

## MULTIPLE OCURRENCE OF WELFARE RECIPIENCY: DETERMINANTS AND POLICY IMPLICATIONS

Autores: *Luis Ayala*<sup>(a)</sup>

*Magdalena Rodríguez*<sup>(b)</sup>

P. T. N.º 13/04

(a) Facultad de Ciencias Jurídicas y Sociales. Universidad Rey Juan Carlos. Paseo Artilleros, s/n. Madrid. Spain. layala@fcjs.urjc.es.

(b) Instituto de Estudios Fiscales. Avda. Cardenal Herrera Oria, 378. 28035 Madrid. Spain. magdalena.rodriguez@ief.minhac.es.

N.B.: Las opiniones expresadas en este trabajo son de la exclusiva responsabilidad de los autores, pudiendo no coincidir con las del Instituto de Estudios Fiscales.

Desde el año 1998, la colección de Papeles de Trabajo del Instituto de Estudios Fiscales está disponible en versión electrónica, en la dirección: ><http://www.minhac.es/ief/principal.htm>.

Edita: Instituto de Estudios Fiscales

N.I.P.O.: 111-04-007-8

I.S.S.N.: 1578-0252

Depósito Legal: M-23772-2001

## INDEX

INTRODUCTION

1. WELFARE RECIDIVISM AND WELFARE DEPENDENCE

2. DATA

3. DETERMINANTS OF THE RE-ENTRY PROBABILITY

4. THE DURATION OF "POST-PROGRAM" SPELLS: A PARAMETRIC ESTIMATION

5. CONCLUSIONS

BIBLIOGRAPHY



## ABSTRACT

The question of whether or not a high percentage of recipients return to welfare programmes has attracted great attention from economists and policymakers. Using data gathered for the minimum income programme of the Madrid Government, this paper aims to broach various questions arising from the issue of welfare recidivism. After setting out a theoretical framework alternative to models based on single spells and presenting the combined effect of the recipients' first spell, macroeconomic conditions and socio-demographic characteristics, various econometric procedures are used to answer two fundamental questions: which characteristics have an influence over the probability of returning to the programmes, and what factors determine that the off-welfare duration should differ substantially among recidivist households. The simulations conducted with alternative scenarios place policymakers chances of lengthening the off-welfare spells if macroeconomic shocks occur into perspective. However, the experience of the first spell and, to a lesser extent, employability can indeed contribute towards lengthening the time former recipients spend outside the programme.

**Keywords:** welfare, recidivism, survival analysis, unobserved heterogeneity.

**JEL:** I30, I38, C41.



## INTRODUCTION<sup>1</sup>

The increase in the number of studies focusing on the dynamics of welfare participation has revealed that a high percentage of recipients return to the programmes in the near term. These results have given rise to an important change of focus in the study of welfare dynamics and to a growing awareness about the importance of designing public intervention more in keeping with these new forms of dependence. Reconsidering these processes from a context of multiple occurrence of welfare reciprocity is crucial for measurement and diagnostic purposes. If each spell is seen as independent from previous spells, an incomplete picture of these programmes' dynamics is obtained, thus resulting in duration estimates that are biased downwards.

From the viewpoint of policymakers, there can be little doubt of the importance of properly identifying the recidivist households. In most social protection systems, welfare benefits play a two-fold role of providing temporary income maintenance for a large segment of welfare recipients in addition to providing a permanent income support for another group of households. The fact that an important core of recipients have intermittent spells obliges managers of such programmes to redefine their functions and objectives. If re-entries reach a sufficiently large number, the objective of policymakers should be re-oriented from maximising exits or minimising the duration of spells to reducing re-entries or maximising the time recipients spend outside the programmes. This differentiation logically refers back to the debate on targeting or focusing actions. It seems logical to diversify and differentiate between actions aimed at households suffering from a process of chronification from those designed for households having intermittent participations.

The relevance of the implications arising from multiple spells in welfare contrasts with a wide range of constraints limiting their study. A large part of these difficulties are statistical in nature. Incorrectly coding of surveys, for instance, is normal. Additionally, as noted by Bane and Ellwood (1994), the likelihood also exists that an increase in income slightly above a programme's scales can lead to a rise in the number of exits. These, however, can quickly become re-entries should macro-economic shocks occur, even if they are not particularly intense. The aggregation biases seen in sources with an annual periodicity are also noteworthy. This makes it advisable to have access to monthly or quarterly data over a sufficiently long period of time, thus resulting in information needs that often are difficult to obtain. Many problems also arise from the theoretical side. The models designed to analyse participation in welfare programmes, which es-

---

<sup>1</sup> We are grateful for the useful comments of Rebecca Blank. Financial support was received from the Instituto de Estudios Fiscales and the Ministry of Science and Technology through the National Scientific Research, Development and Technological Innovation Plan (SEC 2001-0764).



essentially rest on the assumption of independence between different spells, encounter obvious difficulties when dealing with the possibility of multiple spells. Including this new reality also implies greater complexity in the econometric tools needed to determining the causes of welfare reciprocity.

Despite such constraints, this paper aims to broach various questions arising from the issue of welfare recidivism. The first set of questions refers to whether or not clearly differentiable types of households exist depending on their relationship with the programme. This involves questions such as who leaves and returns to the programmes, whether there are clear differences between the households which leave such programmes and come back to them and those that leave them never to return, or whether the former are very different from households that stay for a long period. A second type of questions deals with the main explanatory factors behind the duration outside a programme, which, as was mentioned above, could be an objective policymakers should maximise. Various possibilities and questions remain unanswered. These include the extent to which the length of the first spell and the way an individual or household exits a programme can explain the duration of the off-welfare spells, determining which individual characteristics are associated with extended periods without receiving benefits and, finally, the extent to which exogenous variables like macro-economic conditions can also contribute to lengthening the off-welfare spells.

This study is based on the data gathered for the minimum income programme of the Madrid Government (IMI). It is one of the most well grounded experiences among the varied mosaic of regional welfare schemes existing in Spain. Administrative records are available from the time the programme was first set up (last quarter of 1990) up to the closure of data gathering (December 2001). The advantages it offers when compared to other sources used to analyse re-entries include the longer time period covered by the records and the inclusion of a much larger number of households and spells than in other studies. Additionally, the fact that information is available from the beginning of the programme avoids the problems of left censoring commonly encountered in duration models.

The paper offers other novelties when compared to the currently available body of literature. To date, the bulk of the research literature on welfare recidivism has almost exclusively focused on the U.S. Secondly, a large database extracted from administrative records was used. This avoids some of the biases seen in the surveys that are usually used to analyse these topics and the problems of endogeneity they tend to suffer from. Variables that are often not observed are also available, including the existence of a very varied range of barriers to employment. In most cases, these constitute obstacles to entering the labour market and are the main source of unobserved heterogeneity in other studies. Lastly, in

addition to using as explanatory factors socio-demographic variables and changes in the economic cycle, the study also examines the possible link between the first spell in the programme (duration and type of exit) and subsequent spells through the design of parametric duration models.

The study is structured as follows. The first section defines the overall framework of analysis. The characteristics of the welfare programme under study are then analysed. The study then moves on to look into the differences between the different groups of welfare recipients depending on programme entry and exit sequences, and the main causes of recidivism are examined. Different models are then calculated in an attempt to explain the length of the off-welfare spells in order to simulate expected durations. The study ends with a brief list of conclusions.

## 1. WELFARE RECIDIVISM AND WELFARE DEPENDENCE

The study of multiple occurrence of welfare reciprocity is based on a widened interpretation of the analysis of each spell considered independently. When the duration of each spell is examined, the fundamental question is whether or not problems of dependency exist. Dependency could be interpreted as a prolonged participation in the programmes. The key variable is therefore the probability of leaving welfare and the possibility that it may have some sort of relationship with the time spent in the programme is relevant.

The hazard function of exiting the programme is expressed as follows:

$$\lambda(t) = \lim_{dt \rightarrow 0} \frac{\Pr \{t < T \leq t + dt \mid T > t\}}{dt} \quad (1)$$

where the numerator represents the conditional probability of an exit taking place in time interval  $(t, t+dt)$ , a fact which has not occurred up to that moment. The denominator reflects the length of the interval. There is a positive duration dependence if  $d\lambda(t)/d(t) > 0$  (the probability of leaving increases as the spell lengthens), and there is a negative dependence if  $d\lambda(t)/d(t) < 0$  (the probability of leaving diminishes as duration increases). As  $T_{ik}$  is the duration of each individual spell, and  $i$  and  $k$  respectively represent each individual and spell, the objective function of the policymakers would be  $\min \left\{ \sum_{i=1}^n T_{ik} \right\}$ .

To minimise durations, policymakers need to correctly identify the characteristics of households taking part in the programme. In most cases, observable characteristics exist –such as age, sex, household size or educational attainment– that could explain longer spells in the programme. There are, however, explanatory factors that are difficult to measure like motivation, social stigma or job-search efforts. These are unequally shared out among the welfare recipients

without being observable. Correctly estimating the distribution of durations would have to be based on:

$$F(t, X, \theta) = \exp\left(-\int_0^t \lambda(u, X_u | \theta) du\right) g(\theta) d(\theta) \quad (2)$$

where  $F$  is the distribution function of the time spent in the programme,  $\theta$  a vector of unobserved covariates and  $g(\theta)$  their distribution, and finally  $X$  a set of observed covariates.

However, the possible inferences on welfare dependency problems based on duration analyses can throw up important biases if the possibility of some households re-entering the programme shortly after their first spell is ignored. In a seminal contribution, Ellwood (1986) estimated that around 40 percent of AFDC recipients in the U.S. registered multiple participation spells and that 11 percent of them returned to the programme within a year. Subsequently, various authors using new data and alternative analytic procedures confirmed that recidivism was generalised and that distortions in duration estimates arose due to that fact. Weeks (1991), Blank and Ruggles (1994), Cao (1996), Meyer and Cancian (1996), Harris (1996) and Sandefur and Cook (1997) used household surveys; and Brandon (1995) and Keng *et al.* (2000) used administrative records. Recidivism rates estimates vary widely, ranging from as little as 25 percent up to a maximum of above 55 percent for the year following the end of the first observed spell<sup>2</sup>.

The existence of multiple spells fits in relatively well with conventional analytical models of welfare participation if the sum of all the spells lengths is taken as a reference for durations<sup>3</sup>. The main novelty lies more on the policy-makers side, facing a new objective function. From this new viewpoint, the main objective would not be so much as to minimise durations in the programme but to maximise the time recipients spend outside it. Within this new framework, analysing duration would lead to a new hazard function that would now indicate the probability of re-entering the programme once a recipient has left it:

$$\lambda^*(t) = \lim_{dt \rightarrow 0} \frac{\Pr\{t < T^* \leq t + dt | T^* > t\}}{dt} \quad (3)$$

where the numerator now represents the conditional probability of re-entering the programme within the time interval  $(t, t+dt)$  and  $t$  represents the moment the first spell ends. The denominator reflects the off-welfare interval's length.

To accomplish this objective, policymakers need to properly interpret the determining factors of the distribution of the off-welfare durations. An essential

---

<sup>2</sup> Cao (1996) obtained the highest percent (58 percent) using the longest time period under analysis (168 months).

<sup>3</sup> See, for instance, Gottshalk and Moffitt (1994).

factor could be the existence of some kind of correlation with the first spell. This would be a new form of duration dependence, but now dependant on the length of the first spell. Cao (1996) developed a duration model that simultaneously calculated the determining factors of the first spell and recidivism. Unobserved heterogeneity was controlled through a variance component structure to find that a negative correlation existed between the first spell's duration and the time spent outside the programme. Similar conclusions were also reached by Blank and Ruggles (1994) and Keng *et al.* (2000).

