light of the results of the analyses conducted here, the next section provides some policy recommendations on MIS provision.

2.6. Proposals to improve the Basque Minimum Income Scheme

Results so far have revealed certain strengths and weaknesses of the Minimum Income Scheme to eradicate poverty in the Basque Country. This section now seeks to propose changes in its design so as to enhance its fairness and efficiency.

The first design change proposed refers to the way that each household member is computed in defining poverty thresholds. Figure 2.2 shows that the as currently defined the BC poverty line means that 63% of MIS recipients are classed as being in extreme poverty (below 40% of the median income distribution), and that they are mostly persons who live in large households. These households are classed as being in extreme poverty because BC legislation does not compute each extra member

but instead the transfer remains constant from a particular number upwards. Hence, I propose that household members be counted following the OECD criterion, i.e using the *OECD equivalent-modified scale*. This assigns a value of 1 to the first household member, 0.5 to each additional adult and 0.3 to each child under 14. This is because the needs of a household grow with each additional member but economies of scale in consumption mean that the growth is not proportional[23]. In addition, this change is very likely to bring down the number of MIS-receiving households because as the legislation now stands individuals from large families have incentives to live in separate households in order to receive a different MIS. Larger total amounts of MIS for large households would be offset by savings due to economies of scale with people living in the same household. The incentive to move out is thus reduced and individuals would tend to stay in the same household and make use of economies of scale, which would help bring down spending on MIS[24]. Moreover, this proposal encourages an increase in the birth rate as it does not penalize having more children.

Secondly, there is a need to improve other inefficiencies detected in the current mechanism: it must be assured that MIS is not transferred to non-poor people, or in other words that ONLY poor people receive the transfer. In terms of the Beckerman model, this means eliminating area C. Moreover, the system should transfer to poor people only the payment required to raise them to the poverty line and no more. This means eliminating area B. Finally, effectiveness would improve if the new mechanism proposed enabled all MIS recipients to reach the poverty line, i.e. to exit poverty.

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23 Some steps in this direction are being taken. A new proposal that takes into account each extra member of the household has been presented at the Basque Parliament but has not yet been approved.
24 Unfortunately, the scope of this indirect effect cannot be estimated.

My proposed Minimum Income Scheme design enables all three of these improvements to be made together. Issues such as requirements for receiving MIS and the design of employment stimulus are taken as given.

Specifically, my proposal for a new design is the following:

$$\text{MIS} = (0.88) * \text{MW} * (1 + 0.5\,(A - 1) + 0.3\,C)$$

where A is the number of adults in the household and C the number of children under the age of 14[25, 26].

This MIS design not only uses an international poverty standard (the modified OECD scale) but also draws on the premise already set out in legislation of using a linkage with the minimum wage[27]. The legislation sets an amount of 88% of the minimum wage for a one– adult household. According to the EPDS, this is equivalent to 43.9% of the median, slightly above the figure for the extreme poverty line[28]. Furthermore, setting the threshold below the minimum wage does not discourage exit into employment.

This scheme would raise the poverty threshold for 75.38% of beneficiaries and lower it for 10.55%. For the remaining 15.07%, living in type 1 households, it would remain the same. Notice that when the

25 It should be noted that extra income received by retired people or single parent families under the BC legislation would be lost, since the modified OECD criterion does not consider that it entails any additional living cost.
26 This paper does not assess "Supplementary Housing Benefit" (the periodic benefit provided under current legislation to cover the cost of renting habitual accommodation for those households that are owner-occupied): the proposed MIS design takes it as given and maintains it.
27 Another possibility is to use the median individual disposable income of the population, but this number is not easy to learn. Furthermore, only past values of it could be known. However, the MW is not set by the Basque Government, so unexpected changes could affect the Basque budget. If this happens, some adjustment can be made using initial values of the MW and updating it depending on the funding available in the Basque Country.
28 The figure for 2014 is similar: 88% of the MW is equivalent to 44.25% of the median income at that time. Therefore, this mechanism seems to be consistent over time.

poverty line is moved up new individuals start being classed as poor under the new threshold. Unfortunately, it is not possible to determine how many of them meet the requirements for receiving MIS. To draw up a realistic simulation, new recipients of MIS arising from the raising of the poverty line should be estimated when the figures for the new scenario are calculated[29].

A comparison between my proposed MIS design and the current one offers the following figures[30]:

Table 2.8. Characteristics of the recommended and current MIS

	Current	Recommended
Individuals covered	124,493	129,369
Households covered	59,976	55,193
Poverty line (%Me)	[16.8 - 48.8]	43.9
Total expenditure (€M/month)	34.16	29.4

The scenario simulated covers 129,369 individuals (4,876 more than the current one) and 55,193 households (4,783 fewer than in the current scenario). This is explained because all households whose pre–MIS income is above the poverty line cease to be recipients. The average number of individuals in the receiving households increases significantly because large households now have a higher poverty line than previously, so households with large number of individuals fall within the definition of "poor". At the same time, 84,461 individuals (35,617 households) are estimated as being poor but not meeting the requirements and therefore do not receive MIS. That is to say, MIS will never eradicate poverty as long as there are households that do not meet the requirements. However, for the extreme poverty line in the literature the incidence of the poor population in the scenario simulated is estimated in 2.56%, whereas in the current situation it is 4.88%. The

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29 For an explanation of how new recipients are estimated, see the Annex.
30 All calculations are made assuming that only poor people receive transfers, in the amounts necessary to bring them up to the poverty line, i.e. 100% effectiveness and efficiency.

total estimated expenditure on MIS in the scenario simulated is €29.40 million per month[31]. This represents a monthly saving of €4.76 million compared to the current situation. The estimated expenditure for the MIS receiving households newly classed as poor in the simulation is €4 million.

2.7. Summary and Conclusions

In the Basque Country (a region in northern Spain) a Minimum Income Scheme has been in place since 1989. It is a last resort scheme whose main objective is to guarantee individuals the basic right to a guaranteed decent minimum standard of living. According to the Basque Survey of Poverty and Social Inequalities in 2016 there were 124,493 beneficiaries of this aid (5.8% of the population) in 59,976 households.

The first aim of this paper is to measure the impact of MIS on poverty reduction. Three different poverty thresholds are used: two commonly found in the literature, known as the "poverty line" (60% of the median income) and the "extreme poverty line" (40% of the median income) and the one used in Basque legislation. The threshold set in the legislation is lower than the extreme poverty line for 63% of MIS recipients and is lower than the poverty line in all cases. Poverty is quantified using the FGT family of indexes, constructed as a function of the degree of poverty aversion. Specifically, they cover three dimensions of poverty: incidence, intensity, and inequality. Comparing the situation before and after the MIS transfer, it can be concluded that in terms of **incidence** MIS notably reduces the number of poor individuals and households. It also reduces the **intensity** of poverty substantially: after MIS Basque society is notably closer to eradicating poverty, i.e. the extra amount in euros required to put an end to poverty is much lower. In terms of **inequality**, the MIS is shown to be a very pro-poor policy, as it alleviates the

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31 The theoretical figure of €1.18 million corresponding to the stimulus to employment is not included in these calculations.

situation of the poorest individuals. Single-parent households are the poorest type, but their contribution to total poverty is low because their number is low and the amount of money that they receive exceeds the 40% Me line in most cases. By contrast, households with three or more members and at least two adults are not so poor but they are much more numerous and they do not receive enough MIS, so their contribution to total extreme poverty is the highest.

The second aim of the paper is to assess the effectiveness and efficiency of MIS. To that end, Beckerman's Model is used. The question posed is whether MIS is properly assigned (according to the legislation) or whether same amount distributed in a different way would reduce poverty more. The findings reveal that in terms of effectiveness poverty under the Basque definition is close to being eradicated for MIS recipients. However, there is room for improvement in terms of efficiency. In fact, the amount of money spent is more than actually needed to eradicate poverty under the BC definition. In other words, with the same expenditure the BC poverty line could be brought closer to the standard extreme poverty line used in the literature.

Finally, in light of the results, this paper presents an alternative design for MIS in the Basque Country. Firstly, I propose counting household members in line with an international standard of poverty. The MIS design proposed uses the OECD modified scale starting from 88% of the minimum wage (the current amount for a one-adult household). This threshold is more egalitarian as it is the same for all MIS recipients. Furthermore, it is equivalent to 44% of the median income, slightly above the extreme poverty line. The second improvement suggested is that MIS should not be paid to non-poor people, and that precisely the amount required to bring people up to the poverty line should be paid. These changes would enable the policy to reach full effectiveness and efficiency. The recommended MIS design covers 129,369 individuals (4,876 more than the current system) and 55,193 households (4,783

fewer). Furthermore, the amount of MIS paid would be higher for 75% of beneficiaries. It would not only provide wider coverage but also estimated monthly savings of €4.76 million.

3. Assessing the Impact of a Minimum Income Scheme in the Basque Country

3.1. Introduction

Most European Union Member States currently provide some form of Minimum Income Scheme so as to ensure a minimum standard of living for households when they lack other sources of financial support. The emergence of these schemes dates back to 1992, when a European Council recommendation assessed the need to develop last resort schemes which recognized the basic right of every individual to ensure a decent minimum standard of living. These programs were part of comprehensive, consistent plans to combat social exclusion.

