Stepping stones versus dead end jobs:Exits from temporary contracts in Italy after the 2003 reform[*]

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Abstract

In this paper we study labor market transitions out of temporary jobs in Italy focussing on a very interesting time span: the one immediately following the last, 2003 labor market reform aimed at flexibilizing and liberalizing the Italian labor market by a widespread use of temporary work arrangements, and immediately preceding the economic downturn. The data-set used is the 2004-2007 IT-SILC individual panel. Specifically we apply a discrete-time duration analysis and estimate a competing-risk model for assessing whether and for whom starting a temporary job after 2004 results, in a 3 years time span, a stepping stone to permanent employment rather than having the negative outcome of driving out of the labor market. We find that temporary contracts have a positive impact only on men's transitions to permanent employment. School leavers, as well as women, are instead rather penalized after a temporary job. They have an higher probability to remain trapped in temporary contracts than men and an higher probability of exiting the labour market. Moreover, for school leavers entering the labour market with a temporary contract the peril is higher to become unemployed in the short- run.

JEL classification: J24, C41, C33, C35, J6.

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1 Introduction

Young people, during their school to work transition, face a problem of gap of work experience. In fact, despite ever increasing educational attainment, they lack the other two components of human capital: generic and job-specific work experience. In order to fill this gap, they carry out a searching strategy by which they move among different labour market statuses in search for the best job-worker match. However, the process of transition is a complex phenomenon with strong elements of rigidity concerning the institutions (school, training and university systems, labour agencies), the norms and contracts regulating the labour market, uncertainty and errors of judgment (Caroleo and Pastore 2009).

To help young people to smooth school-to-work transitions, every country has provided a mix of policy instruments reaching different outcomes. We can sum up these instruments into two groups: policies that, considering the need of firms to minimize the labour costs, aim at introducing different degrees and types of labour market flexibility, and policies that, considering the need of new entrants to adequate their human capital, adopt training programs and labour market active policies or reforms of their education and training system.

In the last decades, in particular, the economic and political debate (OECD 1994) has focused on temporary contracts as a way to increase labour market flexibility mainly in those European countries characterized by an excessive employment protection regulation or that need to speed up the transition process towards a market economy. In response to this concern, several countries have liberalized the rules regulating temporary employment (OECD 2002). Taking a look at the data, Fig. 1 shows that in the OECD area the differences in the share of temporary jobs in total dependent employment are large, ranging in 2010 from 3,1 of Estonia to 23,9 of Spain. However, looking at the percentage variation from 2000 to 2010 (fig. 2) we can see that countries increasing the share are mostly East European in transition economies (Russia Federation, Poland, Slovenia, Hungary),and Mediterranean (Italy, Portugal) and Central European countries (Germany, Netherland) that, starting from the '90s, have implemented reforms introducing more flexibility in the labour market . On the other hand, even if during the decade Spain (because of the several reforms to attenuate the use this type of contracts) and Turkey have reduced the share of temporary job, they have continued to be among the countries with the highest one.

Most importantly, temporary employment has become the principal way by which youth enter the labour market (OECD 2008). In fact, especially in countries where the employment protection legislation is particularly strict, temporary work has been used to increase entry and exit flexibility *at the margin*, namely for the new entrants (Ochel, 2009, Boeri and Garibaldi 2007). As a consequence of these *two tier* strategies, in most cases in 2010 more than one out of two youth employed have temporary jobs (fig. 3 and 4).

In this paper we analyze the Italian case where the reforms started in the '90s (*Treu Law* -law 196/1997- and *Biagi Law* -law 30/2003-) have enormously

increased the probability to be employed in a temporary work. We provide new evidence on job transitions of Italian employees working with temporary contracts, of which young people and in particular school-leavers are a good proportion together with women, from a so far unexplored source of data that covers the period following the most recent reform of the labor market and precedes the economic downturn: the IT-SILC 2004-2007 panel. As far as regards the econometric strategy, we estimate a discrete-time competing risk model that takes into account the alternatives to temporary employment of permanent employment or not employment in the final state. The estimation of this model is meant to help answering our research questions: after all the recent attempts to flexibilize the Italian labor market, what happens to employees starting a temporary job in a three-years' time period? Do they stabilize their working position moving to permanent jobs? Or do they worsen their position in the labour market either remaining trapped in a series of temporary contracts or abandoning the labour market? In other words: are temporary contracts stepping stones or dead end jobs? And for which categories of people? In particular, have they really improved job stability of young people and women?

The paper is organized as follows: in Section 2 we give the state of art in the literature about temporary jobs; Section 3 introduces the econometric strategy suited for our analysis; in Section 4 we give descriptive evidence on our data; Section 5 discusses the results of the model; Section 6 concludes.

2 The state of art

The literature on temporary employment shows conflicting theses. According to the mainstream approach, high degree of labour market flexibility, through fixed-term contracts for instance, is the best way to help young people to find their best match in a shorter time, therefore reducing the gap between youth and adult unemployment rates. Clark and Summers (1982) and Freeman and Wise (1982) first suggested that labour turnover is a tool for youth to become adults (see also Rees, 1986; Topel and Ward, 1992). The basic argument is that any labour market experience is better than not working. Temporary jobs allow young people to attain specific human capital (work experience)[1] together with the acquisition of firm-specific social capital (relational networks and therefore easier access to the information on vacancies). This view is also based on the hypothesis that long-term unemployment is generally caused by low labour turnover causing in turn state dependence: the longer people stay unemployed, the longer they remain unemployed[2]. In other words, temporary jobs provide a springboard opportunity for young people (stepping stone effect)

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[1]The argument has been questioned by Becker (1962). In fact, the short time horizon of fixed-term contracts may represent a strong disincentive for young people to invest in job specific competences for both the employer and the employee. Therefore fixed-term contracts might be seen as a solution only to reduce the gap in generic, but not job specific work experience (see also Caroleo and Pastore 2009).