Considering the length of the first spell does away with a part of the heterogeneity when calculating the off-welfare duration. There are other variables related with the first spell that may also be crucial, such as the type of ending of the first spell. It seems logical to think that an individual or household that leaves the programme because they have found a job will take longer to re-enter it than one that has been expelled from it for other reasons. Blank and Ruggles (1994) and Born *et al.* (1998) found that the type of ending of the first spell is as or more important a determining factor for recidivism than socio-demographic characteristics. Moffitt (2002) also points towards the importance of the type of exit, albeit indirectly. Against the notion of greater entry flows of higher skilled recipients foreseen in conventional theories, he found that differences in the labor market skills were minimal. This would seem to suggest that the cause of such flows could lie in a segment of the recipients encountering greater difficulties in fulfilling administrative obligations. Miller (2002) found that recipients expelled from the programme usually have lower employment rates, which would increase the probability of recidivism. Nevertheless, the results obtained by other studies do not confirm that apparently successful exits constitute an automatic guarantee for diminishing the probability of short-term recidivism. Edin (1995) found that various recipients of the U.S. AFDC returned to the programme from situations of employment because their low initial earnings did not go up in the medium- and long-term.

Exogenous factors also exist that could condition decisions to participate in programmes and change duration times in and off-welfare. A large number of studies have attempted to single out the contribution made by changes in macroeconomic conditions, reforms to programme parameters (such as the level of benefits, entitlement conditions or time limits) and changes in the population's demographic structure<sup>4</sup>. In fact, there is recent evidence on the interactions between changes in the macroeconomic environment and individual microeconomic decisions as the main determining factors for entry and exit flows in welfare programmes (Moffitt and Stevens, 2001). Nevertheless, the evidence from some studies that include macroeconomic conditions as possible determining

---

<sup>4</sup> There are various synthetic studies on this question. See Moffitt (1992), Stepleton *et al.* (1997), Mayer (2000), Bell (2001) and Blank (2002), among others.

factor do not always show a linear relationship between an increase in unemployment and recidivism (Kent *et al.*, 2000).

Based on this review of arguments we can formulate a new hazard function for welfare recidivism, with the form:

$$\lambda^*(t, X) = \lim_{dt \rightarrow 0} \frac{\Pr\{t < T \leq t + dt \mid T > t, (X, T^{1E}, Z, U)\}}{dt} \quad (4)$$

where  $X$  represents each household's socio-demographic characteristics,  $T^{1E}$  the length of the first spell,  $Z$  the type of exit from the first spell and  $U$  changes in macroeconomic conditions.

## 2. DATA

The minimum income programme (IMI) of the Madrid Regional Government was used to conduct the empirical analysis. The fact that a regional programme was chosen was due to the complete decentralisation of these programmes in Spain<sup>5</sup>. The advantages the IMI has over other possibilities resides both in the fact that the values of its basic parameters approach the Spanish average as well as the availability of a more complete information system when compared to other regional programmes.

The IMI programme was implemented in the last quarter of 1990. Based on the French *Revenu minimum d'insertion* and in line with developments in other Spanish regions, an attempt was made to combine within a single social welfare instrument an economic last safety net with the development of training and other measures in order to favour transitions into the labour market more quickly than through traditional welfare programmes. Unlike American welfare programmes, which have been the basis of much of the economic literature on welfare benefits, this system is almost universal. The minimum income it provides is a last resort for any type of households, not only households with children or single-parent households. Its entitlement conditions are similar to those of other European programmes, although entitlement constraints are placed for specific groups. These limitations essentially reside in minimum (25 years) and maximum (65 years) age requirements in an effort to avoid the generation of dependency chains among the young and favour transfers from the regional

---

<sup>5</sup> Some studies have confirmed that the regional levels of income have statistically significant positive effects on benefits (Ayala *et al.*, 2004). However, empirical estimates show no sign of a 'welfare magnet' problem. Average low benefits and strict residence requirements act as institutional barriers for welfare migration.

scheme to the national old-age means-tested pension scheme<sup>6</sup>. There are no limits on nationality, as long as potential recipients can prove they reside in the region legally.

Entry into the programme is effectuated by means of geographical social services centres that comprise the basic administrative unit for the programme's management. These centres are charged with the responsibility of advertising the programme, processing applications and promoting socio-economic insertion measures. The process commences with an initial interview in which the head of household submits an application for entry into the programme. A series of basic characteristics of the household unit and of each of its members appear on the application forms filled in by households requesting to take part in the IMI programme. At the same time recipients sign the application form for the benefit, they also sign an integration contract. The regional authority's Social Services Department checks whether the household meets the benefit's entitlement conditions and decides whether it is entitled to receive it.

Renewal is automatic unless the circumstances that applied when the application was accepted change. Social workers conduct continuous assessments –at least once a quarter– to monitor the household's situation and the results of the insertion activities. Should certain circumstances arise, this monitoring may lead to the ending of entitlement to the benefit. The most important of these is exceeding the income standards set forth if the household in question manages to improve its working situation and increase its working income. Households can also be expelled from the programme for having committed fraud, either because they did not provide information about changes in their economic situation or because they failed to fulfil some of the commitments laid down in the insertion contract. In other cases, leaving the programme can be the result of different administrative processes coinciding. These may include moving on to the means-tested pension scheme, losing Spanish nationality, imprisonment or death. Leaving the programme at any one moment does not preclude the possibility of re-entering it later. Households may once again request the benefit. There is also no limit on the number of re-entries.

The evolution of the programme's caseload has been marked by the three-fold influence exerted by changes in macroeconomic conditions, reforms made to its main parameters and changes introduced to the national unemployment benefit system, the last safety net preceding the minimum income programme<sup>7</sup>. Hence, the logical initial growth of the programme in the first half of the 1990s coincided with a sharp increase in the region's unemployment rate and the res-

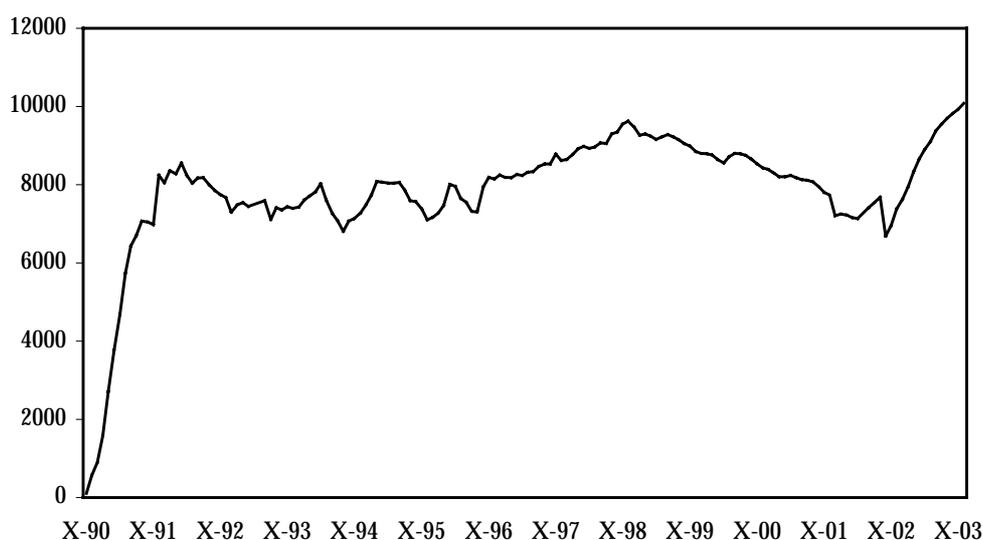
---

<sup>6</sup> Access to the programme, however, is allowed if family responsibilities exist.

<sup>7</sup> Demographic shifts and institutional reforms had the greatest weight among all these factors (Ayala and Pérez, 2003).

trictive reforms that limited entitlement to unemployment benefits. During the last three and half years of the 1990s, the figures tended to decrease, which was essentially due to an increase in employment levels. The programme's most important reform took place in 2002. It converted minimum income into a subjective right and widened its scope of coverage, thus leading to a large increase in the figures.

**Figure 1**  
**EVOLUTION OF THE NUMBER OF RECIPIENTS**



Monitoring the flow of entries into and exits from the programme is possible due to a wide base of administrative records. Cleaning these records allows to have information on over 50,000 spells in the programme, corresponding to slightly more than 39,200 households. Of these, 8,500 have left the programme at some stage and then re-entered it at least once. Having administrative records available to study re-entries provides many advantages. These include very detailed and precise data, a larger number of observations and fewer biases than in surveys.

In addition, the IMI database provides detailed information on each household's specific characteristics. These include some of the variables various studies have highlighted as ideal to analyse welfare populations [Mainieri and Danziger (2001), Goerge and Boo Lee (2001)], such as the existence of structural problems (social isolation, alcohol abuse and drug addiction) or the development of behaviour associated with marginal situations like prostitution or begging. In order to observe the effect of changes in macroeconomic conditions over time, regional unemployment rates from the Labor Force Survey (*EPA*) have been added as a variable. Other strong points of the database include the length of the time period that can be studied (135 months) –longer than in most studies– and the fact

that the information is available for the whole period the programme has been in existence, thus eliminating left censoring.

These features ensure that the IMI database enjoys several advantages over the data sources used in other studies that have attempted to study the determinants of welfare recidivism. Ellwood (1986) used annual data from the Panel Study of Income Dynamics (PSID) to study the AFDC re-entries. Apart from using survey data, the fact that he took years as a time unit gave rise to an important aggregation bias. Blank and Ruggles (1994) avoided this problem by using monthly data from a bi-annual Survey of Income and Program Participation (SIPP). Certain variables, nevertheless, suffered from a problem of endogeneity because possible participation before the moment of observation was ignored. This may have exerted an influence on some of the individual socio-economic characteristics. Born *et al.* (1998) and Keng *et al.* (2000) used administrative monthly data from certain U.S. states, which were limited to an excessively short period of observation. Cao (1996) studied the longest series by using monthly data encompassing 1978 to 1991 from the National Longitudinal Survey of Youth (NLSY). The sample, however, was limited to 1,478 multiple spells starting off from 820 initial spells.

Despite all the advantages mentioned above, the IMI records do suffer from certain limitations. These arise from the very nature of administrative sources as well as from some peculiarities of the data itself. The well-known difficulties that arise from the use of information designed for management purposes belong to the former. It has been necessary to clean up and reorganise the original data. In order to have suitable files to analyse durations within a context of multiple spells, it was also necessary to make some imputations in order to eliminate some inconsistencies and recover data on invariable household characteristics when such information was not available for the first spell but existed for subsequent spells.

### 3. DETERMINANTS OF THE RE-ENTRY PROBABILITY

The possibility of multiple spells in welfare programmes gives rise to a wide range of questions. Undoubtedly, the most pressing of these is to gauge the real extent of recidivism and ascertain which of the recipients' characteristics determine a greater probability of re-entering the programmes. Answering the first of these questions leads to verifying whether or not there are different types of recipients depending on the duration and intermittence of their participation in the programmes. Some studies, like Miller's (2002), have attempted to define three types of recipients: *stayers* (households or individuals who remain



in the programme for a long time), *leavers* (households or individuals who leave the programmes and remain outside them for at least a minimum period<sup>8</sup>) and *cyclers* (households or individuals who enter and leave these programmes on a recurrent basis).

For the purposes of this study, a similar classification has been adopted that distinguishes three different types of groups in accordance with the IMI data. *Cyclers* are recipients of the programme whose information appears more than once, including those censored at the moment data gathering was closed. *Temporary recipients* are those who registered only one spell in the programme that lasted less than 24 months. Finally, *chronic recipients* are those who only had one spell in the programme that lasted 24 months or more (this group may include censored recipients who have spent at least 24 months in the programme). There would also be another group covering censored observations that cannot be classified as either *cyclers* or *chronic recipients*.

**Table 1**  
**DISTRIBUTION OF THE PROGRAMME'S RECIPIENTS**

Type of Recipient	Frequency	Percent
Chronic	14725	37.5
Temporary	13868	35.3
Cycler	8517	21.7
Others	2128	5.4
TOTAL	39238	100.0

As can be observed in Table 1, the percentage of households that re-enter the programme is somewhat more than a fifth of the total. The incidence of recidivism is therefore lower than the rates obtained by some of the other studies mentioned above. More than a third of the households that entered the IMI left it never to return again, at least during the period of observation. The benefit served to substitute these households' incomes during a temporary period when their earnings were insufficient. A similar percentage of recipients had long-term spells and a large part of the programme's spending was concentrated on this group.