Since then, implementation of Minimum Income Schemes (MIS) across European Countries has varied in coverage and effectiveness. The most widely used are the so-called "simple and comprehensive schemes", which basically cover every person/household in need of support, without confining their effects to particular categories of people. Since 2008, The European Council has endorsed the objective of combining adequate income support with labor market activation measures so as to facilitate re-entry of recipients into employment.

Although the implementation of these schemes is progressing in most European countries, albeit heterogeneously, there is no sufficient assessment of their impact on aspects such as poverty reduction, labor market participation of recipients and/or the impact of activation measures on their recipients in terms of re-entry. Examples of such studies include Gouveia and Rodrigues (1999) and Brunori, Chiuri and Peragine (2009), who assess the impact of particular MISs on poverty reduction in Portugal and in a southern Italian region, respectively. Additionally, Clavet, Duclos and Lacroix (2013) and Chemin and Wasmer (2012) assess the impact of two MISs – one potentially implemented in Quebec and the other in Alsace-Moselle, in France, on the labor market participation of their recipients. Surprisingly, we are not aware of any study that assesses the impact of labor market activation measures for MIS recipients on their re-entry into work.

Our paper seeks to fill this gap. Specifically, our study assesses the impact of a Minimum Income Scheme that operates in a northern Region of Spain – The Basque Country, called Renta de Garantía de Ingresos. This region pioneered the introduction of MIS in Spain in 1989. The Basque Country is currently the only Spanish region with a Simple and Comprehensive MIS Scheme. We assess first whether the Basque MIS delays entry into labor market for its recipients. Then we test the efficacy of policies aimed at enabling its recipients to re-enter employment. We do this by using the Inverse Probability Weighting methodology, which enables MIS recipients to be compared with a similar, fictitious group created by weighting non-recipients. By doing so, the treatment is dissociated from individual characteristics and hence pseudo-randomized. Our results indicate that, on average, the Basque MIS does not, per se, delay entry into work for its recipients. Interestingly, however, the impact differs from one demographic group to another. Furthermore, Active Labor Market Policies designed for MIS recipients, in particular training, have a strong positive impact on re-entry into employment.

The rest of the paper is organized as follows: Section 2 reviews institutional aspects of the MIS implemented in the Basque Country. Section 3 briefly describes related literature. Section 4 gives a description of the data and the main descriptives of MIS recipients. Section 5 presents the methodological and analytical assessment methods and the empirical findings. Finally, Section 6 summarizes and concludes.

3.2. The Minimum Income Scheme in the Basque Country

The Basque MIS was introduced in 1989, with the so-called Integrated Plan to Combat Poverty. In the last few decades it has undergone several modifications. In 1998 it was given the rank of law, the concepts of "poverty" and "exclusion" were defined and employment incentives,

penalties and infringements were established. The amounts provided and the requisites for recipients have also been modified several times. The latest modification was implemented in 2011 (Act 4/2011). We base the details of our description on that version.

Eligibility Requisites: The first important point to note is that the Basque MIS is household-based. To apply for the aid, applicants must comply with the following eligibility requisites: first, they must show that their household income is insufficient to meet basic needs, which means inability to access the goods and services classed as necessary for minimum welfare in society according to the Basque Government criterion of poverty (which is outlined below). The second eligibility condition concerns residency in the Basque Country: in principle, the recipient of MIS in the household must be registered on the census and actually have resided in the Basque Country without interruption for the last three years. If applicants can prove five years of paid work in the Basque Country the residence requisite can be relaxed to one year instead of three. If none of the above requirements is met, applicants must have been registered for a continuous period of five years in the immediately preceding ten years.

Furthermore, the MIS is considered as a last resort scheme, so applicants must already have applied for all other income aids to which they are entitled. In principle, the scheme is compatible with other income aids or wages of family members, so long as they do not exceed the defined poverty line. In addition, applicants must own no property other than their habitual residence.

Coverage: MIS benefits are transferred to family units on a monthly basis. The amount set by the Basque Government to meet basic necessities varies depending on the minimum wage (MW), the number of people in the household, the number of retired persons and whether it is a single-parent household or not. Specifically, it is 88% of the MW for

single-member households and can reach 125% of the MW for households with three or more members. In the case of households with at least one pensioner those figures rise to 100% and 135% respectively. Single-parent households receive a supplementary subsidy. If there are other incomes in the household, the MIS covers the difference in that amount.

Household Labor Market Availability: Both holders and other members cohabiting in the same household who are able to work must commit to being available to do so. In addition, they must participate in activities that increase their employability. In particular, the holder must sign an inclusion-oriented employment improvement agreement. However, although the spirit of the law is that every recipient should search actively for a job only around 40% are observed to receive any interventions from the public employment service or activating interventions. We do not know what criteria the Public Employment Service uses to follow MIS recipients to monitor their activation, i.e. whether individuals are self-selected into different activities or there is some kind of compulsory participation.

3.3. Related Literature

Very similar policies have been implemented in other countries, though few have been assessed. Furthermore, some pilot projects and ex-ante or ex-post assessments of similar measures to reduce poverty around the world can also be found.

The Portuguese Guaranteed Minimum Income scheme (Rendimento Minimo Garantido), set up in 1996, follows a very similar structure to the Basque Renta de Garantía de Ingresos. However, the benchmark income for the benefit is very low, at approximately 50% of the absolute poverty line figure. Gouveia and Rodrigues (1999) provide a simulation of its effect on poverty using the Household Budget Survey for 1994-95. They find that 5% of households and 5.7% of individuals take part in the

program. The cost to the public purse is about 0.18% of Portugal's GDP and 0.39% of total public expenditure, but the impact on recipients' income is an average increase of 18.5% in the annual income of the participating households. According to this study, this policy measure has a modest effect on the reduction of the number of poor households, but a substantial effect on alleviating the intensity and severity of poverty. Following Beckerman's model, which analyses the efficiency of income transfers, Rodrigues (2001) estimates the vertical efficiency of the program (as the proportion of total transfers received by households that were poor before the transfers) and its poverty reduction efficiency (as the proportion of total transfers that contributed to a reduction in poverty). The study concludes that the vertical efficiency of the program is 85% and the poverty reduction efficiency is 82%. This means that households that were initially above the poverty line receive 15% of the total MIS transfers, and 18% of total transfers did not contribute to reducing the poverty gap. A similar analysis has not yet been completed for the Basque Country, but it is currently in progress.

A Reddite Minimo d'Insermento pilot scheme was implemented in the small town of Mola di Bari in the south of Italy. Brunori, Chiuri and Peragine (2009) analyze such issues as (i) eligibility criteria; (ii) targeting choices and results; (iii) distribution and welfare effect on recipients and on the overall population in the town; and (iv) the incentive effects on labor market participation. Their most significant finding is that the mere use of a national measure of poverty tends to obscure individual situations, making it impossible to distinguish poor people in need of public support. By contrast, the second significant issue is that local administrations seem unable to correctly verify the income level of households. Their study also shows which categories of individuals are most likely to be activated. The analysis of the MIS shows that a substantial number of households improve their economic conditions thanks to the provision of public funds, even though the coverage rate is insufficient. Finally, they find no evidence to suggest that individuals

involved in the program tend also to become recipients in the following months.

An ex-ante assessment of a Proposal in Québec is provided by Clavet, Duclos and Lacroix (2013). Every individual would be guaranteed an income equivalent to 80% of the Market Basket Measure. The study first estimates a structural labor supply model and then simulates the impact of the poverty reduction recommendation by the Quebec Committee. By predicting labour supply the result shows that the proposed scheme would have strong negative impacts on labor market participation rates, mostly among low-income workers. The so-called Revenue Minimum d'Insertion is assessed by Chemin and Wasmer (2012) in Alsace-Moselle in eastern France. Their estimates, based on double and triple differences, show that the RMI policy is associated with a 3% fall in employment (among unskilled workers aged 25–55), leading to an estimated loss of 328,000 jobs; with a decline in the job-access rate; and with a five-month increase in the average duration of unemployment. They also find considerably larger disincentive effects for single parents.

3.4. The Dataset and Some Descriptive Statistics

3.4.1. The Dataset

Our dataset consists of monthly longitudinal information on all individuals who were registered with the Basque Public Employment Service from February 2015 to January 2016. Data are collected on the last day of each month. Most of those registered are unemployed, but some may be employed and searching for another job. Their employment status is clearly stated. All MIS recipients and their cohabitants must register with the Basque Public Employment Service as a requisite for receiving income aid, independently of their employment status.

The database includes all the information provided by each individual when registering at the Employment Office, including standard demographic characteristics (gender, age, education level, nationality, postcode and residence, knowledge of other languages), as well as labor market information (previous employment experience, occupational and geographical searches, unemployment duration, etc.). The Basque Public Employment Service also provides exact information on whether individuals receive or have received unemployment benefits (entitled benefits, assistance benefits and/or MIS) and on the duration of entitlement. Finally, the database also records information on the assistance measures from the public employment services that unemployed workers have received in the last 12 years to enhance job access. Information such as the type of measure, number of hours and start and end dates are provided.

Basque Public Employment Service in Spain divides the pool of unemployed workers on their files into "Registered Unemployed" and "Other Unemployed Workers". The latter category, which accounts for around 22% of all unemployed workers, includes retirees and pensioners, those not immediately available for work, those registered in the current month, those who just seek particular kinds of work such as outwork and teleworking and those who seek work for under 20 hours a week. Students are also included in this category. We restrict our analysis to the "Registered Unemployed", i.e. those without a job who are seeking work and immediately available for any "regular" job.