[2]According to Heckman and Borjas (1980) and Heckman and Singer (1984), however, the hypothesis of state dependence is not supported by empirical evidence.

to the permanent job. Besides, they guarantee lower entry wages and allow firms to form buffer stocks of works reducing hiring, firing and dismissal costs. It might be a probation instrument for firms (Loh 1994; Wang and Weiss 1998; Portugal and Varejao 2010), and a way for young people to signal their skills and motivation to employers (Booth et al., 2002). Finally, this type of flexibility is less expensive for the public finances than other policy alternatives such as active labour policy or training programs.

However, a widely debated issue is whether temporary jobs are actually a springboard or a stepping stone to permanent work, without causing a long-lasting wage penalty (Pavopoulos 2009; Barbieri and Cutilli, 2009) or a dead end. In fact, temporary work often becomes a low-pay trap as young people tend to accept low pay jobs and, instead of accumulating work experience to find later high pay-high quality jobs, they remain trapped for many years or also for the rest of their lives.

The evaluation of the stepping stone or of the dead end effect is essentially an empirical issue and needs longitudinal data with similar characteristics to be answered. The available evidence is mixed up. The springboard effect is confirmed in almost all cases but in some studies on the USA (Heinrich et al. 2009; Hotchkiss, 1999; Autor and Houseman, 2005; Addison and Surfield, 2009). The size of the impact, on the other hand, differs hugely across European countries. Cross-country comparative research shows that the effect of entering the labour market trough a temporary contract on the probability to get a permanent job is in general rather weak (O'Higgins 2010; D'Addio and Rosholm 2005), underlining that the differences depend on the labour market regimes (Righi and Sciulli 2009; Scherer, 1999; Garrouste and Loi 2011; Caroleo and Pastore, 2007) as well as on the regulation mix of the contracts considered, that is to say their length (Gagliarducci, 2005; Antoni and Jahn, 2009), whether they include formal or informal training (Brauns at al. 1999; Contini et al. 2004), whether they are based on financial incentives (Booth et al. 2002), and finally on the diffusion of the Temporary Work Agencies (Ichino et al. 2007; Nunziata and Staffolani 2007; Amuedo-Dorantes et al. 2008) and/or of policies of temporary help work for unemployed job seekers (Kvasnicka 2008)[3].

As said before, the stepping stone or dead end effects are diversified across the European countries. Booth et al. (2002) find that temporary jobs in the UK are substantially bad jobs with wage penalties (Pavlopoulos, 2009) and have scarring effects on future job careers, especially for men. In the Anglo-Saxon countries (see for the USA Autor, 2001) where the contractual flexibility is very high, temporary (occasional or seasonal) jobs are done by less motivated and less skilled workers. In the case of North-Centre European countries, a positive stepping stone effect is confirmed (see Holmlund and Storrie, 2002; Hartman et al., 2010 for Sweden; Verhofstadt and Goebel, 2008 for the Flemish region; Zijl et al.,2004 for Netherland; Hagen, 2003 for Germany). In these countries, temporary contracts are neither the only policy to speed up the school to work

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[3]Nonetheless, it is questionable whether temporary work is a good substitute for general training or active labour market policy (ALMP) (Caroleo 2012).

transition nor they are used in a massive way. These are rather seen by firms and workers as a tool to tackle adverse macroeconomic shocks and not to make more flexible the labour market.

On the other hand, there is a general consensus in asserting the null effect on reducing the total unemployment or the duration of school to work transition (Quintini et al. 2007), and in deepening the adverse effect on particular groups of workers, in the South-Mediterranean countries where in the last decades two tier reforms have been implemented with the growing use of temporary contracts. Blanchard and Landier, (2002) show that in France the two tier reform has raised the worker turnover and worsened the welfare of young workers. Dolado et al. (2002) find that in a segmented labour market like in Spain, the positive effect on labour turnover, lower unemployment duration and lower firing costs of temporary contracts has been offset by negative consequences such as lower investment in human capital, higher wage pressure (Bentolilla e Dolado, 1994), a more unequal distribution of unemployment duration, lower labour mobility and fertility rates and larger wage dispersion.

On the whole, and in these countries with particular intensity, temporary contracts have perverse effects in terms of efficiency and equity. They are held disproportionately by women, younger people, and less educated workers (Quintini and Martin 2006, OECD, 2002). Workers starting with a temporary contract tend to be trapped in temporary employment relationships (Alba-Ramirez, 1998). Besides, the stepping stone effect towards permanent employment decreases if temporary jobs are repeated (Garcìa-Pérez and Munoz Bullòn 2007). Too often short-term work causes precariousness of labour market experiences (Guell and Petrongolo, 2007; Harslof, 2003). It tends to be paid less than a permanent job and the wage gap tends to be permanent (Gash and McGinnity 2007; Hevenstone 2008; Barbieri and Cutilli, 2009); sometimes temporary workers have a harder access to training as well as to benefits like paid vacations, sickness leave, unemployment insurance. They are also less satisfied with their jobs and more often report inflexible work schedules and monotonous tasks (Barbieri e Scherer (2009)[4].

