PROTECTING WORKERS AGAINST UNEMPLOYMENT IN URUGUAY

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Abstract[*]

This paper considers the main institutional features of the Uruguayan labor market and its recent evolution, with a focus on unemployment. The main policies aimed at protecting workers against unemployment are analyzed. Using administrative data from social security records, the paper studies the dynamics of the labor market. Particularly examined are inflows and outflows from the formal labor market, as well as the effect, in terms of earnings loss, of episodes out of the formal labor market. Finally, an impact evaluation of recent changes in the unemployment insurance program is presented.

JEL Classification: J01, J08
Keywords: Unemployment insurance, Entry and exit rates, Earnings loss, Impact evaluation

1

1. Introduction

The report is organized as follows. The second section describes the main policy instruments available in Uruguay to protect workers against unemployment, focusing on t he design and characteristics of unemployment insurance. The third section presents an analysis of the evolution of the labor market in Uruguay in the period 2000-2009. The fourth section exploits longitudinal data from the social security system to analyze entry and exit rates, exit unemployment duration and wage loss due to exit from the formal labor market. The fifth section consists of an impact evaluation of recent changes in the unemployment insurance system in Uruguay. F inally, concluding remarks are presented in Section 6.

2. Policies to Protect Workers against Unemployment in Uruguay

Different mechanisms are intended to protect workers from unemployment or other labor market risks. These mechanisms are traditionally classified as active or passive policies. Whereas active policies include training, labor intermediation and employment services, the main passive instruments are severance payments and unemployment insurance systems. In this section we briefly describe the application of these instruments in Uruguay.

2.1 A Brief History of Active Labor Market Policy in Uruguay

Uruguay began to implement active labor policies in 1992, w hen the Ministry of Labor and Social Security created the *Dirección Nacional de Empleo* (DINAE) and *Junta Nacional de Empleo* (JUNAE). DINAE was conceived as an executing institution, whereas JUNAE had an advisory role. This last institution consisted of representatives of employers, workers and the government, and was responsible for the administration of the *Fondo de Reconversión Laboral (FRL)*, which charged 0.25 percent on nom inal wages (the burden was equally split between employers and employees). These funds constitute the main source of funding of active labor market policies, and originally their use was to be decided by consensus.

Until 1996 those programs were directed towards unemployment beneficiaries, but then its target population was expanded. The consensus rule, however, has led to significant important difficulties in implement active labor market programs. Additionally, the FRL is pro-cyclical, decreasing funds available during hard economic times, when active labor market policies are needed the most. Existing analyses, moreover, have underscored the lack of evaluations of the

efficiency of these active labor market policies. Those few that have been conducted suggest that that these polices have had a small impact and a high cost (Rodríguez, 2002; Rodríguez, 2005).

In 2008 a new institution was created that replaced the JUNAE This new institution ,called the *Instituto Nacional de Empleo y Formación Profesional* (INEFOP), is not purely public, but ruled by non-state public law (*derecho público no estatal*).[1] Its main objective is the execution of training policies for Uruguayan workers, as well as the strengthening of employment. This new institution was conceived as a means of fostering active labor market policies, with the underlying idea that the old DINAE was not suitable for this purpose. Its legal status gives it more flexibility in terms of the use of funds. Although it remains a tripartite, like the JUNAE, its decisions are made by majority and not by consensus. In the next paragraphs, we follow Mazzuchi (2009) in describing Uruguayan active labor market policies, which can be classified in three groups: i) job search assistance, ii) job training, and iii) direct job creation.

When DINAE was created, a new public program of job search assistance, named PROCOL (*Programa de Colocación Laboral*) was established. It aimed at improving the matching between workers and jobs, and the target population consisted of workers covered by unemployment insurance due to layoffs.[2] The program informed requesting firms on workers who had received retraining, and it helped workers in the search process (by showing them how to write a resume, behave in an interview, etc.).

This PROCOL program was substituted by *Uruguay Activo*, which was implemented between 2004 and 2006. It provides registered firms with a data base containing information on job seekers. It was originally funded by the IDB, but nowadays it financed by general funds. Workers could also apply for specific jobs, which were announced in the web site.

A 2007 evaluation of Uruguay Activo showed that the program's coverage was very low, with only 300 firms and 10,000 workers registered. Of the numerous causes cited for the program's poor performance, several stood out: only a small number of centers installed outside the capital of the country, a low level of familiarity with the program among firms and workers, and high turnover among public servants working in the program.

One of the central objectives of DINAE and JUNAE was to implement a retraining program, PROCAL (*Programa de Calificación Laboral*) for unemployment insurance

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[1] www.inefop.org.uy

[2] As discussed in the following sections, workers can access unemployment benefits in two modalities, which reflect the nature of the separation from the job: layoffs and suspensions.

beneficiaries. The program began in 1992 and was extended to cover active workers in 1996. In the beginning, training activities were provided by public institutions, but later on pr oviders could be either public or private institutions. These programs are not formally related to unemployment insurance.

The PROCAL training program was relatively expensive (US$ 1,730 per worker). It began to face financial problems, and in 2000, with increasing unemployment, the courses could not be implemented. This problem was repeated again in 2007. Impact evaluations did not find any positive effect of this intervention, and several criticisms were made about the design of the program. Among other things, workers could make use of their right to participate in these courses at any time, even if they found another job. Institutional weaknesses were also noted, such as excessively long waiting times for entering courses. Those courses, moreover, were not always of high quality. At the time of writing this program was suspended and under review.

There are also specific training initiatives targeting youth (PROJOVEN), women (PROIMUJER), rural workers and the disabled (PROCLADIS). Currently under the supervision of INEFOP, these decentralized initiatives are carried out by external technical teams. PROJOVEN, for example, targets individuals from poor households who are between 17 to 24 years old and have not finished secondary school.[3] The program covers training costs and provides a per diem for transportation.

Existing evaluations of the PROJOVEN program indicate that, although the training institutions helped young people to obtain jobs, these jobs were of short duration. Nevertheless, the program contributed to the return of young people to schools. In the case of PROIMUJER, the evaluation shows that the program had some targeting problems, but that it helped participants to get new jobs. Nevertheless, these jobs were of bad quality and unrelated to the specific training received.

Job creation programs currently implemented in Uruguay consist of i) direct wage subsidies to the private sector, ii) direct job creation in the public sector and (ii) support for unemployed workers to start their own enterprises. The program *Trabajo Protegido* provides a wage subsidy (for 9 to 12 months) to private firms to encourage the creation of new jobs.[4] It has two components: *Objetivo Empleo* and *Uruguay Trabaja,* administered by the Ministry of Social

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[3] *Instituto Nacional de la Juventud* also participates in the execution of this program.
[4] This program is part of the broader Plan de Equidad implemented by the government in 2008, which included cash transfers, tax reform and health reform.

Development. In both cases, the target population consists of persons who have been unemployed for more than two years, belong to poor households, have less than nine years of schooling, and are between 18 and 65 years old.

In 2008, 35 thousand people applied for the program, and 6,000 were randomly assigned to enter. *Objetivo Empleo* provides a subsidy of 60 percent of men's wages and 80 percent of women's wages (the maximum possible wage is 1.5 times the minimum wage), for a period from nine to 12 months. Firms must fulfill all social and tax regulations, and they cannot dismiss any worker in a period of 90 days before and 90 days after hiring. Firms can hire up to 20 percent of its staff using this subsidy (60 percent in the case of microenterprises).[5] *Objetivo Empleo* was supposed to cover 3,000 participants in 2008, but the program was not able to reach this objective.

The other component of the program, *Uruguay Trabaja*, consists of direct hiring of workers by the public sector, to work in construction and maintenance activities at schools and hospitals. They receive a salary and are required to work 30 hours per week for nine months. The program is implemented through civil society organizations, with a commitment to find jobs for 20 percent of participants. In 2008 the program had 3,000 participants, at an average cost of US$ 2,700 per participant during the nine months of participation. It still has not been evaluated.

There are similar programs of temporary job creation in the public sector at the local government level. The *Intendencia Municipal de Montevideo* has implemented some of them, but they are very small programs in terms of coverage.[6]

Finally, there exist private and public programs of microenterprise development assistance and measures to promote self-employment. On the public side, there are two main programs, currently under the supervision of INEFOP, *Emprende Uruguay* and FOMYPES. In both cases, the program is implemented through an agreement with Universidad Católica del Uruguay. *Emprende Uruguay*, financed by the FRL, provides training and technical assistance to micro and small informal enterprises, with at least one year of existence, and to formal enterprises with at least two years of existence. Beneficiary enterprises must be located in Canelones, Florida, Montevideo or San José. FOMYPES provides financial support to micro and

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[5] A subsidy for the hiring of young workers was created in 1997 (Law 16873). It was not frequently used in the private sector, and with the tax reform this measure was eliminated. A new initiative is under discussion now.
[6] Examples of programs at the municipal level in Montevideo are *Jornales Solidarios* in 2003, *Trabajo por Montevideo* in 2004 and *Barrido Otoñal*, which has taken place every year since 2002. The latter program covered 147 female-headed households in 2008.

small enterprises to undertake training activities or receive technical assistance. Enterprises must have less than 20 workers and can be located in Canelones, Colonia, Maldonado, Montevideo, Paysandú, San José or Tacuarembó. The aim of the program is to improve the productivity of participating enterprises.

A similar program, *Programa de Emprendimientos Productivos*, funded by the Ministry of Social Development, provides financial support to buy equipment and machines. Similar initiatives are also undertaken by local governments and also by the *Oficina de Planeamiento y Presupuesto* and by DYNAPYME in the Ministry of Industry. They are not classified as labor market policies by Mazzuchi (2009), who argues that they are specific programs of enterprise development.

2.2 Severance Payments

The Uruguayan labor code does not impose restrictions on the dismissal of employees. Unlike the majority of Latin American countries, labor norms do not require either a minimum advance notice period prior to termination or the establishment of a "fair cause" for dismissal. Therefore only a simple communication is needed to end the labor relationship, and no other formality is required for this purpose. Consequently, several studies found that Uruguay shows one of the lowest levels of job security in Latin America, accompanied by Panama and Chile (Lora and Pagés, 2004). The only restrictive rule in place is a severance payment made to the worker at the time of termination. This compulsory payment increases with tenure. For each year or fraction thereof a typical worker has the right to collect a month's wages, with a maximum of six wages. In addition to basic salary, other items such as per diems, in kind payments, annual bonus, holiday pay and pending leave are included to calculate the amount of the payment.

In the case of a day laborer, he has the right to receive the equivalent to 25 working days per year of work if he has completed 240 working days. If he has not completed 240 working days, he receives the equivalent of two working days' pay for each 25 worked. In case he has worked less than 100 days, he has no right. The calculation is made year by year, and the maximum amount is equivalent to 150 working days.

If the worker enters the unemployment insurance program and after six months he does not return to his job, he is considered to be dismissed and has the right to obtain his severance

payment. In that sense, severance payments can be considered a complementary policy to unemployment insurance.

There are no contributions to the social security for severance pay. Dismissed workers who are denied severance pay can report the problem to the Ministry of Labor, and the conflict is resolved in the judicial system.

Uruguayan legislation additionally recognizes special cases where the employer must make restitution in a larger amount. These cases include maternity, illness, accident, injury or occupational illness. A dismissed pregnant woman, for example, is entitled to restitution of six wages more over the normal payment, for a total of 12 wages, and an ill worker is entitled to twice the regular amount. A worker injured on the job or suffering from an occupational illness is entitled to three times the regular amount.

Unfortunately, statistics on the incidence of severance payments are not available. Although the design of a statistical instrument to gather information about severance payment seems to be relatively easy and not extremely costly, such an instrument does not exist.[7] As these payments do not make any contribution to social security, they are not included in social security administrative data.

2.3 Unemployment Insurance

While the *Banco de Previsión Social* (BPS) is in charge of the administration of UI in Uruguay, program and policy design are primarily the responsibility of the Ministry of Labor. The origins of the Uruguayan unemployment insurance can be traced to 1919, when an insurance program for public workers was created. In 1958, an unemployment insurance program very similar to the current one was created, with subsequent modifications in 1962 and 1982. The latter version of the program (created by Decree-Law 15.180 in 1981 and Decrees 14/982 and 280/982 issued in 1982) operated until 2009, when the program underwent major modifications (Law 18399). Both regimes are summarized in Table 1, and described in the following paragraphs.

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[7] Information is recorded on paper documents at the Ministry of Labor.

Table 1. Characteristics of the Unemployment Insurance System in Uruguay		
	Old Regime	**New Regime (February 2009)**
Causes for entering the program	job loss: dismissed workers job suspension: total suspension of activities -job reduction (25% or higher reduction in days/hours of labor)	Similar to the old system
Elegibility conditions	-having worked in the formal sector at least six months in the previous year an being involuntarily unemployed	Similar to the old system
Benefit amount	Lump sum: - 50% of the average wage of the last six months or subsidy equivalent to 12 days of labor for day laborers (job loss or suspension) -difference between 50% of their average wage during the previous six months, and the salary they continue to get from their employees (job reduction) -Minimum: half BPC / Maximum: 8 BPC	Job loss: decreasing scheme (as % of average wage of last 6 months): 1st month: 66%, 2nd month: 57%, 3rd month: 50%, 4th month: 45%, 5th month: 42%, 6th month: 40%. For day laborers: equivalent to 16 days of labor in the 1st month, 14 in the 2nd, 12 in the 3rd, 11 in the 4th, 10 in the 5th and 9 in the 6th. Job suspension or job reduction: similar to the old system -Minimum: 1 BPC/ Maximum: similar to the old system (adjusted to the new decreasing scheme in the case of job loss)
Incidence of family composition	-additional 20% for married or with family workers	Similar to the old system
Waiting period to reenter	-1 year since last benefited from UI	Similar to the old system
Benefit duration	-6 months -72 days of labor (day laborers)	-6 months in the modality of job loss or job reduction (or 72 days of labor) - 4 months in the modality of suspension (or 48 labor days) -can be extended to one year for workers older than 50 -can be extended to 8 months for job loss in cases of economic recession
Method of indexation	The amount is not indexed. Maximum and minimum payments are set in terms of BPC, which is indexed to the consumption price index or to the average wage index	Similar to the old system
Claiming period	Within 30 days after last day of work	No restriction
Link to active policies	Can have training. Weak link	Attempts to reinforce the link
Monitoring system or punitive sanctions	-Control for not holding other formal job -No control for job seeking/ No punitive sanctions	-Compatibility with keeping a secondary formal job The rest is similar to the old system

Note: BPC means Base de Prestaciones Contributivas. In December 2010, a BPC was equivalent to $U 2,061 (US$ 103), and represented 46 percent of the National Minimum Wage.
Source: Authors' elaboration based on Decree-Law 15180 and Law 18399.

There are three possible reasons or causes for entering the program: job loss (being fired or permanently laid off), job suspension (total suspension of activities for a period, temporary lay-off) and job reduction (when days of work or hours of work suffer from a reduction of at least 25 percent). The modality of job suspension allows firms to lay off workers when facing demand fluctuations and recall them when UI benefits are exhausted.[8]

Originally, the program covered private and rural workers, excluding domestic workers and workers in the financial system.[9] To have this subsidy, workers must have worked at least six months in the previous year, and they must have been involuntarily unemployed. Unemployment insurance lasted for six months or the equivalent of 72 days of labor for day laborers. The subsidy was 50 percent of the average wage of the last six months, or a monthly subsidy equivalent to 12 working days (calculated as the total amount received during the six previous months divided by 150). That amount could never be less than half the minimum wage.[10] In the case of job reduction, the amount of the benefit is the difference between 50 percent of their average wage during the previous six months and the salary they continue to receive from their employers.

Married workers or workers responsible for other people receive an additional 20 percent (so they may end up receiving a total of 60 percent of their previous wage). The worker cannot re-enter the insurance program until a year has passed since the last time he received the benefit. Although the worker may receive the benefit for a maximum of six months, the Executive Power can extend this period, in a rather discretional way. This extension is not supposed to exceed 18 months, although this rule has been violated on some occasions. The general rule is that if the worker does not return to his job after six months, he is considered to be fired de facto and is entitled to a severance payment.

UI beneficiaries lose the benefit if they get another job, reject a job offer or get a pension. The first requirement implies that workers receiving the unemployment insurance could not have a job that implies a contribution to the social security system, although if

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[8] Under the old regime, the Executive Power (EP) could establish an unemployment subsidy, total or partial, in special cases of unemployment. This includes highly specialized workers, or workers belonging to certain occupations or industries. The amount, established by the EP, cannot be higher than 80 percent of a worker's previous wage. This provision continues under the new regime (law 18399).

[9] Although rural workers have been eligible for this program since 2001 (Decree 211/01), their eligibility requirements are more stringent than those for other workers (Amarante and Bucheli, 2008).

[10] There is an upper limit to the benefit, equivalent to eight BPC (*base de prestaciones contributivas*).

they are working in the informal sector this may not be detected. The system does not include the monitoring of unemployed workers or the existence of punitive sanctions.

UI beneficiaries may apply (it is voluntary) to receive training, financed by the *Fondo de Reconversión Laboral* (FRL), which was especially created with this objective. These services have traditionally been in charge of the Ministry of Labor *(Direccción Nacional de Empleo)*, although they are presently being redesigned (see Section 2.1).

All the programs that are under the administration of BPS (contributory and non-contributory pensions, as well as other social programs) are financed by funds coming from contributions both from employers and employees, and from general taxes. As argued in Amarante and Bucheli (2008), the program's lack of designated funding makes it difficult to analyze its financial results.

Before the modification of the unemployment insurance program, Amarante and Bucheli (2008) reviewed the literature on the Uruguayan program, analyzed the problems of the existing insurance and suggested possible improvements. Among the weak points of the program, they highlight the low proportion of covered workers. Information from household surveys indicates that during the period between 1991and 2005 the program covered no m ore than 6.2 percent of the unemployed. A more disaggregated analysis presented by these authors shows that around 48 percent of unemployed in 2005 were not covered by the insurance, because they were looking for their first job or re-entering the labor market after a long absence.

Another important explanation for this low coverage was the high incidence of informality among workers, as detailed above. According to household survey information, almost 25 percent of the unemployed in 2005 had lost their previous job within the previous six months, but that job was informal (Amarante and Bucheli, 2008).

Administering UI is further complicated by difficulties in monitoring compliance with conditions of participations such as actively searching for a job and not being employed in the informal sector. The program, moreover, does not include any incentive or specific support for job search. Relatively few attempts have been made to correct these features, and evaluations of these initiatives indicate they were not satisfactory (as discussed in Section 2.1).

Although discretionary extensions of benefits increased the program's flexibility, they ultimately proved a weakness. The use of the program as a subsidy for firms with seasonal fluctuations in activity also proved undesirable. In addition, the old program lacked coordination with active labor market policies. There was no association between labor intermediation services and training services, and neither interacted with the unemployment insurance program. This lack of coordination characterized both policy design and the information flows, as records from different data sources are not connected. For a fuller discussion of these issues, see Rodríguez (2005) and Bucheli and Amábile (2008).

Important modifications to the unemployment insurance program were introduced with the approval of Law 15.180, implemented in February 2009. The most relevant has to do with the amount of benefits for those unemployed as a result of job loss: instead of being an equal sum for every month, the new system establishes a decreasing scheme for benefits (see Table 6), with an average benefit of 66 percent of the previous salary during the first month (instead of 50 percent as before). This modification is aimed at fostering job search among beneficiaries. The minimum amount is doubled from one half of a BPC (*base de prestaciones contributivas*) to one BPC,[11] and the maximum benefit is on average kept the same, but adapted to the new decreasing scheme. The Executive Power, through the Ministry of Labor, may extend the duration of the unemployment subsidy, for those who were dismissed (job loss), up to a maximum of eight months, when the economy is going through a recession. This happens when GDP falls during two consecutive quarters. The normal duration of the unemployment benefit will be restored three months after GDP has increased during two quarters.

For those UI beneficiaries due to suspension, the duration of the program was reduced to four months (or 48 labor days). During this time, they continue to receive 50 percent of their average wage of the previous six months (or 12 labor days). In 2009, workers in this modality represent around 25 percent of unemployment insurance beneficiaries. Nevertheless, the norm establishes that the period can be extended if firms provide an adequate justification, with the intention of promoting a more rational use of this modality. More requirements are set for firms to apply, and a public list with the name of

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[11] One BPC was equivalent to $U 2,061 or US$ 103 USD in November 2010.

the firms and frequency of use of this modality of the unemployment insurance is kept by the Ministry of Labor.

Beneficiaries under the modality of job reduction receive the difference between 50 percent of their average wage during the previous six months, and the salary they continue to receive from their employers (as they continue to work in some capacity). Since benefits are available for up to six months, the program is essentially the same for workers in this modality as for others.

Another important change involves workers aged 50 or more, who can now receive UI for six additional months. During these additional six months they receive the same amount as they received during the sixth month (40 percent). This change is meant to address the difficulties in reentering the labor market experienced by older workers, who represent approximately 15 percent of total beneficiaries.

The new regulations also attempt to coordinate UI with active labor market policies. UI beneficiaries in the job loss modality may lose their UI benefits if they do not participate in training courses offered by the Ministry of Labor, although this offense is not considered in subsequent applications to the UI program.

Other modifications to the UI system include the compatibility of unemployment insurance with other activity. Under the previous regulation, if the worker had two jobs, both covered by the unemployment insurance, and he lost one, he could not receive the benefit. This was modified, and in the new system the worker is able to receive benefits if he loses his main job but keeps the secondary one.

In the old regime, if the worker applied for the unemployment insurance 30 days later than his last day of work, he lost any right to receive the benefit. In the new regime, he only loses the benefits for that (those) month(s). In the new regime, there also exists the possibility of interruption, as the benefits are paid for calendar days. The beneficiary may interrupt his UI benefits in case he finds a temporary job and subsequently returns to the insurance system.

3. Basic Statistics on the Labor Market in Uruguay, 1990-2009

In this section we analyze the evolution of the main variables of the labor market in the last two decades. Statistics at the regional level for the last four years are provided, and basic statistics on the unemployment insurance program are discussed.

3.1 Evolution

During the last two decades, labor market conditions have undergone different stages in Uruguay. A mild but sustained increasing trend in the unemployment rate arose during the 1990s and in 2002, with the severe economic crisis that affected the country, the unemployment rate reached its highest rate (17 percent in annual terms) since statistics have been kept.[12] Two years later, a sustained decreasing trend began, and in 2009 unemployment fell to a historical low of 7.7 percent. Whereas during the 1990s the increasing trend in unemployment coexisted with economic growth, in the last decade unemployment and economic growth shown opposite trends (Figure 1).

Employment was relatively stable until the end of the 1990s, and decreased significantly during the crisis (Figure 2). When the expansionary economic cycle began in 2003, employment began to increase, although it has shown less dynamism than GDP. Labor income, whose evolution was highly correlated to that of GDP during the nineties, presents an impressive decrease during the economic crises. It began its recovery in the last years, although at an even a slower pace than employment (Figure 3).[13]

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[12] Data analyzed in this section refer to urban areas with 5,000 or more inhabitants, as consistent time series on labor market indicators can only be constructed for these cities. They accounted for 85 percent of the population in 2009. A more detailed analysis of regional disparities is presented in the next section, as from 2006 on the household survey covers all the country and not only urban areas.

[13] Among the explanations for this lack of dynamism in the first years after the crises, the following have been mentioned: the increase in labor costs due to higher minimum wages and collective bargaining, the increase in controls from *Banco de Previsión Social*, and the slow growth of key sectors such as commerce and construction.

Figure 1. GDP and Employment: 1990-2009
(Indexes 100=March 1997)
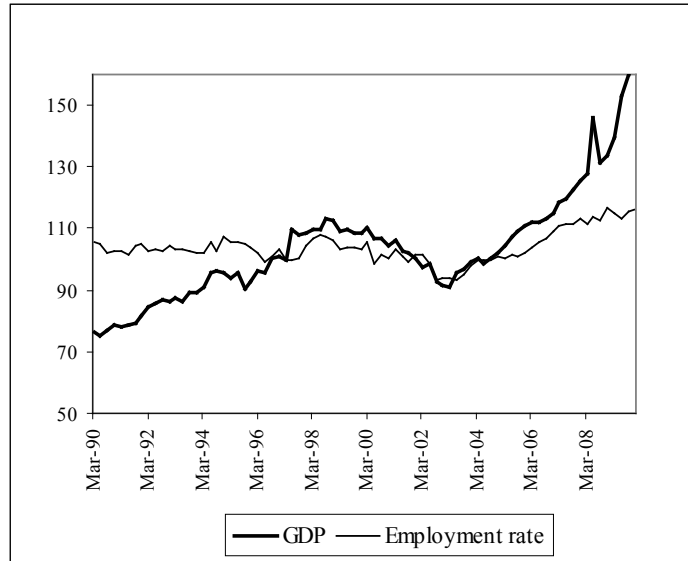
Source: Authors' calculations using household surveys.

Figure 2. GDP and Unemployment: 1990-2009
(Indexes 100=March 1997)
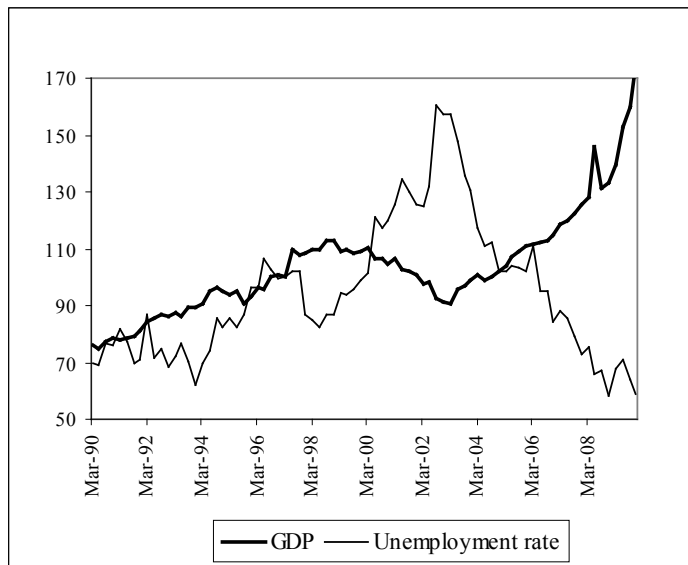
Source: Authors' calculations using household surveys.

Figure 3. GDP and Labor Income: 1990-2009
Indexes 100=March 1997
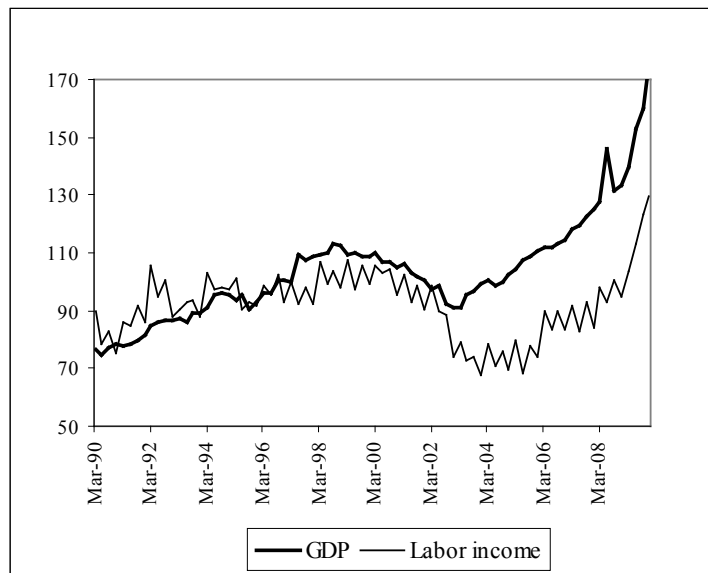
Source: Authors' calculations using household surveys.