Another classification can be set out regarding recidivism based on intermittent participation sequences (Table 2). Only a fifth (19.2 percent) of the more

---

<sup>8</sup> The definitions for leavers vary considerably in the different studies that have broached the issue. For instance, some studies consider leavers as recipients who leave programmes and remain outside them during at least a year (Moffitt and Roff, 2000) while others typify them as recipients who leave the programme for at least two consecutive months within a specific time interval (Miller, 2002).

than the eight thousand five hundred recipients having more than one spell had more than two spells. The remaining cases correspond to households who left the programme to return only once. The difference lies in the fact that some left the programme definitively after the first spell, while the rest return to welfare to stay on<sup>9</sup>. These two types of recipients with two spells together make up a percentage that is very similar to the *cyclers* (41.0 percent and 39.8 percent respectively).

**Table 2**  
**TYPE OF CYCLERS**

Type of Recipient	Frequency	Percentage
Only one re-entry and definitive exit	3494	41.0
Only one re-entry without subsequent exit	3390	39.8
Various re-entries	1633	19.2
TOTAL	8517	100.0

The question naturally crops up of whether the households that return to welfare have specific characteristics. A general response to this question could be derived from analysing their respective frequency distributions (Table 3). A preliminary difference lies in the unequal sharing out of recipients by age groups. Households that return to the programme are primarily located in the intermediate and younger age groups. As shown by Ayala and Rodríguez (2003), this differentiation could be due to a statistical correlation found between being older and a definitive exit from the programme for administrative reasons. This could be attributable to the transition towards other income transfer schemes providing greater sums and stability, such as the old-age means-tested schemes.

There are no appreciable distribution differences according to gender. The differences are rather more visible with regard to household size and type. The former variable is considerable higher for redivivist households. While a little more than a third are households with two or less members, the corresponding percentage for the rest of recipients amounts to more than half of the total. This difference is essentially due to the presence of a greater number of children in households that registered recurrent spells. Consequently, these differences are materialised in very different types of households. The two differential traits for *cyclers* compared to the other households are the considerably greater presence of couples with children and the lower weight of people living alone.

---

<sup>9</sup> Cyclers with only one re-entry and recipients who have not left the programme again make up the censored observations. It could logically be the case that these households re-entered the programme shortly before the closure of data gathering and then exited it soon afterwards.



**Table 3**  
**SOCIO-ECONOMIC CHARACTERISTICS OF CYCLERS (Frequency Distribution)**

	Cyclers	Non-Cyclers
<i>Age</i>		
< 26	8.2	7.9
26-35	34.6	30.1
36-45	30.3	27.3
46-55	16.7	18.3
56-65	10.2	16.4
<i>Gender</i>		
Male	38.8	39.1
Female	61.2	60.9
<i>Household Size</i>		
1 Person	20.6	30.8
2 People	16.9	23.0
3 People	20.4	20.4
4 People	17.4	13.5
5 People	11.3	6.9
6 People	6.6	3.1
7 People	3.7	1.3
8 or more people	3.2	1.1
<i>Number of Children</i>		
0	42.2	52.8
1	22.9	22.8
2	19.4	15.3
3	9.5	6.0
4	3.9	2.1
5 or more	2.0	1.0
<i>Type of Household</i>		
Single Person	20.6	30.8
Single-Parent	32.7	31.6
Other Households with Children	25.0	15.5
Other Households without Children	21.7	22.1
<i>Educational Level</i>		
Does not write or read	15.9	8.1
Without qualifications (only reads and writes)	24.9	17.8
Elementary	34.8	37.7
Secondary	21.6	30.8
Higher	2.9	5.6

(Keep.)

(Continuation.)

	Cyclers	Non-Cyclers
<i>Employability</i>		
Absolutely incapable of normal employment	5.7	11.1
Needs an initial process of social/health recovery	25.3	25.9
Unemployed needing training/education	24.9	19.7
Could access employment now	26.6	32.2
Carries out work in hidden economy - equivalent activity	12.7	4.9
Carries out normal work	3.6	4.5
<i>Social Problems</i>		
Drug abuse / dependency	7.9	6.2
Alcohol abuse / dependency	6.7	6.0
Other mental health problems	11.2	12.4
Other serious health problems	16.6	21.8
Foregoing payment for dwelling - eviction	8.6	8.0
Begging	1.5	1.0
Prostitution	0.7	0.6
Social Isolation - mental problems	13.2	16.2
Ethnic minority	26.4	10.4
<i>Number of Social Problems</i>		
0	29.2	35.2
1	45.8	42.4
2	17.8	16.6
3	5.5	4.6
4 or more	1.8	1.3
<i>Type of First Exit</i>		
Administrative	4.7	14.0
Fraud	56.9	42.7
Successful	38.4	43.4
<i>Total Time on Welfare</i>		
< 2 years	11.4	65.1
2-4 years	37.5	24.1
5-6 years	26.1	6.8
7-8 years	15.1	2.4
> 8 years	9.9	1.6
TOTAL	100.0	100.0

The categories appearing under the heading "Social Problems" are non-exclusive dichotomy variables; a household may suffer from more than one problem.

The frequency distributions concerning training and educational characteristics show that educational attainment is lower for households with multiple spells. This, nevertheless, does not seem to lead to very marked differences in the recipients' employability<sup>10</sup>. The only exception to this is the greater weight of recipients who are totally unfit for normal employment among non-cyclers. In any case, the data on these variables should be interpreted while considering the comparison established between cyclers and the rest of households. Hence, chronic recipients and those who had short spells and never return to the programmes are included in the latter group. While the former includes a large number of recipients suffering from greater difficulties in finding employment, just the opposite happens to the second group.

The number of social problems is somewhat higher for cyclers (29 percent of them do not suffer from any problems at all, compared to 35 percent for the other recipients). There are, however, no great differences concerning the presence of specific problems. Health problems are relatively widespread in both cases, while there is a lower incidence of marginal behaviour. The only exception to this is belonging to an ethnic minority, which is higher for households that return to the programme<sup>11</sup>.

The last differentiating characteristic between these groups concerns their differing experiences within the programme. There are notable divergences in the way recipients left the IMI and their total duration on it. The predominant type of exit from the first spell in the IMI for recidivist households is being expelled for not having fulfilled the commitments taken on at the moment they entered the programme. For the other households successful and administrative exits carry greater weight.

There are therefore various differentiating characteristics for households having more than one spell in the programme. In order to identify the precise effect each characteristic has on the likelihood of returning to the programme, it is necessary to single out their contribution by controlling the effect of the remaining characteristics, in addition to focusing the analysis solely on the group exposed to the risk of recidivism. The probability of returning to the programme should be calculated by only considering the households that left the IMI after an initial spell, thereby contrasting the probability of such households being cyclers to that of being temporary recipients. Some previous studies have not found significant differences between the characteristics of both these groups. Miller (2002), for instance, observed important differences between chronic and temporary recipients, the most striking traits of the latter being the fact that they

---

<sup>10</sup> Employability is a variable that is subjectively defined by social workers when assessing a benefit request.

<sup>11</sup> Belonging to an ethnic minority is not in itself a social problem. It is coded as such when the fact of belonging to an ethnic minority limits an individual's possibilities of social integration.

are older, have a higher level of educational attainment, have less children, suffer from less obstacles to enter the labor market and have more recent working experience. Nonetheless, he also found that there were striking similarities between cyclers and temporary recipients.

The probability of being a *cycler* as opposed to a temporary recipient can be calculated by means of a logistic regression model. A dichotomy variable ( $R_i$ ) can be used to classify households that left the programme after an initial spell. This variable can adopt the values 1 or 0, depending on whether they are either *cyclers* or *temporary* recipients. The probability of returning to the programme can be explained by the different socio-economic characteristics of each household:

$$R_i = x_i' \beta + u_i \quad (5)$$

where  $\beta$  represents the vector of coefficients corresponding to each household's ( $x_i'$ ) socio-economic characteristics. Calculating this probability depends on the hypothesis made concerning  $u_i$ . If one accepts that the most suitable way of modelling the relationship is through a logistic distribution function,  $P(F) = e^F / (1 + e^F)$ , then the probability of recidivism can be expressed as:

$$P(R_i = 1) = \frac{e^{x_i' \beta}}{1 + e^{x_i' \beta}} \quad (6)$$

and the likelihood function would be:

$$L = \frac{e^{\left[ \sum_{i=1}^n R_i (x_i' \beta) \right]}}{\prod_{i=1}^n (1 + e^{x_i' \beta})} \quad (7)$$

A preliminary analysis of the different variables allows us to single out educational attainment, belonging to an ethnic minority, household size, the number of children, the number of social problems, being a single-parent household or not, and employability as being significant. The interaction between the number of problems and employability also turns out to be significant. The probability of recidivism was calculated with the above-mentioned variables, reconstructed as dummies for each category (Table 4).

The model's results show that some categories have a high level of statistical association with the probability of returning to the programme. All the educational categories are very significant and show an almost linear negative relationship with the reference category –without studies– concerning the probability of re-entering the programme. The higher educational attainment is, the greater probability there is of a definitive exit from the programme after an initial spell. Logically, this relationship is linked to the greater possibility skilled recipients have of achieving job stability. The coefficients of the various categories of the employability variable corroborate this conclusion.

**Table 4**  
**PROBABILITY OF RECIDIVISM**

	(1)	(2)
<i>Constant</i>	0.816 <sup>***</sup> (0.069)	0.886 <sup>***</sup> (0.077)
<i>Educational Attainment</i>		
Does not write or read	0.635 <sup>***</sup> (0.065)	0.640 <sup>***</sup> (0.065)
Elementary	-0.121 <sup>**</sup> (0.037)	-0.124 <sup>***</sup> (0.037)
Secondary	-0.318 <sup>***</sup> (0.041)	-0.314 <sup>***</sup> (0.041)
Higher	-0.571 <sup>***</sup> (0.078)	-0.573 <sup>***</sup> (0.079)
<i>Belonging to an Ethnic Minority</i>		
No	-0.638 <sup>***</sup> (0.038)	-0.641 <sup>***</sup> (0.038)
<i>Household Size</i>		
1	-0.073 (0.062)	-0.072 (0.062)
2-4	-0.146 <sup>**</sup> (0.050)	-0.145 <sup>**</sup> (0.065)
5-7	0.071 (0.054)	0.069 (0.057)
<i>Number of Children</i>		
1	-0.144 <sup>**</sup> (0.065)	-0.145 <sup>**</sup> (0.065)
2-4	-0.002 (0.057)	-0.002 (0.057)
5-7	0.216 (0.145)	0.215 (0.146)
<i>Number of Social Problems</i>		
None	-0.226 <sup>***</sup> (0.053)	-0.241 <sup>**</sup> (0.075)
1	-0.091 <sup>***</sup> (0.047)	-0.160 <sup>**</sup> (0.061)
2	-0.011 (0.056)	-0.040 (0.069)
3	0.167 <sup>**</sup> (0.084)	0.135 (0.100)

(Keep.)

(Continuation.)

	(1)	(2)
<i>Single-Parent Household</i>		
No	-0.107 <sup>***</sup> (0.031)	-0.107 <sup>***</sup> (0.032)
<i>Employability</i>		
Low	0.343 <sup>***</sup> (0.039)	0,270 <sup>***</sup> (0,070)
Average	0.310 <sup>***</sup> (0.044)	0,406 <sup>***</sup> (0,116)
High	-0.195 <sup>***</sup> (0.035)	0,050 (0,093)
<i>Number of Problems x Employability</i>		
Problems(0) x High Employability		-0,222 <sup>**</sup> (0,108)
Problems(1) x Low Employability		0,156 <sup>*</sup> (0,081)
Problems(3) x Average Employability		-0,366 <sup>*</sup> (0,082)
AIC	14763	14760
-2 Log L	16466	14696
N	11881	11881

Standard errors in brackets. \*\*\* Significant at 99%, \*\* Significant at 95%, \* Significant at 90%.