Italy is another typical case where the two tier reform has been adopted. As a consequence, in 2010 almost one out of two young workers has a temporary contract, and in the last decade the increase of the share has been one of the highest in the OECD area (Fig. 4). Several researchers have tried to estimate the effect of the reform of the labour market using different data sets and econometric methodologies. Also in this case the results are mixed, even if the stepping stone effect is rather weak for particular groups of workers.

A number of studies use the panel survey of individual work histories drawn by WHIP (Work Histories Italian Panel), which is based on INPS (Istituto Nazionale di Previdenza Sociale, Social Security Institute) administrative archives. With these data Elia (2010) performs a duration analysis estimating a standard

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[4]Portugal and Varejão (2010), as an exception to the view that in these countries there is a stigma effect for part-time workers, that is not having been selected for the primary labour market is interpreted as a negative signal by potential future employers, find on the contrary that in Portugal this type of contracts are used as a screening device by firms.

proportional hazard Cox model. He finds that workers entering the labour market with a short-term contract are able to convert it in a permanent contract after a very long period. More skilled workers have lower conversion rates which could be explained by the tendency of the firms to extend the probation and screening process for them. Gender discrimination does not seem to affect the transition probability too much. Furthermore, the use of temporary contracts seem to affect mostly the youngest cohorts of workers, in terms of both incidence and lower chances of exiting into permanent employment[5].

Berton et al (2011) estimate dynamic multinomial logit models for transitions from different temporary contract arrangements to permanent jobs, finding that, although on the whole they have a *port of entry* effect, training contracts are the best port of entry to permanent employment, while free-lance contracts are the worst. However, they also observe that, due to the existence of strong state dependence, there is a tendency towards *permanent precariousness*, particularly for young people, with new entrants becoming trapped in repeated short-term contracts.

The Berton et al. (2011) paper highlights an element already underlined in our introduction, namely that in shaping the chances for the transition to stable employment, education and human capital endowment (non c'è informazione su education nei dati WHIP, come del resto abbiamo detto prima, non comprendo a chi ti riferisci) seem to play a key role. In particular to augment the probability to get a permanent job, temporary workers not only should be more educated but they also need some form of on the job training experience in order to rise their work competence.

In line with this argument Cappellari et. al (2011), employing a difference in difference set-up on a panel data on Italian firms derived from the Excelsior database, a survey conducted by Unioncamere (the Association of Italian Chambers of Commerce), show that fixed term contracts are not an efficient tool for the firms as they are used to substitute temporary employees with permanent ones and reduce capital intensity, generating productivity loss. On the other hand, apprenticeship contracts increase job turnover and induce the substitution of external staff with firms' apprentices, with an overall productivity enhancing effect.

A number of studies find a positive, even if weak, stepping stone effect. Barbieri and Sestito (2008) adopt a propensity score matching methodology to the Labour Force Surveys (LFS) to show that workers starting with a temporary job augment of 30% the probability to get a *satisfactory* employment after one year. Females, adult people and who lives in the low unemployment regions have the highest gains. Gagliarducci (2005) applies multiple-spell duration techniques to ILFI 1997 survey (Indagine Longitudinale sulle Famiglie Italiane) to prove a

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[5]WHIP data suffer of the disadvantage of missing relevant information about individuals, such as the level of education and the year of exit from school, not allowing to analyze young entrants behavior in the labour market. Moreover, it is not known whether, once exiting the WHIP, people actually become unemployed or simply exit the state of employee in the private sector therefore becoming employed in the public sector, or self-employed and also in this case it needs strong assumptions.

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positive effect of temporary employment on the chances of finding permanent employment, although the repeated temporary jobs, especially with interruptions, tend to hinder the transition to permanent employment.

On the 2000, 2002, and 2004 waves of the Survey of Italian Households' Income and Wealth (SHIW) conducted by the Bank of Italy, Picchio (2008) estimates different specifications of dynamic probit models for transitions to permanent employment, finding that temporary contracts have a 2 years' stepping stone effect. Nevertheless, since the survey is bi-annual, the results are strongly affected needing ad hoc assumptions.

Ichino et al. (2007) find a springboard effect of workers starting a temporary job trough Temporary Work Agencies. They use an ad hoc data base for two Italian regions adopting sensitivity analysis on matching estimators. However results don't seem robust for the Southern region.

Barbieri e Scherer (2009) trough a (continuous time) competing risk piecewise constant exponential model applied on the data from 1997, 1999, 2001, 2003 and 2005 ILFI surveys, estimate the probability of the transition into stable employment having started with a temporary job. They find in general a scant stepping stone effect with strong elements of discrimination for youth, women, less educated and workers living in the Southern regions. These are likely to remain trapped in the precariousness and underpaid with respect to equivalent permanent positions, all job and individual characteristics being equal (see also Barbieri and Cutilli 2009).

Summing up, the research on the stepping stone effect shows that temporary employment in principle increases the probability of finding permanent work, but in a rigid labour market only few are winners. The concrete risk is that less favoured workers (especially youth and women) fall into a dead-end relegating them, sometimes for a very long period of time, in working circuits characterized by temporary and/or part-time jobs, informal sectors without guarantees, long-term unemployment, with highly negative social effects.

Our new evidence, presented in this paper, shows that the most recent reforms carried out in Italy, although increasing the use of temporary contracts, unfortunately have not yet succeded in improving the above results.

3   The econometric model

We estimate a discrete-time duration model for *temporary employment, TE*, with two competing exit states: *permanent employment, PE*, and *non-employment, NE*. The structure of the model is essentially the same as that estimated by D'Addio and Rosholm (2005) on the ECHP data-base over the years 1994-1999, with the difference that we estimate it on the IT-SILC data-base for the years 2004-2007 and explicitly take *school leavers* into consideration, as explained in Section 4.