The evolution of the unemployment rate was similar in Montevideo and the rest of the country, although at the beginning of the period Montevideo's unemployment rate was higher, and this was reversed in the last year (Figure 4 and Table A1).

Figure 4. Unemployment Rate in Montevideo and Other Urban Areas: 1990-2009
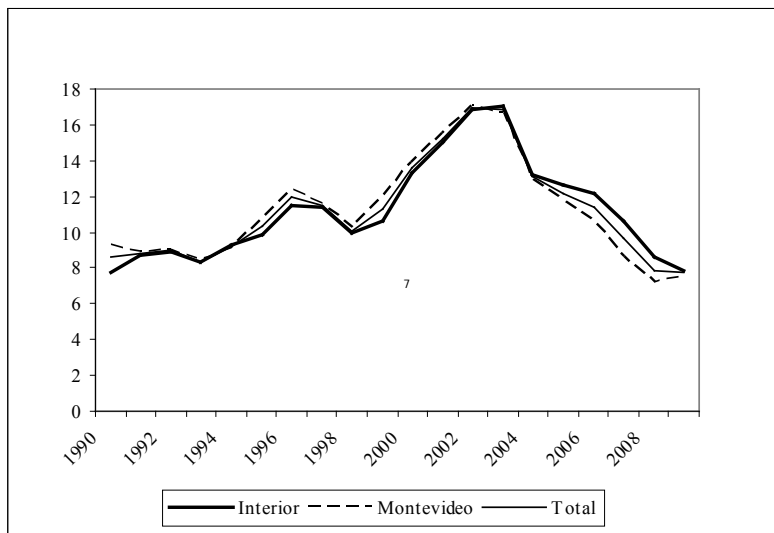
Source: Authors' calculations using household surveys.

The decrease in the unemployment rate in recent years, as well as the creation of new jobs, is not exclusive to Uruguay; it has taken place in many countries in the region (CEPAL, 2008). This positive evolution in labor market indicators took place jointly with a process of economic growth and poverty reduction, and it implies an important change in labor market. Whereas the Uruguayan labor market has previously been characterized by high and increasing unemployment, high unemployment duration and higher probability of unemployment for women, youth and unskilled workers, an updated diagnosis should acknowledge that at least this first characteristic is no longer true. Nevertheless, some structural characteristics, previously identified in research, such as intense concentration of unemployment among disadvantaged groups and high informality, persist (Bucheli and Casacuberta, 2005; Amarante and Arim, 2005; Amarante and Espino, 2009; among others).

As in other countries in the region, unemployment mainly affects women, young people and Afro-descendants. The unemployment rate of women is almost twice that of men (Figure 5 and Table A2), whereas the unemployment rate of people aged 15 to 25 is around four times that of those aged 26 to 55 (Figure 6, Table A3 and Figure A1).

Figure 5. Unemployment Rate by Sex: 1990-2009
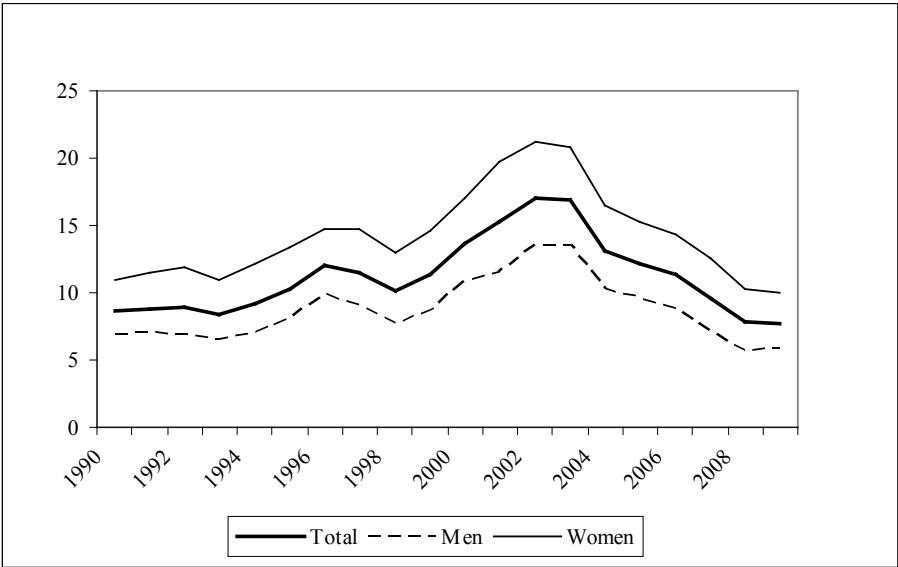
Source: Authors' calculations using household surveys.

Figure 6. Unemployment Rate by Age: 1990-2009
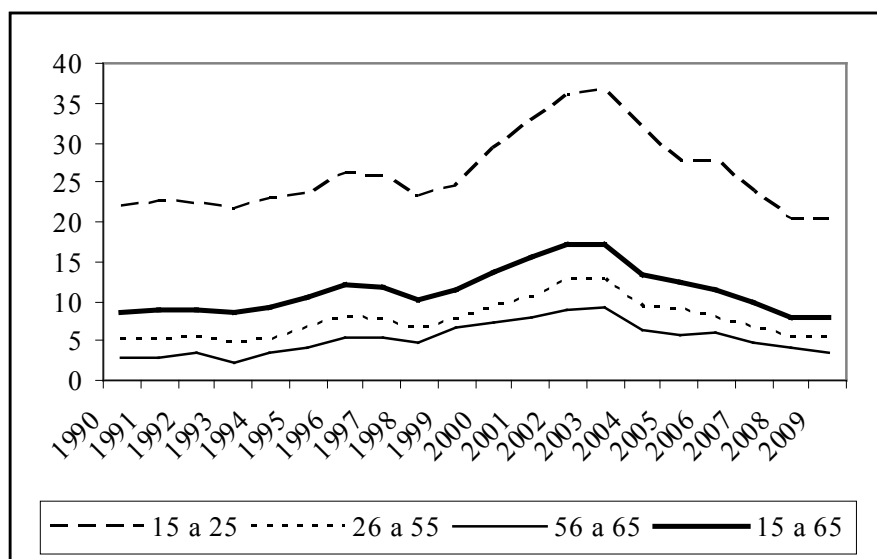
As usual, unemployment rates decrease with education: whereas the rate is 10 percent for people with incomplete secondary education in 2008, it decreases to 3 percent among those with tertiary complete education (see Table A4). Those with primary education (complete or incomplete), however, show smaller unemployment rates (7.2 percent and 8.9 percent, respectively) than people with secondary education (Figure 7). Finally, the unemployment rate is considerable lower among household heads, although important differences are detected depending on the sex of the household head (see Table A5).[14]

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[14] Nevertheless, only around 35 percent of households have female heads.

Figure 7. Unemployment Rate by Education: 1990-2009
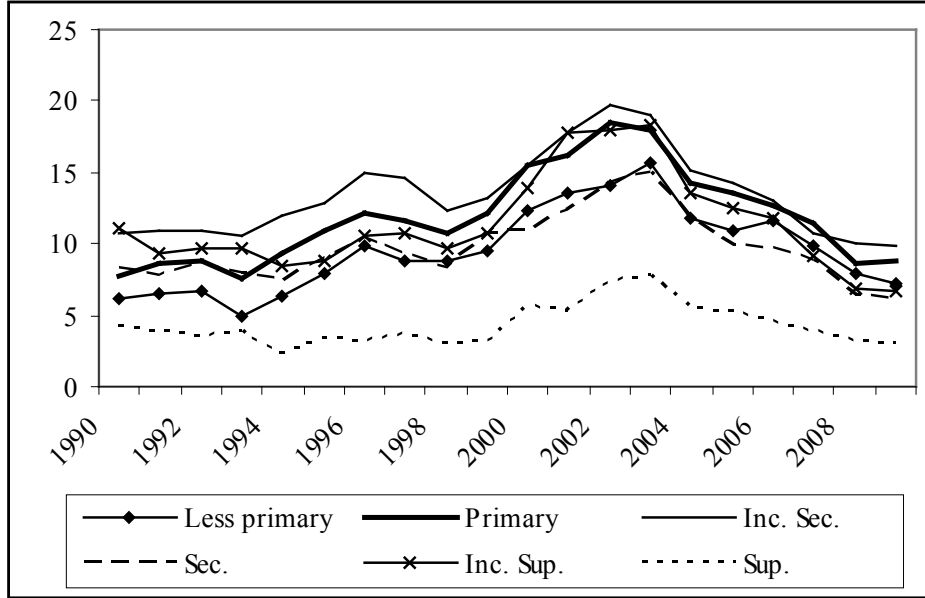
Source: Authors' calculations using household surveys.

In order to analyze the changes in the profile of unemployment, we estimate a probit model using as dependent variable a dummy variable indicating the status of the unemployed. We grouped the microdata for the years 1991 and 2009, and incorporate in the specification the interaction among the independent variables (x_{it}) and a binary variable that takes value one for the year 2009 (z_{it}). The estimated equation is:

$$p_{i,t} = P(d_{i,t} = 1) = F(x'_{i,t}\beta + z'_{i,t}x_{i,t}\gamma)$$

(1)

This equation allows capturing the presence of changes in the profile of unemployment, since significant parameters γ imply changes in the marginal effect of the associated variables. We carry out the estimation with individuals aged 15-65 who identify themselves as being active in the labor market. The results are presented in Table 2.

Table 2. Probit Model of Unemployment: Marginal Effects						
Variable	Marginal effect	Standard error	Z	P>z	Confidence interval (95%)	
Complete primary	0.010	0.004	2.320	0.020	0.001	0.018
Incomplete secondary	0.006	0.004	1.720	0.085	-0.001	0.014
Complete secondary	-0.024	0.005	-4.370	0.000	-0.033	-0.015
Incomplete tertiary	0.003	0.006	0.600	0.549	-0.008	0.015
Complete tertiary	-0.045	0.004	-7.730	0.000	-0.053	-0.037
26-55 years	-0.098	0.005	-24.610	0.000	-0.108	-0.088
More than 55 years	-0.060	0.003	-15.030	0.000	-0.065	-0.055
Gender (man=1)	-0.016	0.004	-4.660	0.000	-0.023	-0.009
Region (capital=1)	0.002	0.003	0.680	0.495	-0.004	0.007
Man head of household	-0.052	0.004	-13.030	0.000	-0.059	-0.045
Woman head of household	-0.033	0.005	-5.750	0.000	-0.042	-0.023
Interaction with year variable (2009=1) (coefficients γ)						
Year 2009	-0.003	0.006	-0.510	0.611	-0.014	0.008
Complete primary	0.009	0.006	1.680	0.092	-0.002	0.020
Incomplete secondary	0.002	0.005	0.450	0.653	-0.007	0.011
Complete secondary	0.008	0.009	0.960	0.338	-0.010	0.026
Incomplete tertiary	-0.011	0.006	-1.640	0.100	-0.023	0.001
Complete tertiary	0.000	0.010	0.000	1.000	-0.020	0.020
26-55 years	0.005	0.004	1.160	0.247	-0.003	0.012
More than 55 years	0.006	0.008	0.730	0.468	-0.010	0.022
Gender (man=1)	-0.010	0.004	-2.340	0.019	-0.019	-0.002
Region (capital=1)	-0.002	0.004	-0.470	0.637	-0.009	0.005
Man head of household	0.004	0.006	0.620	0.534	-0.008	0.015
Woman head of household	0.015	0.009	1.910	0.057	-0.002	0.032
Pseudo R2: 0,1126 - Number of observations: 82,207						

Source: Authors' calculations using household surveys.

The probability of being unemployed decreases for those with completed secondary or tertiary education when compared to those with primary. This probability is decreasing with age and is lower for household heads (man or woman, the coefficient being higher for the former). *Ceteris paribus* women have a greater propensity to become unemployed. The unemployment profile has not undergone major changes between 1991 and 2009, despite the decline in the average unemployment rate (8.9 percent in 1991 and 7.7 percent in 2009). The only parameter γ significant at 95 percent is sex, as men show a greater reduction of unemployment incidence between 1991 and 2009.

As income from the labor market is the main source of income for most households, people cannot afford to be unemployed for a long time. They need to get any type of job, even one of bad quality. Trying to measure the incidence of bad quality jobs is not an easy task. The International Organization of Labor (ILO) encouraged the adoption of a common measure of the informal sector. This definition, adopted in 1993 in the Fifteenth International Labor Statistics Conference in 1993, defines the informal sector in terms of the characteristics of the production units in which the activities take place. In this tradition, informal sector is defined as comprising all persons employed in enterprises owned by households, production units owned and operated by a single individual working as self employed, small enterprises (with less than five workers) and unpaid workers.[15]

Another relevant dimension of job quality refers to contributions to the social security system. In many Latin American countries, there is a high degree of overlapping between informality (as defined in the ILO tradition) and social protection (Bertranou, 2004). For Uruguay, Amarante and Espino (2009) indicate that data from household surveys indicate that around 72 percent of workers without social protection are informal, whereas 74 percent of informal workers do not have social protection. Hence, overlapping between these two categories is high but not total. The analysis presented by the authors shows that informality involves very heterogeneous situations. If workers' conditions are analyzed in terms of income, higher salaries are found among formal workers with social protection. The second group corresponds to informal workers with social protection, followed by formal workers without social protection. The most disadvantaged group consists of informal workers without social protection. These wage differentials persist once observed workers' characteristics are controlled for. Considering this, and the fact that non-contribution to the social security system is associated with greater vulnerability in the future, the authors conclude that social protection is a better category for studying job quality in Uruguay, at least when compared to informality in the ILO tradition. This is also the criterion followed in this report.

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[15] Recommendations for the definition of the informal sector referred to the exclusion of units engaged in the production for own final consumption, the exclusion of agricultural activities, the exclusion of enterprises engaged in the production of professional or technical services by self-employed persons, and the option to include or exclude paid domestic workers

Social protection can be properly analyzed in Uruguay from 2001 on, as that year the household survey began to include a specific question about contribution to social security.[16] Social protection decreased between 2001 and 2004, but it has been increasing for the last five years. In effect, uncovered workers decreased from almost 40.7 percent of total workers to 31.6 percent between 2004 and 2009. The decrease is similar by sex and region (Figure 8 and Table A6), and it mainly reflects the evolution of social protection among private workers. Young workers are most affected by the lack of social security contributions (Figure A.2).

Figure 8. Uncovered Workers, Total and by Sex: 1990-2009
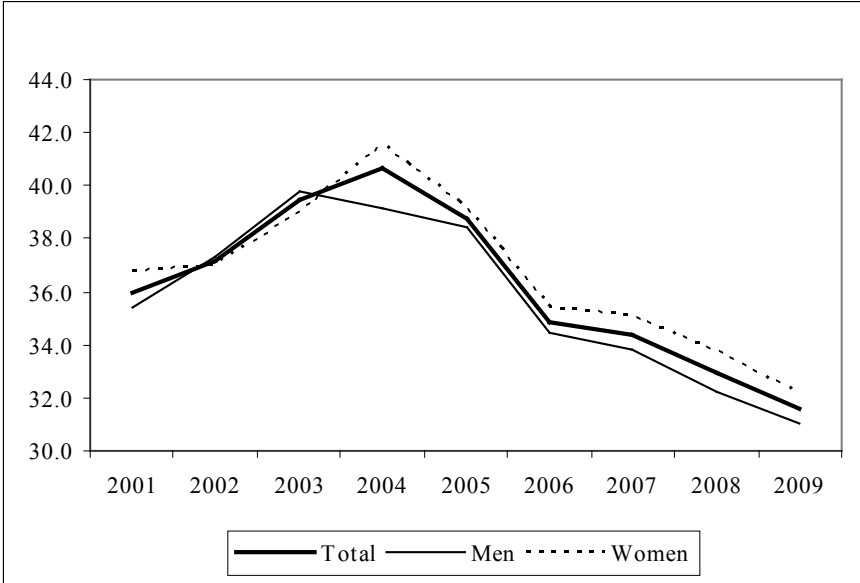
Source: Authors' calculations using household surveys.

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[16] Studies that considered social protection using a proxy variable indicate that it showed a mild increasing trend between 1991 and 2000 (Bucheli, 2004; Amarante and Espino, 2009).

Around 50 percent of uncovered workers are self-employed (with and without investment), and 43 percent are private sector workers (Figure 9). The rate of coverage is extremely low among the self-employed, especially for those without investment (Table A7).[17]

Figure 9. Composition of Uncovered Workers, 2001 and 2009

Source: Authors' calculations using household surveys.

Non-coverage by the social security system is higher for construction and for trade, restaurants and hotels. The recent decline in non-coverage takes place in all industries. Uncovered workers are concentrated in community and social services (which include paid domestic service), and trade, restaurants and hotels (Table A8).

We estimate a probit model, as shown in equation (1), to analyze the changes in the profile of the probability of not contributing to the social security system. In this case, the dependent variable is a dummy that equals one when the worker does not contribute to the social security system. This estimation was performed with grouped microdata for the years 2001 and 2009 and incorporated into the specification the interaction among the independent variables (x_{it}) and a binary variable that takes value one for the year 2009 (z_{it}). The results are presented in Table 3.

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[17] The methodology of the household survey defines as self-employed with investment those who do not depend on an employer, do not have any (paid) employees, and have a place of work (shop, office, studio, garage, place in a street market, etc.) or machinery/valuable tools.

Table 3. Probit Model for Non-Contribution to Social Security: Marginal Effect						
Variable	Marginal effect	Stand. Error	Z	P>Z	Confidence Interval (95%)	
Complete primary	0.015	0.010	1.520	0.128	-0.004	0.034
Incomplete secondary	-0.086	0.009	-9.720	0.000	-0.103	-0.069
Complete secondary	-0.194	0.009	-17.550	0.000	-0.211	-0.177
Incomplete tertiary	-0.196	0.009	-17.470	0.000	-0.214	-0.179
Complete tertiary	-0.305	0.006	-28.410	0.000	-0.317	-0.293
26-55 years	-0.123	0.010	-12.890	0.000	-0.142	-0.104
More than 55 years	-0.040	0.012	-3.250	0.001	-0.063	-0.016
Gender (man=1)	-0.004	0.010	-0.420	0.673	-0.023	0.015
Region (capital=1)	-0.080	0.007	-11.970	0.000	-0.093	-0.067
Man head of household	-0.087	0.010	-8.710	0.000	-0.106	-0.067
woman head of household	0.023	0.012	1.970	0.049	0.000	0.046
interaction with year variable (2009=1) (coefficients γ)						
Year 2009	-0.095	0.015	-6.530	0.000	-0.124	-0.066
Complete primary	0.078	0.013	6.410	0.000	0.053	0.103
Incomplete secondary	0.051	0.011	4.570	0.000	0.029	0.073
Complete secondary	0.043	0.018	2.510	0.012	0.009	0.077
Incomplete tertiary	-0.023	0.016	-1.390	0.164	-0.054	0.009
Complete tertiary	0.017	0.019	0.880	0.378	-0.021	0.054
26-55 years	-0.004	0.011	-0.310	0.753	-0.026	0.019
More than 55 years	0.077	0.016	4.990	0.000	0.046	0.108
Gender (man=1)	0.007	0.012	0.630	0.529	-0.016	0.030
Region (capital=1)	0.003	0.008	0.400	0.692	-0.013	0.019
Man head of household	-0.002	0.012	-0.190	0.850	-0.026	0.022
Woman head of household	-0.001	0.013	-0.060	0.954	-0.027	0.026
Pseudo R2: 0,0940 Number of observations: 77,478						

Source: Authors' calculations using household surveys.

The probability of not contributing to social security declines with educational level and with age. Sex differences are not statistically significant, whereas workers living in Montevideo have a higher probability of contributing. In this case, being a household head displays different signs for women and men: men who are household heads have a lower probability of not contributing to the social security system, and the opposite occurs for women, although the statistical significance is lower.

The important general decrease in the probability of non-contribution in the period is reflected in the significance of the coefficient for the year 2009. Parameters γ are significant for primary and secondary levels of education, and for workers aged more than 55, implying that there have been changes in the marginal effects associated with these variables. These changes have implied higher probabilities of non-contribution of these groups relative to omitted groups. In a context of decreasing informality this means that the increase in contributions was higher for more educated and younger workers.

3.2 Regional Disparities

Information from the household surveys allows analyzing labor market outcomes in the whole country from 2006 onward. Whereas the analysis of the previous section covers only major urban areas (with more than 5,000 inhabitants), where 85 percent of the population lives, this section presents a brief illustration of regional disparities. This implies adding information about minor urban areas and rural areas, each representing around 7.5 percent of the population.

The first aspect that emerges refers to the considerably lower rate of unemployment in rural areas, which is less than a half of that from urban areas. The evolution of the unemployment rate is similar in all regions in the period, although the decrease in the unemployment rate in the last year is considerable higher in percentage terms in minor urban and rural areas (Figure 10).

Figure 10. Unemployment Rate by Region: 2006-2009
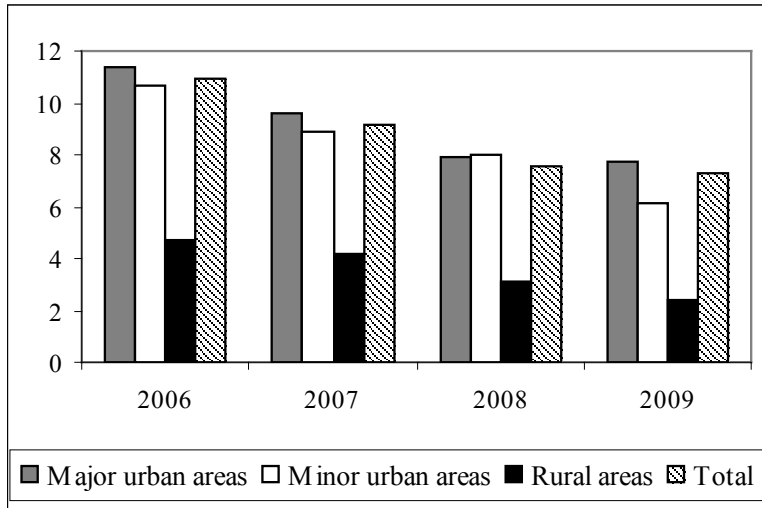
Source: Authors' calculations using household surveys.

These important differences in the unemployment rate are mainly explained by differences in activity and employment rates. Activity and especially employment rates are considerably higher in rural areas. Differences by sex are also more acute in rural areas (i.e., higher female unemployment and higher male participation and employment, as shown in Table A.9).

Rural and major urban areas display a similar incidence of non-contribution to social security, and workers in minor urban areas display higher rates of non-contribution (Figure 11).

Figure 11. Uncovered Workers by Region: 2006-2009
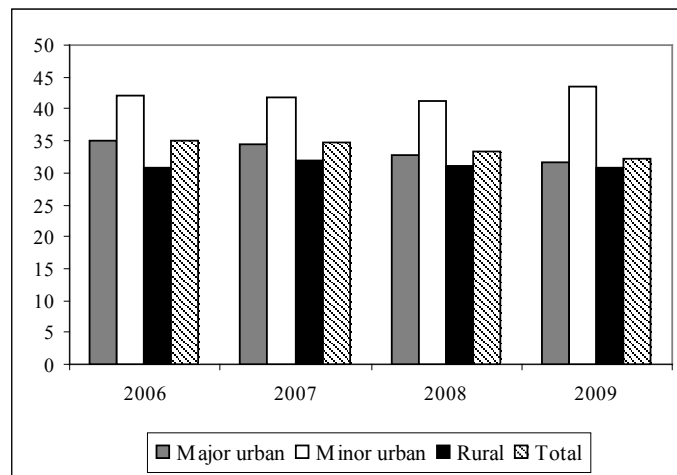
Source: Authors' calculations using household surveys.

3.3 Basic Statistics on the Unemployment Insurance Program

According to administrative records, the number of beneficiaries of the UI program has shown some oscillations until 1999 and a sharp increase during the economic crises. The number of beneficiaries in 2002 was more than twice the 1998 total (37,302 versus 17,652), as shown in Figure 12.

Figure 12. Number of Unemployment Insurance Beneficiaries, 1993-2009
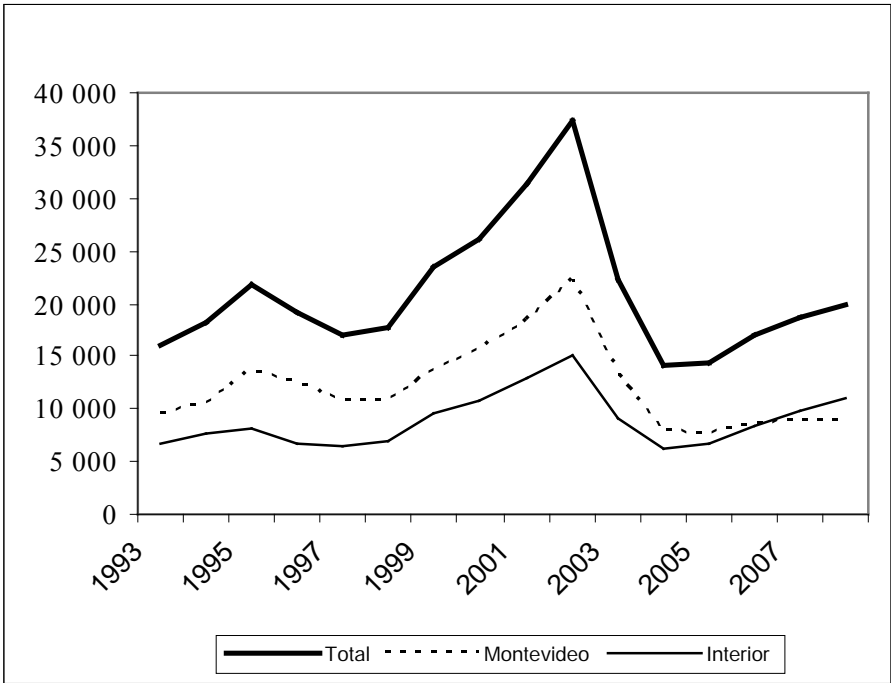
Source: BPS statistical yearbook.

BPS data make it possible to discern a profile of UI beneficiaries. Most are men (70 percent in 2008). At the beginning of the period, beneficiaries from Montevideo represented more than 55 percent of total beneficiaries, but by 2009 they were only 44 percent of the total beneficiaries. Beneficiaries are concentrated in central ages (around 50 percent are between 30 and 49 years old). It should also be noted that in recent years the additional requirements have been imposed in order to dissuade firms from using the suspension modality, whose importance has decreased. Whereas in 2001 63 percent of benefits corresponded to this modality, in 2008 the figure was around 33 percent. Finally, most of the beneficiaries have family dependents (Table 4).