Household size also seems to be a significant variable to explain the probability of recidivism. When the different household sizes are disaggregated, however, most of the categories lose statistical significance. A slight relationship with household size can be detected with smaller households having a lower probability of returning to the IMI. A similar conclusion is reached when we observe the coefficients for the number of children. Households with only one minor turned out to be the most significant, with a negative value. It is also worth noting that belonging to a single-parent household increases the probability of recidivism the most among all the different types of households.

Of the three different types of variables included in the model –education and employability, household type and size, and social problems–, the latter have the greatest explanatory capacity. The number of social problems is a key variable with very significant negative coefficients when households are not affected by any problem. The existence of health problems, mental health problems and marginal behaviour are, without doubt, factors that hinder households from



earning sufficient income by their own means. Nonetheless, belonging to an ethnic minority is above all the primary cause of recidivism. It is the most significant variable and the one having the greatest coefficient among the set of variables and categories included in the model. This result has important repercussions for social policy given the specific characteristics of this population and the difficulties encountered when conducting long-term public sector intervention. It is even possible to question what the optimum level of intervention should be in the face of this group's very specific social norms.

Lastly, interactions between employability and the number of social problems seem to be significant if analysed together. They, however, lose a large part of their significance when they are disaggregated. The model's fit hardly changes with their inclusion. Although foreseeable, the most outstanding result is that the combination of high levels of employability along with the lack of social problems seems to guarantee a substantially lower probability of recidivism.

The model's results therefore allow us to identify a set of characteristics that increase the probability of recidivism that corroborate traditional hypotheses derived from dynamic analyses of welfare programmes. Improving training and employability levels; providing differential support for households having a large number of children and, more specifically, single-parent families; and developing actions designed to reduce the number and intensity of social problems, especially obstacles to employment, should all be essential ingredients of any overall public initiative geared towards promoting the definitive exit from welfare programmes.

#### **4. THE DURATION OF "POST-PROGRAM" SPELLS: A PARAMETRIC ESTIMATION**

The extent of recidivism constitutes an indication that the welfare policies are not designed as efficiently as they could. The evaluation of these instruments, however, has conventionally been based on studying durations considering each spell independently, thus obviating the notion of dependence as a phenomenon resulting more from intermittent participation than from a prolonged initial spell. If households manage to leave the programmes but are unable to earn sufficient income due either to their structural characteristics or the existence of adverse macroeconomic conditions, they will return to the programmes in the medium or long-term. This lack of self-sufficiency constitutes a distinct form of dependence and, as was mentioned above, obliges policymakers to redefine their objectives.

From the previous section, it can be gleaned that a key variable for the policymakers should be the probability of recidivism. The guiding principle should

therefore be to minimise it. However, if a large part of households that leave the programme cannot avoid redivism a secondary objective would be to maximise the duration of post-program spells. In order to verify by what degree durations of the off-welfare spells are longer or shorter and find out what their main determining factors are, we have chosen to estimate a duration model based on (4). It incorporates three different explanatory factors including the recipients' socio-economic characteristics ( $X$ ), the parameters summing up the first individual initial spell –the length of the initial spell ( $T^E$ ) and the type of exit ( $Z$ )–, and macroeconomic conditions ( $U$ ). Contrary to the previous analysis, which jointly took into account *cyclers* and *temporary* recipients to identify the explanatory characteristics of the probability of recidivism, we have logically focused our attention solely on the households that returned to the programme in order to conduct the empirical analysis.

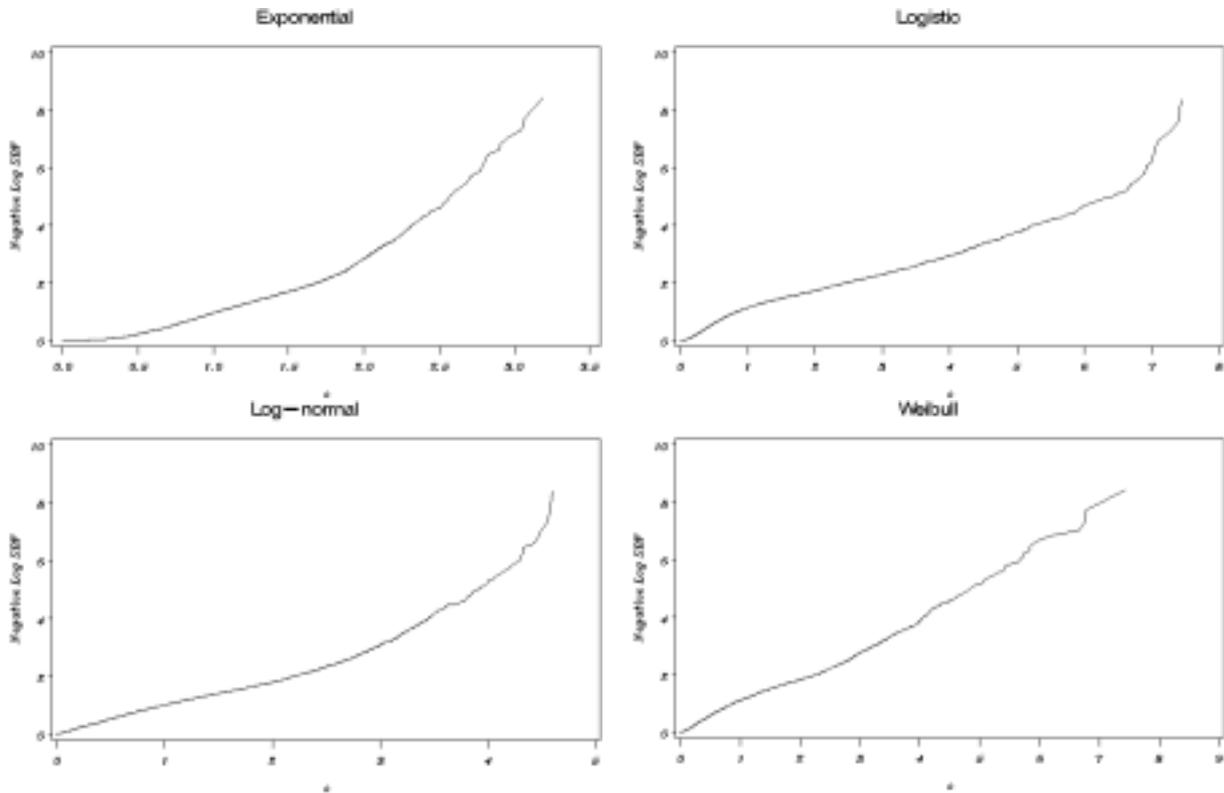
Estimating off-welfare durations by means of a re-entry hazard function requires it to be properly specified. It is well known that duration model results are very sensitive to the assumptions made regarding the distribution shapes chosen for the durations and that the hypothesis requirements for parametric models are notable. Nonetheless, if the behaviour patterns of recipients who return to the programmes correspond to a specific probability distribution, the inferences based on the parameterisation of the distribution would be more efficient or accurate than with the use of other more flexible procedures. The key lies in choosing the distribution that best fits in with the data. To analyse first spell durations, researchers have commonly turned to Weibull functions [Blank (1989), Sandefur and Cook (1997)] that assume monotonous hazard rates, which increase or decrease over time. Previous studies conducted on the IMI, however, have revealed that the distribution of total time in the programme fits in with a log-normal distribution (Ayala and Rodríguez, 2003). Most of the studies that analyse duration outside the programmes and not total duration within them also suggest a pattern marked by a rapid growth of the recidivism hazard rate that subsequently falls dramatically in the medium- and long-term [Ellwood (1986), Weeks (1991), Blank and Ruggles (1994), and Cao (1996)].

One of the possible ways to confirm this pattern is analyzing Cox-Snell residuals. These are defined as follows:

$$e_i = \log \hat{S}(t_i | \psi_i) \quad (8)$$

where  $t_i$  represents the time observed for each household  $i$  that returns to the programme,  $\psi_i$  is a vector of explanatory variables (which would include the three types mentioned previously), and  $\hat{S}(t)$  represents the estimated probability of remaining outside the programme until the moment  $t$ , based on the adjusted model. Its graphical representation against  $t$  should generate a straight line with a slope of 1 and an origin at 0 if we are dealing with a suitable distribution.

**Figure 2**  
**COX-SNELL RESIDUALS FOR OFF-WELFARE SPELLS**



Calculating the Cox-Snell residuals allows us to consider the log-normal and Weibull functions as the most suitable distributions for the durations of post-program spells. Nonetheless, in neither case does the line correspond exactly to a straight line with a slope of 1, forcing us to evaluate the calculation results with some degree of caution.

The hazard rate including the vector of the households' characteristics, the parameters of the first spell and the macroeconomic conditions (with  $\psi_i$  summing up the three factors) for the log-normal distribution of durations can be expressed as:

$$\log \lambda(t) = \log \lambda_0 (t e^{-\beta \psi}) - \beta \psi \quad (9)$$

and the hazard for the Weibull distribution can be specified as:

$$\lambda(t|\psi) = \exp(\beta \psi) \gamma \rho t^{\rho-1} [\psi \exp(\beta \psi)] \quad (10)$$

The individual characteristics selected to estimate the models are the same as the ones used to study the probability of returning to the program. As was mentioned previously, the duration of the first spell and the type of exit are included in order to understand how the first spell can condition the time spent outside the programme. In order to assess the contribution made by macroeconomic conditions to the off-welfare duration, the Madrid Region's unemployment rate at the moment of re-entry (taken from the Labor Force Survey) is included.

Table 5 shows the results of both models with their significant variables. Although there are some differences between the models, the results generally show a high degree of similarity, especially with regard to the sign of the coefficients. In addition, their errors are also similar. The variables that turned out to be significant and which have given form to the final model are: the first spell's duration and type of exit, the unemployment rate and a set of socio-demographic characteristics such as the size of the household, single-person households or not, belonging to an ethnic minority, educational attainment and the level of employability.

**Table 5**

**RESULTS OF THE PARAMETRIC ESTIMATION OF THE "POST-PROGRAM" DURATION**

	Log-normal	Weibull
Constant	3.670 <sup>***</sup> (0.064)	4.518 <sup>***</sup> (0.074)
Duration of 1 <sup>st</sup> Spell	-0.004 <sup>***</sup> (0.001)	-0.005 <sup>***</sup> (0.001)
Unemployment Rate	-0.032 <sup>***</sup> (0.002)	-0.057 <sup>***</sup> (0.002)
Single Person	-0.132 <sup>***</sup> (0.032)	-0.146 <sup>***</sup> (0.030)
Academic Attainment	-0.025 <sup>***</sup> (0.010)	-0.030 <sup>***</sup> (0.009)
Number of Members	0.036 <sup>***</sup> (0.018)	0.024 (0.016)
Ethnic minority	-0.044 <sup>**</sup> (0.023)	-0.013 (0.022)
Employability	0.037 <sup>***</sup> (0.009)	0.027 <sup>***</sup> (0.009)
Fraudulent Exit	0.124 <sup>***</sup> (0.043)	0.052 (0.039)
Successful Exit	-0.007 (0.043)	-0.040 (0.040)
Scale	0.571 (0.006)	0.514 (0.006)
Weibull shape		1.947 (0.023)
N	4193	4193
Log L	-3515	-3671

Standard errors in brackets. \*\*\* Significant at 99%, \*\* Significant at 95%, \* Significant at 90%.