The Basque Country has records of around 60.000 MIS recipients each month in the period under analysis, equivalent to 25% of those registered as unemployed in the Basque Country.

In spite of the richness of information of the dataset, an important drawback is that there is no household identifier for MIS recipients. Hence, all we can assess is whether an individual is a MIS holder or not.

Hence, although the MIS is provided at the household level, the whole analysis is conducted at individual level for data restriction reasons. An additional caveat of the data is the lack of information related to household income, and in particular, to the specific amount of any type of benefits received by the unemployed.

3.4.2. Statistical Distribution of MIS Recipients vs non-MIS Recipients

To give a precise idea of the differences between MIS recipients and other workers registered as unemployed, we present the distribution of each of the two groups under a total of four characteristics: gender, age (<30, 30-44 and >44), education level (primary at most, secondary and higher education) and duration of unemployment (<3 months, 3-6 months, 6-12 months, 12-24 and >24 months). Figures 3.1 and 3.2 show the distribution of MIS and non-MIS recipients, respectively, across the four characteristics. We do this for a particular month – October 2015 – to get a better idea in not only relative but also absolute terms. Any other month from the sample would give almost identical patterns.

Figure 3.1. Unemployed MIS recipients in the Basque Country

Source: Own elaboration. Lanbide microdata

105
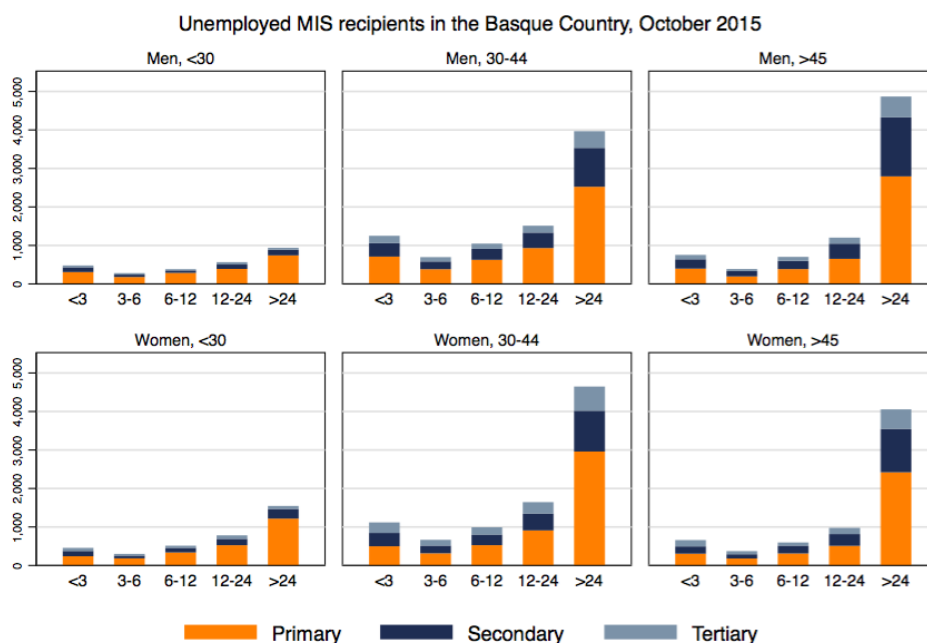
Figure 3.2. Unemployed Non–MIS recipients in the Basque Country

Source: Own elaboration. Lanbide microdata
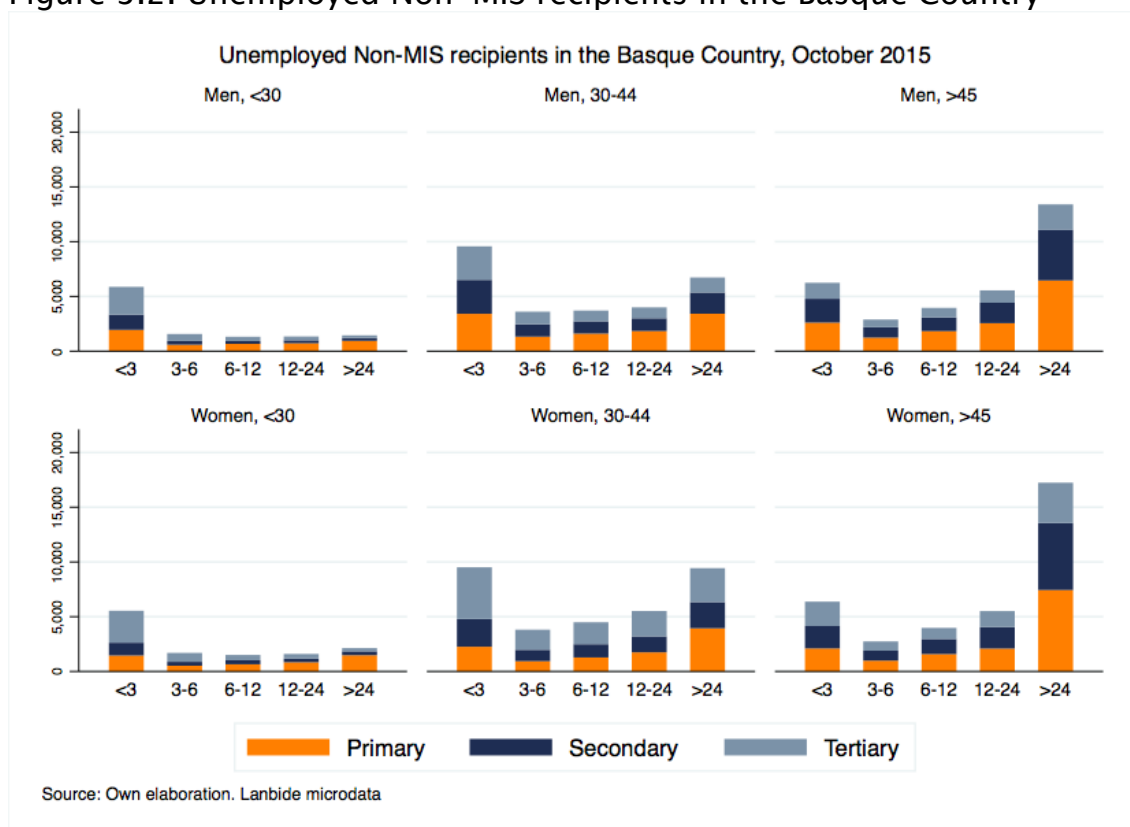
At first sight, the profile for education level and unemployment duration of MIS recipients is quite different from that of the rest of the unemployed. This is not surprising given that MIS is seen as a last resort scheme. In particular, 60% of MIS recipients have no secondary education qualifications and more than half have spent more than two years unemployed. The equivalent figures are barely one third and one fourth, respectively, for non–MIS recipients. More precisely, the biggest group among recipients is that of the very long–term unemployed aged over 30 with only primary education. This group accounts for a third of all MIS recipients. Among non–MIS recipients the equivalent group accounts for barely 10%. Furthermore, regardless of education level, MIS recipients over 30 who have spent more than two years looking for a job account for 50%. Focusing on the youngest group, it can be seen that more than half have spent more than two years seeking employment and 70% have only primary education. However, the pattern is very different among those who do not receive MIS: those who have been

unemployed for a very short time are generally young people with secondary or higher education. It is important to note that many young people with higher education continue studying if they do not find a job and are not therefore considered as unemployed. This behavior is not found among unemployed people with lower education levels, who are precisely the most common group among MIS recipients.

3.4.3. Monthly Exit Rates from Unemployment to Employment (Job Finding Rates)

We now describe the patterns of monthly job-finding rates for recipients and non-recipients of MIS, making use of the longitudinal nature of our dataset. We define "exit into employment" as a transition from "registered unemployed" in the current month to a labor status of "employed" in the next month. Therefore, the characteristics of the unemployed people are fixed in the current month. Following the same structure as above, we characterize job-finding rates by comparing recipients with non-recipients of MIS using the same four characteristics, i.e. gender, age, education level and unemployment duration. Given that we observe unemployed people from February 2015 to December 2015 we compute job-finding rates from March 2015 to January 2016.

On average, the monthly job-finding rate for MIS recipients is 3%. This is significantly lower than the rate for non-MIS recipients, which is 9%. Figures 3.3 and 3.4 show job-finding rates for MIS and non-MIS recipients, respectively, for different profiles. It is immediately apparent that job-finding rates increase with education level and strongly decrease with unemployment duration for both groups. To give some numbers on the strong negative association between unemployment duration and job-finding rates, Figures 3.3 and 3.4 show that individuals unemployed for less than three months have an average exit rate of 11%, while the very long-term unemployed (over two years) have a rate of only 1%. Interestingly, 60% of MIS recipients belong to the

group of very long-term unemployed. Another point to note is that although education level is relevant to understanding differences in access to jobs, it is far less significant than unemployment duration: the exit rate of MIS recipients with higher education averages 5%, compared to 2% among those with primary education only.