Table 4. Characteristics of Unemployment Insurance Beneficiaries												
	1992	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	100	100	100	100	100	100	100	100	100	100	100	100
Men	66.9	69.8	68.3	67.9	66.7	65.7	63.0	65.1	66.9	70.1	70.1	70.0
Women	33.1	30.2	31.7	32.1	33.3	34.3	37.0	34.9	33.1	29.9	29.9	30.0
Montevideo	55.3	63.1	59.6	60.7	59.8	57.8	54.5	51.2	49.4	45.6	43.5	43.8
Rest of the country	44.7	36.9	40.4	39.3	40.2	42.2	45.5	48.8	50.6	54.4	56.5	56.2
Younger than 20	3.0	3.4	2.1	2.0	1.6	1.4	1.5	2.1	2.1	2.1	2.4	2.1
20-29	33.0	31.7	33.6	27.6	30.1	28.9	31.7	26.6	27.0	33.2	29.5	32.6
30-39	26.1	27.4	22.1	26.0	27.2	21.1	27.1	29.9	29.1	20.2	25.0	29.6
40-49	20.5	19.9	17.4	18.2	19.3	21.4	21.8	21.1	20.7	19.7	19.6	19.6
50-59	12.2	12.7	12.7	13.4	12.9	13.0	12.4	12.0	12.3	12.4	12.4	13.0
60 and more	2.6	2.8	2.5	2.5	2.8	2.8	2.8	2.8	2.8	3.0	3.0	3.1
Job loss	43.4	41.6	43.0	37.2	32.9	45.1	57.3	60.0	62.2	67.8	65.5	62.1
Suspension	55.2	57.9	56.9	62.8	58.5	46.4	35.3	31.3	29.7	23.9	25.6	33.3
Job reduction	1.4	0.5	0.1	0.0	8.6	8.4	7.5	8.8	8.0	8.3	8.5	4.6
With family	67.7	62.9	64.1	64.6	64.5	65.9	65.6	65.7	63.3	62.0	63.1	63.4
Without family	32.3	37.1	35.9	35.4	35.5	34.1	34.4	34.3	36.7	38.0	36.9	36.6

Source: Authors' calculations based on BPS statistical yearbook.

The program is small in terms of the resources involved, representing around 2 percent of total BPS expenditures, and it also represents less than 1 percent of GDP. Its financial importance increased in 2002 during the economic crises (Table 5).

	Total benefit payments (constant terms, index base year=1993)	Benefit payments/BPS expenditure	Benefit payments/GDP
Table 5. Amount of UI benefits, 1993-2009			
1993	100.0	2.2%	0.2%
1994	108.0	2.2%	0.2%
1995	128.9	2.6%	0.2%
1996	118.6	2.3%	0.2%
1997	109.6	2.1%	0.2%
1998	110.6	2.0%	0.2%
1999	161.6	2.8%	0.2%
2000	169.6	3.0%	0.2%
2001	197.2	3.6%	0.3%
2002	211.9	4.3%	0.3%
2003	114.9	2.7%	0.2%
2004	69.3	1.6%	0.2%
2005	67.3	1.5%	0.1%
2006	81.5	1.7%	0.2%
2007	96.4	2.0%	0.2%
2008	105.8	2.4%	0.3%

Source: Authors' calculations based on BPS statistical yearbook.

The program's coverage can be analyzed based on data from the household survey. In this survey, the unemployed are asked if they receive the unemployment insurance. The percentage of unemployed receiving the benefit has ranged from 2.4 to 6.2 percent during the last two decades. The higher rate of 6.2 percent of unemployed corresponds with the worst moment of the economic crisis in Uruguay (2002), as shown in Figure 13. It should be noted that some workers receiving unemployment insurance under the suspension modality are classified as employed in the household survey and therefore are not included in these figures.

Figure 13. Percentage of the Unemployed Covered by UI
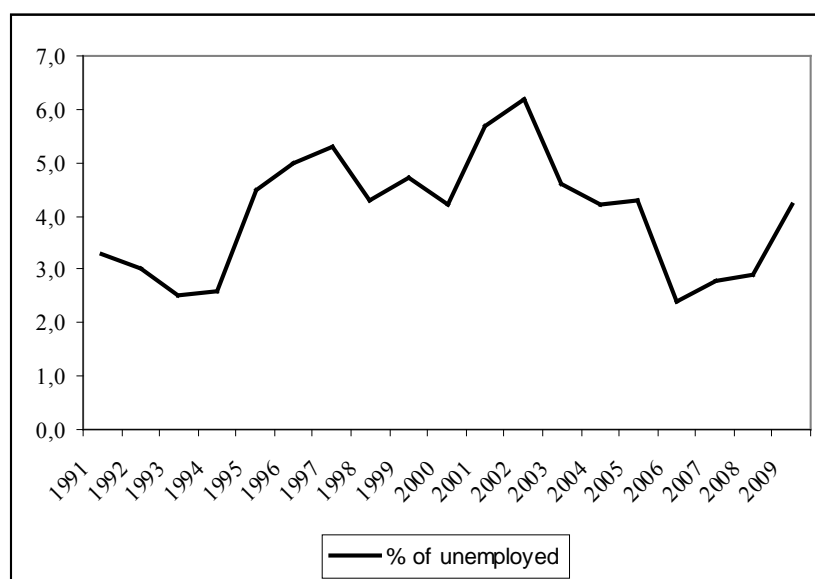
Source: Authors' calculations based on household surveys.

The low coverage of the UI system is in part explained by the characteristics of the Uruguayan labor market. Private formal workers (excluding financial and domestic service) represent around 40 percent of total workers by the end of the period. These are the workers who can eventually apply for the UI benefit, and their importance has increased in the period.[18] The rest of the workers cannot access the program if they lose their jobs, mainly because they are not formal private workers (Table 6).

Table 6. Distribution of Workers by Categories

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Private workers	54.5	52.1	52	52.6	54.5	54.2	54.8	55.2	56.1
Financial and dom. service	*9.8*	*10*	*10*	*9.3*	*9.1*	*8.9*	*8.8*	*8.6*	*8.5*
Rest of formal workers	*35*	*32.7*	*31.3*	*31.8*	*34.1*	*36.1*	*36.9*	*38.2*	*40*
Rest of informal workers	*9.6*	*9.4*	*10.6*	*11.5*	*11.3*	*9.2*	*9.1*	*8.4*	*7.6*
Public workers	16.6	17.9	18.1	17.7	16.6	15.6	14.9	14.9	14.3
Employer	3.9	3.7	3.4	3.5	3.9	4.7	4.8	4.8	4.8
Self employed (without inv.)	8.8	10.3	9.8	9.2	8.3	6.5	4.9	4.1	3.6
Self employed (with inv.)	14.6	14.4	15.3	15.2	15.2	16.5	18.4	19.1	19.1
Other	1.6	1.7	1.5	1.8	1.5	2.4	2.2	2	2.1
Total	100	100	100	100	100	100	100	100	100

Source: Authors' calculations based on household surveys.

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[18] Workers in domestic service are protected by the unemployment insurance program under the new regime that began in February 2009.

4. Unemployment Risks in Uruguay: An Analysis Based on Social Security System Administrative Records

This section analyzes unemployment risks in Uruguay based on data from social security records for the period 1997-2009. These administrative records include information on monthly earnings, age, sex, geographical area of residence, sector of activity (five digit of ISIC, classification, version 2) and characteristics of labor relationship (dependent public worker, dependent private worker, independent worker with capital, independent worker without capital, cooperative, owner of a firm). Thus, we have a longitudinal base that allows us to follow the trajectory of each worker within the formal labor market in the period.[19] The main shortcoming is the absence of information on workers' educational level or other data on human capital accumulation.

We first present some basic statistics on formal labor market entry and exit rates in Uruguay, which have not been extensively analyzed. The second subsection pr esents a detailed analysis on the effect of being out of the formal labor market on subsequent wages.

4.1 Formal Labor Market Entry and Exit

On average, between 3 and 4 percent of registered workers enter or leave the formal market each month (Figure 14). If we compute the exit and entry rate on an annual basis, more than 30 percent of registered workers leave or enter formal employment at some point in a given year.

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[19] As the administrative records of social security were implemented in 1997, no information is available for previous years.

Figure 14. Monthly Entry and Exit Rates
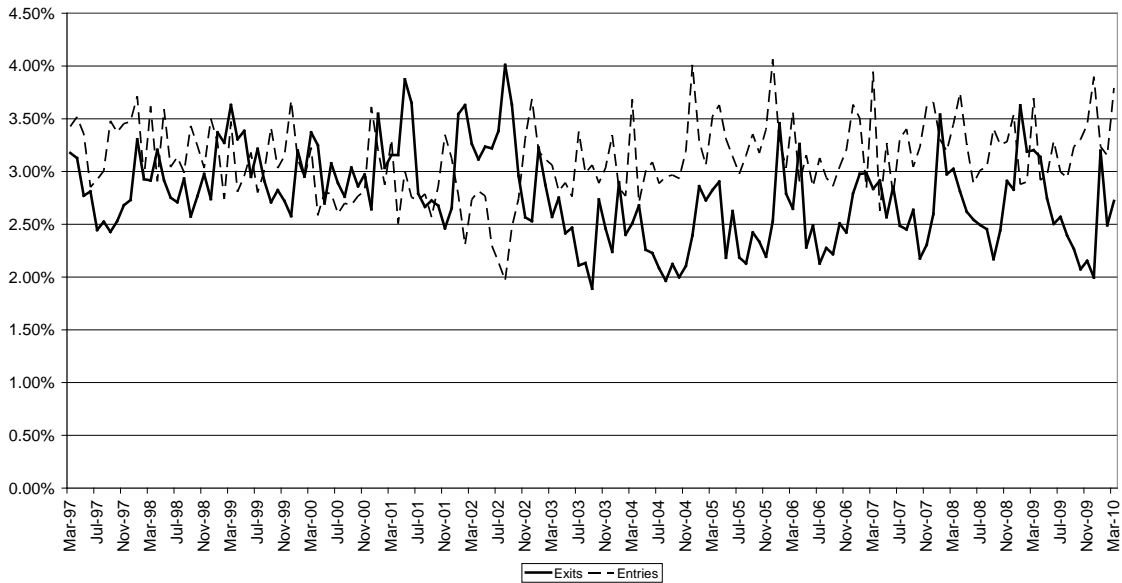
Source: Authors' calculations using BPS administrative records.

In order to analyze differences in labor mobility, entry and exit rates are considered disaggregated by age group, considering the percentage of workers who enter and leave by year and age group (Table 7). Net inflows show a high correlation with the economic cycle, being negative during the economic crisis, especially in 2002, a nd positive afterwards. Positive and large net entries appear during the last five years. Larger movements occur among younger workers in terms of both entries and exits. Net entries are higher for this group, reflecting the fact that incorporation into the labor market often takes place at this stage of the life cycle.

Table 7. Entry and Exit Rates by Age (% of All Registered Persons in Age Group)				
Entries	**Total**	**<26**	**26-55**	**>55**
1998	39.1	79.5	30.4	30.4
1999	37.5	75.0	29.9	29.9
2000	34.6	71.0	27.9	27.9
2001	35.1	68.4	30.0	30.0
2002	32.0	60.2	28.2	28.2
2003	36.5	80.4	31.5	31.5
2004	37.1	94.6	29.7	29.7
2005	40.1	98.3	31.1	31.1
2006	37.6	85.7	30.0	30.0
2007	39.3	90.6	30.6	30.6
2008	39.4	89.6	31.0	31.0
2009	38.5	90.5	29.7	29.7
Exits				
1998	34.7	61.6	29.5	23.3
1999	36.9	63.5	32.3	23.9
2000	35.7	62.8	31.6	22.1
2001	36.4	59.7	33.4	24.4
2002	39.1	62.3	36.8	27.3
2003	29.8	52.5	27.6	19.6
2004	27.6	54.7	24.6	15.2
2005	29.9	60.5	25.6	16.2
2006	31.2	63.4	26.4	17.2
2007	31.7	62.5	27.1	17.5
2008	32.8	66.4	27.4	17.1
2009	31.8	65.9	26.7	13.9
Net entries				
1998	4.4	17.9	0.9	3.9
1999	0.6	11.6	-2.4	2.0
2000	-1.1	8.2	-3.7	1.0
2001	-1.3	8.7	-3.4	-2.4
2002	-7.1	-2.1	-8.5	-4.9
2003	6.7	27.9	3.9	1.0
2004	9.5	39.9	5.0	2.0
2005	10.3	37.8	5.5	3.1
2006	6.4	22.3	3.6	1.7
2007	7.5	28.1	3.5	3.0
2008	6.6	23.2	3.6	1.1
2009	6.8	24.6	3.0	3.7

Source: Authors' calculations using BPS administrative records.

The analysis by gender does not allow identifying significant differences in the behavior of net inflows, although men have higher exit and entry rates than women (Table 8 and Table A10). As women on maternity leave are considered active workers, maternity episodes are not counted as exits in this analysis.

Table 8. Net Inflows Rates by Gender			
	Total	Men	Women
1998	4.4	4.1	4.9
1999	0.6	0.1	1.3
2000	-1.1	-2.2	0.2
2001	-1.3	-2.1	-0.4
2002	-7.1	-8.6	-5.6
2003	6.7	7.1	6.3
2004	9.5	10.1	8.8
2005	10.3	11.3	9.0
2006	6.4	6.2	6.6
2007	7.5	7.2	7.9
2008	6.6	5.9	7.4
2009	6.8	6.0	7.6

Source: Authors' calculations using BPS administrative records.

The dynamics of employment inflows and outflows differ by industry. By the end of the period, net entries are higher for Manufacture (ISIC 3) and Trade, restaurants and hotels (ISIC 7). Net inflows are shown in Table 9, and patterns of entry and exit by industry are presented in Table A11.

**Table 7. Net Inflows Rates by Activity Sector (ISIC rev. 2)**

	ISIC 1	ISIC 2	ISIC 3	ISIC 4	ISIC 5	ISIC 6	ISIC 7	ISIC 8	ISIC 9	ISIC 0
1998	-2.5	-0.2	5.9	5.0	7.0	3.7	17.6	4.3	8.3	2.4
1999	-5.6	-6.7	12.2	0.2	-1.5	0.0	5.9	3.7	4.7	1.1
2000	-5.3	-5.9	8.6	-4.5	-5.4	-0.3	8.3	1.9	4.3	0.4
2001	-8.5	-5.9	-2.1	-2.6	-4.3	-2.1	-3.3	2.2	3.8	1.7
2002	-5.0	-14.2	-14.5	-16.6	-12.9	-6.4	1.6	-0.5	-1.1	-1.6
2003	8.5	7.1	5.6	6.1	8.8	4.1	0.1	1.4	7.8	11.0
2004	7.8	6.0	15.7	12.6	12.7	6.8	14.2	5.6	8.0	9.2
2005	8.2	6.8	17.9	13.3	11.5	9.4	20.3	7.9	7.3	8.7
2006	3.5	5.9	7.5	7.8	4.9	6.5	8.9	6.4	6.6	5.6
2007	3.7	1.9	16.9	10.0	9.4	7.7	12.5	6.5	5.9	6.4
2008	1.0	3.5	12.4	8.2	9.0	7.0	10.9	5.7	7.4	5.8
2009	4.4	2.2	10.4	7.6	8.9	3.1	11.0	8.4	7.7	4.9

Source: Authors' calculations using BPS administrative records.

Our longitudinal database allows us to analyze the duration of exit episodes. But there is no information about the causes of exit, except in the case where the worker becomes a beneficiary of unemployment insurance. It is therefore impossible to distinguish among exits to uncovered employment, transitions to unemployment without insurance or inactivity, retirement, migration or death.

The duration of the exit among workers who are moving from a formal job towards unemployment insurance is highly correlated with the maximum legal duration of insurance (six months in the old regime), as shown in Figure 15. In fact, the mode of the duration distribution is between five and six months. On the other hand, the distribution of exits duration among workers without unemployment insurance is almost monotonically decreasing. This suggests that the design of unemployment insurance, and specifically its duration, affects the decisions of search intensity or willingness to accept a new labor position.

Figure 15. Density Function of Duration of Exits, Measured in Months
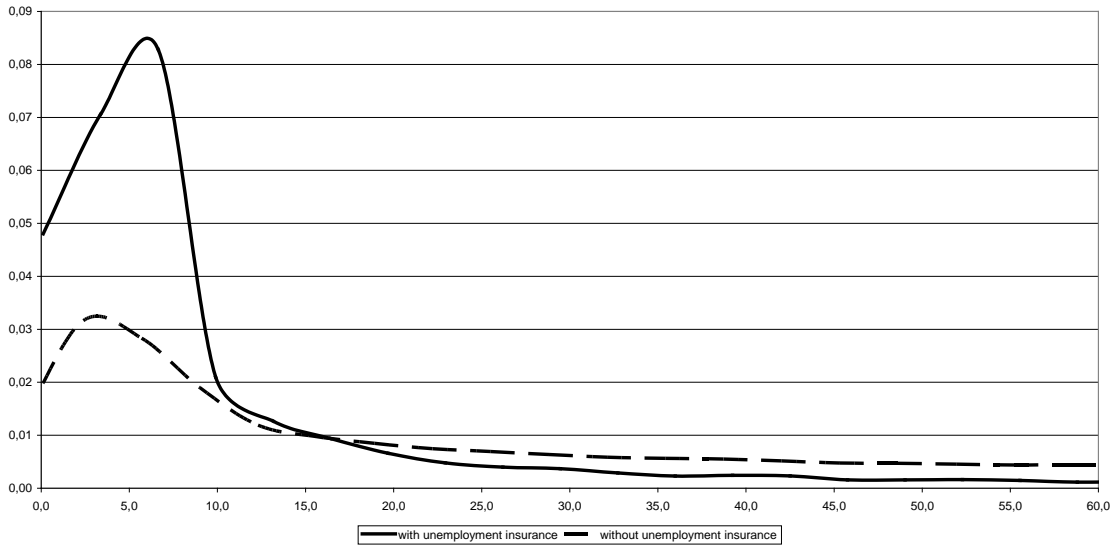
Source: Authors' calculations using BPS administrative records.

Survival and hazard functions allow looking at the issue of exit duration from another perspective. A survival function captures the proportion of people who continue to work steadily as a function of time elapsed since their last entry into the formal market. The hazard function measures the probability of formal job loss in relation to their time the formal labor market.

The probability of uninterrupted participation in formal labor market has a rather sharp decreasing slope (Figure 16). Less than a quarter of workers continuously contribute two years to social security.

Figure 16. Kaplan-Meier Survival Functions, All Formal Workers
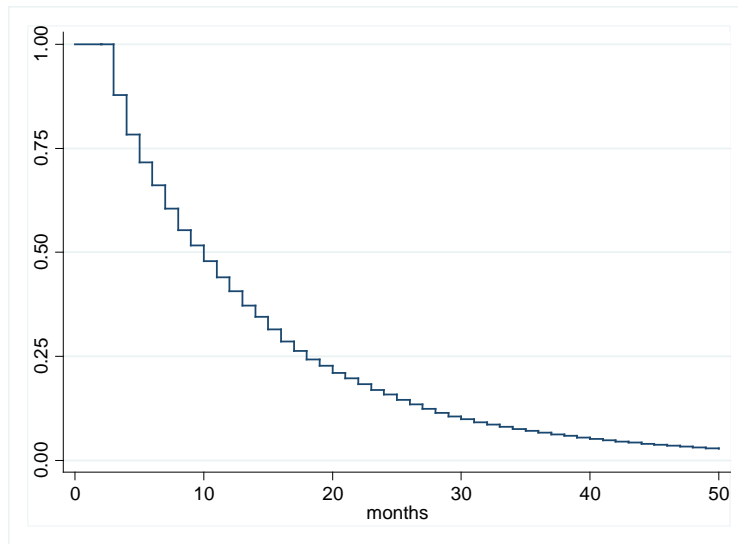
Source: Authors' calculations using BPS administrative records.

In turn, the hazard function shows that the risk of losing a formal job increases during the initial months of work and then decreases monotonically. Above a certain threshold, the tenure incentives to both parties continue with the employment relationship (Figure 17).

Figure 17. Hazard Function, All Formal Workers
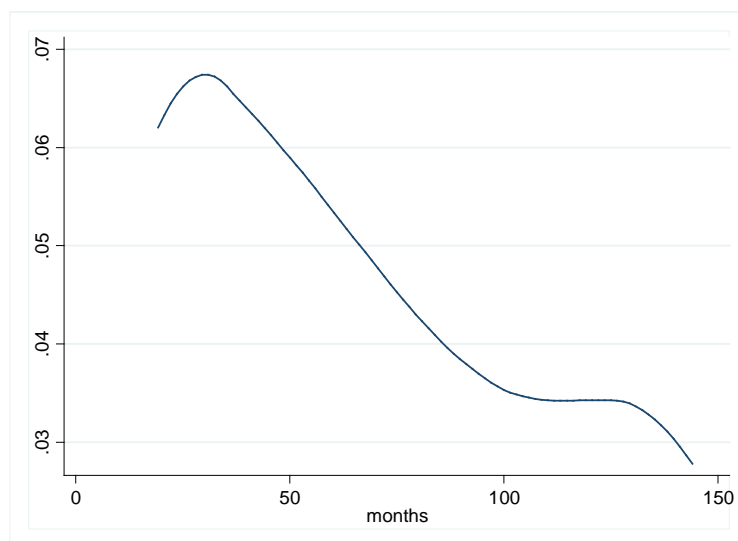
Source: Authors' calculations based on BPS data.

The risk of leaving the formal labor market increases with the number of previous exits. An unstable path is associated with a greater probability of losing formal employment in the future (Figure 18).

Figure 18. Hazard Functions by Number of Entries
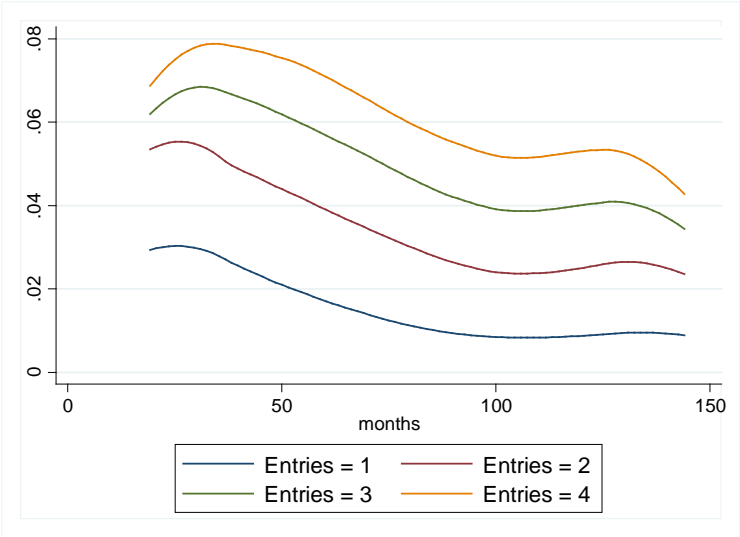
Source: Authors' calculations using BPS administrative records.

4.2 Effects of Being Out of the Formal Labor Market on Subsequent Wages

4.2.1 Data

Our analysis is based on sample data drawn from the longitudinal data set of administrative records of contribution to social security, which include monthly earnings of all formal workers, from January 1997 to April 2010.[20] We focus on private workers with high tenure, defining high tenure as those with at least three years of service with their pre-displacement employer. In this way, we are considering for our analysis a true layoff sample of workers vulnerable to displacement. Our data therefore include quarterly earnings for high-tenure displaced and non-displaced private formal workers.[21] This leaves us with a sample of 45,956 registered private workers, which represent around 7.5 percent of total Uruguayan

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[20] The distribution of our sample by age and sex is very similar to that of formal workers in the household survey, reflecting the representativeness of our sample.

[21] We tried an alternative definition of high-tenure workers, defined as those with at least six years of service in the firm. We decided not to use that definition, as we would have ended up with 16,854 displacement episodes (out of 159,135 of the original data base, and 30,348 in the case of high-tenure workers with three years in the firm).

private formal workers in 2008. Of this total sample, 46.5 percent experienced at least one displacement episode in the period (the total number of displacement events is 30,348). Our data set contains information on e arnings, industry of employment, size of firm, and workers' characteristics (only sex and date of birth).[22,23] Unfortunately, information on educational attainments, occupations and other personal characteristics is not included in our data set, although our analysis does control for fixed unobserved or unmeasured attributes of workers. W orkers who move to the public sector or who become self-employed are eliminated from the sample.

Displacement events refer to workers' disappearance from administrative records of contribution to social security. Probably the major problem in our data involves the impossibility of identifying whether workers' lack of contribution to the social security is due to informal work, inactivity or unemployment, as any of those reasons may be behind the zeros in our data. Also, we cannot tell if they are due to quits, layoffs, justified dismissals, retirements, or migration—a common shortcoming of studies based on administrative data. If workers who quit have better labor market prospects, the estimates of displacement effects would be upwards biased, but we cannot control for that. We try, instead, to control for retirements, eliminating all post-retirement age observations for workers who left the formal labor market and did not return by April 2010. When workers present multiple employers in a month, the information was gathered in a simple observation. Wages from different occupations were added up, and the characteristics of the firm (sector and size) correspond to the employer paying the higher salary.

An advantage of our data is that we also have information on unemployment insurance beneficiaries, so we can identify if the worker entered the unemployment insurance program, as well as the period of payment and the exact amount of the benefit.[24]

To carry out our estimation of wage losses, we considered different groups of workers: men, women, young, middle aged and old, switchers and non-switchers, industry, firm size, if they were dismissed during the economic crisis or not, and if they were

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[22] Originally, *Banco de Previsión Social* provided us a sample containing information for 200,000 workers, representing 12 percent of total formal Uruguayan workers. For our analysis, we restricted our sample to high-tenure private sector workers.

[23] Formal workers represent 76.3 percent of private workers in 2009. This figure has been increasing during the last years; in 2004 they represented only 63.6 percent.

[24] The unemployment insurance program depends on the Ministry of Labor but is administered by the social security institution, *Banco de Previsión Social*.

dismissed as part of a mass layoff. Young workers are those aged 25 and younger, whereas the middle aged include those aged 26 to 55. The group of switchers includes those workers who reentered the formal labor market in another industry, considering the definition of industry at one, two and three digits SIC classification. Results are very similar; we only report those corresponding to the two digit definition. Small firms were defined as those employing less than 20 workers, and all the other firms were considered jointly. We considered separately i) those displaced during the 2002 economic crisis and ii) others.[25]

Finally, to consider if a worker was dismissed as part of a mass layoff, we restricted the analysis to firms with 20 or more workers and defined an *ad hoc* criterion. For the lay off to be considered massive, medium firms (up to 500 workers) must have fired at least 10 workers or 10 percent of their employees in the last quarter, whereas firms with more than 500 workers must have dismissed at least 15 workers or 10 percent of their employees. It must be stressed that we are working with a representative sample of workers, not firms, and this, jointly with the small number of observations, is one of the limitations of this analysis. Table 10 presents some basic statistics on our data.