The significant effect of the first spell's duration on the length of the off-welfare spells stands out among the two variables that refer to the first spell's characteristics. The post-program duration becomes shorter as the first spell is lengthened. Nonetheless, the coefficient's value is low despite the fact that both the direction and the high level of statistical significance are common to both models. Extracting unequivocal conclusions for the type of exit is difficult given the difference in each model's statistical significance. Generally speaking, having left the programme for not having fulfilled its obligations seems to be more significant, although with a positive sign for the time spent outside the programme. This result, however, should be treated with caution due to a variety of reasons. Firstly, the coefficient should be interpreted in relation to administrative exits. The probability of recidivism for this type of exits is, by definition, very low due to the fact that the causes grouped together under this heading lead to definitive exits from the programme (moving on to another benefits scheme, merging cases, death, loss of nationality, etc.). Secondly, the possible inferences made on the different results for successful and fraudulent exits cannot obviate the fact that these behave very similarly in practice<sup>12</sup>. A coding problem probably exists concerning the causes behind programme exits as established by the IMI managers.

The unemployment rate behaves as foreseen by theoretical hypotheses. A growth in the unemployment rate shortens the off-welfare duration. The fact that this is an exogenous variable means that the possibility of macroeconomic shocks occurring can hamper the programme managers' objective of maximising the time spent outside the programme. Possible disruptions to the economic cycle would therefore give rise to a greater number of re-entries independently of the results obtained by public sector initiatives aimed at promoting a rise in the flow of recipients entering the labour market.

Generally speaking, the results obtained for socio-economic characteristics turned out to be as expected. Belonging to an ethnic minority seems to reduce the chances of attaining self-sufficiency and shortens the time for returning to the programme, although it is not significant in both models. Problems of statistical significance do not exist in the case of individuals living alone. This characteristic represents one of the main determining factors for especially short off-welfare durations due to the problems generally associated with it, such as mental health problems and social isolation. It is striking that employability and educational attainment have different signs. The former acts as a factor to lengthen the time spent outside the programme while the latter shortens it. This divergence could probably be due to the fact that they really constitute two different sources of indirect information to assess the real possibility of finding employment and remaining outside the programme. For many groups, educa-

---

<sup>12</sup> This is confirmed through a multiple risk model for exits from the IMI (Ayala and Rodríguez, 2003).

tional attainment provides information on “nominal” qualifications that may have been granted in a personal situation that occurred long before re-entering the IMI. Employability, on the other hand, offers a more up-to-date assessment of the recipients’ possibilities of entering the job market, in addition to including more information (severe health problems make an individual difficult to employ even if he/she has a high level of educational attainment). In any case, the values for both coefficients are relatively low.

It therefore seems that a combination of different variables contributes towards determining durations outside the programme. In general, these fit in well with the hypotheses posed initially. Both the programme’s own parameters as well as the first spell’s characteristics –duration and type of exit– turned out to be relevant. Similarly, exogenous variables such as the economic cycle can limit the fulfilment of the objectives set by policymakers. Finally, there are some socio-demographic characteristics –such as employability, belonging to an ethnic minority and specific types of households– that also have an influence on whether off-welfare spells are longer or shorter.

Predictions could be made on expected durations of the time spent outside the programme based on the results obtained from the parametric models. These would take into consideration different macroeconomic scenarios, different first spell experiences and possible changes in the most relevant socio-economic characteristics. Nevertheless, such predictions would only be advisable if the results obtained from the estimations are sufficiently robust. Two possible sources of bias exist in the models that have been applied. Firstly, parametric calculations impose a certain degree of rigidity if they are not wholly validated by the initial residual contrasts. Secondly, some kind of heterogeneity could also exist among the recipients returning to the programme that might have an effect on the distribution’s shape. This heterogeneity could be derived from a wide variety of sources, such as differences in recipients’ motivation and in job-search efforts as well as their level of satisfaction at the treatment received by the social services.

In order to measure the sensitivity of these results to the decision made to calculate duration by means of parametric models, we have also calculated a semi-parametric proportional hazard model that does not impose any sort of shape to the distribution. In these semiparametric models, the hazard of re-entering the programme can be calculated as follows:

$$\log \lambda_i(t) = \alpha(t) + \beta_1 \psi_{i1} + \dots + \beta_k \psi_{ik} \quad (11)$$

where  $\alpha(t) = \log \lambda_0(t)$ . The notion of proportional hazard means that the hazard of household  $i$  re-entering the programme can be expressed as fixed proportion of any other household’s hazard:

$$\frac{\lambda_i(t)}{\lambda_j(t)} = \exp \{ \beta_1 (\psi_{i1} - \psi_{j1}) + \dots + \beta_k (\psi_{ik} - \psi_{jk}) \} \quad (12)$$

The coefficient among the exit functions is constant over time. From there we can derive as a natural property of the model that hazard functions are strictly parallel. Contrasting the proportional hazard models requires estimating by maximum partial likelihood:

$$\log PL = \sum_{i=1}^n \delta_i \left[ \beta \psi_i - \log \left( \sum_{j=1}^n Y_{ij} e^{\beta \psi_j} \right) \right] \quad (13)$$

where  $Y_{ij}=1$  if  $t_j \geq t_i$  e  $Y_{ij}=0$  if  $t_j < t_i$ .

In order to control the potential effects of unobserved heterogeneity, the models can be estimated by incorporating a common random effect that acts to multiply the hazard rates of all members belonging to a specific sub-group. An attempt is made to conduct an analysis conditioned by an unobservable variable with a distribution that is independent of the explanatory variables under consideration. In order to do so, a gamma function with mean one and variance  $\theta$  was used<sup>13</sup>:

$$g(\alpha) = \frac{\alpha^{1/(\theta-1)} \exp(-\alpha / \theta)}{\Gamma(1/\theta) \theta^{1/\theta}} \quad (14)$$

To measure the sensitivity of this choice we can also estimate the model taking an inverse Gaussian distribution as a representative function of this independent distribution.

The results of the sensitivity analysis appear in Table 6. Calculating the model with a semi-parametric procedure does not change the results obtained with the previous models. The sign and ranking of the coefficients remain the same. The only change worth noting is that the two types of exits from the programme considered turn out not to be significant. Controlling heterogeneity in the log-normal model enables us to prove that heterogeneity is negligible and does not affect the calculations that were carried out at all. Its coefficient is practically nil and not significant ( $\theta=0.00000013$ ). It also serves to improve the results obtained with the Weibull function model with coefficients that are very similar to the log-normal coefficients for most variables, though the overall fit it offers continues to be not as good<sup>14</sup>.

<sup>13</sup> The advantages and limitations of this option compared to other more flexible procedures has been widely discussed since the ground-breaking critical study by Heckman and Singer (1984). For a contemporary justification for this choice, see Abbring and Van den Berg (2003).

<sup>14</sup> The fact that  $\theta$  is significant in the calculations conducted with Weibull functions should not be interpreted to mean that an unobserved individual effect exists. What it indicates is that there is a homogenous population that the Weibull functions does not adjust well to. If the effects of heterogeneity were insignificant as the log-normal calculation seems to confirm, then there would be a homogenous population with a hazard that grows initially and then declines. If a monotonous shape is adopted for the estimation, like the Weibull function, the model does not fit in with the real distribution. There would therefore be no other alternative than to assign the explanation to the unobserved random effect. See Gutiérrez (2002).

**Table 6**  
**SENSITIVITY ANALYSIS**

	Cox Model ( <i>hazard ratios</i> )	Log-normal ( <i>Gamma</i> )	Log-normal ( <i>Inv. Gaussian</i> )	Weibull ( <i>Gamma</i> )	Weibull ( <i>Inv. Gaussian</i> )
Constant		3.670*** (0.078)	3.670*** (0.078)	3.710*** (0.109)	3.891*** (0.077)
Duration of 1 <sup>st</sup> Spell	1.007*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)
Unemployment Rate	1.081*** (0.005)	-0.032*** (0.002)	-0.032*** (0.002)	-0.035*** (0.003)	-0.046*** (0.002)
Single Person	1.239*** (0.071)	-0.132*** (0.032)	-0.132*** (0.032)	-0.137*** (0.033)	-0.141*** (0.031)
Educational Level	1.046*** (0.018)	-0.025*** (0.010)	-0.025*** (0.010)	-0.023** (0.010)	-0.027*** (0.009)
Number of Members	0.944** (0.030)	0.036*** (0.018)	0.036*** (0.018)	0.044** (0.018)	0.029* (0.017)
Ethnic minority	1.029 (0.043)	-0.044** (0.023)	-0.044** (0.023)	-0.052** (0.024)	-0.027 (0.023)
Employability	0.958** (0.016)	0.037*** (0.009)	0.037*** (0.009)	0.040*** (0.010)	0.031*** (0.009)
Fraudulent Exit	0.90 (0.068)	0.124*** (0.043)	0.124*** (0.043)	0.124*** (0.045)	0.078* (0.040)
Successful Exit	1.050 (0.081)	-0.007 (0.043)	-0.007 (0.043)	-0.013 (0.045)	-0.034 (0.041)
Scale		0.560 (0.006)	0.560 (0.006)	0.337 (0.006)	0.321 (0.008)
Weibull shape				2.967 (0.122)	3.110 (0.074)
$\theta$		0.000 (0.000)	0.000 (0.000)	0.902 (0.106)	3.822 (0.605)
N	4193	4193	4193	4193	4193
Log L / -2 Log L	18949	-3515	-3515	-3597	-3540

Standard errors in brackets. \*\*\* Significant at 99%, \*\* Significant at 95%, \* Significant at 90%.

The contrasts carried out therefore allow us to confirm that the log-normal estimation is valid. With it, we also have to accept that the recidivism hazard rises initially to then fall gradually over time. If one therefore manages to lengthen the time spent outside the programme the probability of re-entering



the programme will progressively fall. This objective, however, may be affected by the characteristics of the recipients that have managed to leave a programme after an initial spell and, even more so, by any macroeconomic shocks occurring that substantially reduce these groups' possibilities of finding employment.

The expected duration of post-program spells can be simulated based on the coefficients estimated with the log-normal parametric model. The various alternative scenarios are defined by taking representative variables from each block. These include the duration of the first spell as the most representative variable of the initial experience in the programme, macroeconomic conditions based on the unemployment rate (taking into account the maximum and minimum values for the period under consideration) and employability, as it is the variable over which public sector initiatives can have the greatest effect.

**Table 7**  
**VARIATIONS IN EXPECTED LENGTH OF "POST-PROGRAM" SPELLS WITH**  
**UNEMPLOYMENT, THE DURATION OF THE FIRST SPELL AND**  
**HOUSEHOLDS CHARACTERISTICS<sup>(\*)</sup>**

Duration 1 <sup>st</sup> Spell	Unemployment Rate	Employability	Median Duration
36	20.3	Low	18.4 (0.419) <sup>(**)</sup>
36	20.3	High	19.8 (0.436)
6	20.3	Low	20.5 (0.503)
6	20.3	High	22.1 (0.489)
36	6.6	Low	28.6 (0.823)
36	6.6	High	30.8 (0.858)
6	6.6	Low	31.8 (1.024)
6	6.6	High	34.3 (1.033)

(\*) The values of the characteristics that remain constant are individuals living alone (no), educational attainment (low), number of members (between 2 and 4), belonging to an ethnic minority (no) and type of exit (successful). The calculations were made based on the coefficients from the log-normal model appearing in the 2<sup>nd</sup> column of Table 5.

(\*\*) Standard deviation.

Simulating the length of the off-welfare spells under the different scenarios described above shows that the main determining factor for duration outside the programme is the macroeconomic cycle. An individual having the selected characteristics with a long initial spell and low employability would spend an average of ten additional months outside the programme if the unemployment rate fell from the highest to the lowest value. If the initial spell were short and employability high, the additional duration outside the programme if unemployment fell to that level would exceed a year. The duration of the first spell can therefore also have a certain influence over expected duration. For some combinations of the variables chosen, going from a long initial spell (36 months) to a much shorter one (6 months) could mean up to an additional four months spent outside the programme. The effects of changes in the level of employability are much less pronounced.