Figure 3.3. Exit rates into the labor market of MIS recipients
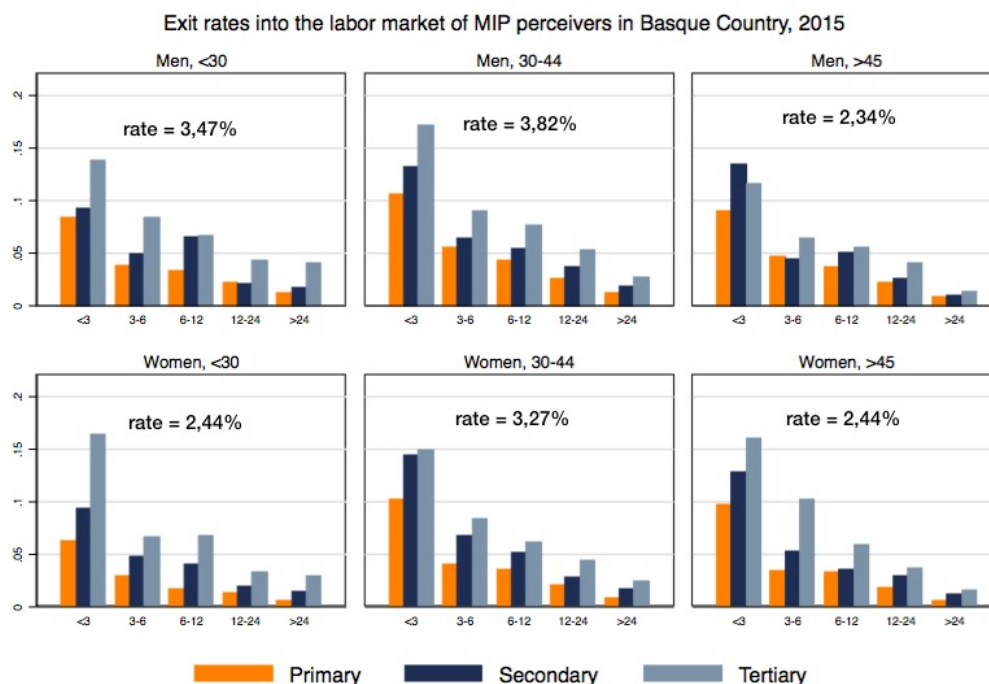
Source: Own elaboration. Lanbide data.

Figure 3.4 focuses on the comparison between MIS recipients and non-MIS recipients on job-finding rates. As mentioned above, there is a difference of 6 percentage points on average between the job-finding rates of the two groups. However, that difference varies markedly depending on individual profiles. For example, among the very short term unemployed there is a difference of 7.5 points, while among the very long term unemployed the difference is barely one percentage point.

Figure 3.4. Exit rates into the labor market of Non-MIS recipients

Exit rates into the labor market of Non-MIP perceivers in the Basque Country, 2015
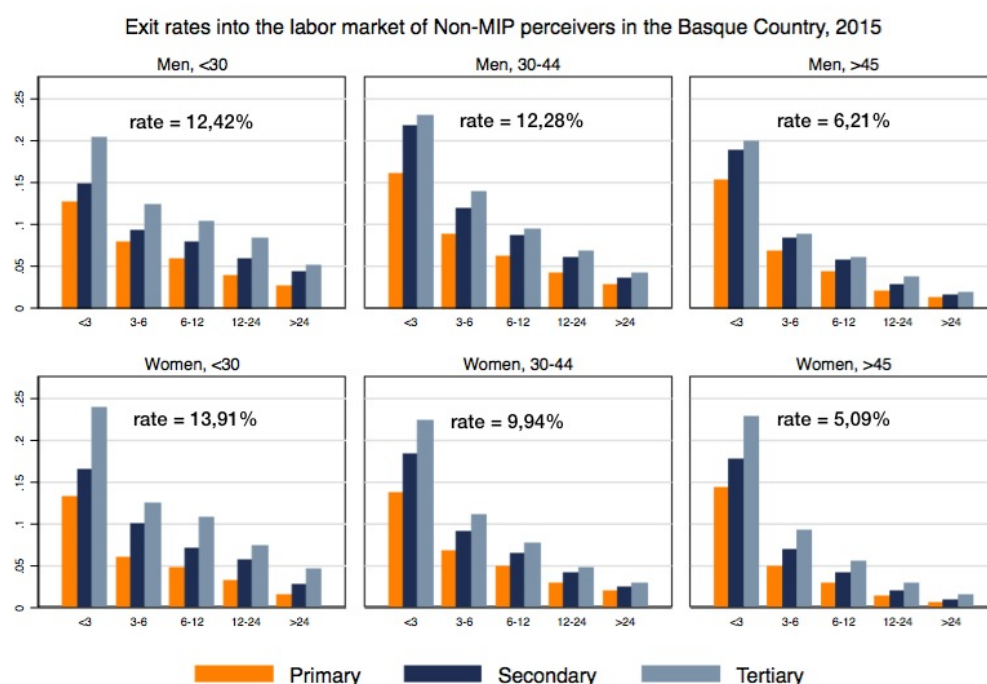
Source: Own elaboration. Lanbide data

3.4.4. Determinants of the probability of finding a job: MIS recipients vs non-recipients

Finally, we estimate the probability of finding a job by the last day of each month for all those registered unemployed on the last day of the previous month. As above, we calculate the probability of finding a job from March 2015 to January 2016. The dependent variable, therefore, takes a value of 1 if the unemployed person gets a job in the next month, and 0 otherwise.

To perform this exercise, we take into account all observable variables that may affect the employability of people registered with the Public Employment Service. In particular, we include demographic characteristics such as sex, age, nationality, disability, education and language skills; job characteristics such as requested occupations, experience, activity in the previous field of work, unemployment duration, geographical scope of the new job search, month(s) in which

the individual is observed as unemployed, whether individuals are MIS holders or not and province of registration.

We add a dummy indicating whether individuals have ever been referred to social services. The receipt of benefits in the current or in previous months is also included. We include in our estimation an indicator for whether individuals have received activation services at least once in the last six months. 40.7% of MIS recipients have received some kind of measure in the last six months, as compared to 13.75% of non-recipients. We divide activation service into the following categories: guidance, monitoring, information on self-employment and training.

Table 3.1 presents the results of the estimation (marginal effects are shown) using a pooled probit model with month and province fixed effects. The first column estimates the probability of finding a job for MIS recipients and the second does likewise for non-recipients. Note that this estimation does not account for unobserved heterogeneity. It should be taken as a preliminary view of the importance of the characteristics of unemployed people in the job search process.

The most noteworthy result has been already anticipated: unemployment duration is the variable that most affects the probability of exiting unemployment. The chances of entering employment decrease dramatically as the time for which a person remains unemployed increases. The largest decrease in the probability of getting a job occurs after the barrier of 3 months (reference group) with a reduction of 5 percentage points when individuals are unemployed for between 3 and 6 months. Being unemployed for between 6 months and 1 year reduces the likelihood by one point (6.5 points less likely than for those unemployed for less than 3 months) and for those unemployed for between 1 and 2 years the probability falls by 1.6 points (8 points less likely). The negative impact increases to 9 points if the duration of unemployment goes beyond 4 years. A comparison of these results with

the impact of the same variable on the total number of unemployed people who do not receive MIS (column 2) shows that the duration of unemployment also has the greatest negative impact in this group. In particular, being unemployed for more than 3 months reduces the exit probability by almost 8 percentage points. As occurs with the MIS group, the likelihood of exit continues to decrease as the duration of unemployment increases, with exit being 15.7 points less likely among those unemployed for more than 4 years. As can be seen, no other variable has a similar impact.

Considering levels of studies, in general the likelihood of finding a job can be seen to be correlated with the education level of each unemployed individual: having secondary education qualifications (compared with primary or no education) increases the probability midpoint; completing high school increases it by 0.8 points; medium level vocational training increases it by 1.2 points and higher level vocational training and higher university degrees raise it by 1.9. Notice that the impact of being unemployed for more than 3 months is double that of having university studies (as compared to primary or no education) for MIS recipients.

A separate section below is dedicated exclusively to a counterfactual assessment of the impact of Activation Services on the probability of finding a job, so here we present only a preliminary assessment of activation interventions. It is important to note that information on self-employment has a clearly differentiated nature, since people who use it are practically on their way towards self-employment. Thus, measuring its effectiveness via its impact on the probability of leaving for a job does not make much sense. From now on, we assess the effectiveness of only the other three interventions in exits into employment.

Table 3.1. Probability of finding a job.