Table 10. Characteristics of the Sample								
	Observations				Age		Earnings	
	Total	In 1997	In 2009	% with UI	Mean	St dev.	Mean	St dev.
Separators								
All	**21,389**	**10,199**	**11,802**	**56.6**	**41.3**	**11.4**	**10,762**	**12,819**
With UI	12,100	761	832	100.0	40.6	11.2	13,378	12,124
Without UI	9,289	836	725	0.0	39.9	12.2	6,986	12,875
Mass layoffs	2,188	76	137	79	41.9	11.1	17,821	12,863
Non-mass layoffs	19,201	1,521	1,420	54	40.4	11.8	10,191	12,237
Males	11,554	5,944	6,206	63.0	41.8	11.8	12,744	14,132
Females	9,835	4,255	5,596	49.0	40.6	10.7	8,154	10,286
Young in 1997	1,098	1,098	-	52.6	22.7	1.7	9,253	6,389
Middle aged in 1997	8,049	8,049	-	50.4	39.5	8.7	14,775	14,632
Old in 1997	1,052	1,052	-	32.7	58.9	3.4	13,499	13,816
Young in 2009	337	-	337	38.3	23.4	1.2	6,595	5,901
Middle aged in 2009	9,676	-	9,676	54.2	40.1	8.1	12,058	12,557
Old in 2009	1,789	-	1,789	58.3	59.4	3.5	11,301	10,792

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[25] During this crisis, the unemployment rate reached 17 percent, the highest rate since statistics became available.

Table 10., continued

	Observations				Age		Earnings	
	Total	In 1997	In 2009	% with UI	Mean	St dev.	Mean	St dev.
Switchers (3 dig.)	16,077	957	1,433	51.2	40.8	11.5	9,714	13,194
Non-switchers	5,312	9,242	10,369	72.8	42.3	10.9	12,741	11,829
Manufacture	-	2,860	1,798	76.0	39.2	10.8	16,023	15,662
Trade, rest and hotels	-	1,884	1,528	57.9	37.4	11.8	11,401	13,390
Other services	-	1,803	1,661	35.8	40.9	10.6	9,708	11,669
Medium and big firms	13,572	5,841	6,318	67.3	41.1	11.2	14,700	15,246
Small firms	7,817	4,358	5,484	37.9	41.4	11.5	6,479	7,420
During crisis	3,906	0	0	72.2	41.8	11	11,669	10,787
During non-crisis	17,483	10,199	11,802	51.7	41.1	11.4	10,500	13,337
Stayers	**24,567**	**9,412**	**16,873**	0.0	42.8	**12.3**	**18,434**	**24,728**

Source: Authors' calculations using BPS administrative records.

In our sample, stayers are two years older than separators, and there are important differences in mean wages among them. Separators who enter the UI program present higher mean wages. Although differences in mean ages are not very big, earnings differences between separators and stayers are considerable, suggesting that there may be important individual heterogeneity that must be controlled for.

4.2.2 Methodology

We follow the methodology of Jacobson, LaLonde and Sullivan (1993), hereafter referred to as JLS, defining displaced workers' earnings losses as the difference between their actual and expected earning if the displacement had not taken place. In this way, we are comparing the earnings of displaced workers with a similar control group that did not experience displacement.[26] As in JLS, we introduce a set of dummy variables for the number of quarters before or after workers' separations. In effect, the displacement indicator $D_{it}^k = 1$ if the worker *i* was displaced in period *t-k.* We allowed displacement to affect earnings up t o 12 quarters prior separation and 20 qua rters after separations.

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[26] An approach also based on comparison of treatment and control groups was previously used by Ruhm (1991). These estimations consisted of cross-sectional regressions for post-displacement earnings, and pre-displacement earnings were included among the independent variables. The control group included workers displaced at other dates.

Accordingly, workers' earnings at a given time[27] depend on set of dummy indicators of displacement and some controls for fixed and time-varying characteristics:

$$y_{it} = \alpha_i + \gamma_t + X_{it}\beta + \sum_{k \geq -m} D_{it}^k \delta_k + \varepsilon_{it} \quad (2)$$

where k goes from $-m, -(m-1), \ldots, 0, 1, 2 \ldots$ and the set of dummy variables jointly represent the event of displacement. The parameter δ_k is the effect of displacement on worker's earnings after k periods of the occurrence of the event, so the evolution of this parameter allows plotting the path of wage difference over time. The parameter α_i is the individual fixed effect and γt represents a set of year-quarter dummy variables. X_{it} are the observable time-varying characteristics of the worker. We include as regressors: age, age squared and cubed, and its interactions with sex, prior tenure and its square. We condition not only on personal characteristics, but also include controls for pre-displacement industry and pre-displacement firm size,[28] assuming that workers are similar or comparable when they work in similar industries or firms.

We consider two alternative specifications of the earnings variables. The first one consists on monthly earnings, and so is zero when the worker is out of the labor force. In the second specification, if the worker is out of the labor force but receiving the unemployment benefit, this benefit is included to compute monthly income. As discussed above, we are able to do this because we also have data on unemployment insurance beneficiaries. In this way, we are able to assess the smoothing effect of the unemployment insurance.[29] All regressions were run including and excluding quarters with zero earnings. When quarters with zeros are excluded, we are comparing the change in wages for workers who lost their job and then returned to the formal labor market (considering their last wage in the previous job and their wages in the new job) with that of workers who did not lose their jobs. In this case, as episodes with zero earnings are not considered, the loss compares pre and post-displacement wages, not taking into account the effect of workers out of the labor force (with zero earnings) in the post-displacement period. We report all

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[27] Ideally, we would like to compare hourly wages, but unfortunately this information is not available in our data.
[28] Industry controls are included at 1 digit SIC.
[29] Earnings and UI benefits are expressed in real values of December 2009 using the Consumer Price Index (from Instituto Nacional de Estadística).

results for regressions excluding zero earnings, and the dependent variable is expressed in constant Uruguayan *pesos* of December 2009. We express this wage loss as a percentage loss considering, for each group, mean wages of 1997.

4.2.3 Results

As a first illustration, we considered differences in evolution of earnings between those who experienced a separation on a given date and stayers in order to obtain a picture of earnings losses in the long term. We considered high-tenure workers who were displaced at two different moments in time: the second quarter of 2001 (the onset of the economic crisis), and the second quarter of 2004, when economic recovery had begun. In each case, we compared the evolution of their wages with that of workers who stayed in the labor force at least two more quarters.

A first striking fact refers to the important real earnings loss that formal workers experienced in the period as a whole that resulted from Uruguay's 2002 economic crisis. The labor market adjusted not only through a very significant increase in unemployment, but also through a major decline in real earnings for private formal workers who kept their jobs during the whole period. Real wages for high-tenure private formal workers have still not recovered to their levels at the beginning of the period. The unadjusted comparison of earnings between separators and non-separators shows that earning losses for displaced workers were sizeable in the long run (Figure 19). The figure also shows that i) workers who access UI benefits are those with higher relative earnings and ii) there are important differences in wages between stayers and separators.

Figure 19. Evolution of Earnings of High-Tenure Workers Separating in 2001 and Stayers

a. Displaced in 2001.2
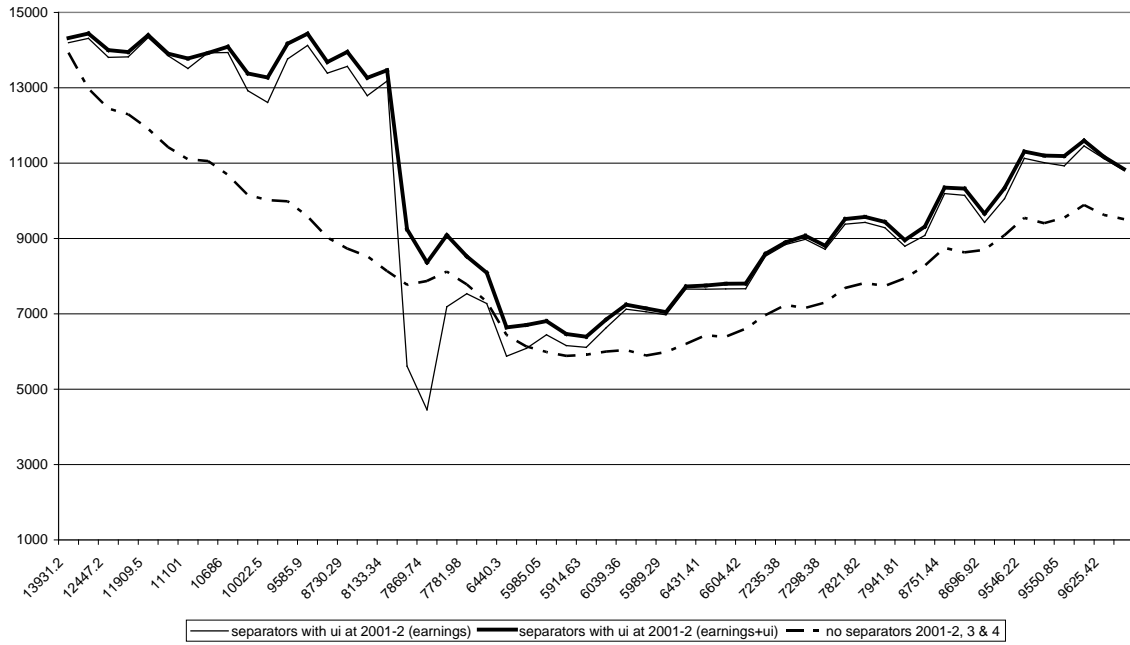
separators with ui at 2001-2 (earnings) ▬▬▬ separators with ui at 2001-2 (earnings+ui) — · — no separators 2001-2, 3 & 4

b. Displaced in 2004.2

separators with ui at 2004-2 (earnings) ▬▬▬ separators with ui at 2004-2 (earnings+ui) — · — no separators 2004-2, 3 & 4

Source: Authors' calculations using BPS administrative records.

43
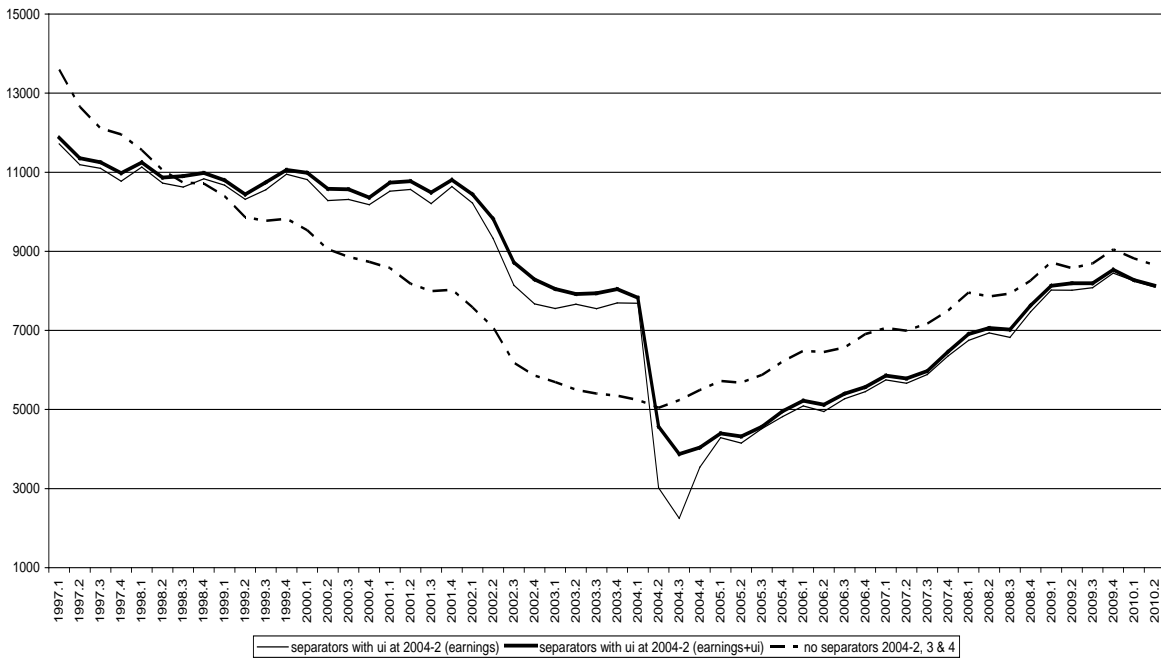
In order to control for observed individual heterogeneity, we estimated earnings losses as the difference between actual earnings and those earnings that would have prevailed if displacement had not taken place. With this purpose, we first estimated equation (1) for all individuals in the sample, considering two alternative dependent variables. One is monthly earnings, and the other one includes earnings and UI benefits (they are equal for workers who do not enter UI). As discussed before, all regressions were run including and excluding quarters with zero earnings. As expected, coefficients on earnings losses are lower when zeros are excluded. In effect, when zeros are included, the evolution of the wage loss is affected by quantities, as those without a job are included in the estimation. We report all results for regressions excluding zero earnings. The estimations of parameters δ_k are displayed in Figure 20. It shows that earnings of displaced workers tend to be above that of non-separators before the displacement event, and that they present a downward trend that can be detected since two years before the displacement. This is consistent with previous empirical evidence, where previous earnings for displaced workers are lower to their expected levels three years before separation (JLS, 1993). The reduction for displaced workers is U\$ 6,029 (or 39 percent of the average separator wage in 1997).[30]

Almost 57 percent of this sample of high tenure displaced workers enter the UI program and receive UI benefits for some months, so the income loss is lower for them. If we consider not only earnings but earnings plus UI benefits, losses at the quarter of displacement are considerable lower, amounting to U\$ 2,087 (13.5 percent). This result illustrates the important income-smoothing effect of UI benefits. Two quarters after the separation both patterns become similar (the UI duration is six months for almost the entire period of analysis, and only after February 2009 were some changes in UI duration for certain workers included). One year after displacement, earnings losses are still 6.67 percent. Estimated losses decrease with time, and five years after displacement, they are around 2 percent of the average wage of the beginning of the period.

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[30] The estimation including quarters with zero earnings produces an earning loss of \$U 6,382 at the time of displacement, representing 44 percent of the average separator wage in 1997. Comparisons of both estimations (with and without zeros), considering earnings and earnings and UI benefits) are presented in Figure A3.

Figure 20. Earnings Losses for Separators, All Observations
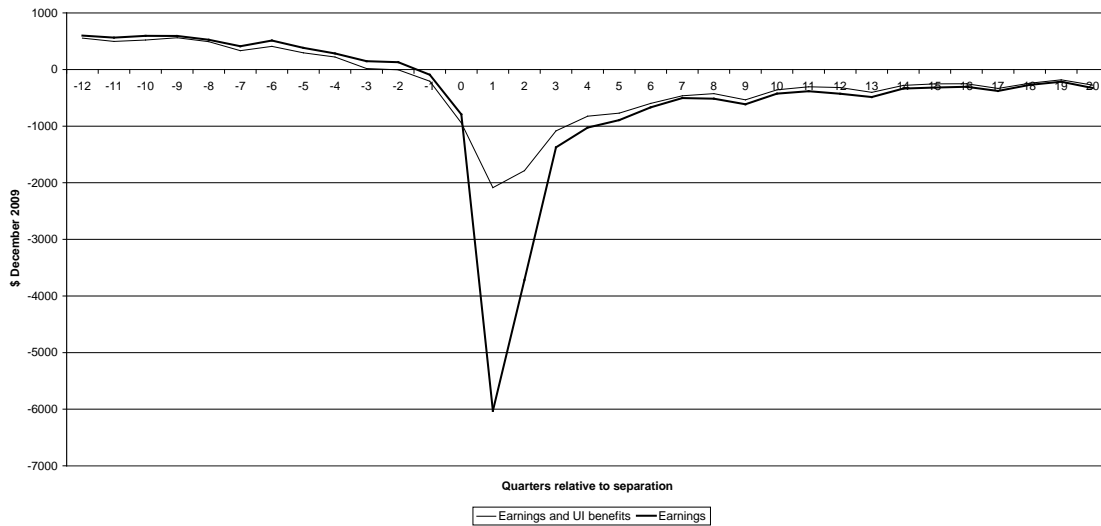
Source: Authors' calculations using BPS administrative records.

Another illustration of the role of UI benefits is provided in Figure 21, where equation (1) is estimated considering all observations but separating them into two samples: one of workers who enter UI program after displacement (covered workers), and the other of workers who do not receive UI benefits after displacement (non-covered workers). The first sub-sample has pre-displacement earnings somehow above that of non di splaced workers, whereas the contrary happens to workers who do not enter the UI program after displacement. Covered workers would lose around 37 percent of their earnings during the first quarter after displacement if they did not receive UI benefits, but thanks to the insurance their loss is only 12 percent. For workers not covered by UI, the loss in the first quarter is also 12 percent (compared with their own initial earnings).

45

**Figure 21. Earnings Losses for Separators: Workers Covered
and Not covered by UI**
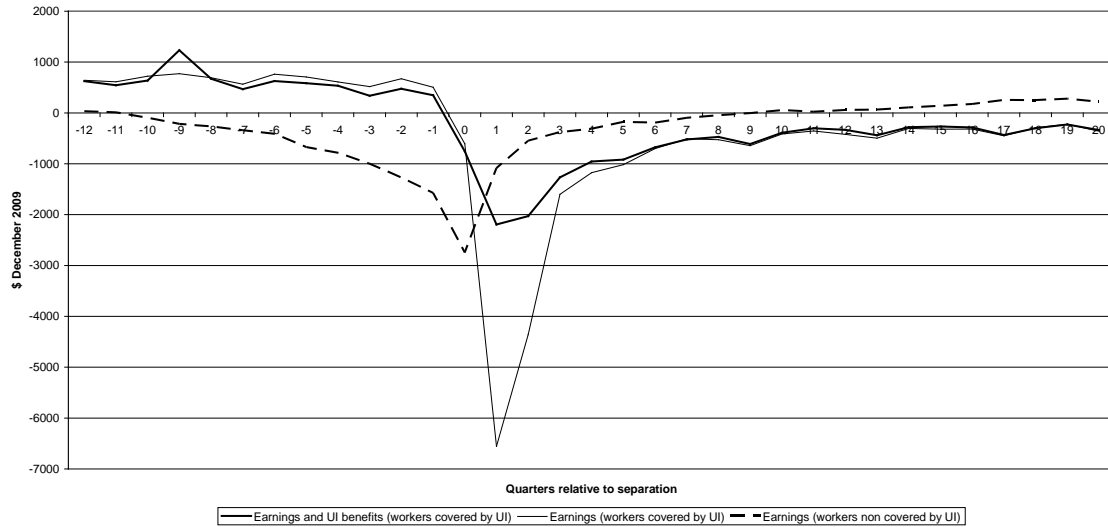
Source: Authors' calculations using BPS administrative records.

Earning losses are greater in absolute terms for men than for women ($U 6,357 vs. $U 3,346 in the first quarter after displacement). In relative terms, these losses represent 35 percent and 28 percent, respectively, and if the role of UI benefits is considered, women lose 9 percent and men 12 percent in the first quarter after displacement (Figure 22).

Figure 22. Earnings Losses by Sex

a) Earnings
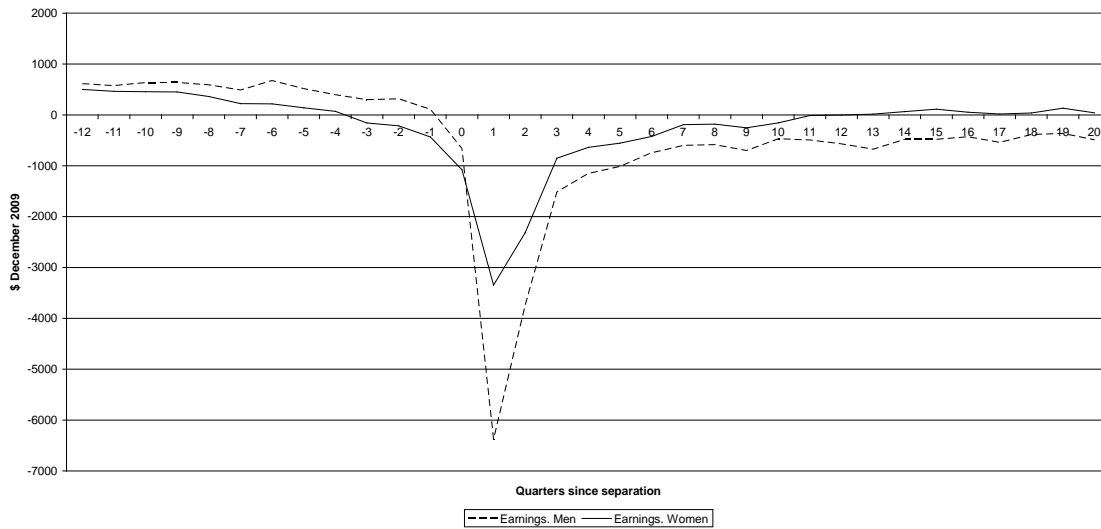
b) Earnings and UI benefits
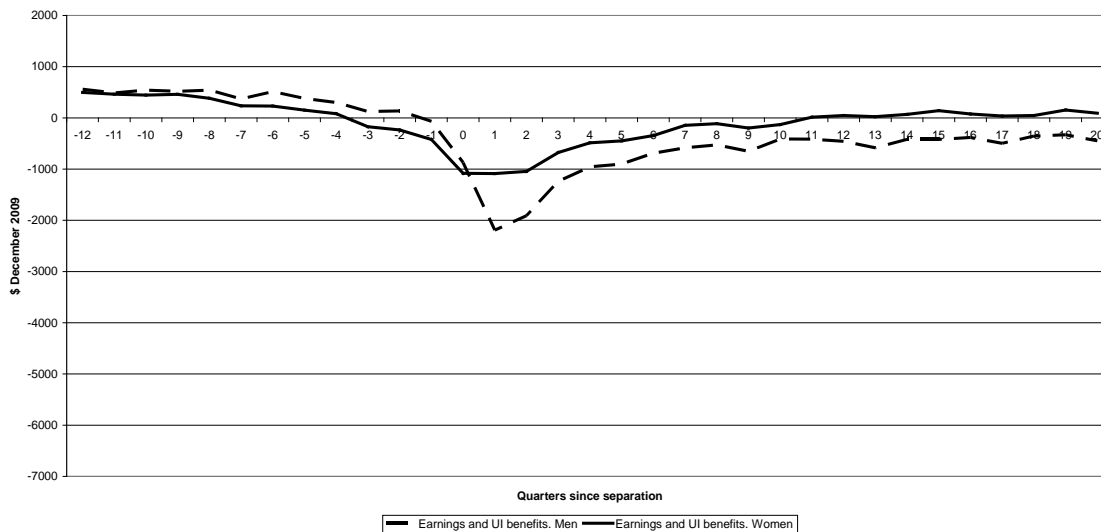
Source: Authors' calculations using BPS administrative records.

In relation to age, variations in absolute losses are not very important for this sample of high-tenure workers (mainly composed of middle-aged persons, as shown in Table 10). In relative terms, younger workers lose 67 percent of their earnings, middle-aged workers 39 percent and older workers 41 percent. Recovery is faster for older workers. When the dependent variable includes UI benefits, the estimations of wage losses for different age groups become more concentrated in relative terms: 23 percent for younger workers, 13 percent for middle-aged workers and 18 percent for older workers (Figure 23).

47

Figure 23. Earnings Losses by Age

a) Earnings by Age Group
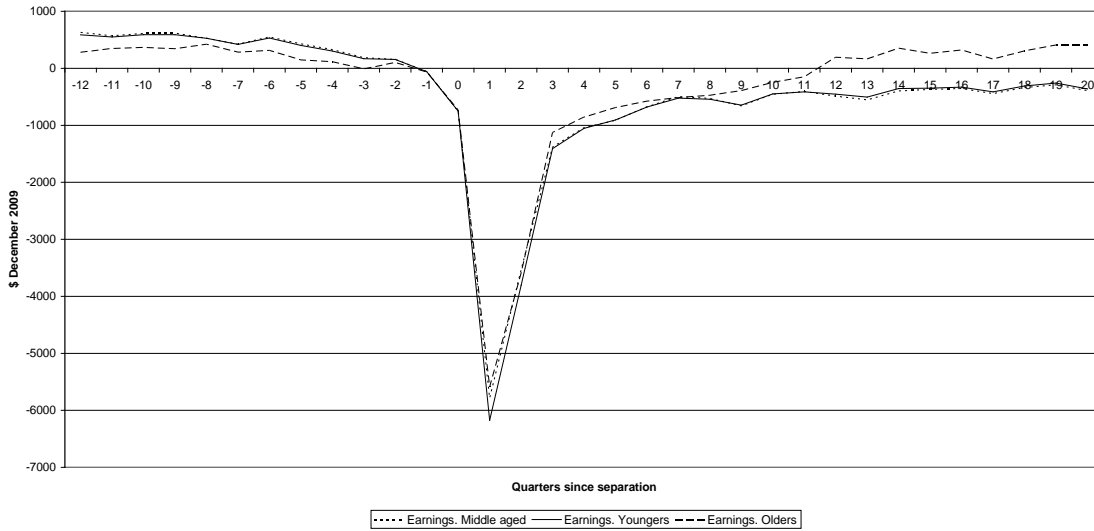
b) Young Workers
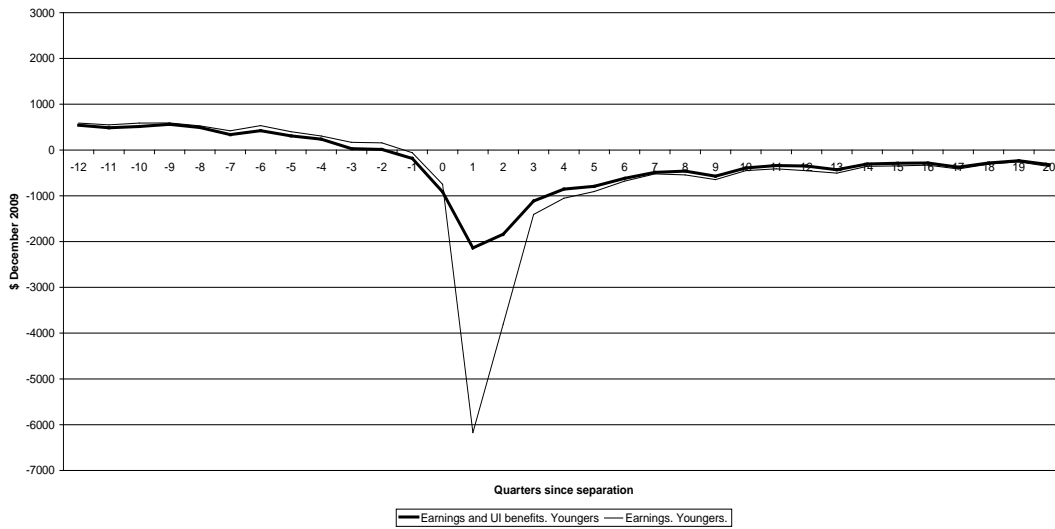
Figure 23., continued

c) Middle-aged Workers

Earnings and UI benefits. Middle aged — *Earnings. Middle aged*

d) Older Workers

Earnings and UI benefits. Olders — *Earnings. Olders*
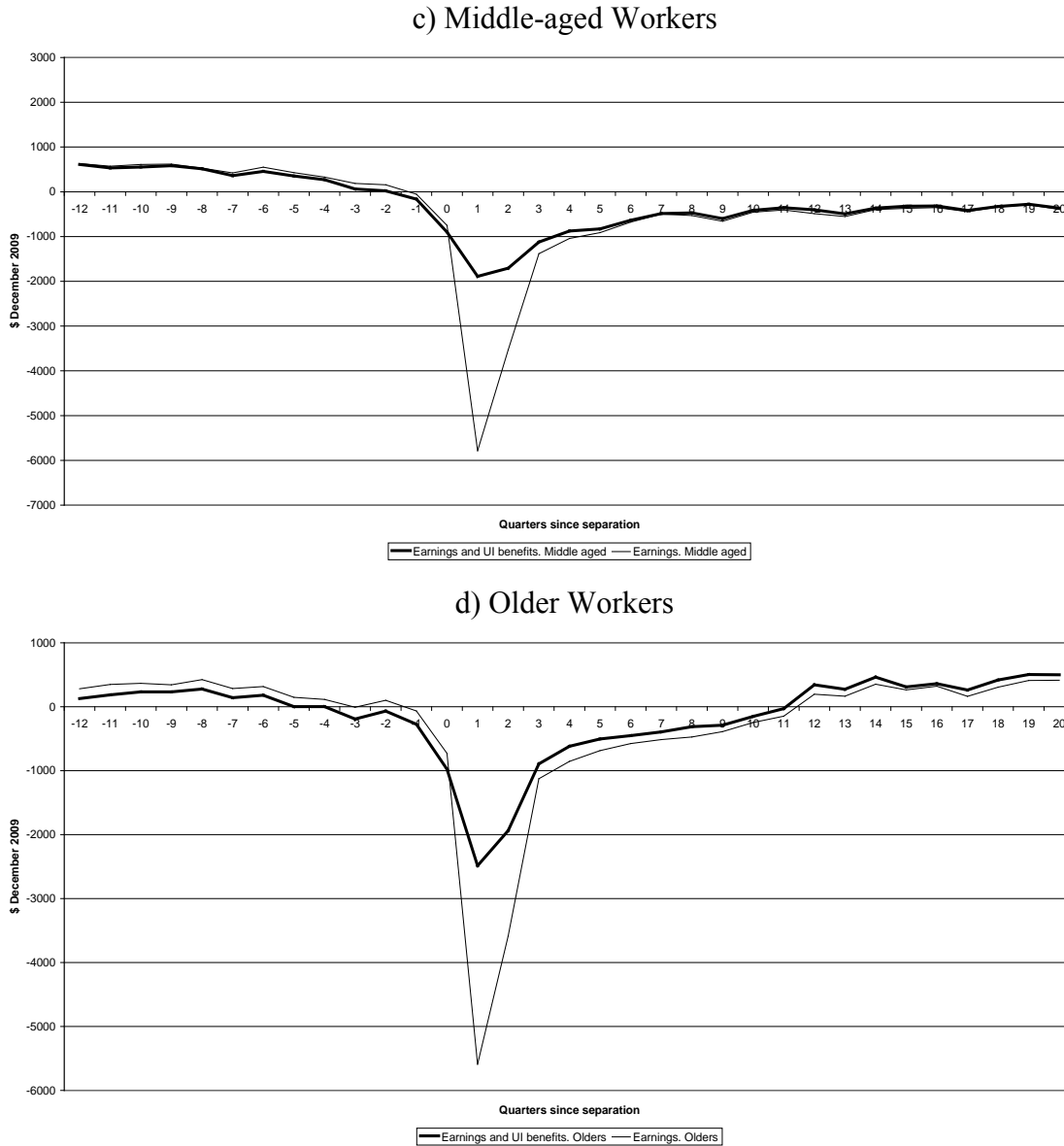
Source: Authors' calculations using BPS administrative records.