Estimation is carried out through a *multinomial model* on suitably reorganized data (see Jenkins, 2005). We start from a random sample of N individuals observed over at most T time periods. In what follows we focus on a generic

individual $i = 1, ..., N$, whose spell begins at date $t = 0$. Time spells are discrete and, as such, are indicated by $t = 1, ..., T$.

Let T_i^j denote the random duration in TE for individual i with exit $j = NE$, PE, so that if exit occurs over the year $(t, t+1]$, $T_i^j = t$. In other words, T_i^j is the number of years in TE, not including the year in which exit occurs. Clearly, T_i^{PE} and T_i^{NE} are both latent variables, only $T_i \equiv min\left(T_i^{PE}, T_i^{NE}\right)$ is observable, and possibly censored if falling outside the individual observation period as explained below. Given this, the discrete hazard function, conditional on a vector of explanatory variables z, for an arbitrary spell $t = \tau \geq 1$, is

$$
\begin{aligned}
h_{i\tau} &\equiv Pr\left(T_i = \tau | T_i \geq \tau, z_{i\tau}\right) \\
&= Pr\left(T_i^{PE} = \tau | T_i \geq \tau, z_{i\tau}\right) + Pr\left(T_i^{NE} = \tau | T_i \geq \tau, z_{i\tau}\right) \\
&\equiv h_{i\tau}^{PE} + h_{i\tau}^{NE}
\end{aligned}
$$

with a corresponding survivor function given by

$$
S_{i\tau} \equiv Pr\left(T_i > \tau | z_{i\tau}\right) = \prod_{t=1}^{\tau} \left(1 - h_{it}\right). \tag{1}
$$

Therefore,

$$
Pr\left(T_i = \tau | z_{i\tau}\right) = Pr\left(T_i^{PE} = \tau | z_{i\tau}\right) + Pr\left(T_i^{NE} = \tau | z_{i\tau}\right) = h_{i\tau} S_{i\tau-1}. \tag{2}
$$

An important point, to which we refer back below, when writing the likelihood function, regards the formula of h_{i1}: since for all individuals in the sample $T_i \geq 1$,

$$
h_{i1} = Pr\left(T_i = 1 | z_{i1}\right). \tag{3}
$$

Now, let t_i indicate the length of the observed spell in TE for individual i. His/her observation period is so $t = 1, ..., t_i$. As in D'Addio and Rosholm (2005), we exclude all individuals with left-censored spells from the estimation sample, so that, according to the definition of D'Addio and Rosholm (2002), all the spells in progress at the beginning of the observation period and with an unknown origin date are removed from the sample. This boils down to removing all individuals with a temporary contract at time $t = 1$. As a result, each individual in the estimation sample can be found in one of three mutually exclusive states:

PE exit to permanent employment: $T_i^{PE} = t_i$;

NE exit to not-employment: $T_i^{NE} = t_i$;

TE staying in temporary employment: $T_i > t_i$.

While NE and PE are cases of completed spells, TE is a case of right-censored spell. Left-censored spells are excluded. To indicate each state, we define the following binary variables

$$
\delta_i \equiv \begin{cases} 1 & if \quad T_i = t_i, \\ 0 & if \quad T_i > t_i, \end{cases},
$$

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$$\delta_i^j \equiv \begin{cases} 1 & if & T_i^j = t_i \\ 0 & if & T_i^l = t_i \text{ or } T_i > t_i \end{cases},$$

with $j \neq l = NE,\ PE$. Clearly, $\delta_i^{NE} + \delta_i^{PE} = \delta_i$.

The explanatory variables in the conditioning set enter the model through the linear index function $z_{it}'\theta_j$. Following a common practice in the econometric literature on duration (Jenkins 2005), we specify $z_{it}'\theta_j$ as

$$z_{it}'\theta_j \equiv D_{it}'\gamma_j + x_{it}'\beta_j,$$

where D_{it} is a vector of dummy variables indicating durations $t = 1, ..., t_i$ for each individual record, and so captures duration dependence in the hazard function; x_{it} contains the economic variables of interest, described in Section 4.

With this in mind and given Equations (1) and (2), we can write the contribution of an individual $i = 1, ..., N$ to the likelihood function when $t_i > 1$ as

$$
\begin{aligned}
L_i\left(\theta|z_{it}\right) &\equiv Pr\left(T_i^{PE} = t_i|z_i\right)^{\delta_i^{PE}} Pr\left(T_i^{NE} = t_i|z_i\right)^{\delta_i - \delta_i^{PE}} Pr\left(T_i > t_i|z_i\right)^{1-\delta_i} \\
&= \left[h_{it_i}^{PE} \prod_{t=1}^{t_i-1}\left(1 - h_{it}^{PE} - h_{it}^{NE}\right)\right]^{\delta_i^{PE}} \left[h_{it_i}^{NE} \prod_{t=1}^{t_i-1}\left(1 - h_{it}^{PE} - h_{it}^{NE}\right)\right]^{\delta_i - \delta_i^{PE}} \\
&\quad \left[\prod_{t=1}^{t_i}\left(1 - h_{it}^{PE} - h_{it}^{NE}\right)\right]^{1-\delta_i} \\
&= \left(h_{it_i}^{PE}\right)^{\delta_i^{PE}} \left(h_{it_i}^{NE}\right)^{\delta_i - \delta_i^{PE}} \left[\prod_{t=1}^{t_i-1}\left(1 - h_{it}^{PE} - h_{it}^{NE}\right)\right]^{\delta_1} \left[\prod_{t=1}^{t_i}\left(1 - h_{it}^{PE} - h_{it}^{NE}\right)\right]^{1-\delta_i} \\
&\quad \left(1 - h_{it_i}^{PE} - h_{it_i}^{NE}\right) \\
&= \left(h_{it_i}^{PE}\right)^{\delta_i^{PE}} \left(h_{it_i}^{NE}\right)^{\delta_i - \delta_i^{PE}} \left(1 - h_{it_i}^{PE} - h_{it_i}^{NE}\right)^{1-\delta_i} \prod_{t=1}^{t_i-1}\left(1 - h_{it}^{PE} - h_{it}^{NE}\right).
\end{aligned}
$$