		Dependent variable: exit probability	
		Unemployed MIS recipients	Unemployed Non–MIS recipients
	Women	–0.0008	–0.0014**
		(0.00067)	(.0006315)
	Foreign nationals	0.0002	–0.0106**
		(0.00076)	(0.00107)
	Disabled persons	–0.0074***	–0.0173***
		(0.00197)	(0.00243)
	MIS recipients	0.0013*	–
		(0.0007)	–
	Social services derivation	–0.0227***	–0.0554***
		(0.00505)	(0.01238)
Benefits	contributory	0.0104***	.0292***
		(0.00151)	(0.00089)
	attendance	0.0091***	0.0245**
		(0.00080)	(0.00112)
	ex–contributory	–	0.0406***
		–	(0.00090)
	ex–attendance	–	0.0207***
		–	(0.00105)
Activation services	guidance	0.0056***	0.0054***
		(0.00056)	(0.00082)
	monitoring	0.0068***	0.0048
		(0.00176)	(0.00504)
	self–employment info	0.0164***	0.0237***
		(0.00358)	(0.00426)
	training	0.0195***	0.0403***
		(0.00126)	(0.000148)
Age	25–30	0.0018	0.0001
		(0.00151)	(0.00152)
	30–35	0.0022	–0.0144***
		(0.0015)	(0.00154)
	35–40	0.0012	–0.0206***
		(0.00144)	(0.00153)
	40–45	0.0015	–0.0200***
		(0.00146)	(0.00154)
	45–50	–0.0006	–0.0208***
		(0.00148)	(0.00156)
	50–55	–0.0028*	0.0265*
		(0.00153)	(0.00158)
	55–60	–0.0083***	–0.0473***

		(0.00159)	(0.00159)
	60–65	−0.0178***	−0.0785***
		(0.00166)	(0.00159)
Education	primary	0.0026***	0.0025*
		(0.00098)	(0.00144)
	uncompleted secondary	0.0001	0.0041***
		(0.00095)	(0.00141)
	secondary	0.0053***	0.0151
		(0.00102)	(0.00140)
	high school	0.0080***	0.0157***
		(0.00135)	(0.00155)
	Medium-level vocational training	0.0111***	0.0289***
		(0.00148)	(0.00158)
	High-level vocational training	0.0175***	0.0284***
		(0.00177)	(0.00158)
	Undergraduate	0.0253***	0.0301***
		(0.00317)	(0.00187)
	Bachelor's degree or higher	0.0176***	0.0300***
		(0.00230)	(0.00170)
Unemployment duration	3–6 months	−0.0524***	−0.0796***
		(0.00189)	(0.00091)
	6–12 months	−0.0662***	−0.1045***
		(0.00172)	(0.00087)
	1–2 years	−0.0819***	−0.1297***
		(0.00163)	(0.00084)
	2–3 years	−0.0857***	−0.1392***
		(0.00164)	(0.00091)
	3–4 years	−0.0891***	−0.1480***
		(0.00164)	(0.00092)
	4 years or more	−0.0943***	−0.1566***
		(0.00160)	(0.00081)
	baseline prob.	0.0291	0.0617
	average pred. prob.	0.0304	0.0750
	Observations	431,773	1,297,683

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Additional variables are included in the estimation: experience in requested occupations, activity in previous field of work, language skills, geographical scope of job search, province of registration and months in which the individual is observed as unemployed.

Baseline profile: men, native, no disabilities, not referred to social services, under 25, illiterate, unemployed for less than 3 months.

3.5. Assessing the Impact of the Basque Minimum Income Scheme on the Labor Market: A Counterfactual Assessment

Any Minimum Income Scheme is by nature a passive policy, as its main aim is to guarantee all individuals the resources required to meet their minimum needs. However, as mentioned above, the Basque MIS, following the dictates of the European Council since 2008, requires recipients to participate (in principle) in active policies to make their re-entry into employment as fast and successful as possible. In view of this two-fold scope of the MIS, with both passive and active aspects, our assessment of the policy is also two-fold.

Firstly, although the goal of any passive policy is not to accelerate the employability of the unemployed but to supplement their income so as to alleviate poverty, empirical evidence generally finds that most income transfers to the unemployed result in a delay in job-finding. Reservation wages increase for anyone who receives additional income, and this typically delays job entry, hence lowering job-finding rates. However, there are two aspects of the MIS which might accelerate rather than delay job access: one is that the MIS can also be received by employed workers with insufficient income to meet minimum needs, so MIS recipients might be willing to accept jobs with "low" wages compatible with retaining the transfer. The other is that recipients can lose their MIS if it is proved that they have rejected job offers. For these reasons, the typical "delay" effect of a passive transfer such as the MIS may be partially offset by some kind of "acceleration effect" for reasons other than the activation measures implemented.

Our first assessment with respect to the impact of the MIS in the Basque Country looks at whether the MIS causes a delay or an acceleration effect, and if so on what scale. This is the first objective addressed in this section.

Secondly, and perhaps more interestingly, we seek to assess whether active policies offered to MIS recipients make for better transitions towards employment. This is the second objective of the section.

3.5.1. Empirical Assessment Strategy

In both analyses the aim is to assess the impact either of the MIS itself or of the activation measures aimed at MIS recipients on the probability of exiting unemployment. As in previous estimations, the dependent variable (Y) takes a value of 1 if the unemployed individual gets a job in the next month and 0 otherwise. The treatment (D), which is a dummy variable, takes a value of 1 firstly when the individual is an MIS recipient and secondly if the individual receives activation measures. The covariates included in our analyses are the same as in previous estimations (X).

The main problem that we face in both the analyses carried out in this paper is sample selection. In the first one unemployed people need to comply with strict requirements to receive MIS. In the second analysis, the profile of the unemployed people who receive activation measures differs broadly from that of non-activation measures recipients (as shown below). Consequently, given that individuals are not randomly chosen, a mean difference between the outcomes of treated and control group cannot be used to learn the causality in the corresponding treatment. Only when participation in the treatment depends on observable characteristics (X) can the Average Treatment Effect on the Treated (ATT) be estimated by conditioning on these variables, rendering the counterfactual outcome independent of the treatment (conditional independence assumption, CIA). However, the probability of finding a job for recipients and non-recipients of MIS might be affected by confounding factors. Therefore, it is hard to justify the validity of CIA in this analysis. In the second analysis, our lack of understanding of the selection process for receiving activation measures means that we are unable to argue as to whether CIA is satisfied or not.

Propensity Score methods are useful for estimating treatment effects using observational data since they enable observational studies to be designed along lines similar to randomized experiments (Rubin, 2001). Rosenbaum and Rubin (1983) show that instead of conditioning on the covariates, conditioning on the probability of potential treatment conditional on observable covariates, the propensity score (p(x)=P (D=1/X)), suffices to achieve a balance between the treatment and control groups as long as other requirements are met. Firstly, the covariates influencing assignment and outcome should not predict the treatment participation deterministically (weak overlap, P (D=1/X)<1for all X). Secondly, the participation in the treatment of one individual must not have an impact on the outcome of other treated or control individuals. Our two samples confirm the weak overlap. Furthermore, it seems reasonable to think that being an MIS recipient or service recipient does not affect other people's probabilities of finding a job. For these reasons, we believe the use of Propensity Score techniques to be appropriate.

Different propensity score approaches have been suggested for estimating an adequate counterfactual outcome. The most widely used methods are matching and reweighting (Imbens, 2004). These methods seek to remove observed systematic differences between treated and control subjects. In our first analysis, Inverse Probability Weighting (IPW) makes the distribution of observable covariates similar in the treated and control groups. Furthermore, as explained below, IPW is the only valid methodology in our first analysis due to the characteristics of the treatment. For the second part of our research, our lack of knowledge of the selection mechanism and the characteristics of the sample assessed leads us to calculate the treatment effect using two different methods: Inverse Probability Weighting (IPW) and Propensity Score Matching (PSM).

The idea behind Inverse Probability Weighting is the following: random assignment guarantees that the distribution of the covariates among

units of observation in the treatment and control groups is probabilistically equivalent, i.e. all units are equally likely to be in the treatment or control groups. However, when the assignment is not random some individuals are more likely to be treated than others, depending on their particular characteristics. To account for these differences in the regression formulation observations must be weighted according to the inverse probability of receiving treatment. This gives a pseudo-random sample by weighting observations by the inverse of the probability of being treated. Therefore, the distribution of covariates between the groups would be probabilistically equivalent (Gardeazabal and Vega-Bayo, 2015). In short, weighting individuals by the inverse probability of treatment creates a synthetic sample where treatment assignment is independent of the observed covariates. Inverse Probability Weighting enables unbiased estimates of average treatment effects to be obtained. However, these estimates are only valid if there are no residual systematic differences in observed variables between the weighted treated and control groups (Austin and Stuart, 2015). We prove this to be the case here. It is thus assumed that when the observable differences are reduced, so are the unobservable factors. It stands to reason that a more efficient estimator can be obtained if the regression of the reweighted sample includes all measured covariates as additional regressors. This other estimator is known as Augmented Inverse Probability Weighting (AIPW).

The IPW estimator uses a two-step approach to estimate treatment effects. The specification for the Average Treatment Effect on the Treated (ATT) is as follows:

1) Estimate the probability of being treated based on the covariates by a probit[32] regression. Denote $p_i(x)$, i.e. the propensity score. Use the

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32 A logit model can be also used.

inverse probability weights to compute the new pseudo-random sample. Build regression weights (w_i) as:

$$w_i = 1 \quad if \quad D_i = 1$$

$$w_i = \frac{p_i(x)}{1 - p_i(x)} \quad if \quad D_i = 0$$

The idea behind this reweighting procedure is quite straightforward. The objective is to approximate the distribution of the covariates of the control group to those of the treated group. For that reason all treated individuals have weights of 1. Control individuals with a 0.5 probability of being MIS recipients are assigned a weight of 1; those with a probability higher than 0.5 have weights of more than 1 with an increasing pattern and those with a probability lower than 0.5 have weights of less than 1 with a decreasing pattern. By doing this, the outcome of those control individuals with the highest probabilities of being MIS recipients would gradually weigh more and the outcome of those control individuals with the lowest probability of being MIS recipients would weigh exponentially less.