Earning losses are considerably greater for workers whose new job is in a different three digit SIC industry (Figure 24). Their estimated loss at the first quarter after displacement is $U 4,282 (24 percent of their initial wages) whereas for those whose new job is in another industry, it is $U 7,069 (48 percent of their initial wages). Again, the role of unemployment benefits as buffers of losses is important for both groups, as when

49

earnings and UI benefits are considered, switchers lose 25 percent of their initial earnings, whereas non-switchers lose only 5 percent.[31]

Patterns of recovery also differ substantially between industry switchers and non-switchers. After one year, switchers' earnings loss is around 20 percent, whereas for non-switchers it is only 3 percent. After five years, non-switchers do not experience further losses, whereas switchers lose around 8 percent of their initial wages.

Figure 24. Earnings Losses for Switchers and Non-Switchers

a) Earnings

b) Earnings and UI benefits
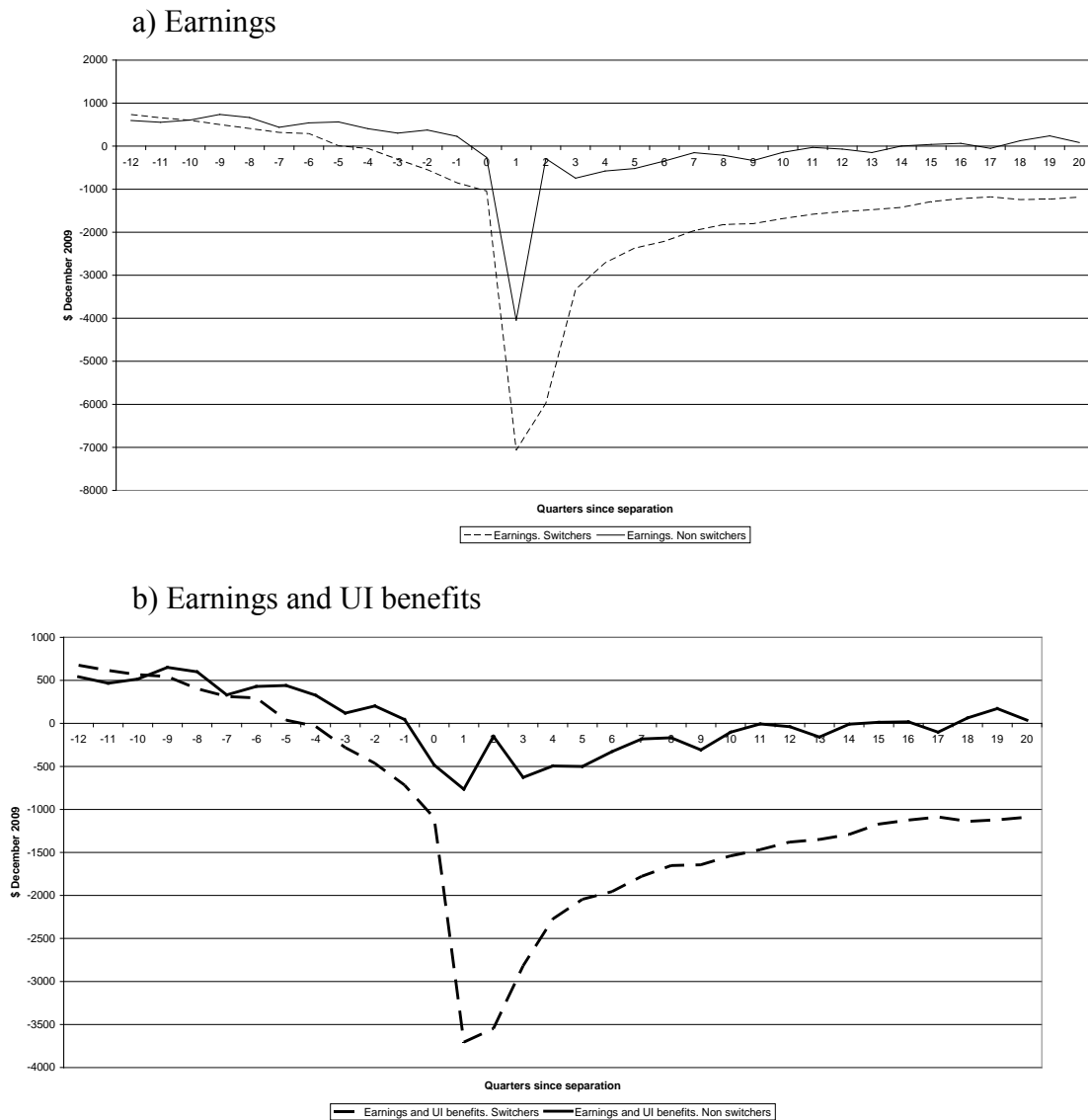
Source: Authors' calculations using BPS administrative records.

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[31] The results are practically the same when switchers are considered at two or one digit SIC industry. Figures are reported in the Annex (Figures A.4 and A.5).

The country's three largest industries display similar losses in absolute terms. Earnings losses are greater for workers from trade, restaurants and hotels ($U 10,037, 71 percent of their earnings), and other services ($U 10,242, 73 percent of their initial earnings), and smaller for those coming from manufacturing (around $U 10,778, or 57 percent of their pre-displacement wages). When UI benefits are considered, losses are considerably reduced (34, 43 and 26 percent, respectively), as shown in Figure 25.

Figure 25. Earnings Losses by Industry

a) Earnings

b) Earnings and UI benefits
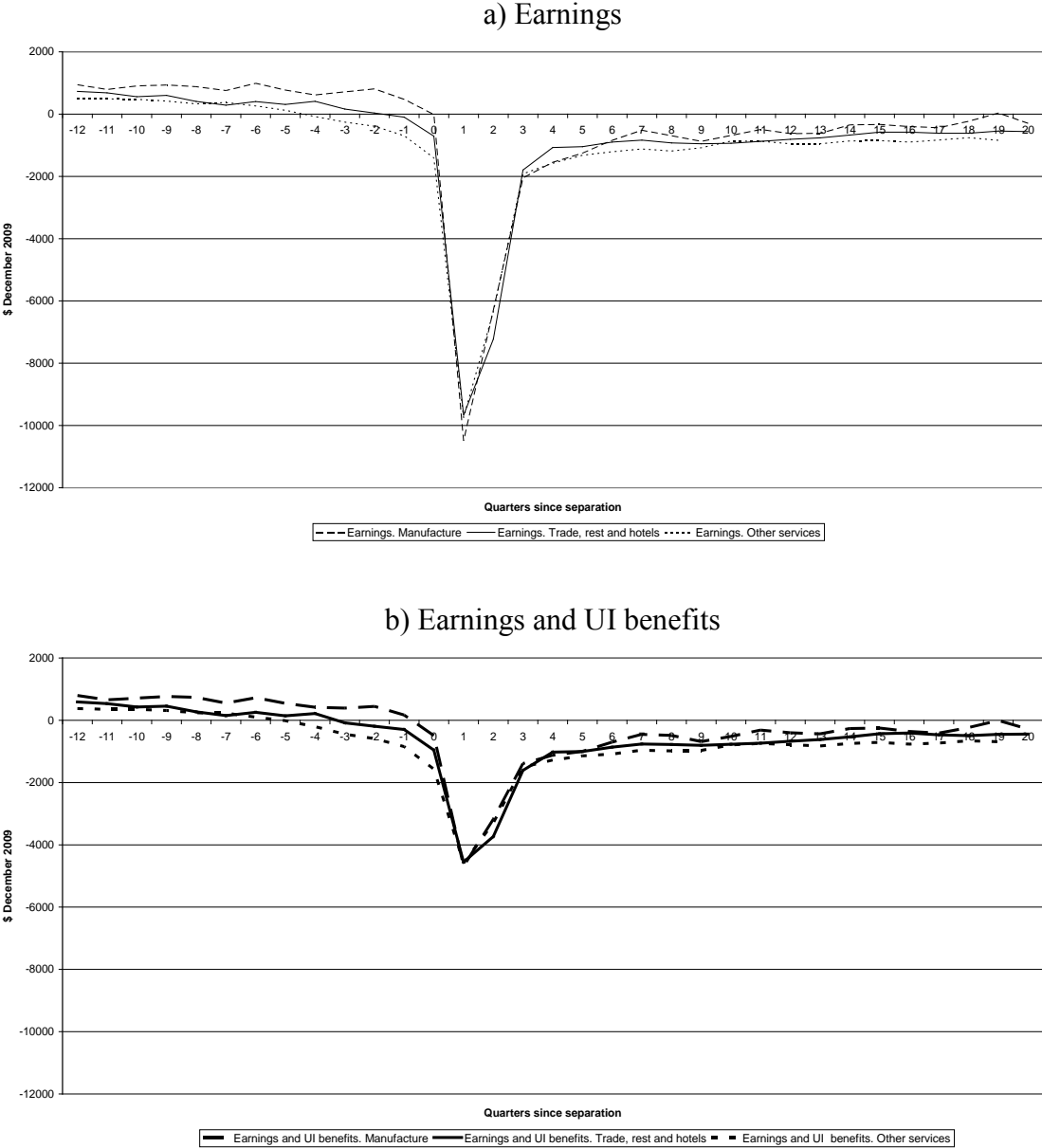
Source: Authors' calculations using BPS administrative records.

Workers from medium and large firms present greater earnings losses in absolute terms (Figure 26). In the first quarter after displacement, their loss is $U 7,521, compared to $U 1,763 for workers from smaller firms. These figures represent 34 and 21 percent, respectively, of their previous wages. Recovery is faster for workers from small firms, while workers from large firms do not reach their expected wages even five years after job separation. When UI benefits are included in the wage variable, the loss is 12 percent for workers from large firms and 7 percent for those from smaller firms.

Figure 26. Earnings Losses by Firm Size

a) Earnings
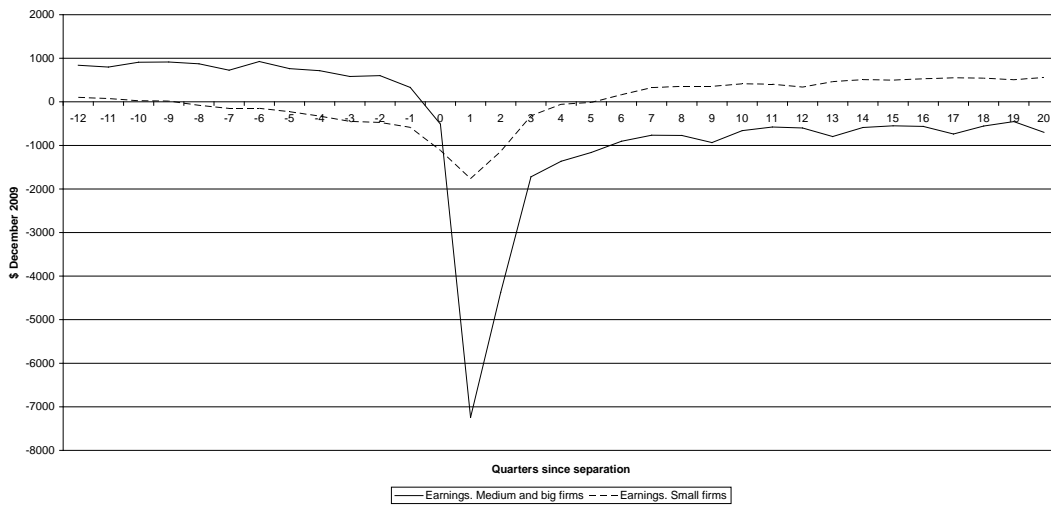
b) Earnings and UI Benefits
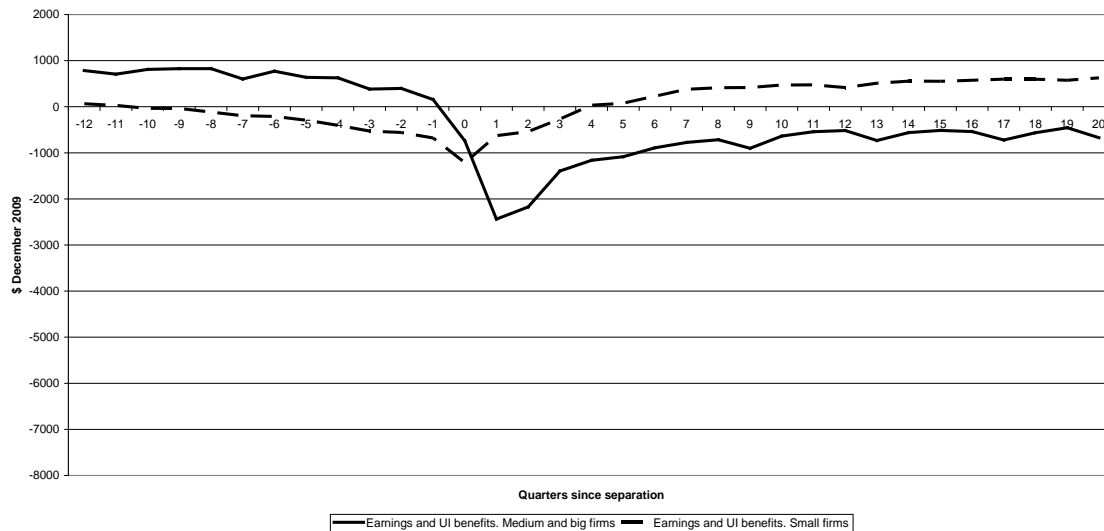
Source: Authors' calculations using BPS administrative records.

We analyzed the pattern of wage losses comparing workers during the 2002 economic crisis with other separators.[32] Workers dismissed during the crisis tend to have higher pre-displacement wages, and the decreasing pre-displacement trend is not detected for them (Figure 27). The earning loss in the first quarter after separation for those separated during the crisis was $U 3,284, whereas for the other group it was $U 6,172. This may in part reflect the lower real wages in the crisis period. In relative terms, those displaced during the crisis lose 19 percent of their initial earnings, whereas the other group loses 40 percent of their previous earnings.

UI benefits played an important role during the economic crisis, as displaced workers reduced their relative loss to 5 percent. Moreover, the path of recovery was faster for workers who were separated during the economic crisis; two years after displacement they have reached their expected wages.

Figure 27. Earnings Losses during Crisis and Non-Crisis Times

a) Earnings

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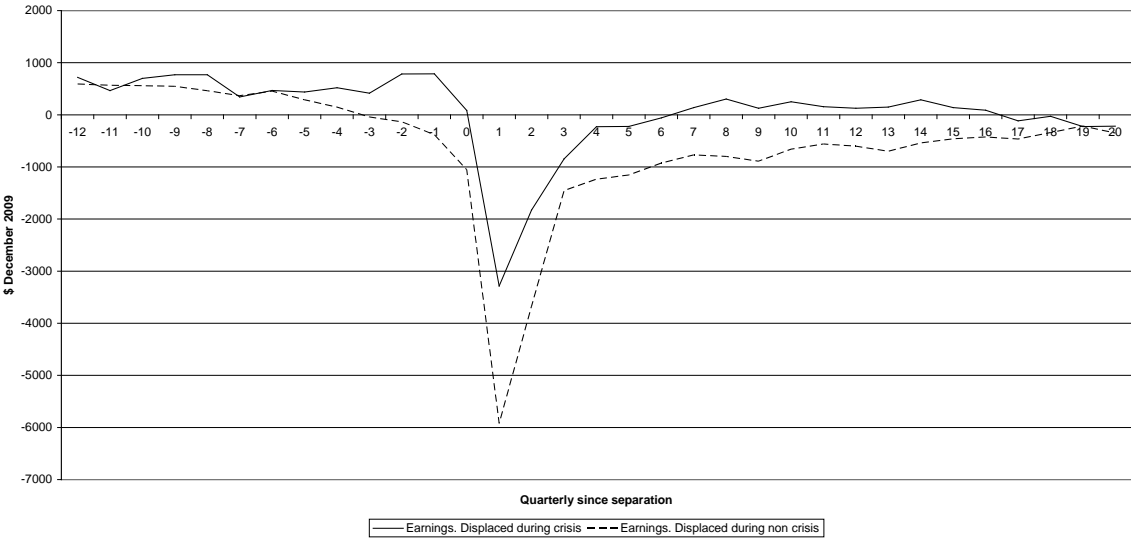
[32] During this crisis, the unemployment rate reached 17 percent, the highest rate since statistics became available.

Figure 27., continued
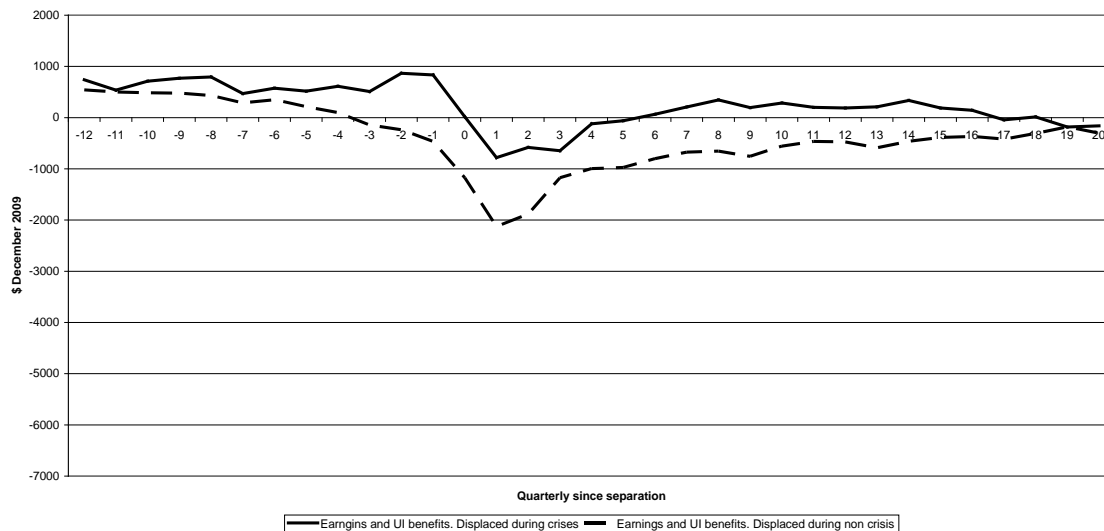
b) Earnings and UI benefits

Finally, using the definition of mass layoffs presented above, we estimated earnings losses separating between mass layoffs workers and the rest. As explained, for this purpose the sample was restricted to firms with 20 or more workers, so we are classifying as mass or non-mass layoffs only 2,188 separators (10 percent of the sample of separators). For this reason, the results must be taken with caution. Contrary to what is found for other labor markets, in our case earnings losses are greater for non-mass layoff workers (Figure 28). Their reduction in the first quarter after displacement is $U 5,643 (47 percent of their pre-displacement earnings at the beginning of the period), whereas for mass layoff workers it was $U 4,236 (25 percent). Differences between both groups are reduced when UI benefits are also considered: in both cases, in the first quarter after displacement, earnings plus UI benefits account for around 9 percent of each group wage at the beginning of the period.

Figure 28. Earnings Losses for Mass Layoffs and Non-Mass Layoffs

a) Earnings
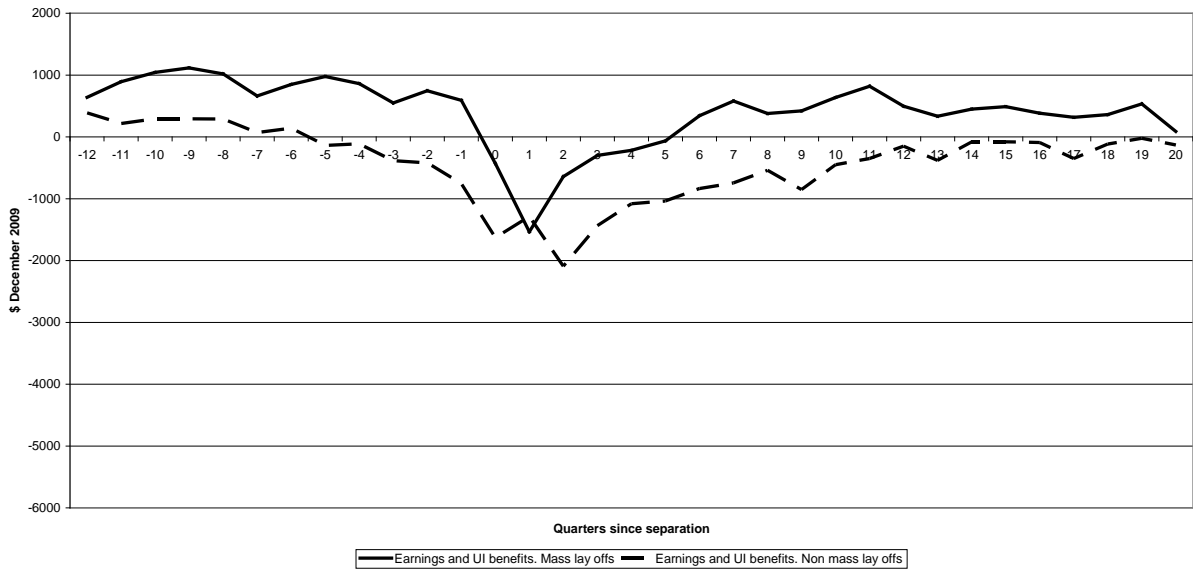
b) Earnings and UI Benefits
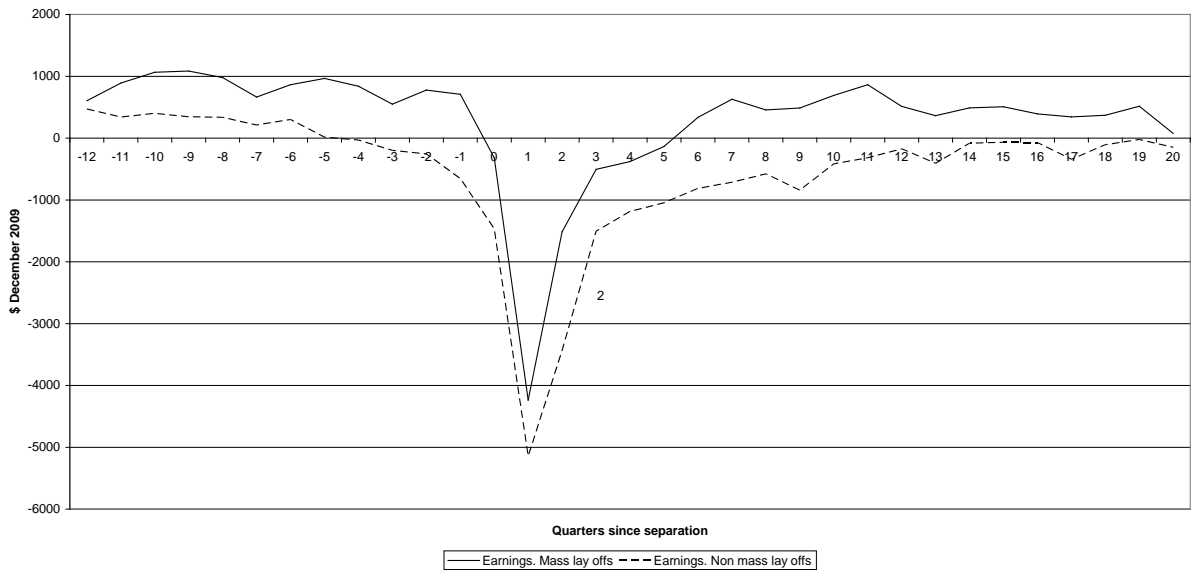
Source: Authors' calculations using BPS administrative records.