Given Equation 3, the individual likelihood function contribution when $t_i \equiv 1$ reduces to

$$L_i\left(\theta|z_{it}\right) = \left(h_{i1}^{PE}\right)^{\delta_i^{PE}} \left(h_{i1}^{NE}\right)^{\delta_i - \delta_i^{PE}} \left(1 - h_{i1}^{PE} - h_{i1}^{NE}\right)^{1-\delta_i}.$$

To make $L\left(\theta|z_{it}\right)$ operational, we maintain a logistic distribution for h_{it}^j, $j = NE,\ PE,\ i = 1, ..., N,\ t = 1, ..., t_i$:

$$h_{it}^j = \frac{exp\left(z_{it}'\theta_j\right)}{1 + exp\left(z_{it}'\theta_{PE}\right) + exp\left(z_{it}'\theta_{NE}\right)}.$$

Note that the hazard function for the TE category is identified by h_{it}^{NE} and h_{it}^{PE} :

$$h_{it}^{TE} = \frac{1}{1 + exp\left(z_{it}'\theta_{PE}\right) + exp\left(z_{it}'\theta_{NE}\right)}.$$

It is thereby apparent that $L_i\left(\theta|z_{it}\right)$ is the likelihood function for a particular *multinomial model* (Jenkins, 2005), one such that:

- observations are organized first by individuals, $i = 1, ..., N$, and then by time within individuals, $t = 1, ..., t_i$, as in a standard (unbalanced) panel data set with sample size $n = \sum_{i=1}^{N} t_i$;

- for each person-period observation (i, t), there are three possible mutually exclusive "choice" categories available: TE, PE or NE, with the former being the base category;

- if $t_i > 1$, the categories PE and NE can be observed only at the end of the observed spell, that is at observation (i, t_i).

- if $t_i > 1$, the first $t_i - 1$ observations are all TE.

The coefficient θ_k^j on a given variable z_k is the marginal effect of that variable on the log odds ratio:

$$\theta_k^j = \frac{\partial}{\partial z_{it,k}} \left(log \frac{h_{it}^j}{h_{it}^{NE}} \right),$$

as such its sign is informative on the relative impact of z_k on h_{it}^j compared to h_{it}^{NE}. The marginal effect of z_k on h_{it}^j, $\partial h_{it}^j / \partial z_{it,k}$, is evidently easier to interpret and is given by

$$\frac{\partial h_{it}^j}{\partial z_{it,k}} = h_{it}^j \left[\theta_{j,k} - \left(\theta_{NE,k} h_{it}^{NE} + \theta_{PE,k} h_{it}^{PE} \right) \right].$$

The specific derivation of the likelihood function for our rotating panel is detailed in Appendix 1. A discussion on the issue of unobserved heterogeneity in our data is postponed to the next section.

4   The data

The data-set used in this study is the Italian part of the EU-SILC 2004-2007 panel, the so-called IT-SILC, in its longitudinal version. The survey is an integrated design with 4 groups. This implies that every year a new group is added and one of the old ones is eliminated after 4 observations. Since we work with the first 4 waves of the survey, we do not observe the elimination of any of the original groups, but only the annual inclusion of each new group in the panel[6]. For this reason, in 2004 we observe 13,335 individuals, Group 1, then the sample doubles in 2005 with the inclusion of new 13,618 subjects, Group 2, and triplicates in 2006 when Group 3 of 13,565 persons is included. Between 2006 and 2007 the sample is kept stable[7] to 41,310 individuals. Some people are lost for attrition in the follow-up. Therefore at the end of our observation period, in 2007, we observe at least the 21% of the sample (8,761 individuals belonging to the first group) for 4 consecutive periods, the maximum time span

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[6]After 2007, Group 1 will be eliminated and substituted by a new one, and in the same way the other groups will be rotated over the following years.

[7]Probably the fourth group will be added in the next release.

in which each group can stay in the sample before being substituted. The 26% of the total sample (11,065 individuals of the second group) is observed for 3 consecutive periods, and about the 32% of the 2007 sample (15,277 of those belonging to third group, entered in 2006) is followed for 2 consecutive periods. The remaining observations correspond to people observed only once between 2004 and 2007. Women are slightly more represented than men in IT-SILC data, as they are the 52% of the sample on average in each wave.

The variable that defines the three mutually exclusive states of our econometric model is constructed as follows. The TE and PE statuses are taken from the variable type of contract, that is very clearly meant to capture the fact that employment is eventually time-limited under an agreement. The question, addressed only to employees, is referred to the main job hold over the year, i. e. the one with the greatest number of hours usually worked.

In Italy, during the period under consideration in our study, in the TE category can therefore be certainly included both the typical temporary contractual arrangements existing since the '60s in the Italian the labor market (such as seasonal jobs, training and apprenticeship), and that have been more and more liberalized since 2001, and the new fixed-term contractual arrangements introduced between 1997 and 2003.