2) Calculate the ATT of the new sample, i.e. run a probit regression of the outcome on a constant and the treatment using the weights calculated. The coefficient of the binary treatment in the previous regression is a consistent estimation of ATT, provided that the propensity-score is correctly specified. Adding all confounders measured as additional covariates the Augmented Inverse Probability Weighting (AIPW) estimator is obtained.

In the second assessment, an additional Propensity Score approach is applied: Propensity Score Matching (PSM) here helps us also to estimate the impact of activation measures. This methodology entails matched sets of treated and untreated subjects who share similar propensity scores (Rosenbaum and Rubin, 1985), and it enables the ATT to be

estimated (Imbens, 2004). The most common implementation is one-to-one pair matching, in which pairs of treated and control individuals are formed in such a way that they have similar propensity scores. Once a matched sample has been formed, the treatment effect can be estimated by directly comparing outcomes between matched treated and control individuals. Schafer and Kang (2008) suggest that treated and control subjects should be regarded as independent within matched samples. By contrast, Austin (2011) argues that the propensity score matched sample does not consist of independent observations. He maintains that in the presence of confounding factors covariates are related to outcomes, so matched subjects are more likely to have similar outcomes than randomly selected subjects.

Based on Austin's argument, we reject the use of the Propensity Score Matching in the first analysis. Non-observed factors such as family income differ systematically between the treated and control individuals as they are crucial determinants for being selected for the treatment. However, the second assessment uses PSM, as we find it reasonable to argue that the unobservable factors of treated and control individuals resemble each other more (given the selected control group used) than in the first analysis.

3.5.2. Impact of MIS on job-finding rates – Does MIS reduce the probability of finding a job?

As shown in previous sections, MIS recipients have a monthly job-finding rate of 3%, compared to 9% for the non-MIS unemployed group. However, as already stated, the composition of the group of MIS recipients differs notably from that of the rest of the unemployed, and those differences (mainly longer unemployment duration and lower education level) may be causing at least part of the differences observed in job-finding rates. To isolate compositional differences from the income scheme, we use the Inverse Probability Weighting Methodology as detailed above. This enables us to assess the extent to which the

differences observed in job-finding rates are explained by (i) compositional differences between the two groups and (ii) by the MIS.

To that end, we include in the treatment group all those individuals who are recipients of the MIS in the current month. Given that the observation unit is one individual per month, an individual may belong to the treatment group in some months (in which he/she receives the MIS) but not in others (in which he/she does not receive it). Hence, an individual may belong to the treated group in a given month and to the control group in another. To set up an adequate counterfactual, we must define the control group so that it provides the best possible simulation of job-finding rates for the group of MIS recipients if they had not received the benefit. According to the data, for 93% of MIS recipients MIS is the ONLY income aid received; a further 6% also receive other welfare benefits and the remaining 1% receive contributory benefits. In the last two situations, they receive both types of income aid because the other benefits received are still lower than what it is considered necessary to meet basic household necessities. We think that it makes sense to assume that if the income scheme did not exist the 93% currently receiving only MIS would not be getting any additional income aid and the remaining 7% would receive an insufficient amount. For this reason, we have chosen to include unemployed individuals who do not receive ANY benefit in the current month in the control group. For this group, the observed monthly job-finding rate is 6.5%. Consequently, the outcome of the assessment must be interpreted as the differential impact of MIS on the job-finding rate compared to not receiving any benefit.

However, the treatment (receiving MIS) is by no means random. As specified above, there are specific requirements. Some of them are observable in our dataset but others are non-observed confounder variables, such as total household income, that must be controlled for. To "correct" for these differences between the treatment and control

groups we use the Inverse Probability Weighting method. Table 3.2 shows the distribution of the reweighted control group, which validates the use of the IPW methodology. This table shows that the differences in the main characteristics are eliminated by using the said weighting procedure.

Table 3.2. Composition of the treated, non-weighted and weighted control groups in the analysis of the impact of MIS on the probability of finding a job (%)

	Treatment	Non-weighted Control	Weighted control
Gender			
Men	49.6	42.19	48.3
Women	50.4	57.81	51.7
Age			
< 30	16.27	20.13	14.1
30–44	45.73	39.32	50.5
> 44	37.99	40.55	35.4
Education			
Primary	59.82	32.7	61.3
Secondary	26.83	29.72	26.3
Tertiary	13.35	37.58	12.4
Unemployment duration			
< 3 months	12.29	33.73	11.5
3–6 months	7.04	10.8	6.2
6–12 months	11.03	11.98	11.3
1–2 years	17.42	13.55	18.8
> 2 years	52.21	29.94	52.1

Treated group: Unemployed MIS recipients.
Control group: Unemployed people without benefits.

The results of the Inverse Probability Weighting Estimation and of an extended version of it (the Augmented Inverse Probability Weighting Estimator) are presented in Table 3.3. Applying such methodology, we find that the impact of MIS is not significantly different from zero at any significance level. The result is the same for both the IPW and the AIPW estimators, which makes it more reliable. This indicates that the monthly job-finding probability for MIS recipients would have been the

same if they had not received any benefit. We can thus conclude that the MIS itself does not reduce the probability of finding a job. In other words, the differences observed in job-finding rates between the treatment and the control group are due solely to the difference in the compositions of the two groups and not to the effect of the policy.

Table 3.3. Assessment results: impact of MIS on the probability of finding a job.

	IPW	AIPW
ATT	0.000135	−0.000690
	(0.000823)	(0.000510)
Observations	724,141	724,141

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
IPW: Inverse Probability Weighting. AIPW: Augmented Inverse Probability Weighting.
Treated group: Unemployed MIS recipients.
Control group: Unemployed people without benefits.

As a second step, we analyze whether the MIS has different impacts on different demographic groups. Specifically, we assess the impact of MIS on men and women separately, on three age groups (< 30, 30−44 and > 45) and on three education groups (primary, secondary and higher) . The results, presented in Table 3.4, confirm that the impact of MIS is not homogeneous across demographic groups. In particular, for women MIS delays exit to employment slightly (0.2 p.p.) whereas it has no impact on men. Second, the MIS accelerates job-finding for older workers (0.2 p.p.) whereas for young workers (<30) it delays exit to employment (1 p.p.). Finally, we find a delay as an impact of MIS for less educated workers (0.2 p.p.), whereas it accelerates job entry for those with more than primary education (0.2 p.p. for workers with secondary education and 0.5 p.p. for those with higher education).

Our results coincide partially with the ex-ante assessment in Clavet, Duclos and Lacroix (2013) and with the findings (double and triple difference estimation strategy) in Chemin and Wasmer (2012). Both find a negative impact on labor market participation, particularly among specific groups such as low-skilled workers. However, their results are

not directly comparable to ours as the methodology and the design of the policies in the regions that they examine are different. To our knowledge there is no comparable assessment of a similar policy.

Table 3.4. Assessment results: impact of MIS on the probability of finding a job per group.

		IPW	AIPW
Gender	Men		
	ATT	0.00308**	0.000745
		(0.00120)	(0.000835)
	Obs.	324,751	324,751
	Women		–
	ATT	–0.00165**	0.00190***
		(0.000681)	(0.000506)
	Obs.	399,393	399,390
Age	< 30		
	ATT	–0.0128***	–0.0108***
		(0.00124)	(0.00109)
	Obs.	190,570	190,570
	30–44		
	ATT	0.00343***	0.00127
		(0.00122)	(0.000883)
	Obs.	272,115	272,115
	> 44		
	ATT	0.00228**	0.00223***
		(0.00102)	(0.000598)
	Obs.	261,456	261,456
Education	Primary		–
	ATT	–0.00144*	0.00202***
		(0.000804)	(0.000592)
	Obs.	371,111	371,111
	Secondary		
	ATT	0.00368***	0.00276***
		(0.00119)	(0.000895)
	Obs.	196,226	196,226
	Tertiary		
	ATT	0.00641***	0.00545***
		(0.00180)	(0.00129)
	Obs.	156,807	156,807

Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$
IPW: Inverse Probability Weighting. AIPW: Augmented Inverse Probability Weighting
Treated group: Unemployed MIS recipients belonging to the specific group.
Control group: Unemployed people without benefits belonging to the specific group.

The main conclusion of this exercise is as follows: by definition, the MIS reduces poverty and promotes social cohesion. Our analysis leads us to conclude that on average the MIS per se does not delay exit to employment. However, we do find differences in its impact on different demographic groups. In particular, it causes an undesired delay effect (also commonly found in other passive policies) for women, the less educated and young people, but accelerates entry into employment for medium and high-educated workers and for those aged over 45.

3.5.3. The Impact of Active Policies on job finding probability for MIS recipients

In this section we assess the effectiveness of the activation interventions received by MIS recipients. Such an assessment is highly recommended given that in general active policies are quite costly. It enables us to check and if necessary modify and improve the efficiency of the Basque Public Employment Service in providing recipients with the tools that they need to re-enter employment. This information can certainly highlight what actions should be strengthened, modified or even eliminated.

Recall that we focus on three types of Active Policy: guidance, monitoring and training. First of all, individuals are classed as users of activation services if they are observed to have received such measures at least once in the last six months (including the current month).