In sum, high-tenure workers suffer considerable earnings losses after an episode of displacement from the labor market. These losses are higher for workers that switch sectors and for younger workers. Wage losses are higher in the case of men, and also for workers from small firms. Workers who exit from the formal labor market during the last economic crisis, or due to mass layoffs, suffer smaller losses. The unemployment insurance program plays an important role as a buffer for workers who lose their jobs. A summary of our results is included in Table 11.[33]

Table 11. Earnings Losses from Displacement						
	Earnings			Earnings+UI benefits		
(in %)	First quarter	First year	Fifth year	First quarter	First year	Fifth year
All	-39.1%	-6.6%	-2.1%	-13.5%	-5.3%	-1.8%
Mass layoffs	-25.4%	-2.3%	0.5%	-9.2%	-1.3%	0.5%
Non-mass layoffs	-47.6%	-11.0%	-1.4%	-11.9%	-10.0%	-1.2%
Men	-35.5%	-6.4%	-2.7%	-12.2%	-5.3%	-2.5%
Women	-28.2%	-5.4%	0.3%	-9.2%	-4.1%	0.8%
Younger	-66.7%	-11.4%	-3.9%	-23.1%	-9.2%	-3.5%
Middle-aged	-39.2%	-7.0%	-2.7%	-12.8%	-5.9%	-2.5%
Older	-41.4%	-6.3%	3.1%	-18.4%	-4.6%	3.7%
Switchers (3 digit)	-47.7%	-18.3%	-8.0%	-25.0%	-15.3%	-7.4%
Non-switchers (3 digit)	-23.9%	-3.4%	0.5%	-4.5%	-2.9%	0.2%
Switchers (2 digit)	-49.3%	-20.0%	-8.5%	-26.0%	-17.1%	-8.1%
Non-switchers (2 digit)	-24.5%	-3.4%	0.5%	-4.8%	-2.9%	0.3%
Switchers (1 digit)	-48.7%	-18.2%	-6.9%	-25.7%	-15.6%	-6.9%
Non-switchers (1 digit)	-25.5%	-3.9%	0.1%	-5.6%	-3.3%	-0.1%
Manufacture	-57.3%	-8.4%	-1.6%	-25.6%	-6.1%	-1.5%
Trade, rest. and hotels	-71.1%	-7.9%	-4.1%	-33.5%	-7.5%	-3.3%
Other services	-73.0%	-11.8%	-6.7%	-34.3%	-9.6%	-5.5%
Medium and large firms	-34.4%	-6.5%	-3.3%	-11.6%	-5.5%	-3.2%
Small firms	-20.9%	-0.7%	6.7%	-7.4%	0.4%	7.4%
During crisis	-19.7%	-1.4%	-1.3%	-4.7%	-0.7%	-1.0%
During non0crisis	-39.2%	-8.2%	-2.3%	-14.0%	-6.6%	-2.0%
With UI	-37.3%	-6.7%	-2.0%	-12.5%	-5.4%	-1.9%
Without UI	-11.5%	-4.1%	0.9%	-9.7%	-2.8%	1.9%

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[33] Results for estimations including zeros are presented in table A.12

Table 11., continued

(in December 2009 $U)	Earnings			Earnings+UI benefits		
	First quarter	First year	Fifth year	First quarter	First year	Fifth year
All	-6,029	-1,026	-328	-2,087	-824	-276
Mass layoffs	-4,237	-379	75	-1,534	-218	89
Non mass layoffs	-5,142	-1,185	-148	-1,287	-1,081	-130
Men	-6,375	-1,150	-490	-2,190	-956	-446
Women	-3,346	-639	38	-1,087	-486	91
Younger	-6,173	-1,052	-361	-2,139	-854	-320
Middle-aged	-5,785	-1,041	-393	-1,888	-875	-364
Older	-5,591	-856	415	-2,486	-619	500
Switchers (3 digit)	-7,069	-2,711	-1,183	-3,705	-2,273	-1,091
Non-switchers (3 digit)	-4,045	-577	85	-765	-495	38
Switchers (2 digit)	-7,375	-2,999	-1,274	-3,890	-2,559	-1,214
Non-switchers (2 digit)	-4,013	-557	81	-783	-472	42
Switchers (1 digit)	-7,282	-2,712	-1,037	-3,835	-2,333	-1,034
Non-switchers (1 digit)	-4,162	-643	23	-906	-546	-12
Manufacture	-10,489	-1,547	-297	-4,688	-1,121	-280
Trade, rest. and hotels	-9,665	-1,071	-558	-4,552	-1,022	-444
Other services	-9,746	-1,578	-900	-4,583	-1,279	-737
Medium and large firms	-7,243	-1,363	-699	-2,437	-1,161	-672
Small firms	-1,763	-57	561	-627	33	626
During crisis	-3,285	-226	-219	-780	-120	-161
During non-crisis	-5,922	-1,234	-350	-2,124	-995	-302
With UI	-6,557	-1,175	-359	-2,195	-955	-338
Without UI	-1,286	-455	97	-1,086	-310	218

Source: Authors' calculations using BPS administrative records.

5. Impact Evaluation of Recent Changes in the Unemployment Insurance

Recent changes in the design of Uruguayan UI have implied modifications that may alter various labor market outcomes. In particular, we want to assess the impacts of the following modifications:

- The duration of UI was reduced from six to four months in the case of temporarily laid off workers (suspension).

- The scheme of payments was changed for permanent laid off workers (job loss). Instead of a lump sum during a six-month period, a decreasing scheme of payments was put in place.

- The duration of the UI can be extended up to one year for workers 50 or older.

Using unemployment insurance records and social security labor histories, and based on different evaluation strategies, we try to disentangle the effect of each of these changes.

5.1 Data and Methodology

This impact evaluation of the unemployment insurance program is based on two data sets: administrative records from the unemployment insurance program and a s ample of longitudinal data on social security records. Each of these data sets is used under a different evaluation strategy. The main outcomes that we are analyzing are mean duration of unemployment and wage at reemployment.

To analyze the effects of the reduction in duration for temporarily laid-off workers (modality of suspension) we rely on pr opensity scores estimations (PS, comparing UI beneficiaries under this modality before and after the change in the system).

The effects of the change in benefits scheme for permanently laid off workers are analyzed using propensity score and difference in difference estimations (DD, comparing UI beneficiaries with workers out of the labor force but not in UI, before and after the change).

For the extension of UI duration for older workers, effects are estimated using regression discontinuity design (RDD), considering workers aged 46 to 53.

The unemployment data sets cover the universe of all unemployed workers who entered the program 15 months before and 15 months after the modification of the program. These data from *Banco de Previsión Social* administrative records include information on sex, date of birth and sector of activity, as well as the exact amount of money workers received and the months they were in the program. We use this data to compare similar workers before and after changes in UI were implemented, as discussed below. For these workers, we have all their labor history until April 2010, so we can know if they returned to

work once UI expired, and in case they did, their wage at reemployment. A sub-sample of this data set, including workers aged 46 to 53 at the time of unemployment, is used for the RDD estimation.

Data on social security records are used to construct control groups of workers who were out of the formal labor force but not covered by the UI, to run DD estimates in the case of permanently laid off workers. The following table describes the evaluation strategy used to analyze each change, detailing the treatment and control groups in each case.

Table 12. Impact Evaluation Strategy			
Reform of UI evaluated	Evaluation Strategy	Definition of Treatment and control groups	Data bases used in the analysis
1. Reduction in duration (suspension)	1. 1 Propensity Score Matching (PS) & Cohort Design	T: unemployment beneficiaries suspension after the change C: unemployment beneficiaries suspension before the change	Both treatment and control groups come from the administrative records of the UI program
2. Change in benefits (job loss)	2. 1 Propensity Score Matching (PS)	(T: unemployment beneficiaries (job loss) after the change C: unemployment beneficiaries (job loss) before the change	Both treatment and control groups come from the administrative records of the UI program
	2.2 Difference in differences (DD)	T: unemployment beneficiaries (job loss) before and after the change C. Out of the labor force, without insurance	Treatment group comes from the administrative records of the UI program. Control group comes from the labor history, social security data
3. Increase in maximum duration for 50 & older UI recipients	3.1 Regression Discontinuity (RD)	T: 50-53 after the change C: 46-49 after the change	Both treatment and control groups come from the administrative records of the UI program

Source: Authors' compilation.

One drawback of our data for both the PS and DD strategies is that we are not considering the same length of time after being out of the labor force for all workers. In fact, for those workers who entered the UI program 15 months before the change, we have information for the 30 subsequent months, whereas for those workers who entered the UI program 10 months after the reform, we have information only on the five subsequent

months. In other words, the probability that a worker gets a formal job is higher for those workers who entered the UI before the change, because we have a longer spell of time. Furthermore, the potential duration of a spell of unemployment is related to an individual's treatment status.

To avoid this problem and make both groups as comparable as possible, we recoded unemployment duration for the first group of workers, allowing the same window of time for them as for the post reform group. For example, if a worker became unemployed one month before the reform, and he gets a formal job after 15 months, we consider that he did not get a formal job during the period (this universe is considered as sample 1).

As a second strategy to limit problems derived from the observation of incomplete spells, we constructed another subsample, extracted from this one, which only considers workers with complete unemployment duration observed (sample 2).

5.2 Results

5.2.1 Reduction in Duration for Workers under Suspension Modality

We analyzed the impact of the reduction of duration of UI (from six to four months) for the temporarily laid off workers (modality of suspension) on unemployment duration and earnings. We used a cohort design combined with propensity score matching to compare the outcomes of individuals who entered unemployment in the modality of suspension before and after the change.

Density functions of unemployment duration for treated individuals before and after the policy change differ considerably: as expected, the mode of the duration distribution is in the fourth month after the change (group A), and two other "modes" appear during the second and the sixth month, before the policy change took effect (group B), as shown in Figure 29. These two groups are the ones being compared under the PS strategy. It must be remarked that although UI beneficiaries in the modality of suspension should return to their job after six or four months (under the old and new regime, respectively), the government (*Poder Ejecutivo*) has the possibility to extend the duration of the benefit.

Figure 29. Density Function of Unemployment Duration

Source: Authors' calculation using BPS administrative records.

Density functions of a variable that measures changes in earnings differ between treated individuals before and after the change in the UI regime. Treated individuals after change present a clearer mode around zero, and less mass for higher-order changes (Figure 30).

Figure 30. Density Function of Earnings Change
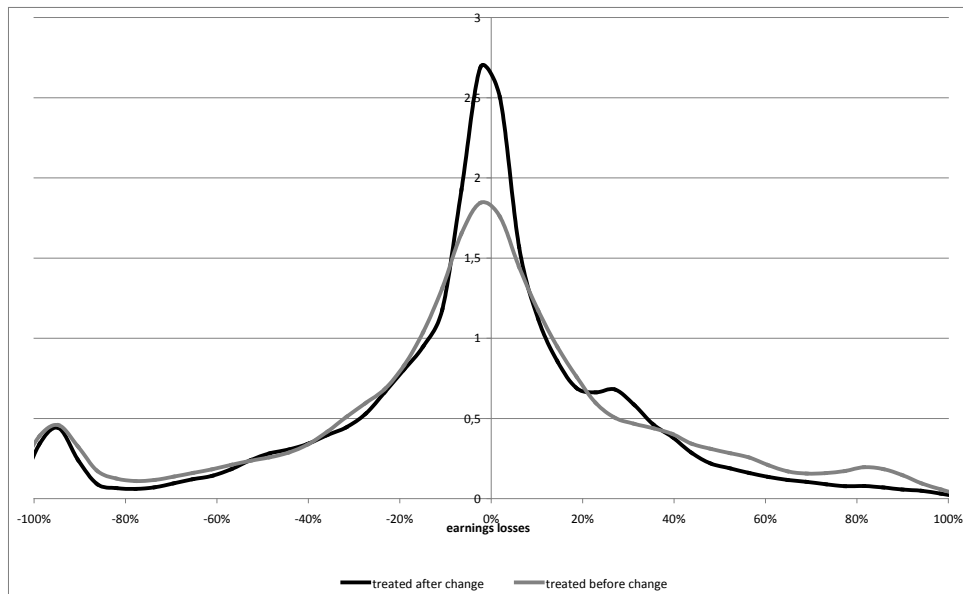
Source: Authors' calculation using BPS administrative records.

Table 13 presents propensity score (PS) results on unemployment duration for two types of propensity score estimators: nearest neighbor matching and stratification matching. The variables used for the matching are age, age squared, sex and the interaction between sex and age.[34] The density functions of the propensity score for treated and untreated groups show a very strong overlap between groups, for both samples, validating the use of this methodology (see Figure A6). When the whole sample is considered, results indicate that there is a significant effect on unemployment duration, with the change in the UI design for temporarily laid-off workers causing a reduction in unemployment duration. This result indicates that the change was really enforced.

The coefficients estimated imply a reduction of around 30 percent in duration of insured unemployment, consistent with the change from 6 to 4 months of duration. It reflects a merely mechanical change, as all workers in this modality remain UI beneficiaries until the end of the period. The results are similar for both samples, and they are also very similar to the unadjusted mean difference.

Table 13. Mean Unemployment Duration and Average Treatment Effect on the Treated (ATT) of Reduction in UI on Unemployment Duration (PS estimates), Temporary Layoffs.

	Sample 1 (all)	Sample 2 (restricted)
Average duration		
Treatment group	2.68	2.67
Control group	2.99	2.99
Unadjusted difference (control vs treatment)	-0.31	-0.32
Average treatment effect on treated (ATT)		
Whole sample		
Nearest neighbor matching	-0.300	-0.313
	$(0.021)^{***}$	$(0.021)^{***}$
Stratification matching	-0.302	-0.311
	$(0.021)^{***}$	$(0.020)^{***}$
Nº of treated observations	11,142	11,021
Nº of control observations	14,685	14,627

Note: Dependent variable: unemployment duration, in months. Standard errors in parentheses. *** significant at 1%.
Source: Authors' calculation using BPS administrative records.

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[34] When earnings prior to the unemployment event was used for the propensity score matching, the balance property was not satisfied.

Propensity score results on a dependent variable which measures the difference between pre and post-unemployment earnings are presented in Table 14. The dependent variable is expressed as the percentage change of wages before and after the unemployment episode. In this case, the PS estimates are not statistically significant, for any of the estimations or samples considered. This indicates that these workers, who return to their previous job, do not experience significant changes in their earnings. This is not surprising, as they return to the same firm and job most of the time.

Table 14. Mean Earnings Change and Average Treatment Effect on the Treated (ATT) of Reduction in UI on Earnings Change (PS estimates), Temporary Layoffs

	Sample 1 (all)	Sample 2 (restricted)
Average duration		
Treatment group	-0.04	-0.04
Control group	-0.04	-0.04
Unadjusted difference (control vs treatment)	0	0
Average treatment effect on treated (ATT)		
	All	
Nearest neighbor matching	-0.001	-0.004
	(0.005)	(0.005)
Stratification matching	-0.001	-0.005
	(0.005)	(0.005)
Nº of treated observations	10,415	10,304
Nº of control observations	13,426	13,365

Note: Dependent variable: earnings' change, in %. Standard errors in parentheses. *** significant at 1%.
Source: Authors' calculation using BPS administrative records.

5.2.2 Change in the Benefits Scheme

To analyze the effects of the change in the scheme of benefits for permanently laid off workers, we used a cohort design and propensity score matching using individuals who entered unemployment in the modality of job loss before and after the change in the UI payments scheme.

As a second strategy, difference in difference estimators were also used, comparing UI beneficiaries before and after the change, with a control group of workers, who lost their formal jobs, but did not enter the UI program. The following equation was estimated:

$$Y_{it} = \alpha + \beta T_{i1}t + \rho T_{i1} + \eta t + \phi X_i + \varepsilon_{it}$$

(3)

where t is a time variable, being one after the moment of the modification of the unemployment program, and $T_1 = 1$ reflects the presence of the new UI program at t=1, whereas $T_1 = 0$ denotes lack of treatment at time t=1. The coefficient β, representing the interaction between the treatment variable and the time variable, gives the average DD effect of the program. Months controls were included in the specification.

Density functions of unemployment duration for treated individuals (laid off workers under UI) before and after the change in the benefits scheme (groups B and A, respectively) show some changes, as the mode detected in the six months before the change vanishes after the change (Figure 31). The control sample of workers who did not enter the UI program, which were used for DD estimation (groups C and D, after and before the change respectively), present very similar density functions

Figure 31. Density Function of Unemployment Duration
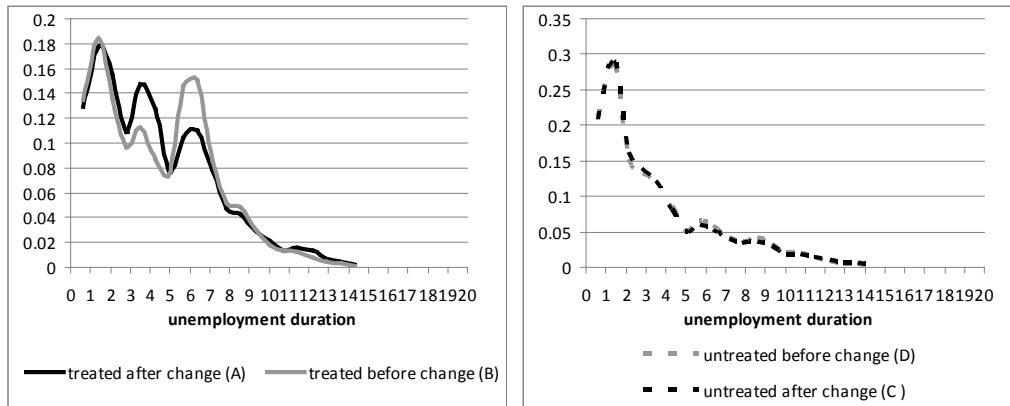
Source: Authors' calculation using BPS administrative records.

Density functions of changes in earnings differ between treated individuals before and after the change in the UI regime (Figure 32). Treated individuals after change present a clearer mode around zero, but considerably less mass for higher order changes. Density functions for untreated individuals before and after the change, the control groups for the DD strategy, are similar.

Figure 32. Density Function of Earnings Change
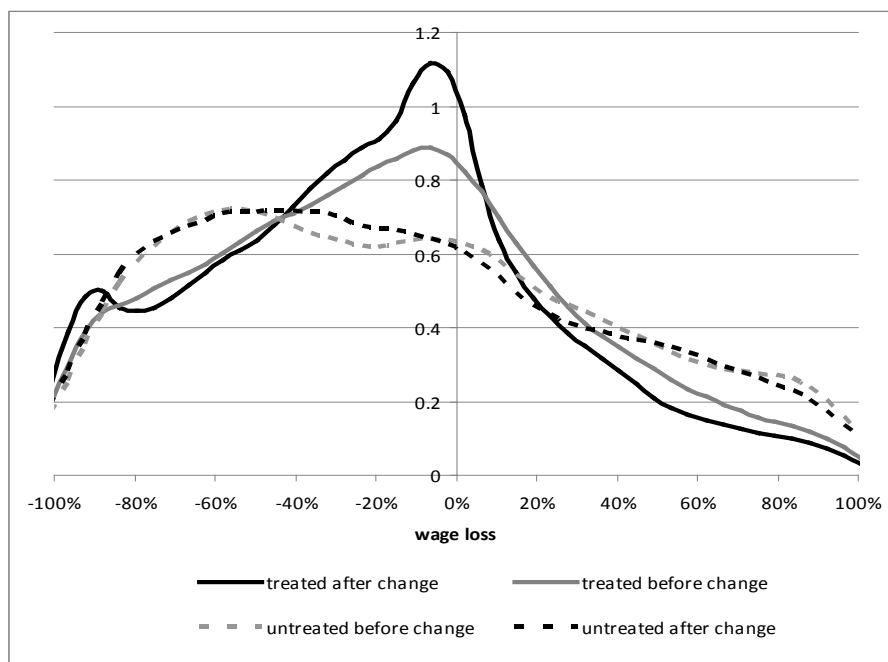
Source: Authors' calculation using BPS administrative records.

Propensity score matching between UI beneficiaries before and after the change in the scheme of benefits indicates that the average treatment effect on unemployment duration is negative, indicating that this change caused a reduction in unemployment duration (Table 15). The matching was done considering age, age squared, sex and the interaction between sex and age.[35]

These results could indicate that the reform produced a significant but very small reduction in the unemployment duration. To the extent that the dependent variable is measured in months, a coefficient of 0.06 represents a reduction of two days, a very small magnitude. Again, the PS results are very similar to unadjusted difference in means.

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[35] Note that the density functions of the propensity score almost perfectly overlap (Figure A7).

Table 15. Mean Unemployment Duration and Average Treatment Effect on the Treated (ATT) of Reduction in UI on Unemployment Duration (PS estimates), Permanent layoffs.

	Sample 1 (all)	Sample 2 (restricted)
Average duration		
Treatment group	4.45	4.48
Control group	4.40	4.40
Unadjusted difference (control vs treatment)	-0.05	-0.08
Average treatment effect on treated (ATT)		
Nearest neighbor matching	-0,06	-0,078
	(0,02) ***	(0,029) ***
Stratification matching	-0,073	-0,078
	(0,029) ***	(0,028) ***
Nº of treated observations	49,961	23,567
Nº of control observations	35,683	16,356

Note: Dependent variable: unemployment duration, in months. Standard errors in parentheses.
*** significant at 1%.
Source: Authors' calculation using BPS administrative records.

The change in the scheme of unemployment duration has also implied a reduction of average earnings loss (Table 16). On average, job loss is associated with a reduction of 20 percentage points of wages for workers who return to labor activity. The propensity score estimates show that after reform the performance would be slightly better, since the loss would be approximately three points lower. This indicates that the decrease in duration is not associated with a worse job matching in terms of earnings. The reform did not cause the unemployed to take lower-paying jobs because their UI benefits ran out.

Table 16. Mean Earnings Change and Average Treatment Effect on the Treated (ATT) of Reduction in UI on Earnings Change (PS estimates), Permanent Layoffs

	Sample 1 (all)	Sample 2 (restricted)
Average duration		
Treatment group	-0.21	-0.21
Control group	-0.23	-0.17
Unadjusted difference (control vs. treatment)	0.02	0.04
Nearest neighbor matching	0.028	-0.033
	(0.004) ***	(0,005) ***
Stratification matching	0.028	-0.033
	(0.004) ***	(0.005) ***
Nº of treated observations	25,921	20,934
Nº of control observations	21,557	14,348

Note: Dependent variable: earnings' change, in percentage points. Standard errors in parentheses.
*** significant at 1%
Source: Authors' calculation using BPS administrative records.

Difference-in-differences estimates confirm the previous results in relation with unemployment duration. In this case, the treatment group is permanently laid off workers covered by UI and the control group is unemployed workers not covered by UI, in both cases before and after the change in the regime (Table 17). Our variable of interest, the interaction between the treatment and time variable, indicates that the change in UI benefits caused a decrease in unemployment duration of one week. The reduction is higher for men (gender=1) and for younger workers. Results also indicate a reduction of wage loss of around 5 percent. Similar results are obtained with the unrestricted sample (see Table A13).

Table 17. Differences in Differences Estimation: Effects of the Change in UI Benefits on Unemployment Duration and Wage Loss. Sample 2 (restricted)

	Coefficient	Std. Err.	T	P>t	Confidence interval	
Unemployment duration						
Treatment	0.764	0.034	22.800	0.000***	0.698	0.830
Time	0.007	0.039	0.180	0.861	-0.070	0.083
treatment*t	-0.179	0.073	-2.460	0.014***	-0.321	-0.036
treatment*t*gender	-0.216	0.036	-6.030	0.000***	-0.286	-0.146
treatment*t*age	0.011	0.001	7.470	0.000***	0.008	0.013
Nº of treated obs. Before	16,355					
Nº of treated obs. After	23,568					
Nº of control obs. Before	8,862					
Nº of control obs. After	8,126					
Wage loss						
Treatment	0.083	0.007	11.710	0.000***	0.069	0.097
Time	-0.026	0.008	-3.200	0.001***	-0.042	-0.010
treatment*t	0.052	0.019	2.790	0.005***	0.015	0.088
treatment*t*gender	0.017	0.009	1.900	0.058**	-0.001	0.034
treatment*t*age	-0.001	0.000	-1.440	0.151	-0.001	0.000
Nº of treated obs. Before	14,348					
Nº of treated obs. After	20,934					
Nº of control obs. Before	5,622					
Nº of control obs. After	5,118					

Note: *** significant at 1%. Estimation included months fixed effects controls.
Source: Authors' calculation using BPS administrative records.

4.2.3 The Extension of Benefits for Older Workers

One way to identify the causal effect of extending UI benefits is to compare workers aged 50 or over, whose UI duration was increased by two quarters, with workers who fall just short of this age of requirement. These two groups are basically similar, and the difference is that the extension in benefits was applied only to workers aged 50 or older at the moment of entering unemployment. So if there is a discontinuity in the outcome variable after the intervention, it is interpreted as a consequence of the change.

A similar strategy was proposed in Lavile (2008), although the increase in duration they analyzed was much more dramatic (3.5 years). As stated in that paper, this strategy could be invalidated if firms manipulate the UI system, offering workers not to lay them off until they are 50 years old. In our case, this may be mitigated by the fact that we are taking

the first immediate year after the modification, and that this change has not been in the public discussion of unemployment reforms, reducing the probabilities of manipulation.

For this analysis, we use information on individuals entering unemployment 15 months before and 15 months after the change in the UI system, so our data cover the period from November 2007 to April 2010 (the change was on February 1, 2009). Regression discontinuity estimations consider as the treated group those who entered the UI system in February 2009 and after, and were aged 50-53 when becoming unemployed, and the control group those aged 46-49 in the same period.

Mean unemployment duration is higher for individuals aged 50 or more both before and after the change in the duration of benefits. Nevertheless, after the change the difference in means is greater (Table 18).

Table 18. Mean Unemployment Duration (in months)			
	Before	After	Total
46-49	5.75	4.01	4.81
50-53	5.86	5.05	5.41
46-53	5.80	4.51	5.09

Source: Authors' calculation using BPS administrative records.

Average unemployment duration by age at entry into unemployment considering all workers, women and men, before and after the change in the UI system, are reported in Figure 33. There seems to be a discontinuity at age 50, both for men and women, before the change in the policy. When the previous period is considered, differences in unemployment duration at the 50 years threshold do not seem to exist, especially in the case of men.