The most relevant characteristic of typical temporary contracts is given by the subordinate nature of employees' relationship with the firm. In the short-term contractual typologies recently introduced instead employees are to be considered as autonomous and independent collaborators of the firms. For this reason in the literature they are called either autonomous or atypical workers, although quite often firms tend to implement subordinate relationships with them. According to the very recent evidence shown in Bruno, Caroleo and Dessy (2012) from ISFOL 2005-2008 data[8] autonomous or atypical contracts are 5% of total TE, the percentage rising to 7% for women and young people therefore confirming the precarious state of these two categories.

Our empirical analysis is meant to assess whether people starting a TE in our period of observation end up either in a positive outcome, i. e. a PE position, or in a negative outcome, i. e. NE. As in previous studies, in the NE status we pool together unemployed and people out of the labor market. The information is taken from an yearly variable that collects the self-defined economic status perceived by individuals during the period of reference. In the category of NE we therefore include people unemployed, in retirement or early retirement, fulfilling domestic tasks and care responsibilities, or inactive for other unspecified reasons[9].

Persons permanently disabled and/or unfit to work, as well as in compulsory military community or service, are excluded from the sample, as well as employees who don't report the contract length because self-employed. We also do not consider in our study immigrants as their working careers are well known to be

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[8]In ISFOL data typical and atypical contracts are disaggregated, whereas in the IT-SILC panel we are unable to distinguish the two categories.

[9]This will be the variable used also for identifying school-leavers, as will be explained later on, since student is one of the possible self-declared statuses.

determined according to very different mechanisms with respect to natives, and focus on individuals aged between 16 and 66 in 2004.

In the next subsection we give some descriptive evidence on transitions emerging from our updated panel. Subsection 4.2 describes the sample that will be used for estimating our model, explaining in detail how it has been constructed. In Subsection 4.3 we motivate the selection of the variables used for explaining transitions from TE, also providing some summary statistics.

4.1 Descriptive evidence

We present in Table 1 some recent evidence for Italy, after the 2003 reform, that emerges from our updated 2004-2007 IT-SILC data. For the whole sample so far constructed we show average year-to-year transitions from TE to PE and NE. The table picks out the two relevant dimensions of interest for our analysis: gender and age differences. Overall we can see that there is a strong stability in the TE status from one year to the next: about 52% of our sample does not exit TE, the percentage being higher for women, and increasing with the age (from zero to 10% points gap with respect to men when after 40). Overall the difference between age cohorts is not very strong, even though we observe that at the beginning, between the first and the second group of age, the percentage of TE increases of 4% points whereas from the second to the third group of age it decreases of 1% point.

A 31% portion of the sample consists of people who successfully move from TE to PE. Also for the positive outcome we do not see an hard age-effect, whereas the gender difference is pronounced: from 4 to 9% women less than men transit to a PE in one year.

As far as regards the negative outcome of exiting the labor market after a TE, we observe instead a more evident age than gender effect: in the youngest cohort 18% of individuals transit to NE, the percentage decreasing to 14% for people aged between 26 and 39. The highest values for the third cohort can be explained with the fact that the NE category includes also people retired. Although more women than men exit the market, the difference remains stable by age groups (3%).

Summing up: even if overall a TE seems to be more a stepping stone than a dead end job, it still does not help to reduce significantly job instability both for women and young people. Our evidence confirms some of the results found in the literature for pre-2004 data, therefore showing that probably the recent policies have not completely reached their goals.

However this is only what happens in the short time, for year-to-year transitions. The econometric analysis is meant to consider the whole time span in which we observe each individual and to control for a number of explanatory variables on the transition probabilities of interest.

4.2   The estimation sample

Before turning to estimating the econometric model some restructuring of data is required. First, we wish to discriminate between entrants in TE and left-censored spells. To this purpose, we use information from the first record of any individual. In our sample an entrant in TE is any individual who enters TE in the second record, given that he/she was not in TE when first observed in the sample. We only keep individuals meeting this requirement, so that the first observation is lost for any individual kept[10]. After some other minor adjustment we are left with 1786 records and 1185 individuals.

The information when the individual in TE becomes NE or PE is used only to determine the last year of TE for any completed spell and does not contribute to estimation. This further reduces the number of observations to 1460 records, but leaves the number of individuals unchanged. Then, cleaning up the data for missing values in the explanatory variables leads us to the definitive estimation sample of 1440 observations and 1172 individuals. Table 2 shows the patterns of duration in the final sample: 79% individuals are observed for one period, 18% for 2 periods and only 3% are observed for three periods.

It is apparent that singletons are predominant, which will prevent attempts of controlling for unobserved heterogeneity, as explained in Appendix1.

As far as regards the age and gender characteristics of the estimation sample: 50% of individuals are less than 30 years old and more than 75% are less the 40; and female workers are slightly more numerous than males, contributing with 53% of the spells.

4.3   The explanatory variables

For estimation we condition on individual-specific variables xit, both time-varying and time constant. Summary statistics for the estimation sample are given in Table 3. Below we provide a succinct discussion of all explanatory variables in the model, focusing on their economic significance.

As already explained in Section 4.2, the first record available for any individual kept in the sample will not contribute to the estimation sample. This information is however used to discriminate between left-censored spells and spells actually starting in the estimation sample, so that only the latter are picked. In addition, as in other papers in this literature, we use the first-record information to construct indicators of the individual status ahead of starting TE and include them in the conditioning set. But differently from previous papers that constrain the initial state to be binary: either PE or NE, we also include the status of being student (declared by individuals in the same variable used for defining the NE status and therefore homogeneous to this information) as a third separate category. In this way we can identify school leavers even though the information on the year in which the maximum level of education has been attained is missing.