## 5. CONCLUSIONS

The possibility of multiple occurrence of welfare reciprocity calls into question the traditional practice of calculating the duration of each spell on an independent basis. The fact the individuals return to the programmes puts the common interpretation of welfare dependency into perspective and obliges policymakers to redefine their objectives. Two new parameters for the function used to evaluate the effectiveness of public intervention could well be minimising the recidivism rates and maximising the time elapsed between off-welfare and welfare spells.

This study has made an attempt to identify the extent of the problem of multiple welfare spells as well as to identify its main determining factors. After setting out a theoretical framework alternative to models based on single spells and presenting the combined effect of the recipients' first spell, macroeconomic conditions and socio-demographic characteristics, various econometric procedures have been used to answer two fundamental questions. Namely, which characteristics have an influence over the probability of returning to the programmes, and what factors determine that the off-welfare duration should differ substantially among the recidivist households. The data of the IMI programme was used to this end. Its records, which have been described in detail in the study, offer great advantages when compared to the sources commonly used by other studies.

The results obtained by the logistic regression can serve to define a possible list of targeted actions that may be taken in order to try to diminish the probability of recidivism. Among other possible long-term initiatives, actions aimed at improving recipient's level of employability to consolidate a more stable position in the labour market, measures that complement the earnings of former recipients



(particularly those with more children) and defining a list of initiatives to reduce the number and intensity of social problems stand out as being important.

According to these results, measures to maximise the duration of the off-welfare spells should focus on implementing reforms that would improve recipients' chances of leaving the programme to enter into more stable forms of employment and allocating a greater amount of resources to promote the insertion of specific groups. In addition to individuals with low or average employability, this would also be the case for individuals living alone and suffering from difficulties in establishing social relationships and mental health problems, as well as individuals whose social integration is hampered by belonging to an ethnic minority. Nonetheless, the empirical evidence we have found reveals that exogenous factors also play a part. These include macroeconomic shocks, which greatly reduce the likelihood of public initiatives reaching their objectives. The simulations conducted with alternative scenarios place policymakers chances of lengthening the off-welfare spells if macroeconomic shocks occur into perspective. However, it can also be deduced from the simulations that the experience of the first spell and, to a lesser extent, employability can indeed contribute towards lengthening the time former recipients spend outside the programme. Hence, even in recessive economic contexts, there is still room for manoeuvre for implementing more efficient public sector initiatives.

## BIBLIOGRAPHY

- ABBRING, J., and VAN DEN BERG, G. J. (2003): *The Unobserved Heterogeneity Distribution in Duration Analysis*, Free University Amsterdam (mimeograph).
- AYALA, L.; MARTÍNEZ, R., and RUIZ-HUERTA, J. (2004): "La descentralización de las prestaciones asistenciales: efectos sobre la igualdad", in RUIZ-HUERTA, J. (ed.): *Políticas públicas y distribución de la renta*. Bilbao: Fundación BBVA.
- AYALA, L., and PÉREZ, C. (2003): "Macroeconomic Conditions, Institutional Factors and Demographic Structure: What Causes Welfare Caseloads?", Instituto de Estudios Fiscales, *Papeles de Trabajo* 2/2003.
- AYALA, L., and RODRÍGUEZ, C. (2003): *The Effects of Demographic Factors on Welfare Duration: Evidence from Spain*, (mimeograph), Madrid: Instituto de Estudios Fiscales.
- BANE, M. J., and ELLWOOD, D. T. (1983): *The Dynamics of Dependence: The Routes to Self-Sufficiency*. U.S. Department of Health and Human Services.
- (1994): *Welfare Realities. From Rhetoric to Reform*. Harvard University Press.
- BELL, S. H. (2001): "Why Are Welfare Caseloads Falling?", The Urban Institute, *Assessing the New Federalism Discussion Papers* no. 01-02.
- BLANK, R. (1989): "Analyzing the Length of Welfare Spells", *Journal of Public Economics*, 39, 245-273.
- BLANK, R. M. (2002): "Evaluating Welfare Reform in the United States", *Journal of Economic Literature*, 40: 1105-1166
- BLANK, R., and RUGGLES, P. (1994): "Short-Term Recidivism among Public Assistance Recipients", *American Economic Review*, 84, 49-53.
- BORN, C. E.; CAUDILL, P. J.; SPERA, C., and KUNZ, J. F. (1998): "A Look at Life after Welfare", *Public Welfare*, 56, 32-37.
- BRANDON, P. (1995): "Vulnerability to Future Dependence Among Former AFDC Mothers", Institute for Research on Poverty, *Discussion Paper* no. 1055-95.
- CAO, J. (1996): "Welfare Reciprocity and Welfare Recidivism", Institute for Research on Poverty, *Discussion Paper* no. 1081-96.
- COLLET, D. (1994): *Modelling Survival Data in Medical Research*. London: Chapman & Hall.
- EDIN, K. J. (1996): "The Myths of Dependence and Self-Sufficiency: Women, Welfare and Low-Wage Work", *Focus*, 17, no. 2, 1-9.
- ELLWOOD, D. T. (1986): *Targeting 'Would Be' Long-Term Recipients of AFDC*, U.S. Department of Health and Human Services.

- GOERGE, R. M., and JOO LEE, B. (2001): "Matching and Cleaning Administrative Data", in VER PLOEG, M.; MOFFITT, R. A., and CITRO, C. (eds.): *Studies of Welfare Population: Data Collection and Research Issues*. Washington: National Academy Press.
- GOTTSCHALK, P., and MOFFITT, R. (1994): "Welfare Dependence: Concepts, Measures and Trends", *American Economic Review*, 84, 38-42.
- GUTIÉRREZ, R. G. (2002): "Parametric Frailty and Shared Frailty Survival Models", *The Stata Journal*, 2, 22-44.
- HARRIS, K. M. (2000): "Life after Welfare: Women, Work and Repeat Dependence", *American Sociological Review*, 61, 407-426.
- HECKMAN, J. J., and SINGER, B. (1984): "A Method for Minimizing the Impact of Distributional Assumptions in Econometric Models for Duration Data", *Econometrica*, 52, 271-319.
- KENG, S. H.; GARASKY, S., and JENSEN, H. H. (2000): "Welfare Dependence, Recidivism and the Future for Recipients of Temporary Assistance for Needy Families", Center for Agricultural and Rural Development, Iowa State University, *Working Paper 00-WP 242*.
- MAINIERI, T., and DANZIGER, S. (2001): "Designing Surveys of Welfare Populations". *Report from the Workshop on Designing Surveys of Welfare Recipients*, Ann Arbor, Michigan.
- MAYER, S. E. (2000): "Why Welfare Caseloads Fluctuate: A Review of Research on AFDC, SSI and the Food Stamps Program". The New Zealand Treasury *Working Paper 00/7*.
- MEYER, D. R., and CANCIAN, M. (2000): "Life after Welfare", *Public Welfare*, 54, 25-29.
- MILLER, C. (2002): *Leavers, Stayers and Cyclers: An Analysis of the Welfare Caseload*, Manpower Demonstration Research Corporation.
- MOFFITT, R. (1992): "Incentive Effects of the U.S. Welfare System: A Review", *Journal of Economic Literature*, 30, 1-61.
- (2002): "Experienced-Based Measures of Heterogeneity in the Welfare Caseload", in CITRO, R.; MOFFITT, R., and VER PLOEG, S. (eds.): *Data Collection and Research Issues for Studies of Welfare Populations*, Washington: National Academy Press.
- MOFFITT, R., and ROFF, J. (2000): "The Diversity of Welfare Leavers". *Policy Brief 00-2*. Baltimore: John Hopkins University.
- (2001): "Changing Caseloads: Macro Influences and Micro Composition", *Federal Reserve Bank of New York Economic Policy*, September 2001, 37-51.
- SANDEFUR, G. D., and COOK, S. T. (1997): "Duration of Public Assistance Receipt: Is Welfare a Trap?". Institute for Research on Poverty, *Discussion Paper no. 1129-97*.

STAPLETON, D.; LIVERMORE, G., and TUCKER, A. (1997): *Determinants of AFDC Caseload Growth*. Washington: Department of Health and Human Services.

WEEKS, G. (1991): *Leaving Public Assistance in Washington State*, Washington State Institute for Public Policy.



## ***NORMAS DE PUBLICACIÓN DE PAPELES DE TRABAJO DEL INSTITUTO DE ESTUDIOS FISCALES***

Esta colección de *Papeles de Trabajo* tiene como objetivo ofrecer un vehículo de expresión a todas aquellas personas interesadas en los temas de Economía Pública. Las normas para la presentación y selección de originales son las siguientes:

1. Todos los originales que se presenten estarán sometidos a evaluación y podrán ser directamente aceptados para su publicación, aceptados sujetos a revisión, o rechazados.
2. Los trabajos deberán enviarse por duplicado a la Subdirección de Estudios Tributarios. Instituto de Estudios Fiscales. Avda. Cardenal Herrera Oria, 378. 28035 Madrid.
3. La extensión máxima de texto escrito, incluidos apéndices y referencias bibliográficas será de 7000 palabras.
4. Los originales deberán presentarse mecanografiados a doble espacio. En la primera página deberá aparecer el título del trabajo, el nombre del autor(es) y la institución a la que pertenece, así como su dirección postal y electrónica. Además, en la primera página aparecerá también un abstract de no más de 125 palabras, los códigos JEL y las palabras clave.
5. Los epígrafes irán numerados secuencialmente siguiendo la numeración arábica. Las notas al texto irán numeradas correlativamente y aparecerán al pie de la correspondiente página. Las fórmulas matemáticas se numerarán secuencialmente ajustadas al margen derecho de las mismas. La bibliografía aparecerá al final del trabajo, bajo la inscripción "Referencias" por orden alfabético de autores y, en cada una, ajustándose al siguiente orden: autor(es), año de publicación (distinguiendo a, b, c si hay varias correspondientes al mismo autor(es) y año), título del artículo o libro, título de la revista en cursiva, número de la revista y páginas.
6. En caso de que aparezcan tablas y gráficos, éstos podrán incorporarse directamente al texto o, alternativamente, presentarse todos juntos y debidamente numerados al final del trabajo, antes de la bibliografía.
7. En cualquier caso, se deberá adjuntar un disquete con el trabajo en formato word. Siempre que el documento presente tablas y/o gráficos, éstos deberán aparecer en ficheros independientes. Asimismo, en caso de que los gráficos procedan de tablas creadas en excel, estas deberán incorporarse en el disquete debidamente identificadas.

***Junto al original del Papel de Trabajo se entregará también un resumen de un máximo de dos folios que contenga las principales implicaciones de política económica que se deriven de la investigación realizada.***



## ***PUBLISHING GUIDELINES OF WORKING PAPERS AT THE INSTITUTE FOR FISCAL STUDIES***

This serie of *Papeles de Trabajo* (working papers) aims to provide those having an interest in Public Economics with a vehicle to publicize their ideas. The rules governing submission and selection of papers are the following:

1. The manuscripts submitted will all be assessed and may be directly accepted for publication, accepted with subjections for revision or rejected.
2. The papers shall be sent in duplicate to Subdirección General de Estudios Tributarios (The Deputy Direction of Tax Studies), Instituto de Estudios Fiscales (Institute for Fiscal Studies), Avenida del Cardenal Herrera Oria, nº 378, Madrid 28035.
3. The maximum length of the text including appendices and bibliography will be no more than 7000 words.
4. The originals should be double spaced. The first page of the manuscript should contain the following information: (1) the title; (2) the name and the institutional affiliation of the author(s); (3) an abstract of no more than 125 words; (4) JEL codes and keywords; (5) the postal and e-mail address of the corresponding author.
5. Sections will be numbered in sequence with arabic numerals. Footnotes will be numbered correlatively and will appear at the foot of the corresponding page. Mathematical formulae will be numbered on the right margin of the page in sequence. Bibliographical references will appear at the end of the paper under the heading "References" in alphabetical order of authors. Each reference will have to include in this order the following terms of references: author(s), publishing date (with an a, b or c in case there are several references to the same author(s) and year), title of the article or book, name of the journal in italics, number of the issue and pages.
6. If tables and graphs are necessary, they may be included directly in the text or alternatively presented altogether and duly numbered at the end of the paper, before the bibliography.
7. In any case, a floppy disk will be enclosed in Word format. Whenever the document provides tables and/or graphs, they must be contained in separate files. Furthermore, if graphs are drawn from tables within the Excell package, these must be included in the floppy disk and duly identified.