Figure 33. Effects of UI Extension on Duration: Age Threshold

a) before (men and women)   b) after (men and women)
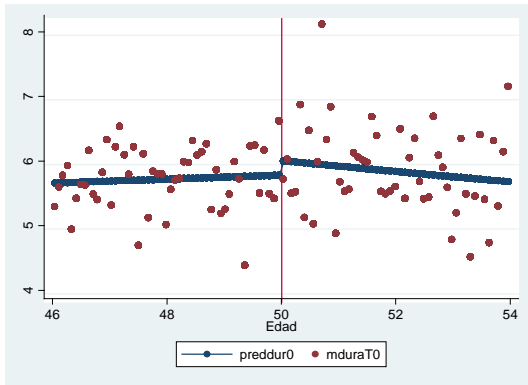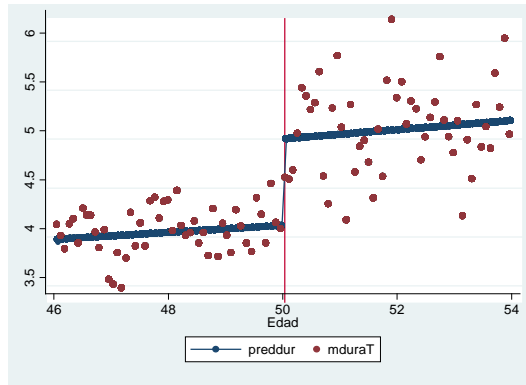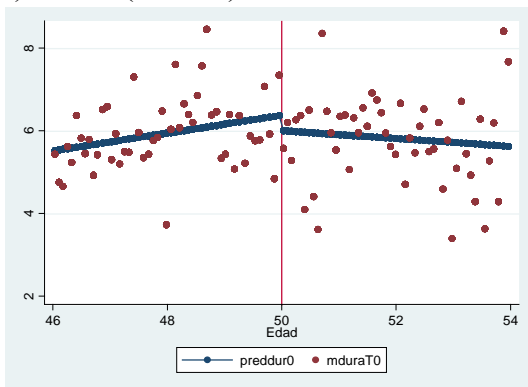
a) before (women)   b) after (women)
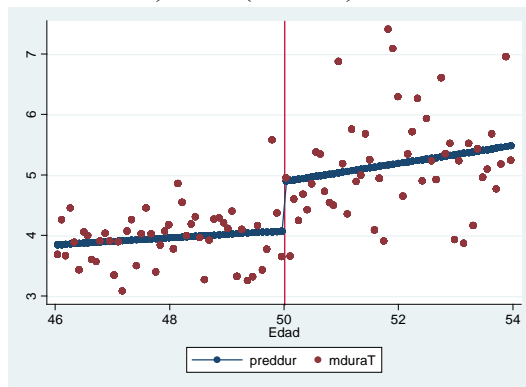
a) before (men)   b) after (men)
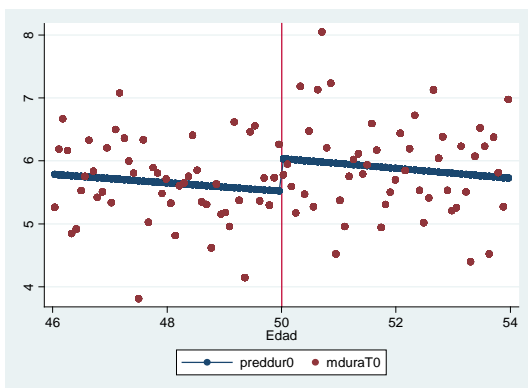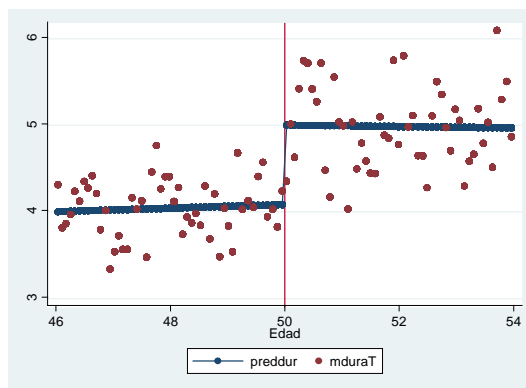
Source: Authors' calculation using BPS administrative records.

Following the RD estimation strategy, we run the following linear regression:

$$Y_i = \alpha_0 + \alpha_1 T_i + \alpha_2 (A_i - A_0) + \alpha_3 T_i (A_i - A_0) + \varepsilon \qquad (4)$$

where Y_i is the outcome variable (duration of unemployment and wage at employment), T is the treatment variable and A is the assignment (or the forcing) variable, in our case reflecting age, with A_0=50. We also include quadratic and cubic expressions of A_i-A_0. The parameter α_1 measures the average causal effect of the extension on UI benefits on outcome variables. As shown by Table 19, our estimates indicate that average unemployment duration is almost four weeks longer for those aged 50-53 when compared to those aged 46-49. If the same regression is run with data from the period before the change was introduced, the treatment variable is only weakly significant in some of the specifications for men, indicating that for all workers, the effect can be explained by the change in the policy. It is never significant for women. The effect detected for men before the policy change is consistent with the hint of a discontinuity for men before the change (Figure 33). The increase in unemployment duration due to the extension of benefits is mainly explained by women's behavior.

Table 19. Effect of UI Extension on Unemployment Duration (in months), Workers Aged 46-53

	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
After the change in UI duration						
All	0.881	0.881	0.859	0.883	0.883	0.862
	[0.1347]***	[0.1352]***	[0.1814]***	[0.1348]***	[0.1352]***	[0.1815]***
N° obs.	8502	8502	8502	8502	8502	8502
Women	0.821	0.829	0.528			
	[0.2444]***	[0.2447]***	[0.3219]			
N° obs.	2789	2789	2789			
Men	0.91	0.895	1.015			
	[0.1612]***	[0.1617]***	[0.2190]***			
N° obs.	5,713	5,713	5,713			

Table 19., continued

	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
Before the change in UI duration						
All	0.231	0.234	0.412	0.23	0.233	0.415
	[0.2092]	[0.2097]	[0.2731]	[0.2092]	[0.2097]	[0.2731]
Nº obs.	6994	6994	6994	6994	6994	6994
Women	-0.344	-0.331	0.108			
	[0.3588]	[0.3596]	[0.4547]			
Nº obs.	2294	2294	2294			
Men	0.527	0.522	0.571			
	[0.2573]**	[0.2577]**	[0.3398]*			
Nº obs.	4,700	4,700	4,700			

Note: *** significant at 1%.
Source: Authors' calculation using BPS administrative records.

Estimations were also done considering narrower age bins, instead of the 46-54 group. In particular, we considered 47-52, 48-51 and 49-50. As Tables 20-22 show, the results are maintained for these groups. As the age bin is wider, the effects become stronger. The extension in UI duration for older workers leads to an increase in unemployment duration for older workers.

Table 20. Effect of UI Extension on Unemployment Duration (in months), Workers Aged 49-50

	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
After the change in UI duration						
All	0.629	0.631	0.582	0.618	0.62	0.564
	[0.2717]**	[0.2719]**	[0.3625]	[0.2715]**	[0.2717]**	[0.3625]
Nº obs.	2112	2112	2112	2112	2112	2112
Women	-0.12	-0.121	-0.163			
	[0.4754]	[0.4743]	[0.6370]			
Nº obs.	690	690	690			
Men	0.976	0.984	0.994			
	[0.3302]***	[0.3297]***	[0.4387]**			
Nº obs.	1422	1422	1422			

Table 20., continued

	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
Before the change in UI duration						
All	-0.0794	-0.0485	-0.113	-0.0769	-0.0459	-0.0794
	[0.3863]	[0.3880]	[0.5227]	[0.3860]	[0.3876]	[0.3863]
Nº obs.	1752	1752	1752	1752	1752	1752
Women	-0.398	-0.442	-0.109			
	[0.6510]	[0.6566]	[0.9058]			
Nº obs.	591	591	591			
Men	0.0627	0.141	-0.0682			
	[0.4762]	[0.4771]	[0.6340]			
Nº obs.	1161	1161	1161			

Note: *** significant at 1%.
Source: Authors' calculation using BPS administrative records.

Table 21. Effect of UI Extension on Unemployment Duration (in months), Workers Aged 48-51

	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
After the change in UI duration						
All	0.853	0.845	0.857	0.858	0.849	0.861
	[0.1932]***	[0.1939]***	[0.2575]***	[0.1932]***	[0.1939]***	[0.2575]***
Nº obs.	4201	4201	4201	4201	4201	4201
Women	0.453	0.457	0.374			
	[0.3405]	[0.3400]	[0.4487]			
Nº obs.	3.903	4.083	4.122			
Men	1.042	1.029	1.056			
	[0.2336]***	[0.2347]***	[0.3127]***			
Nº obs.	4.119	4.27	4.256			
Before the change in UI duration						
All	0.28	0.284	0.143	0.292	0.296	0.163
	[0.2874]	[0.2882]	[0.3720]	[0.2874]	[0.2883]	[0.3719]
Nº obs.	3516	3516	3516	3516	3516	3516
Women	-0.0264	-0.0197	-0.12			
	[0.4788]	[0.4808]	[0.6350]			
Nº obs.	1172	1172	1172			
Men	0.432	0.432	0.275			
	[0.3574]	[0.3582]	[0.4562]			
Nº obs.	2,344	2,344	2,344			

Note: *** significant at 1%.
Source: Authors' calculation using BPS administrative records.

Table 22. Effect of UI Extension on Unemployment Duration (in months), Workers Aged 47-52

	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
After the change in UI duration						
All	0.783	0.788	0.92	0.786	0.791	0.924
	[0.1559]***	[0.1564]***	[0.2097]***	[0.1560]***	[0.1565]***	[0.2098]***
Nº obs.	6332	6332	6332	6332	6332	6332
Women	0.598	0.608	0.352			
	[0.2795]**	[0.2798]**	[0.3665]			
Nº obs.	2078	2078	2078			
Men	0.873	0.866	1.183			
	[0.1875]***	[0.1882]***	[0.2549]***			
Nº obs.	4254	4254	4254			
Before the change in UI duration						
All	0.35	0.352	0.156	0.351	0.353	0.168
	[0.2386]	[0.2388]	[0.3096]	[0.2386]	[0.2388]	[0.3096]
Nº obs.	5216	5216	5216	5216	5216	5216
Women	-0.129	-0.102	-0.21			
	[0.4030]	[0.4039]	[0.5117]			
Nº obs.	1,704	1,704	1,704			
Men	0.602	0.591	0.322			
	[0.2953]**	[0.2953]**	[0.3864]			
Nº obs.	3,512	3,512	3,512			

Note: *** significant at 1%.
Source: Authors' calculation using BPS administrative records.

The same analysis was undertaken considering earnings at reemployment as outcome variable. The graphical analysis (Figure 34) is less clear than in the case of duration. In any case, it indicates that older workers tend to find worse jobs, in terms of payment, after the reform. The extension in the UI benefit does not help workers to get better jobs by subsidizing job search.

Figure 34. The Effects of UI Extension on Wages: Age Threshold

a) before (men and women)   b) after (men and women)
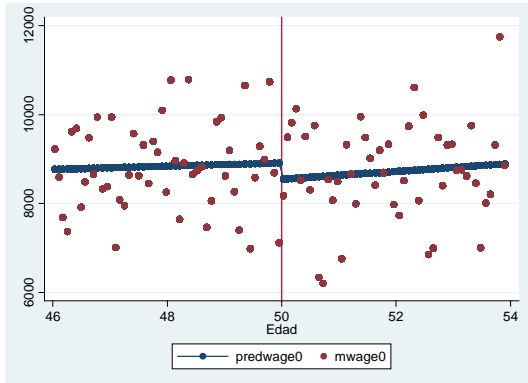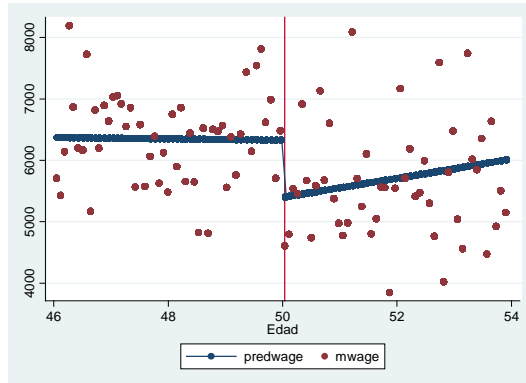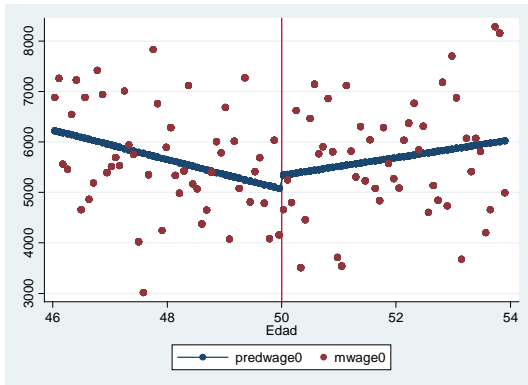
a) before (women)   b) after (women)
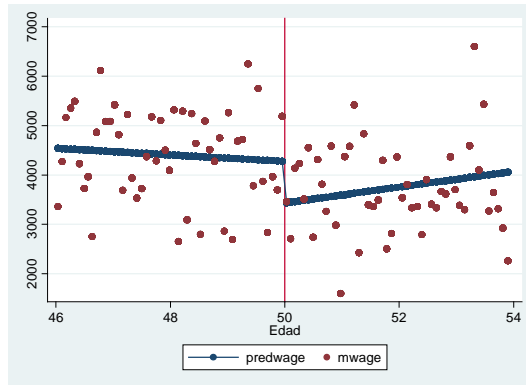
a) before (men)   b) after (men)
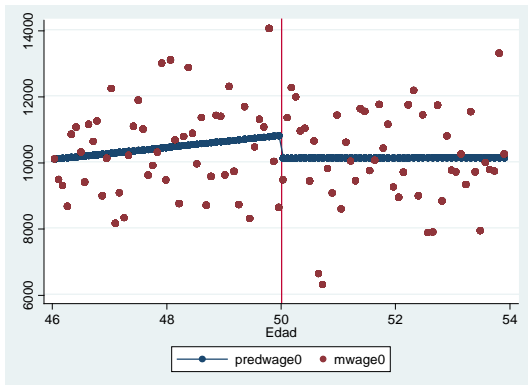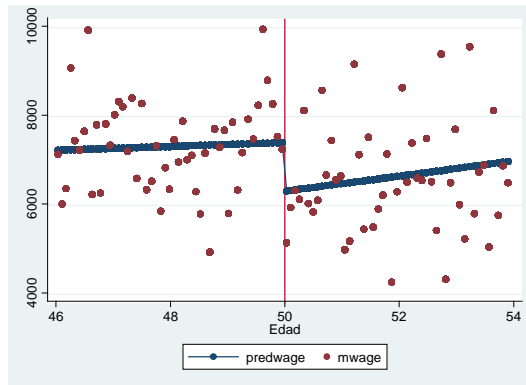
Source: Authors' calculation using BPS administrative records.

Regression analysis shows that there are no differences in wages at reemployment when treated individuals are compared with untreated ones (Table 23). The effect is positive for the linear and quadratic specification, and negative for the cubic one, but never significant. In all cases, we are only considering workers who reenter the labor market. The treatment coefficient is not significant for men or woman, and when estimations are performed considering narrower age bins, the results remain the same (Tables A14 to A16).

Table 23. Effect of UI Extension on Wages at Reemployment ($U December 2009)

	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
After the change in UI duration						
All	564.8	556	-532.5	393.5	392.5	-555.4
	[553.7191]	[560.5287]	[702.6397]	[531.5711]	[538.1546]	[672.7613]
Nº obs.	4439	4439	4439	4439	4439	4439
Women	-36	-34.32	-908.8			
	[540.4768]	[541.4665]	[703.2851]			
Nº obs.	7,669	7,647	8,029			
Men	594.5	589.3	-424.3			
	[735.6817]	[747.0473]	[931.5978]			
Nº obs	12,856	12,903	13,361			
Before the change in UI duration						
All	-99.12	-92.07	-139.3	-27.7	-24.74	-205.9
	[447.2470]	[448.4413]	[613.0633]	[432.0247]	[433.1054]	[592.7695]
Nº obs.	5,822	5822	5,822	5,822	5,822	5,822
Women	427.1	429.1	-192.2			
	[540.4188]	[542.2662]	[728.5719]			
Nº obs.	6,897	6,850	7,125			
Men	-237.3	-233.2	-218.4			
	[573.0306]	[574.6444]	[781.8765]			
Nº obs.	12,204	12,160	12,152			

Note: *** significant at 1%.
Source: Authors' calculation using BPS administrative records.

6. Concluding Remarks

Uruguay was one of the first countries in Latin America to implement mechanisms to protect workers from unemployment and other labor market risks. Uruguay's unemployment insurance system dates back to the beginning of the twentieth century, and active labor policies have been in place for more than 20 years. In the case of active labor

market policies, institutional changes have recently been recently made, but the framework is still weak. Previous experiences have scarcely been evaluated, and the results of the few evaluations to date have not been promising. With respect to unemployment insurance, changes have also recently been implemented with the objective of improving its design, although one of its main shortcomings, low coverage, is related to the structural importance of informality (lack of social protection) among workers.

The formal labor market displays notable dynamics, with around 3 or 4 percent of registered workers entering or leaving the formal market every month. The duration of exit among workers moving from a formal job towards unemployment insurance is highly correlated with the maximum legal duration of insurance, whereas the distribution of exits duration among workers without unemployment insurance is almost monotonically decreasing. This suggests that the design of unemployment insurance, and specifically its duration, affects the decisions of search intensity or willingness to accept a new labor position.

Episodes out of the labor force imply an important and long-lasting earnings loss. High-tenure displaced workers lose around 39 percent of their previous earnings in the first quarter after separation, and one year after displacement this loss is around 7 percent. UI has an important role because of its important smoothing effect, reducing earnings losses to 13 percent in the first quarter when UI benefits are considered. Losses are considerably higher among workers who switch sector of activity, and were lower and with a quicker recovery for those displaced during the last Uruguayan economic crisis.

Based on s everal diagnostics about the weaknesses of the UI program, the government undertook important changes in its design. The new design tries to strengthen the links between the UI and training policies, as the new regulation states that UI beneficiaries in the job loss modality may lose their benefits if they do not participate in training courses offered by the Ministry of Labor (which were optional in the previous design). This sanction will be applied once INEFOP is able to provide courses for all beneficiaries.[36] A specific program of training for beneficiaries of the UI program has begun in INEFOP and is expected to develop further in the short run.

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[36] This provision will be achieved through agreements with private training institutions.

Three main changes in the UI design were analyzed in this document: the reduction in UI duration for temporarily laid-off workers (suspension), the change in the scheme of payments for permanently laid off workers (job loss) and the extension of UI duration for workers 50 or older

Our analysis indicates that the reduction in duration for temporarily laid off workers was really enforced, as there as a reduction of around 30 percent in duration of insured unemployment when unemployed before and after the change are considered.

The change from a lump sum to a decreasing scheme of benefits for permanently laid off workers has implied a reduction in unemployment duration. This result holds both for propensity score and difference in difference estimations, but the magnitude of the reduction is small. This decrease in duration is not associated with a worse matching in terms of earnings.

The possibility of extension of UI duration for workers aged 50 or more has implied an extension in unemployment duration for older workers, and it has not helped to subsidize better job matches in the form of better-paying jobs.

In all cases, the lack of effect on earnings at reemployment indicates that the UI program in Uruguay acts mainly as temporary income insurance and not as a subsidy for more productive job search.

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Annex

Table A1. Unemployment Rate by Region and Distribution of Unemployed (15-65)			
Region	**Total**	**Montevideo**	**Rest of the country**
1990	8.7	9.3	7.8
1991	8.9	8.9	8.7
1992	9.0	9.0	8.9
1993	8.4	8.4	8.3
1994	9.3	9.1	9.3
1995	10.5	10.8	9.8
1996	12.1	12.3	11.5
1997	11.7	11.6	11.4
1998	10.2	10.2	9.9
1999	11.4	11.9	10.7
2000	13.7	13.9	13.3
2001	15.4	15.5	15.0
2002	17.2	17.0	16.9
2003	17.0	16.7	17.0
2004	13.3	12.9	13.2
2005	12.4	11.8	12.6
2006	11.5	10.6	12.2
2007	9.8	8.6	10.6
2008	8.1	7.2	8.6
2009	7.9	7.6	7.9
Distribution			
1990	100	58.2	41.8
1991	100	55.3	44.7
1992	100	53.1	46.9
1993	100	55.2	44.8
1994	100	53.8	46.2
1995	100	55.0	45.0
1996	100	55.6	44.4
1997	100	53.0	47.0
1998	100	53.6	46.4
1999	100	55.1	44.9
2000	100	53.2	46.8
2001	100	53.9	46.1
2002	100	53.5	46.5
2003	100	52.0	48.0
2004	100	52.2	47.8
2005	100	50.3	49.7
2006	100	45.6	54.4
2007	100	43.4	56.6
2008	100	44.7	55.3
2009	100	49.2	50.8

Source: Authors' calculations based on household surveys.

Table A2. Unemployment Rate by Sex and Distribution of Unemployed (15-65)			
Sex	**Total**	**Men**	**Women**
1990	8.7	6.9	11.0
1991	8.9	7.0	11.4
1992	9.0	6.8	11.9
1993	8.4	6.4	11.0
1994	9.3	7.0	12.1
1995	10.5	8.0	13.4
1996	12.1	9.8	14.7
1997	11.7	9.1	14.7
1998	10.2	7.8	13.0
1999	11.4	8.7	14.6
2000	13.7	10.9	17.0
2001	15.4	11.5	19.7
2002	17.2	13.5	21.2
2003	17.0	13.5	20.8
2004	13.3	10.2	16.5
2005	12.4	9.5	15.3
2006	11.5	8.8	14.4
2007	9.8	7.1	12.6
2008	8.1	5.7	10.3
2009	7.9	5.8	10.0
Distribution			
1990	100	46.8	53.2
1991	100	46.6	53.4
1992	100	43.8	56.2
1993	100	44.1	55.9
1994	100	44.0	56.0
1995	100	44.4	55.6
1996	100	46.1	53.9
1997	100	44.8	55.2
1998	100	43.1	56.9
1999	100	42.9	57.1
2000	100	44.4	55.6
2001	100	41.0	59.0
2002	100	43.6	56.4
2003	100	43.5	56.5
2004	100	43.1	56.9
2005	100	42.3	57.7
2006	100	41.4	58.6
2007	100	39.1	60.9
2008	100	38.3	61.7
2009	100	39.2	60.8

Source: Authors' calculations based on household surveys.

	Total (15-65)	15-25	26-55	56-65
Table A3. Unemployment Rate by Age (15-65)				
1990	8.7	22.0	5.2	3.0
1991	8.9	22.4	5.1	2.9
1992	9.0	22.3	5.3	3.4
1993	8.4	21.6	4.6	2.2
1994	9.3	22.9	5.2	3.4
1995	10.5	23.6	6.5	4.2
1996	12.1	26.0	7.8	5.5
1997	11.7	25.6	7.6	5.2
1998	10.2	23.2	6.4	4.8
1999	11.4	24.4	7.7	6.7
2000	13.7	29.3	9.2	7.3
2001	15.4	32.7	10.6	7.9
2002	17.2	36.0	12.6	9.0
2003	17.0	36.5	12.6	9.2
2004	13.3	31.4	9.1	6.4
2005	12.4	27.8	9.0	5.8
2006	11.5	27.7	7.8	5.9
2007	9.8	23.7	6.6	4.8
2008	8.1	20.4	5.3	4.2
2009	7.9	20.3	5.3	3.5

Source: Authors' calculations based on household surveys.

Table A4. Unemployment Rate by Educational Level, 1990-2009					
	Less than primary	Primary	Incomplete secondary	Secondary	Incomplete superior (technical, tertiary, college)	Superior
1990	6.2	7.8	10.8	8.3	11.0	4.3
1991	6.5	8.7	10.9	7.7	9.4	3.9
1992	6.8	8.7	11.0	8.6	9.6	3.5
1993	4.9	7.6	10.6	8.0	9.6	3.8
1994	6.3	9.3	12.0	7.5	8.5	2.3
1995	7.9	11.0	12.9	9.1	8.9	3.3
1996	9.8	12.2	15.0	10.4	10.6	3.1
1997	8.8	11.7	14.6	9.4	10.7	3.8
1998	8.7	10.7	12.4	8.3	9.6	2.9
1999	9.4	12.2	13.3	10.7	10.8	3.2
2000	12.3	15.5	15.4	10.9	13.8	5.6
2001	13.5	16.1	17.7	12.3	17.7	5.3
2002	14.1	18.5	19.7	14.2	18.0	7.5
2003	15.6	17.9	19.1	15.0	18.3	7.8
2004	11.8	14.2	15.2	11.8	13.5	5.5
2005	10.9	13.5	14.3	9.8	12.6	5.2
2006	11.6	12.7	13.0	9.7	11.8	4.5
2007	9.8	11.4	10.8	8.9	9.2	3.9
2008	7.9	8.6	10.0	6.3	6.9	3.2
2009	7.2	8.9	9.8	6.2	6.6	3.0

Source: Authors' calculations based on household surveys.

Table A5. Unemployment Rate for Household Heads, by Sex, 1990-2009			
	Female head	Male head	Total household heads
1990	5.5	2.4	2.9
1991	4.6	2.5	2.8
1992	5.6	2.2	2.7
1993	4.5	1.9	2.3
1994	4.9	2.5	2.8
1995	6.4	3.0	3.5
1996	6.5	4.3	4.7
1997	6.7	3.8	4.4
1998	7.0	3.2	4.0
1999	7.4	3.9	4.6
2000	9.8	4.8	5.8
2001	11.2	5.0	6.5
2002	11.7	6.7	7.8
2003	11.8	6.4	7.7
2004	8.7	4.2	5.2
2005	8.9	3.9	5.2
2006	7.9	3.6	4.7
2007	7.3	2.7	4.0
2008	6.3	2.2	3.5
2009	5.9	2.3	3.4

Source: Authors' calculations based on household surveys.

Table A6. Workers Not Covered by Social Security: Total, by Region and by Sex, 2001-2009					
	Total	Men	Women	Montevideo	Rest of the country
2001	36.0	35.4	36.8	42.6	30.2
2002	37.2	37.3	37.0	44.2	31.0
2003	39.4	39.8	39.0	46.6	33.1
2004	40.7	39.2	41.5	46.6	35.4
2005	38.7	38.4	39.1	45.6	32.5
2006	34.9	34.4	35.4	38.8	30.0
2007	34.4	33.8	35.1	38.6	29.3
2008	32.9	32.3	33.7	37.8	27.4
2009	31.56	31.1	32.1	36.8	26.4

Source: Authors' calculations based on household surveys.

Table A7. Workers Not Covered by Social Security by Category of Occupation, 2001-2009									
Uncovered/Total	2001	2002	2003	2004	2005	2006	2007	2008	2009
Private workers	29.8	31.4	34.0	36.4	33.8	28.1	27.0	25.2	23.71
Public workers	1.5	1.1	1.7	1.4	1.4	1.5	1.3	1.5	0
Employer	14.8	14.0	16.3	21.0	15.7	15.4	15.9	17.9	15.78
Self emp. (without inv)	91.7	91.5	93.6	93.9	94.7	93.9	97.1	96.4	96.13
Self emp. (with inv)	65.3	65.1	69.0	69.4	69.0	69.6	70.3	70.1	69.69
Non paid	86.3	83.4	84.0	82.5	84.0	76.1	80.9	82.0	82.42
Other	0.0	0.0	0.0	0.0	0.0	16.1	13.8	14.3	18.28
Total	36.0	37.2	39.4	40.7	38.7	34.9	34.4	32.9	31.56
Distribution of uncovered									
Private workers	45.1	44.0	44.9	47.0	47.6	44.22	43.67	42.94	42.6
Public workers	0.7	0.5	0.8	0.6	0.6	0.73	0.59	0.71	0
Employer	1.6	1.4	1.4	1.8	1.6	1.90	2.03	2.46	2.2
Self emp. (without inv)	22.5	25.3	23.1	21.3	20.2	18.19	14.56	12.29	11.4
Self emp. (with inv)	26.5	25.2	26.8	25.9	27.0	31.77	35.69	38.16	39.9
Non paid	3.3	3.4	2.9	3.2	2.9	3.06	3.24	3.26	3.7
Other	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2
Total	100	100	100	100	100	100	100	100	100

Source: Authors' calculations based on household surveys.