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[10]To be concrete, the 2004, 2005 and 2006 waves are lost for individuals in Group 1, 2 and 3, respectively.

Among personal and family characteristics we consider: sex, age (included non-linearly[11]), region of residence , marital status, health, and a dummy that indicates if during the period the person has ever had a children less than 12 years old.

Women, are analyzed separately from men, as in most of the previous literature on the subject, since their behavior in the labor market is completely different from that of men. Moreover, as we have shown from the preliminary descriptive evidence, there is a strong gender-effect in the observed transitions out from TE.

Regions are aggregated in five macro-areas: North-East (17% of the sample), North-West (23%), Centre (24%), South (27%) and Islands (9%). This control for the geographic localization of employees is crucial since the Italian labor market is characterized by enormous regional disparities. For this reason, at the same level, we control for two indicators of the structural economic trend: unemployment (for local labor market characteristics) and growth (for the cyclical component[12]).

Family characteristics are usually included, when available, for explaining job transitions out of TE because, according to the implications of job-search theories, people who live alone or out of their original families, as well as parents of very young children, might feel more responsible for their economic situation and therefore put more effort in improving their stability on the job market and transit with higher probability to PE than those married or without young children. But family characteristics can also play an opposite role for women, since quite often for them the family burden is an incentive to not participate to the labor market. Among the widespread information on family characteristics available in IT-SILC we have chosen two variables: marital status and the number of children. According to the marital status declared, we distinguish people in two mutually exclusive groups: those who are not married, from those that at the time of the survey either are or have ever been married, therefore including in this category widowed, separated and divorced. This last group represents the majority of our sample, with 53% of observations. As for the number of children, our dummy children less than 12 is time constant, indicating whether between 2004 and 2007 the person has ever had a children younger than 12 (33% of the sample).

The variable health is taken from the auto-declared level of general health. It is included in our model as another important element of observed heterogeneity among workers, since it can determine both their labor performance and their on-the job search activity. In the dummy health good we aggregate the medium-high levels reported (very good, good and fair) as opposed to the lower perceived statuses of health (bad and very bad), included in the complementary health bad dummy, that captures the outlier 3% of our sample.

According to the economic theory, an high level of human capital increases the likelihood of finding a job and therefore can help in transiting to a PE. Em-

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[11]This choice is supported by the descriptive evidence shown in Section 4.1.
[12]Both series are taken from ISTAT's web-site: www.istat.it

ployees' human capital is measured with two variables in our empirical model: experience and maximum level of education. Experience corresponds to the declared number of years in paid jobs. They vary between a minimum of 1 year and a maximum of 46 years, with an average of 10.37 years. The six highest levels of education available in the original data have been aggregated as follows: Education primary includes pre-primary and primary levels of education; Education secondary aggregates people with lower secondary, (upper) secondary and post-secondary non tertiary education levels of education; Education tertiary indentifies individuals with a first stage of tertiary education (not leading directly to an advanced research qualification), and a second stage of tertiary education (leading to an advanced research qualification). The majority of individuals in our sample (77%) holds a secondary degree, 16% belong to the group with the highest levels of education, and only about 7% is at pre-primary or primary levels.

As far as regards jobs' characteristics, unfortunately the longitudinal version of IT-SILC misses some very useful information such as the sector of activity, or the firm size. The only characteristic available about jobs is occupation, reported according to the ISCO-88 2-digit codes, that we have aggregated in three broad categories, according to the level of skill required: High (29% of our data), Medium (35%) or Low (38%), as explained in Appendix 2[13].

Another characteristic available about labor contracts, besides their length, is the distinction between part-time and full-time jobs. Full-time workers are the majority of those starting a TE between 2004 and 2007: 74%. Clearly, working part-time is another way of implementing job flexibility that can be used both for TE and for PE. Therefore it is useful to control for this characteristic.

We have also information about employees' labor income in IT-SILC longitudinal data: it is referred to the income reference period[14], and consists of the monetary component of the compensation of employees payable in cash by an employer to an employee. Although both the gross and net measures are available, we have chosen the employees' net cash or near cash income as one of the explanatory variables of our model, because income gross is missing for the majority of individuals[15]. Alonso et al. (2005) and Berton, Garibaldi (2006) argue that individuals searching in the labor market may face liquidity constraints. Those with more stringent budget constraints, despite being highly productive, might sort into TE because more stable positions are not quickly available.

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[13]Those occupied in the army forces have been excluded from the sample. It is relevant to remind that in the previous literature for Italy some authors (Gagliarducci (2005), Picchio(2008) and Barbieri and Sherer (2009) on ILFI or SHIW data) deliberately do not include job characteristics in their analyses because correlated with TE. Others (all those working with WHIP data, where individual and family characteristics are not available) consider only job characteristics. We have included instead all the information available as in D'Addio and Rosholm (2005).

[14]Monthly gross/net wages are available only for cross-sections in IT-SILC data. Net in these data is meant from reduction of taxes at source and/or social insurance contributions.

[15]As a separate variable, also non-cash income components are given in IT-SILC. They comprise personal monetary evaluations of all goods and services provided free or at reduced price to an employee as part of the employment package by an employer. So far, we have not included them in our measure of income.