***Together with the original copy of the working paper a brief two-page summary highlighting the main policy implications derived from the re-search is also requested.***



## ÚLTIMOS PAPELES DE TRABAJO EDITADOS POR EL INSTITUTO DE ESTUDIOS FISCALES

### 2000

- 1/00 Crédito fiscal a la inversión en el impuesto de sociedades y neutralidad impositiva: Más evidencia para un viejo debate.  
*Autor:* Desiderio Romero Jordán.  
Páginas: 40.
- 2/00 Estudio del consumo familiar de bienes y servicios públicos a partir de la encuesta de presupuestos familiares.  
*Autores:* Ernesto Carrillo y Manuel Tamayo.  
Páginas: 40.
- 3/00 Evidencia empírica de la convergencia real.  
*Autores:* Lorenzo Escot y Miguel Ángel Galindo.  
Páginas: 58.

### *Nueva Época*

- 4/00 The effects of human capital depreciation on experience-earnings profiles: Evidence salaried spanish men.  
*Autores:* M. Arrazola, J. de Hevia, M. Risueño y J. F. Sanz.  
Páginas: 24.
- 5/00 Las ayudas fiscales a la adquisición de inmuebles residenciales en la nueva Ley del IRPF: Un análisis comparado a través del concepto de coste de uso.  
*Autor:* José Félix Sanz Sanz.  
Páginas: 44.
- 6/00 Las medidas fiscales de estímulo del ahorro contenidas en el Real Decreto-Ley 3/2000: análisis de sus efectos a través del tipo marginal efectivo.  
*Autores:* José Manuel González Páramo y Nuria Badenes Plá.  
Páginas: 28.
- 7/00 Análisis de las ganancias de bienestar asociadas a los efectos de la Reforma del IRPF sobre la oferta laboral de la familia española.  
*Autores:* Juan Prieto Rodríguez y Santiago Álvarez García.  
Páginas 32.
- 8/00 Un marco para la discusión de los efectos de la política impositiva sobre los precios y el *stock* de vivienda.  
*Autor:* Miguel Ángel López García.  
Páginas 36.
- 9/00 Descomposición de los efectos redistributivos de la Reforma del IRPF.  
*Autores:* Jorge Onrubia Fernández y María del Carmen Rodado Ruiz.  
Páginas 24.
- 10/00 Aspectos teóricos de la convergencia real, integración y política fiscal.  
*Autores:* Lorenzo Escot y Miguel Ángel Galindo.  
Páginas 28.

## 2001

- 1/01 Notas sobre desagregación temporal de series económicas.  
*Autor:* Enrique M. Quilis.  
Páginas 38.
- 2/01 Estimación y comparación de tasas de rendimiento de la educación en España.  
*Autores:* M. Arrazola, J. de Hevia, M. Risueño y J. F. Sanz.  
Páginas 28.
- 3/01 Doble imposición, “efecto clientela” y aversión al riesgo.  
*Autores:* Antonio Bustos Gisbert y Francisco Pedraja Chaparro.  
Páginas 34.
- 4/01 Non-Institutional Federalism in Spain.  
*Autor:* Joan Rosselló Villalonga.  
Páginas 32.
- 5/01 Estimating utilisation of Health care: A groupe data regression approach.  
*Autora:* Mabel Amaya Amaya.  
Páginas 30.
- 6/01 Shapley inequality decomposition by factor components.  
*Autores:* Mercedes Sastre y Alain Trannoy.  
Páginas 40.
- 7/01 An empirical analysis of the demand for physician services across the European Union.  
*Autores:* Sergi Jiménez Martín, José M. Labeaga y Maite Martínez-Granado.  
Páginas 40.
- 8/01 Demand, childbirth and the costs of babies: evidence from spanish panel data.  
*Autores:* José M.<sup>a</sup> Labeaga, Ian Preston y Juan A. Sanchis-Llopis.  
Páginas 56.
- 9/01 Imposición marginal efectiva sobre el factor trabajo: Breve nota metodológica y comparación internacional.  
*Autores:* Desiderio Romero Jordán y José Félix Sanz Sanz.  
Páginas 40.
- 10/01 A non-parametric decomposition of redistribution into vertical and horizontal components.  
*Autores:* Irene Perrote, Juan Gabriel Rodríguez y Rafael Salas.  
Páginas 28.
- 11/01 Efectos sobre la renta disponible y el bienestar de la deducción por rentas ganadas en el IRPF.  
*Autora:* Nuria Badenes Plá.  
Páginas 28.
- 12/01 Seguros sanitarios y gasto público en España. Un modelo de microsimulación para las políticas de gastos fiscales en sanidad.  
*Autor:* Ángel López Nicolás.  
Páginas 40.
- 13/01 A complete parametrical class of redistribution and progressivity measures.  
*Autores:* Isabel Rabadán y Rafael Salas.  
Páginas 20.
- 14/01 La medición de la desigualdad económica.  
*Autor:* Rafael Salas.  
Páginas 40.

- 15/01 Crecimiento económico y dinámica de distribución de la renta en las regiones de la UE: un análisis no paramétrico.  
*Autores:* Julián Ramajo Hernández y María del Mar Salinas Jiménez.  
Páginas 32.
- 16/01 La descentralización territorial de las prestaciones asistenciales: efectos sobre la igualdad.  
*Autores:* Luis Ayala Cañón, Rosa Martínez López y Jesus Ruiz-Huerta.  
Páginas 48.
- 17/01 Redistribution and labour supply.  
*Autores:* Jorge Onrubia, Rafael Salas y José Félix Sanz.  
Páginas 24.
- 18/01 Medición de la eficiencia técnica en la economía española: El papel de las infraestructuras productivas.  
*Autoras:* M.<sup>a</sup> Jesús Delgado Rodríguez e Inmaculada Álvarez Ayuso.  
Páginas 32.
- 19/01 Inversión pública eficiente e impuestos distorsionantes en un contexto de equilibrio general.  
*Autores:* José Manuel González-Páramo y Diego Martínez López.  
Páginas 28.
- 20/01 La incidencia distributiva del gasto público social. Análisis general y tratamiento específico de la incidencia distributiva entre grupos sociales y entre grupos de edad.  
*Autor:* Jorge Calero Martínez.  
Páginas 36.
- 21/01 Crisis cambiarias: Teoría y evidencia.  
*Autor:* Óscar Bajo Rubio.  
Páginas 32.
- 22/01 Distributive impact and evaluation of devolution proposals in Japanese local public finance.  
*Autores:* Kazuyuki Nakamura, Minoru Kunizaki y Masanori Tahira.  
Páginas 36.
- 23/01 El funcionamiento de los sistemas de garantía en el modelo de financiación autonómica.  
*Autor:* Alfonso Utrilla de la Hoz.  
Páginas 48.
- 24/01 Rendimiento de la educación en España: Nueva evidencia de las diferencias entre Hombres y Mujeres.  
*Autores:* M. Arrazola y J. de Hevia.  
Páginas 36.
- 25/01 Fecundidad y beneficios fiscales y sociales por descendientes.  
*Autora:* Anabel Zárate Marco.  
Páginas 52.
- 26/01 Estimación de precios sombra a partir del análisis Input-Output: Aplicación a la economía española.  
*Autora:* Guadalupe Souto Nieves.  
Páginas 56.
- 27/01 Análisis empírico de la depreciación del capital humano para el caso de las Mujeres y los Hombres en España.  
*Autores:* M. Arrazola y J. de Hevia.  
Páginas 28.

- 28/01 Equivalence scales in tax and transfer policies.  
*Autores:* Luis Ayala, Rosa Martínez y Jesús Ruiz-Huerta.  
Páginas 44.
- 29/01 Un modelo de crecimiento con restricciones de demanda: el gasto público como amortiguador del desequilibrio externo.  
*Autora:* Belén Fernández Castro.  
Páginas 44.
- 30/01 A bi-stochastic nonparametric estimator.  
*Autores:* Juan G. Rodríguez y Rafael Salas.  
Páginas 24.

## 2002

- 1/02 Las cestas autonómicas.  
*Autores:* Alejandro Esteller, Jorge Navas y Pilar Sorribas.  
Páginas 72.
- 2/02 Evolución del endeudamiento autonómico entre 1985 y 1997: la incidencia de los Escenarios de Consolidación Presupuestaria y de los límites de la LOFCA.  
*Autores:* Julio López Laborda y Jaime Vallés Giménez.  
Páginas 60.
- 3/02 Optimal Pricing and Grant Policies for Museums.  
*Autores:* Juan Prieto Rodríguez y Víctor Fernández Blanco.  
Páginas 28.
- 4/02 El mercado financiero y el racionamiento del endeudamiento autonómico.  
*Autores:* Nuria Alcalde Fradejas y Jaime Vallés Giménez.  
Páginas 36.
- 5/02 Experimentos secuenciales en la gestión de los recursos comunes.  
*Autores:* Lluís Bru, Susana Cabrera, C. Mónica Capra y Rosario Gómez.  
Páginas 32.
- 6/02 La eficiencia de la universidad medida a través de la función de distancia: Un análisis de las relaciones entre la docencia y la investigación.  
*Autores:* Alfredo Moreno Sáez y David Trillo del Pozo.  
Páginas 40.
- 7/02 Movilidad social y desigualdad económica.  
*Autores:* Juan Prieto-Rodríguez, Rafael Salas y Santiago Álvarez-García.  
Páginas 32.
- 8/02 Modelos BVAR: Especificación, estimación e inferencia.  
*Autor:* Enrique M. Quilis.  
Páginas 44.
- 9/02 Imposición lineal sobre la renta y equivalencia distributiva: Un ejercicio de microsimulación.  
*Autores:* Juan Manuel Castañer Carrasco y José Félix Sanz Sanz.  
Páginas 44.
- 10/02 The evolution of income inequality in the European Union during the period 1993-1996.  
*Autores:* Santiago Álvarez García, Juan Prieto-Rodríguez y Rafael Salas.  
Páginas 36.

- 11/02 Una descomposición de la redistribución en sus componentes vertical y horizontal: Una aplicación al IRPF.  
*Autora:* Irene Perrote.  
Páginas 32.
- 12/02 Análisis de las políticas públicas de fomento de la innovación tecnológica en las regiones españolas.  
*Autor:* Antonio Fonfría Mesa.  
Páginas 40.
- 13/02 Los efectos de la política fiscal sobre el consumo privado: nueva evidencia para el caso español.  
*Autores:* Agustín García y Julián Ramajo.  
Páginas 52.
- 14/02 Micro-modelling of retirement behavior in Spain.  
*Autores:* Michele Boldrin, Sergi Jiménez-Martín y Franco Peracchi.  
Páginas 96.
- 15/02 Estado de salud y participación laboral de las personas mayores.  
*Autores:* Juan Prieto Rodríguez, Desiderio Romero Jordán y Santiago Álvarez García.  
Páginas 40.
- 16/02 Technological change, efficiency gains and capital accumulation in labour productivity growth and convergence: an application to the Spanish regions.  
*Autora:* M.<sup>a</sup> del Mar Salinas Jiménez.  
Páginas 40.
- 17/02 Déficit público, masa monetaria e inflación. Evidencia empírica en la Unión Europea.  
*Autor:* César Pérez López.  
Páginas 40.
- 18/02 Tax evasion and relative contribution.  
*Autora:* Judith Panadés i Martí.  
Páginas 28.
- 19/02 Fiscal policy and growth revisited: the case of the Spanish regions.  
*Autores:* Óscar Bajo Rubio, Carmen Díaz Roldán y M.<sup>a</sup> Dolores Montávez Garcés.  
Páginas 28.
- 20/02 Optimal endowments of public investment: an empirical analysis for the Spanish regions.  
*Autores:* Óscar Bajo Rubio, Carmen Díaz Roldán y M.<sup>a</sup> Dolores Montávez Garcés.  
Páginas 28.
- 21/02 Régimen fiscal de la previsión social empresarial. Incentivos existentes y equidad del sistema.  
*Autor:* Félix Domínguez Barrero.  
Páginas 52.
- 22/02 Poverty statics and dynamics: does the accounting period matter?.  
*Autores:* Olga Cantó, Coral del Río y Carlos Gradín.  
Páginas 52.
- 23/02 Public employment and redistribution in Spain.  
*Autores:* José Manuel Marqués Sevillano y Joan Rosselló Villalonga.  
Páginas 36.