Secondly, we present some descriptive statistics to show the extent of activation for the MIS group. As in the descriptive section, we focus (in order to present the characteristics of the unemployed) on a particular month (October 2015) so as to avoid overrepresentation of the long-term unemployed. Of the 38.345 unemployed people registered as MIS recipients in that month, 15.630 had received some kind of active policy in the form of guidance, monitoring or training at some time in the previous 6 months. This amounts to 40.8% of the total. As regards the

types of services received, 15,106 people (39,4% of all unemployed MIS recipients) received guidance services, 265 (0.7%) monitoring services and 881 (2.3%) training courses. This means that 728 individuals received more than one type of service. Given the low figure for monitoring, from here on we focus our results on activation through guidance or training interventions.

A brief profile is given below of how individuals involved in each of these two policies compare to individuals who receive no activation measures. Table 3.5 shows the distribution of the four main characteristics (sex, age, education and unemployment duration) depending on the type of active policy received.

In general men receive more activation than women: around 65% of those who received training were men. The age range varies depending on the type of service. Guidance and training predominate in the 30–45–age range (their relative incidence among MIS receivers is 46%). In general, young people tend to receive fewer activation interventions. There are also substantial differences between education levels: 60% of MIS recipients have at most primary education, 27% secondary and 13% higher education, which means that on average fewer activation measures are received by highly educated MIS recipients. In addition, activation measures decrease as unemployment duration increases.

Furthermore, we find distributional differences per type of activation measure. Guidance measures are distributed similarly across education levels, but we find significant differences in training measures, as recipients with secondary or higher education levels receive more training measures than those with at most primary education.

To assess the impact of each of these activation interventions, we place those MIS recipients who have received each particular activation policy being assessed (either individual guidance or training) in the last six

months in the treatment group. As before, we measure the impact of receiving the activation measures on monthly job-finding rates. As a control group we use MIS recipients who have not participated in ANY activation measures from the Public Employment Service in the last six months so as to get a cleaner impact of each specific activation measure. The results must therefore be interpreted as the impact of the intervention on the probability of finding a job compared to not receiving any activation service in the last six months.

Table 3.5. Composition of MIS recipients per type of activation (%)

	No activation	Guidance	Training
Gender			
Men	48.0	51.7	64.5
Women	52.0	48.3	35.5
Age			
< 30	18.6	12.9	16.0
30–44	43.1	49.4	54.3
> 44	38.3	37.7	29.7
Education			
Primary	60.8	59.1	41.1
Secondary	26.6	27.0	36.4
Tertiary	12.6	13.9	22.5
Unemployment duration			
< 3 months	13.2	10.7	18.2
3–6 months	7.9	5.8	4.5
6–12 months	11.3	10.6	11.0
1–2 years	16.7	18.5	19.5
> 2 years	50.9	54.4	46.8

As shown in Table 3.5, the treatment and control groups differ in important characteristics such as the duration of unemployment and education level. We assess each intervention following the IPW methodology described above. The interventions are thus "pseudo-randomized", so the distribution of the covariates between the two groups is balanced and the treatment is probabilistically equivalent. Therefore, the impact of each type of intervention can be properly assessed without the results being biased by differences in composition.

In addition to the IPW (and AIPW) method, we also use a Propensity Score Matching technique to enhance robustness. Given that the control group now consists of MIS-recipients (although they do not receive activation measures), we find it reasonable to assume that unobserved confounding factors of treated and control individuals do not differ substantially from one group to the other. This assumption is essential to validate the use of the Propensity Score Matching technique.

The results of the assessment of each active policy for MIS recipients (guidance and training) are shown in Table 3.6. Inverse Probability Weighting (IPW), Augmented Inverse Probability Weighting (AIPW) and the Propensity Score Matching (PSM) estimators are presented. The first three columns correspond to the three specifications for the impact of guidance service. It can be seen that guidance has a positive impact on exit into employment. This impact is statistically significant for all three approaches, although its magnitude differs slightly from one to the other. As a general result, we conclude that guidance increases the probability of getting a job by about half a percentage point over not receiving any activation intervention in the last six months.

The last three columns in Table 3.6 show the impact of training programs on job-finding rates. Unfortunately, we have no information on the type of training provided or on whether there is any selection process prior to participating in a training program. Given this information limitation, all that we can assert is whether participating in any kind of training program helps individuals find a job. What we find is that training is undoubtedly the factor with greatest impact on the probability of finding a job for the MIS group. Individuals who use these programs increase their likelihood of finding a job by around 3 percentage points. Given that the average job-finding rate for MIS recipients is 3%, the probability of finding a job increases by around 100% when an unemployed MIS recipient attends a training course. Due to their potential for job-finding, it would be most helpful to have more

detailed information regarding training programs so as to assess in the future more precisely which types of training program seem to work best.

Table 3.6. Assessment results: impact of activation on the probability of finding a job.

	Guidance			Training		
	IPW	AIPW	PSM	IPW	AIPW	PSM
ATT	0.00543***	0.00475***	0.00760***	0.0297***	0.0258***	0.0298***
	(0.000601)	(0.000453)	(0.000772)	(0.00233)	(0.00204)	(0.00292)
N. Obs	431,773	431,773	420,482	431,773	431,773	292,816

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
IPW: Inverse Probability Weighting. AIPW: Augmented Inverse Probability Weighting. PSM: Propensity Score Matching
Treated group: Unemployed MIS recipients who have received activation services in the last six months.
Control group: Unemployed MIS recipients who have not received any activation services in the last six months

In line with the literature on Active Labor Market Policies, we also find that an adequate design of activation policies accelerates re-entry into employment. In short, active policies significantly accelerate the probability of finding a job for MIS recipients. However, only around 40% of them use such measures, even though participation in them is supposedly compulsory. Specifically, training is the most effective policy: those who undergo it are twice as likely to find a job. This conclusion emphasizes the importance of linking passive policies with active policies, because those MIS recipients who use active policies enhance their chances of finding a job compared to similar unemployed people who do not receive any aid.

3.6. Summary and Conclusions

In the Basque Country (a region in north-eastern Spain) a Minimum Income Scheme has been in place continuously since 1989. Its main objective is to guarantee all individuals the resources required to cover their basic necessities, and at the same time to provide for their progressive integration into society and employment. Furthermore, in line with European Council recommendations, the Basque MIS has an

interesting feature: recipients are in principle required to participate in active measures to make their re-entry into employment as fast and successful as possible.

In 2015 there were about 62,000 MIS recipients, 60% of whom belonged to the group denoted as "registered-unemployed" at the Public Employment Service. The rest are workers, retired recipients and non-working persons who for different reasons do not fit into the category of those registered as unemployed. MIS recipients account for 25% of all the registered unemployed in the Basque Country.

Given that the Basque MIS is a last resort scheme, individuals with low education levels and the (very) long-term unemployed are prevalent among recipients. Specifically, 60% of MIS recipients have at most primary education and 52% have been looking for a job for more than two years. Unsurprisingly, low education levels and particularly long unemployment durations are the main determinants that delay job-finding. Indeed, MIS recipients have an average monthly job-finding rate of 3%, while for unemployed people who do not receive the MIS, the rate stands at 9%.

The first empirical strategy in this paper is to measure whether this difference is solely due to the different composition of the unemployed or, whether the MIS delays entry into employment as empirical evidence has proven that passive policies do in general.

The second aim of the paper is to measure the effectiveness of active policies on MIS recipients in terms of their impact on the probability of finding a job. Even though all MIS recipients are supposed to engage in activation measures, the fact is that only around 40% of them (16,000 out of 38,000 unemployed recipients) have done so at any time in the last six months. Guidance is the most common service: it is received by 39% of all unemployed MIS recipients. It is followed at some distance by

training (received by only 2.3%). The profiles of the participants differ from one kind of activation measure to another and also with respect to those who do not participate in such services.

Propensity Score methods are applied in both assessments. In both analyses we follow an Inverse Probability Weighting methodology. In the second exercise we also supplement our assessment with a Propensity Score Matching. Both methodologies help us deal with confounding effects and differences in composition between the treated and control groups in the most suitable way according to the characteristics of the corresponding sample.

Our results confirm that on average the MIS does not delay entry into employment, so the difference in the job-finding rates observed are due solely to the different compositions of the treated and control groups. If the analysis is conducted for specific population groups, we find that its impact differs. The undesired delay effect commonly found in passive policies is observed among less educated and younger MIS recipients, but the MIS accelerates entry into employment for medium and high-educated people and for the over 45s. To the best of our knowledge there are no other assessments of similar policy implementations that we could compare our results with.

The second finding is that all types of public employment activation services have positive impacts on job-finding rates, but the extent of that impact varies from one measure to another: the most effective services are training programs (which double the probability of finding a new job), followed by guidance services (which increase the probability by around 20%). Hence, as a policy device, this study supports the conclusion that training services for MIS recipients should be enforced, as they help recipients to re-enter employment, which is the ultimate aim of activation measures. Moreover, it is essential to emphasize the

importance of linking passive policies with activation measures for recipients.

Finally, for future research we have two related projects to work on, both of which require more information. The first is to extend our study to a duration type analysis, where the question to be answered is not based on instantaneous job finding rates but rather on time to exit from unemployment. For now we are limited by the fact that we only have information on all unemployed workers for 12 months. For MIS recipients, more than 70% of whom have been unemployed for more than a year, we would need longer longitudinal information. Secondly, we would like to obtain more precise information on what training programs MIS recipients receive, so as to learn more about what types of training program are most successful in terms of job-finding rates. This would enable us to be more precise with regard to policy advice.