Table A8. Workers Not Covered by Social Security by Industry, 2001-2009							
Uncovered/Total	2003	2004	2005	2006	2007	2008	2009
1 - Agriculture, Hunting, Forestry and Fishing	44.8	45.6	42.0	38.9	39.6	38.1	37.7
2 - Mining and Quarrying	44.8	52.6	31.1	36.9	27.7	32.2	15.1
3 - Manufacturing	44.6	45.9	43.1	36.6	35.9	33.9	33.5
4 - Electricity, Gas and Water	0.7	0.9	1.6	2.8	3.0	1.9	1.4
5 – Construction	73.4	66.0	63.8	59.3	52.9	51.9	49.4
6 - Wholesale and Retail and Rest.and Hotels	49.5	52.0	48.0	45.0	43.6	41.4	39.8
7 - Transport, Storage and Communication	26.3	23.6	23.9	20.5	20.9	19.0	18.8
8 - Financing, Ins., Real Estat and Bus. Services	29.0	33.2	30.6	26.4	26.4	25.5	23.3
9 - Community, Social and Personal Services	30.6	32.1	31.2	27.8	28.3	27.5	25.9
0 - Activities not Adequately Defined	78.0	0.0	42.8	23.5	0.0	0.0	0.0
Total	39.5	40.7	38.7	34.9	34.4	32.9	31.6
Distribution							
1 - Agriculture, Hunting, Forestry and Fishing	5.1	5.5	4.9	5.3	5.9	5.8	5.66
2 - Mining and Quarrying	0.1	0.2	0.0	0.1	0.1	0.1	0.01
3 - Manufacturing	15.5	15.8	15.9	15.1	15.2	14.4	14.59
4 - Electricity, Gas and Water	0.0	0.0	0.0	0.1	0.1	0.1	0.04
5 – Construction	12.4	10.7	10.9	11.2	10.8	11.4	11.46
6 - Wholesale and Retail and Rest.and Hotels	27.4	28.3	28.3	30.1	29.1	28.4	29.44
7 - Transport, Storage and Communication	3.9	3.4	3.4	3.3	3.6	3.5	3.6
8 - Financing, Ins., Real Estat and Bus. Services	6.5	7.0	7.4	6.0	6.6	7.0	6.84
9 - Community, Social and Personal Services	29.0	29.1	28.7	28.6	28.6	29.2	28.36
0 - Activities not Adequately Defined	0.1	0.0	0.5	0.1	0.0	0.0	0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100

Source: Authors' calculations based on household surveys.

Table A9. Activity, Employment and Unemployment by Region, 2006-2009

	Major urban			Minor urban			Rural		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Activity									
2006	60.9	71.7	51.8	56.3	71.0	42.6	63.9	79.7	45.9
2007	62.7	73.6	53.7	55.9	70.3	42.5	65.0	80.8	47.5
2008	62.6	72.7	54.3	56.9	70.0	44.8	64.8	80.9	46.6
2009	63.3	73.1	55.1	59.8	75.2	45.0	64.7	80.9	46.3
Employment									
2006	53.9	65.4	44.4	50.3	65.9	35.7	60.9	77.6	41.9
2007	56.7	68.4	47.0	50.9	66.3	36.7	62.2	79.2	43.4
2008	57.7	68.5	48.8	52.4	66.3	39.5	62.8	79.7	43.8
2009	58.4	69.9	49.5	55.8	73.0	40.0	63.2	79.8	44.2
Unemployment									
2006	11.4	8.8	14.4	10.7	7.3	16.0	4.7	2.7	8.8
2007	9.6	7.1	12.6	8.9	5.8	13.8	4.2	1.9	8.6
2008	7.9	5.7	10.3	8.0	5.3	12.0	3.1	1.6	6.0
2009	7.7	5.8	10.0	6.2	3.0	11.1	2.4	1.3	4.5

Source: Authors' calculations based on household surveys.

Table A10. Entries and Exits by Sex						
	Entry			Exit		
	Total	Men	Women	Total	Men	Women
1998	39.1	40.5	37.4	34.7	36.5	32.5
1999	37.5	38.9	35.9	36.9	38.8	34.5
2000	34.6	36.2	32.8	35.7	38.4	32.6
2001	35.1	37.7	32.0	36.4	39.9	32.4
2002	32.0	35.4	28.2	39.1	44.0	33.8
2003	36.5	40.7	31.9	29.8	33.6	25.7
2004	37.1	39.9	33.9	27.6	29.8	25.1
2005	40.1	42.6	37.3	29.9	31.3	28.2
2006	37.6	39.1	35.9	31.2	32.8	29.4
2007	39.3	40.0	38.4	31.7	32.8	30.5
2008	39.4	40.1	38.5	32.8	34.2	31.1
2009	38.5	39.3	37.6	31.8	33.3	30.0

Source: Authors' calculations based on BPS data.

Table A11. Entries and Exits by Industry

	ISIC 1	ISIC 2	ISIC 3	ISIC 4	ISIC 5	ISIC 6	ISIC 7	ISIC 8	ISIC 9	ISIC 0
Entries										
1998	35.0	24.8	72.7	44.1	38.9	25.6	51.6	17.0	31.2	37.2
1999	38.2	23.7	77.7	46.7	48.9	29.7	62.7	19.2	32.6	39.1
2000	42.1	29.2	87.7	44.6	43.5	25.4	54.4	20.3	27.8	33.4
2001	37.3	26.8	78.5	42.1	42.2	23.8	55.9	17.6	27.2	29.2
2002	43.9	22.7	70.7	43.3	38.6	21.4	49.6	20.0	26.6	29.4
2003	41.2	29.5	68.9	35.6	38.9	20.1	52.1	17.8	23.1	30.9
2004	35.8	30.2	63.7	44.1	46.4	23.0	51.8	23.7	31.0	38.1
2005	32.7	22.4	73.8	46.8	49.4	25.5	53.7	25.5	30.1	36.9
2006	38.3	25.4	70.9	49.5	52.4	30.8	56.3	27.3	31.2	39.7
2007	33.0	24.1	63.4	45.4	46.7	28.9	58.7	26.3	32.1	37.4
2008	34.6	21.2	69.2	47.6	46.8	30.1	63.1	26.8	33.1	39.8
2009	34.6	25.6	71.3	47.2	47.5	28.5	56.1	25.6	30.9	43.3
Exits										
1998	31.5	20.8	58.6	39.4	37.2	22.4	40.2	11.1	20.5	31.2
1999	40.7	23.9	71.8	41.7	41.8	25.9	45.1	14.9	24.3	36.6
2000	47.8	35.9	75.6	44.4	45.0	25.4	48.6	16.5	23.1	32.3
2001	42.6	32.6	69.9	46.6	47.6	24.2	47.5	15.8	22.9	28.7
2002	52.5	28.6	72.8	45.9	42.9	23.6	53.0	17.8	22.7	27.6
2003	46.2	43.7	83.3	52.2	51.8	26.5	50.5	18.3	24.2	32.5
2004	27.3	23.1	58.1	38.0	37.6	18.9	51.7	22.3	23.3	27.1
2005	24.9	16.4	58.1	34.2	36.7	18.7	39.5	19.8	22.1	27.7
2006	30.0	18.6	53.1	36.2	40.8	21.4	36.0	19.4	23.9	30.9
2007	29.6	18.3	55.9	37.6	41.8	22.4	49.9	19.9	25.4	31.8
2008	30.9	19.2	52.3	37.6	37.4	22.4	50.6	20.3	27.2	33.4
2009	33.6	22.1	58.8	39.0	38.4	21.5	45.2	19.9	23.5	37.5

Source: Authors' calculations based on BPS data.

90

Table A12. Earnings Losses from Displacement (estimation with zeros)						
	Earnings			Earnings+UI benefits		
(in %)	First quarter	First year	Fifth year	First quarter	First year	Fifth year
All	-39.1%	-6.6%	-2.1%	-13.5%	-5.3%	-1.8%
Mass layoffs	-25.4%	-2.3%	0.5%	-9.2%	-1.3%	0.5%
Non mass layoffs	-47.6%	-11.0%	-1.4%	-11.9%	-10.0%	-1.2%
Men	-35.5%	-6.4%	-2.7%	-12.2%	-5.3%	-2.5%
Women	-28.2%	-5.4%	0.3%	-9.2%	-4.1%	0.8%
Youngers	-66.7%	-11.4%	-3.9%	-23.1%	-9.2%	-3.5%
Middle aged	-39.2%	-7.0%	-2.7%	-12.8%	-5.9%	-2.5%
Olders	-41.4%	-6.3%	3.1%	-18.4%	-4.6%	3.7%
Switchers (3 digit)	-47.7%	-18.3%	-8.0%	-25.0%	-15.3%	-7.4%
Non switchers (3 digit)	-23.9%	-3.4%	0.5%	-4.5%	-2.9%	0.2%
Switchers (2 digit)	-49.3%	-20.0%	-8.5%	-26.0%	-17.1%	-8.1%
Non switchers (2 digit)	-24.5%	-3.4%	0.5%	-4.8%	-2.9%	0.3%
Switchers (1 digit)	-48.7%	-18.2%	-6.9%	-25.7%	-15.6%	-6.9%
Non switchers (1 digit)	-25.5%	-3.9%	0.1%	-5.6%	-3.3%	-0.1%
Manufacture	-57.3%	-8.4%	-1.6%	-25.6%	-6.1%	-1.5%
Trade, rest and hotels	-71.1%	-7.9%	-4.1%	-33.5%	-7.5%	-3.3%
Other services	-73.0%	-11.8%	-6.7%	-34.3%	-9.6%	-5.5%
Medium and big firms	-34.4%	-6.5%	-3.3%	-11.6%	-5.5%	-3.2%
Small firms	-20.9%	-0.7%	6.7%	-7.4%	0.4%	7.4%
During crisis	-19.7%	-1.4%	-1.3%	-4.7%	-0.7%	-1.0%
During non crisis	-39.2%	-8.2%	-2.3%	-14.0%	-6.6%	-2.0%
With UI	-37.3%	-6.7%	-2.0%	-12.5%	-5.4%	-1.9%
Without UI	-11.5%	-4.1%	0.9%	-9.7%	-2.8%	1.9%
(in $U December 2009)						
All	-6.029	-1.026	-328	-2.087	-824	-276
Mass layoffs	-4.237	-379	75	-1.534	-218	89
Non mass layoffs	-5.142	-1.185	-148	-1.287	-1.081	-130
Men	-6.375	-1.150	-490	-2.190	-956	-446
Women	-3.346	-639	38	-1.087	-486	91
Youngers	-6.173	-1.052	-361	-2.139	-854	-320
Middle aged	-5.785	-1.041	-393	-1.888	-875	-364
Olders	-5.591	-856	415	-2.486	-619	500
Switchers (3 digit)	-7.069	-2.711	-1.183	-3.705	-2.273	-1.091
Non switchers (3 digit)	-4.045	-577	85	-765	-495	38
Switchers (2 digit)	-7.375	-2.999	-1.274	-3.890	-2.559	-1.214
Non switchers (2 digit)	-4.013	-557	81	-783	-472	42
Switchers (1 digit)	-7.282	-2.712	-1.037	-3.835	-2.333	-1.034

Table A12., continued

	Earnings			Earnings+UI benefits		
	First quarter	First year	Fifth year	First quarter	First year	Fifth year
Non switchers (1 digit)	-4.162	-643	23	-906	-546	-12
Manufacture	-10.489	-1.547	-297	-4.688	-1.121	-280
Trade, rest and hotels	-9.665	-1.071	-558	-4.552	-1.022	-444
Other services	-9.746	-1.578	-900	-4.583	-1.279	-737
Medium and big firms	-7.243	-1.363	-699	-2.437	-1.161	-672
Small firms	-1.763	-57	561	-627	33	626
During crisis	-3.285	-226	-219	-780	-120	-161
During non crisis	-5.922	-1.234	-350	-2.124	-995	-302
With UI	-6.557	-1.175	-359	-2.195	-955	-338
Without UI	-1.286	-455	97	-1.086	-310	218

Source: Authors' calculations using BPS administrative records.

Table A13. Differences in Differences Estimation, Effects of Change in UI Benefits on Unemployment Duration and Wage Loss, Sample 2 (restricted)

	Coefficient	Std. Err.	T	P>t	Confidence interval	
Unemployment duration						
Treatment	-0.20	0.04	-5.68	0.00	-0.27	-0.13
Time	-0.19	0.07	-2.69	0.01	-0.33	-0.05
treatment*t	0.01	0.00	7.11	0.00	0.01	0.01
treatment*t*gender	0.77	0.03	22.90	0.00	0.70	0.83
treatment*t*age	0.06	0.04	1.60	0.11	-0.01	0.14
Nº of treated obs. Before	16,422					
Nº of treated obs. After	24,267					
Nº of control obs. Before	8,907					
Nº of control obs. After	8,585					
Wage loss						
Treatment	-0.10	0.01	-18.07	0.00	-0.11	-0.09
Time	-0.02	0.01	-2.09	0.04	-0.03	0.00
treatment*t	0.00	0.01	0.15	0.88	-0.03	0.03
treatment*t*gender	0.02	0.01	2.84	0.00	0.01	0.03
treatment*t*age	0.00	0.00	3.67	0.00	0.00	0.00
Nº of treated obs. Before	8,479					
Nº of treated obs. After	5,434					
Nº of control obs. Before	25,920					
Nº of control obs. After	21,558					

Source: Authors' calculations using BPS administrative records.

Table A14. Effect of UI Extension on Wages at Reemployment ($U December 2009), Workers Aged49-50

|	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
After the change in UI duration						
All	-1812	-1799	7.492	-1743	-1730	-253.1
	[1059.8572]*	[1067.7874]*	[1452.9353]	[1016.6798]*	[1024.4034]*	[1400.1208]
Nº obs.	1123	1123	1123	1123	1123	1123
Women	-858.4	-860.7	-125.7			
	[1060.7466]	[1060.4901]	[1445.3785]			
Nº obs.	8048	8102	7813			
Men	-2133	-2107	-302.6			
	[1412.8912]	[1426.9198]	[1960.7607]			
Nº obs	14075	13545	12594			
Before the change in UI duration						
All	398.5	388.3	994.7	147.3	147.2	762.4
	[930.2177]	[921.8145]	[1200.1365]	[895.0041]	[886.3022]	[1153.0868]
Nº obs.	1442	1442	1442	1442	1442	1442
Women	-148.3	-77.76	-651.1			
	[1030.9736]	[1019.8742]	[1144.3204]			
Nº obs.	7179	6022	6303			
Men	272.5	213.1	1239			
	[1181.0436]	[1169.7230]	[1533.9621]			
Nº obs.	12175	12637	12059			

Source: Authors' calculations using BPS administrative records.

Table A.15. Effect of UI Extension on Wages at Reemployment ($U December 2009), Workers Aged 48-51

	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
After the change in UI duration						
All	-744.6	-719.5	-1735	-836.1	-819	-1876
	[742.2180]	[746.7844]	[1036.2328]*	[711.1706]	[715.7649]	[996.7332]*
Nº obs.	2175	2175	2175	2175	2175	2175
Women	-845.6	-847.7	-815.7			
	[742.7619]	[746.1784]	[985.6998]			
Nº obs.	701	701	701			
Men	-864.3	-835.1	-2408			
	[987.3163]	[994.6641]	[1402.7140]*			
Nº obs	1474	1474	1474			
Before the change in UI duration						
All	-289.2	-343.2	208.1	-418	-464.3	-8.289
	[660.7898]	[658.0054]	[890.6322]	[638.4730]	[635.8087]	[860.2891]
Nº obs.	2919	2919	2919	2919	2919	2919
Women	10.96	11.06	-180.3			
	[774.5857]	[777.0425]	[993.3404]			
Nº obs.	889	889	889			
Men	-597.2	-682.9	50.24			
	[845.3178]	[839.7528]	[1132.8250]			
Nº obs.	2,030	2,030	2,030			

Source: Authors' calculations using BPS administrative records.

Table A 16. Effect of UI Extension on Wages at Reemployment ($U December 2009), Workers Aged 47-52

|	Linear	Quadratic	Cubic	Linear+sex control	Quadratic+sex control	Cubic +sex control
After the change in UI duration						
All	109.7	120.8	-1343	-5.175	0.762	-1301
	[623.6382]	[632.3850]	[806.0138]*	[597.2564]	[605.7418]	[771.7955]*
Nº obs.	3302	3302	3302	3302	3302	3302
Women	-426.7	-412.1	-1209			
	[605.8763]	[608.5245]	[800.0906]			
Nº obs.	1062	1062	1062			
Men	177.9	172.4	-1360			
	[829.7616]	[845.5555]	[1074.7614]			
Nº obs	2240	2240	2240			
Before the change in UI duration						
All	-113.1	-108.8	-166.3	-97.37	-87.89	-402.5
	[519.6671]	[520.1659]	[719.6167]	[502.7263]	[503.2552]	[695.9260]
Nº obs.	4336	4336	4336	4336	4336	4336
Women	208.1	201.9	-209.3			
	[631.1948]	[633.8308]	[840.0089]			
Nº obs.	1294	1294	1294			
Men	-243.8	-224.3	-468.2			
	[662.9558]	[663.5231]	[916.8620]			
Nº obs.	3,042	3,042	3,042			

Source: Authors' calculations using BPS administrative records.

Figure A1. Unemployment Rate by Age
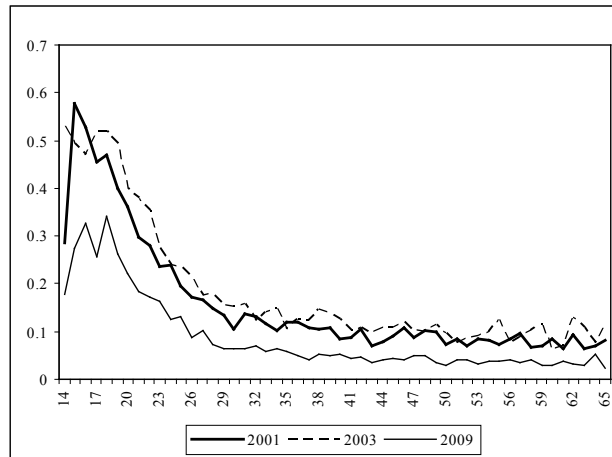
Source: Authors' compilation using household surveys.
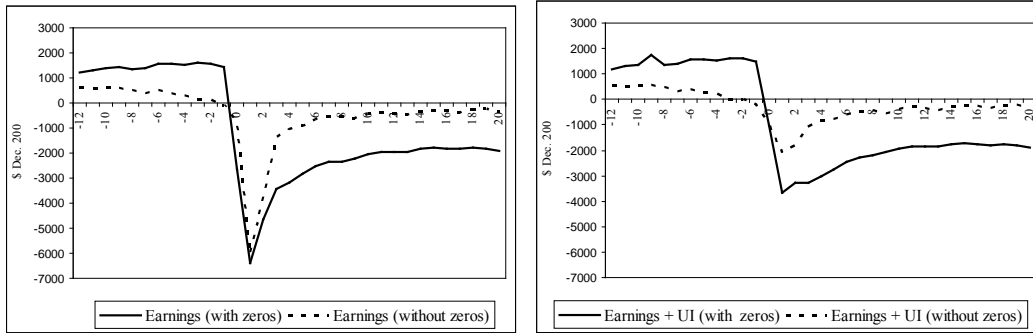
Figure A2. Uncovered Workers by Age
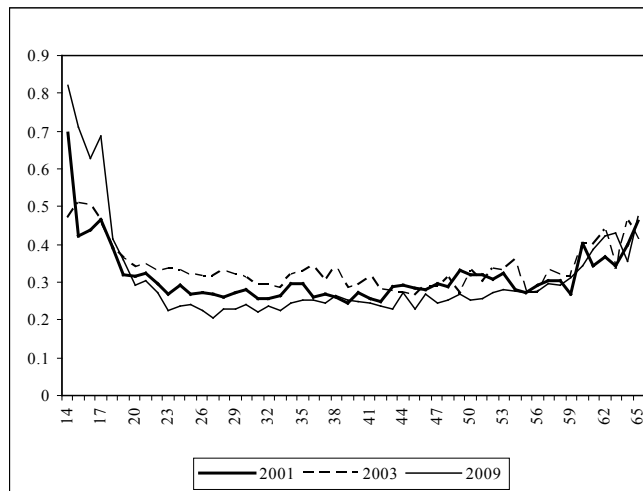
Source: Authors' compilation using household surveys.

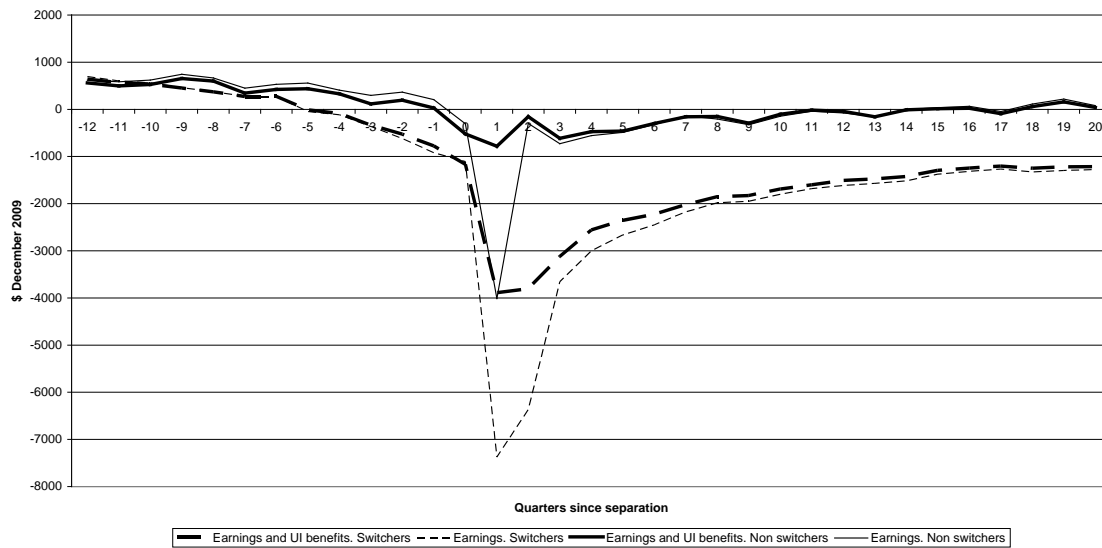## Figure A3. Earnings Losses for High-Tenure Workers
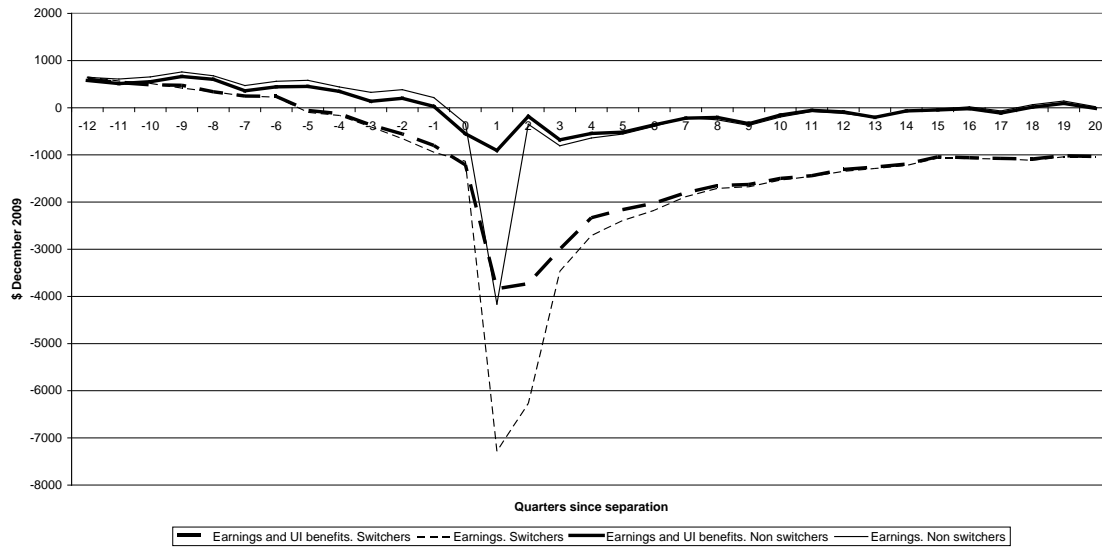
a)Earnings

b) Earnings and UI benefits

Source: Authors' calculations using BPS administrative records.

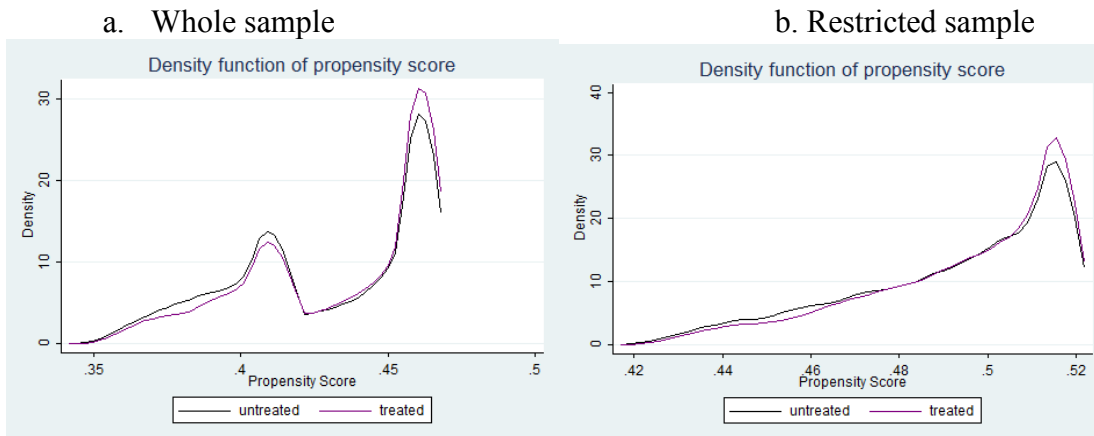## Figure A4. Earnings Losses for Switchers and Non-Switchers (2 Digit ISIC)

Source: Authors' calculations using BPS administrative records.

Figure A.5. Earnings Losses for Switchers and Non-Switchers (1 digit ISIC)

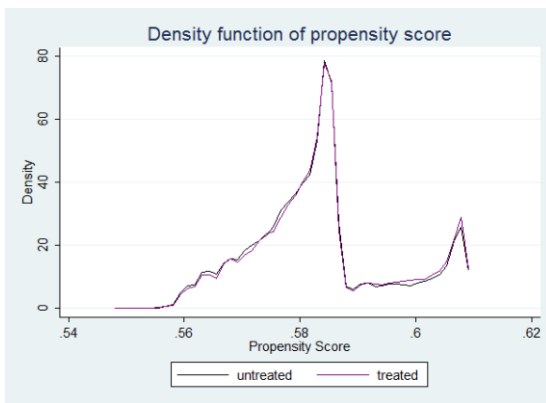*Source:* Authors' calculations using BPS administrative records.

Figure A6. Density Function of Propensity Score

a. Whole sample

b. Restricted sample

Source: Authors' compilation.

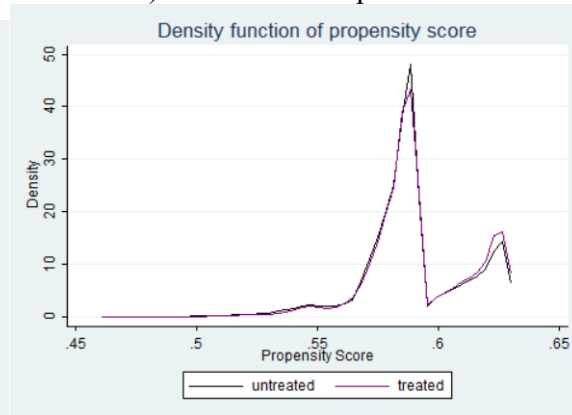**Figure A7. Density Function of the Propensity Score**

a) All sample   b) Restricted sample

Source: Authors' compilation.