- 24/02 La evolución de la pobreza estática y dinámica en España en el periodo 1985-1995.  
*Autores:* Olga Cantó, Coral del Río y Carlos Gradín.  
Páginas: 76.
- 25/02 Estimación de los efectos de un "tratamiento": una aplicación a la Educación superior en España.  
*Autores:* M. Arrazola y J. de Hevia.  
Páginas 32.
- 26/02 Sensibilidad de las estimaciones del rendimiento de la educación a la elección de instrumentos y de forma funcional.  
*Autores:* M. Arrazola y J. de Hevia.  
Páginas 40.
- 27/02 Reforma fiscal verde y doble dividendo. Una revisión de la evidencia empírica.  
*Autor:* Miguel Enrique Rodríguez Méndez.  
Páginas 40.
- 28/02 Productividad y eficiencia en la gestión pública del transporte de ferrocarriles implicaciones de política económica.  
*Autor:* Marcelino Martínez Cabrera.  
Páginas 32.
- 29/02 Building stronger national movie industries: The case of Spain.  
*Autores:* Víctor Fernández Blanco y Juan Prieto Rodríguez.  
Páginas 52.
- 30/02 Análisis comparativo del gravamen efectivo sobre la renta empresarial entre países y activos en el contexto de la Unión Europea (2001).  
*Autora:* Raquel Paredes Gómez.  
Páginas 48.
- 31/02 Voting over taxes with endogenous altruism.  
*Autor:* Joan Esteban.  
Páginas 32.
- 32/02 Midiendo el coste marginal en bienestar de una reforma impositiva.  
*Autor:* José Manuel González-Páramo.  
Páginas 48.
- 33/02 Redistributive taxation with endogenous sentiments.  
*Autores:* Joan Esteban y Laurence Kranich.  
Páginas 40.
- 34/02 Una nota sobre la compensación de incentivos a la adquisición de vivienda habitual tras la reforma del IRPF de 1998.  
*Autores:* Jorge Onrubia Fernández, Desiderio Romero Jordán y José Félix Sanz Sanz.  
Páginas 36.
- 35/02 Simulación de políticas económicas: los modelos de equilibrio general aplicado.  
*Autor:* Antonio Gómez Gómez-Plana.  
Páginas 36.

## 2003

- 1/03 Análisis de la distribución de la renta a partir de funciones de cuantiles: robustez y sensibilidad de los resultados frente a escalas de equivalencia.  
*Autores:* Marta Pascual Sáez y José María Sarabia Alegría.  
Páginas 52.

- 2/03 Macroeconomic conditions, institutional factors and demographic structure: What causes welfare caseloads?  
*Autores:* Luis Ayala y César Pérez.  
Páginas 44.
- 3/03 Endeudamiento local y restricciones institucionales. De la ley reguladora de haciendas locales a la estabilidad presupuestaria.  
*Autores:* Jaime Vallés Giménez, Pedro Pascual Arzoz y Fermín Cabasés Hita.  
Páginas 56.
- 4/03 The dual tax as a flat tax with a surtax on labour income.  
*Autor:* José María Durán Cabré.  
Páginas 40.
- 5/03 La estimación de la función de producción educativa en valor añadido mediante redes neuronales: una aplicación para el caso español.  
*Autor:* Daniel Santín González.  
Páginas 52.
- 6/03 Privación relativa, imposición sobre la renta e índice de Gini generalizado.  
*Autores:* Elena Bárcena Martín, Luis Imedio Olmedo y Guillermina Martín Reyes.  
Páginas 36.
- 7/03 Fijación de precios óptimos en el sector público: una aplicación para el servicio municipal de agua.  
*Autora:* M.<sup>a</sup> Ángeles García Valiñas.  
Páginas 44.
- 8/03 Tasas de descuento para la evaluación de inversiones públicas: Estimaciones para España.  
*Autora:* Guadalupe Souto Nieves.  
Páginas 40.
- 9/03 Una evaluación del grado de incumplimiento fiscal para las provincias españolas.  
*Autores:* Ángel Alañón Pardo y Miguel Gómez de Antonio.  
Páginas 44.
- 10/03 Extended bi-polarization and inequality measures.  
*Autores:* Juan G. Rodríguez y Rafael Salas.  
Páginas 32.
- 11/03 Fiscal decentralization, macrostability and growth.  
*Autores:* Jorge Martínez-Vázquez y Robert M. McNab.  
Páginas 44.
- 12/03 Valoración de bienes públicos en relación al patrimonio histórico cultural: aplicación comparada de métodos estadísticos de estimación.  
*Autores:* Luis César Herrero Prieto, José Ángel Sanz Lara y Ana María Bedate Centeno.  
Páginas 44.
- 13/03 Growth, convergence and public investment. A bayesian model averaging approach.  
*Autores:* Roberto León-González y Daniel Montolio.  
Páginas 44.
- 14/03 ¿Qué puede esperarse de una reducción de la imposición indirecta que recae sobre el consumo cultural?: Un análisis a partir de las técnicas de microsimulación.  
*Autores:* José Félix Sanz Sanz, Desiderio Romero Jordán y Juan Prieto Rodríguez.  
Páginas 40.

- 15/03 Estimaciones de la tasa de paro de equilibrio de la economía española a partir de la Ley de Okun.  
*Autores:* Inés P. Murillo y Carlos Usabiaga.  
Páginas 32.
- 16/03 La previsión social en la empresa, tras la Ley 46/2002, de reforma parcial del impuesto sobre la renta de las personas físicas.  
*Autor:* Félix Domínguez Barrero.  
Páginas 48.
- 17/03 The influence of previous labour market experiences on subsequent job tenure.  
*Autores:* José María Arranz y Carlos García-Serrano.  
Páginas 48.
- 18/03 Promoting student's effort: standards *versus* tournaments.  
*Autores:* Pedro Landeras y J. M. Pérez de Villarreal.  
Páginas 44.
- 19/03 Non-employment and subsequent wage losses.  
*Autores:* José María Arranz y Carlos García-Serrano.  
Páginas 52.
- 20/03 La medida de los ingresos públicos en la Agencia Tributaria. Caja, derechos reconocidos y devengo económico.  
*Autores:* Rafael Frutos, Francisco Melis, M.<sup>a</sup> Jesús Pérez de la Ossa y José Luis Ramos.  
Páginas 80.
- 21/03 Tratamiento fiscal de la vivienda y exceso de gravamen.  
*Autor:* Miguel Ángel López García.  
Páginas 44.
- 22/03 Medición del capital humano y análisis de su rendimiento.  
*Autores:* María Arrazola y José de Hevia.  
Páginas 36.
- 23/03 Vivienda, reforma impositiva y coste en bienestar.  
*Autor:* Miguel Ángel López García.  
Páginas 52.
- 24/03 Algunos comentarios sobre la medición del capital humano.  
*Autores:* María Arrazola y José de Hevia.  
Páginas 40.
- 25/03 Exploring the spanish interbank yield curve.  
*Autores:* Leandro Navarro y Enrique M. Quilis.  
Páginas 32.
- 26/03 Redes neuronales y medición de eficiencia: aplicación al servicio de recogida de basuras.  
*Autor:* Francisco J. Delgado Rivero.  
Páginas 60.
- 27/03 Equivalencia ricardiana y tipos de interés.  
*Autores:* Agustín García, Julián Ramajo e Inés Piedraescrita Murillo.  
Páginas 40.
- 28/03 Instrumentos y objetivos de las políticas de apoyo a las PYME en España.  
*Autor:* Antonio Fonfría Mesa.  
Páginas 44.

- 29/03 Análisis de incidencia del gasto público en educación superior: enfoque transversal.  
*Autora:* María Gil Izquierdo.  
Páginas 48.
- 30/03 Rentabilidad social de la inversión pública española en infraestructuras.  
*Autores:* Jaime Alonso-Carrera, María Jesús Freire-Serén y Baltasar Manzano.  
Páginas 44.
- 31/03 Las rentas de capital en Phogue: análisis de su fiabilidad y corrección mediante fusión estadística.  
*Autor:* Fidel Picos Sánchez.  
Páginas 44.
- 32/03 Efecto de los sistemas de rentas mínimas autonómicas sobre la migración interregional.  
*Autora:* María Martínez Torres.  
Páginas 44.
- 33/03 Rentas mínimas autonómicas en España. Su dimensión espacial.  
*Autora:* María Martínez Torres.  
Páginas 76.
- 34/03 Un nuevo examen de las causas del déficit autonómico.  
*Autor:* Santiago Lago Peñas.  
Páginas 52.
- 35/03 Uncertainty and taxpayer compliance.  
*Autores:* Jordi Caballé y Judith Panadés.  
Páginas 44.

## 2004

- 1/04 Una propuesta para la regulación de precios en el sector del agua: el caso español.  
*Autores:* M.<sup>a</sup> Ángeles García Valiñas y Manuel Antonio Muñoz Pérez.  
Páginas 40.
- 2/04 Eficiencia en educación secundaria e *inputs* no controlables: sensibilidad de los resultados ante modelos alternativos.  
*Autores:* José Manuel Cordero Ferrera, Francisco Pedraja Chaparro y Javier Salinas Jiménez.  
Páginas 40.
- 3/04 Los efectos de la política fiscal sobre el ahorro privado: evidencia para la OCDE.  
*Autores:* Montserrat Ferre Carracedo, Agustín García García y Julián Ramajo Hernández.  
Páginas 44.
- 4/04 ¿Qué ha sucedido con la estabilidad del empleo en España? Un análisis desagregado con datos de la EPA: 1987-2003.  
*Autores:* José María Arranz y Carlos García-Serrano.  
Páginas 80.
- 5/04 La seguridad del empleo en España: evidencia con datos de la EPA (1987-2003).  
*Autores:* José María Arranz y Carlos García-Serrano.  
Páginas 72.
- 6/04 La ley de Wagner: un análisis sintético.  
*Autor:* Manuel Jaén García.  
Páginas 60.

- 7/04 La vivienda y la reforma fiscal de 1998: un ejercicio de simulación.  
*Autor:* Miguel Ángel López García.  
Páginas 44.
- 8/04 Modelo dual de IRPF y equidad: un nuevo enfoque teórico y su aplicación al caso español.  
*Autor:* Fidel Picos Sánchez.  
Páginas 44.
- 9/04 Public expenditure dynamics in Spain: a simplified model of its determinants.  
*Autores:* Manuel Jaén García y Luis Palma Martos.  
Páginas 48.
- 10/04 Simulación sobre los hogares españoles de la reforma del IRPF de 2003. Efectos sobre la oferta laboral, recaudación, distribución y bienestar.  
*Autores:* Juan Manuel Castañer Carrasco, Desiderio Romero Jordán y José Félix Sanz Sanz.  
Páginas 56.
- 11/04 Financiación de las Haciendas regionales españolas y experiencia comparada.  
*Autor:* David Cantarero Prieto.  
Páginas 52.
- 12/04 Multidimensional indices of housing deprivation with application to Spain.  
*Autores:* Luis Ayala y Carolina Navarro.  
Páginas 44.
- 13/04 Multiple occurrence of welfare reciprocity: determinants and policy implications.  
*Autores:* Luis Ayala y Magdalena Rodríguez.  
Páginas 52.