4. Conclusions

The main objective of this research is to assess public policies so as to better understand their impact on society and thus help to improve policy-decision making and make better use of public resources.

Chapter 1 assesses the impact of a family-friendly policy implemented in Spain in 1999. It was aimed at granting parents the right to reduce their working hours with an equivalent wage reduction in order to enable parents to afford both to work and to take care of their children. Furthermore, users of the law enjoy greater protection against dismissal than other workers, to avoid layoffs caused by the use of the law. The study obtains several findings: First, the law has increased the probability of part-time working for eligible mothers by around 18%. Second, fathers are not observed to be using the working reduction. Third, based on these first two results, employers have behaved strategically in the sense of offering fewer indefinite contracts to potential users of the law, in this case women of fertile age. Finally, we test the view that eligible workers have used the law during the recent recession mainly to protect themselves against dismissal. The last result shows that the Great Recession reduced the likelihood of resorting to the law by more than 13%, which is not consistent with the aforesaid contention.

From a policy point of view, it can be concluded that the implementation of a well-intentioned family-friendly policy, which in principle is available to both fathers and mothers, may have perverse effects if only a sub-group of workers -in this particular case mothers- makes use of it, given their traditionally greater role in childcare issues. The results obtained highlight the importance of assessing policies, as this is the only way to determine their causal effects on society. As shown, the impact of public policies is sometimes unexpected. This knowledge is essential in the design of future policies.

Chapter Two assesses the impact of a last resource scheme: The Basque Minimum Income Scheme. The first aim of this study is to measure the extent to which this policy has reduced poverty in the Basque Country, as that is its main objective. The second objective is to quantify the effectiveness and efficiency of the scheme, which is essential with such a costly public policy.

Although poverty is understood in terms of a certain minimum standard of living given the necessities of society at a point in time, there no single threshold that establishes who is poor or not. The literature commonly uses the 60% (poverty line) or the 40% (extreme poverty line) of the median equivalent income in the society. The Basque legislation uses a different threshold, which is lower than the extreme poverty line as per the standard in the literature for 2/3 of MIS recipients and lower than the poverty line in all cases.

Using the FGT family of indexes the impact of the MIS on several dimensions of poverty (incidence, intensity, and inequality) and the poverty lines presented is measured. The results show that the scheme notably reduces poverty for all the indicators presented, especially for the extreme poverty line and the line established in the legislation. In addition, the MIS is a very pro-poor policy as it works well in helping those who are far below the poverty line. However, poverty will never be eradicated as long as there are households that do not meet the requirements for receiving MIS.

Beckerman's Model is used to analyze the effectiveness and efficiency of the policy. This analysis seeks to determine whether the MIS is properly assigned according to the legislation or whether the same amount distributed differently would reduce poverty by more. The results determine that in terms of effectiveness, i.e. the ability to achieve a desired end, the MIS is very close to eradicating poverty for its recipients. However, when "waste of resources" is taken into account,

i.e. in terms of efficiency, there is considerable room for improvement. Indeed, the amount of money spent is actually 12 million Euros higher than would be required to eradicate poverty.

In light of the results of these analyses, Chapter 2 ends with a proposal for improvements and presents an alternative MIS design. The recommendation is in line with an international standard of poverty: It uses the OECD modified scale starting from 88% of the minimum wage (the current amount for a one-adult household). This threshold is more egalitarian than the current one as the equivalent income is the same for all MIS recipients, independently of the type of household where they live. Furthermore, it is also recommended that the exact amount needed to reach the poverty limit be paid out, so as to achieve full effectiveness and efficiency. The proposed MIS provides wider coverage and monthly savings of €4.76 million.

Chapter 3 completes this PhD dissertation by assessing the impact of the said Basque MIS on the labor market. If MIS recipients stop actively looking for work, the presence of the policy could cause poverty to become chronic, so the beneficiaries would not reenter employment and would therefore never exit the scheme.

Labor market literature finds that passive policies commonly cause an undesired delay in entry into employment. However, the Basque MIS requires all unemployed recipients who are able to work to be available to do so. In addition, they must participate in activities that increase their employability. The first aim of this chapter is to assess whether the MIS causes the mentioned delay effect. The second objective is to test whether the active policies directed at MIS recipients work.

This study focuses on MIS recipients registered as unemployed. Given the characteristics of a last resource scheme, its recipients are mainly individuals with low education levels and tend to be very long-term

unemployed. Indeed, their job-finding rate is 3%, while the figure for non-recipients is 9%. The first empirical exercise consists of discerning whether this difference is due to differences in the composition of the unemployed or whether the MIS delays entry into the labor market. Using an Inverse Probability Weighting strategy that enables differences in composition between treated and control groups to be eliminated, the results confirm that on average the MIS does not delay entry into employment. However, the impact differs if the analysis is conducted by population sub-groups. The undesired delay effect prevails among less educated and younger recipients. By contrast the MIS accelerates entry into employment for medium and highly educated unemployed people and for the over 45s.

The last analysis in Chapter 3 examines the impact of activation policies on MIS recipients. This analysis is conducted using the Inverse Probability Weighting methodology along with a Propensity Score Matching method, according to the characteristics of the sample. The results show that all types of intervention work in accelerating labor market entry. Specifically, training schemes are the most effective programs (doubling the probability of finding a job), followed by guidance services (which increase the probability by around 20%). However, although the spirit of the law is that every recipient should search actively for a job only around 40% are observed to receive any activating interventions from the public employment service.

From a policy point of view, it is essential to emphasize the importance of linking passive policies with active policies, because those MIS recipients who use active policies enhance their chances of finding a job compared to similar unemployed people. Furthermore, the study supports the conclusion that training programs for MIS recipients should be reinforced.

For future research it would be important to conduct a duration analysis to determine time exits from employment instead of instantaneous finding rates. A deeper analysis of the types of job that the beneficiaries of the MIS get is also needed, so as to ensure a successful, decent entry into employment and subsequent emancipation from the MIS. This is not possible at the moment because of data limitations. More precise information on training programs for MIS recipients would be also valuable to reveal more about what types are more successful in job-finding terms for MIS beneficiaries. As a more general recommendation, the usefulness of evaluating activation programs for all unemployed individuals should be highlighted, so as to facilitate their re-entry into employment.

As a final conclusion, I would like to highlight the importance of assessing social and economic policies in society. This is not a widespread custom in Spain, but fortunately it is making headway, albeit very slowly. It is especially important in a situation such as the present one: a deep crisis that has left many long-term unemployed people, at risk of social exclusion or in situations of poverty. Effective policies are key to making the best use of public resources and, among other things, helping that part of society to re-enter more decent, equitable, egalitarian employment and thus reintegrate into a society with the same characteristics. Therefore, achieving an economic recovery in which the economic and social policies implemented are based on solid research outcomes is essential if successful results are to be achieved.

Annex

Calculation of the Total Household Income

Household income includes own income, income from social security benefits, income from social assistance, and income from supplementary civil society assistance. The total income received includes the following items: monthly salaries or wages from salaried or similar employment, monthly income as a maintenance allowance, extraordinary payments for wages, salaries, unemployment benefits or pensions, income from the operation of a business of their own or from courses, conferences or similar activities, income from urban rentals, rural leases, annuities or income derived from pension funds or similar, income from real estate, prizes, tax rebates or labor indemnities. In the case of wages and salaries and of the proceeds of alimony, the different monthly incomes received by the different members of the household are aggregated. In the other cases, the income obtained by the household as a whole in the last 12 months for the items indicated is calculated and a monthly average is apportioned. Income from Social Security benefits includes the total monthly income received by individual household members from benefits or unemployment benefits, pensions or Social Security benefits (including non-contributory benefits and family benefits). Income from social assistance includes the following: monthly income from MIS, social emergency aid, scholarship income, aid to minors and other public welfare assistance. In the case of MIS the different monthly incomes received by the different household members are aggregated. In the other cases the income obtained by the household as a whole in the last 12 months for the items indicated is calculated and a monthly average is apportioned. Finally, income from supplementary civil society assistance includes the income of the household in the reference month from direct support from relatives, friends, neighbors or private welfare institutions.

Simulation of new MIS perceivers

Theoretically, to receive MIS households must have an income below the poverty line and must meet further requirements. As mentioned, it is not possible to control here for who meets the requirements and who does not, so the simulation is conducted as follows:

-For households where the BC poverty line is higher than or equal to the simulated line it is already known which meet the non-income requirements, because they are or are not already recipients. This is the case of households of types 1, 4 and 6.

-For the other households, by type according to the legislation:

1) The percentage of MIS recipients out of the total poor households is calculated, i.e. the weight of the households that meet the requirements as a proportion of the total

2) This percentage is assumed to be constant with income. That is, when the poverty line is moved the weight of households that meet requirements other than income remains the same.

3) For households whose income before the transfer is between the old and new poverty lines, some MIS beneficiaries are found (those who receive payments from area C), so it is known that they are eligible. Then, by type of household, I randomly add new households until the percentage of receiving households calculated in point 2 is reached.

4) 100% efficiency is assumed, so all households whose pre-MIS income is above the new poverty line will not be recipients in the scenario simulated, even if they meet the other requirements.

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