Another variable that has been sometimes considered in this literature is a dummy that indicates whether employees have received benefits. The economic reasoning, supported by theoretical models, is the following: if a person benefits of unemployment, redundancy, or other kind of allowances she might reduce her job-search effort and therefore we observe a low probability that she transits to PE. However it is well known that in Italy people in TE do not receive unemployment benefits if they loose their job. For this reason, even though the information about unemployment benefits is available in our data, we have preferred to include in the dummy benefit, when it is equal to 1, only people who during the reference period have received monetary aids for at least one of the following reasons: disability, education, old age and survivor (an outlier 5% of the sample). We can therefore expect a different behavior of this variable in explaining job transitions out of TE because, indicating unease conditions of life, the above benefits might actually help people either to find better jobs[16] or to exit the labor market[17].

5   Results

In this section we discuss the results of the estimation of the econometric model introduced in Section 3. First the estimated marginal effects will be presented, showing the ceteris paribus estimated impact of explanatory variables on the probability of the various transitions, and then the observed and estimated hazards will be presented.

5.1   The estimated marginal effects

Table 4 shows the marginal effects estimates for the probability of staying in TE and the hazards out to PE and NE. Results are displayed for the whole sample (columns 1-3) and the two separate subsamples of male (columns 4-6) and female workes (column 7-9).

To interpret the results keep in mind that the reference type for the two subsamples is a single worker with no children (in the specified category), the lowest level of education, in good health, not receiving any benefit and coming from PE, ahead of starting a TE spell with the following characteristics: full-time position in a high-skill job located in the north-east Italian region. In the whole subsample the reference worker is a female worker with the foregoing characteristics.

Next we comment the most salient results, focussing on the two subsamples.

1) For both men and women there is clear evidence of duration dependence. Ceteris paribus, the longer the stay in TE, the higher the probability of remaining in TE.

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[16]In particular, some state advantages are given to firms that employ disabled persons in Italy.

[17]Especially if for old age or survivor.

2) As expected, significant regional disparities emerge. For both men and women working in the south increases the probability of being trapped into TE as opposed to exiting to PE or NE.

3) Obtaining a TE position directly after leaving school seems to lower the probability of upgrading to PE, although this effect is mildly significant and emerges at the level of the whole sample only. Nonetheless, we observe that such a negative impact holds through for both men and women.

4) A period of NE, before starting TE, is significantly detrimental on the chances of a PE position only for women. This effect probably drives the same result at the level of the whole sample, where we can also observe a significant positive effect on the probability of exiting the labor market after TE.

5) While a status of bad health does not explain men's job transitions, it has a strong negative impact towards exclusion of women from stable positions in the labor market, either keeping them in TE, or pushing them into NE.

6) Family characteristics expectedly affect men differently from women. Having children aged less than 12 years old seem to exert an impact towards pushing parents into the labour market, on the one hand reducing the chances of NE for men and, on the other, increasing those of keeping their TE positions for women.

7) A medium level of education helps in avoiding the NE status, but only for men.

8) For women TE in low-skill occupations is more likely to end up into an exit from the labor market than TE in high-skill jobs.

9) To the opposite, women having a part-time position are less likely to exit from the labor market, but at the price of a longer permanence in TE.

10) The finding that the hazards to PE and NE are higher not only in regions where growth is higher, but also where unemployment is higher is difficult to explain. D'Addio and Rosholm (2005) find exactly the same result and suggest that when unemployment increases, temporary jobs are the first ones to be destroyed by firms, thus generating an increasing outflow from temporary jobs in all directions.

Accommodating unobserved heterogeneity is important in discrete-time duration models, since it permits to relax the assumption of independence from irrelevant alternatives (IIA) maintained by homogeneous multinomial logit models. The Heckman and Singer (1985) nonparametric method, allowing for the presence of discrete individual-specific error components into the specification of the logistic distribution, is by far the most widely used procedure to deal with unobserved heterogeneity in this literature. However, the predominance of singletons (one-year durations in TE) in our estimation sample - accounting as much as 79% of the spells (Table 2) - clearly prevents us from any attempts in this sense[18].

That said, we observe that an homogenous multinomial probit model, maintaining a normal distribution for the hazard function, does not require IIA (see

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[18]Excluding singletons, as for example in Bover et al. (2002), is clearly not feasible here given the large portion of such cases in our estimation sample.

Wooldridge 2010), and as such lends itself as a robust, although computationally expensive itself, alternative to the error components multinomial logit a la Heckman and Singer. For this reason, we complement the multinomial logit estimates with estimation of a multinomial probit model, thought of as a robustness check to violations of the IIA assumption.[19]

5.2 Estimated hazards, empirical hazards and goodness of fit

Following Bover et al. (2002), we evaluate the goodness of fit of the model by comparing average hazard estimates from the model to the *empirical hazards* along several dimensions of interest.

The empirical hazard to PE for t years is obtained as the portion of temporary employees for at least t years that find a permanent contract after t years. The empirical hazard to NE for t years is similarly computed as the portion of temporary employees for at least t years that enter NE after t years.

Tables 5 and 5 show, for the subsamples of men and women respectively, the empirical hazards and average hazard estimates for the two completed spells observed in our sample, $t = 1$ and $t = 2$. For each subsample, results are then broken by regions (north & centre vs. south & isles) and age (less vs. more than 30 years old). The goodness of fit is quite satisfactory overall, with the hazard estimates that always fall inside the empirical hazard confidence intervals.

Either looking at the empirical or the estimated hazards, the following patterns seem to emerge quite clearly:

1) For men, one year more in TE markedly increases the probability of finding a permanent position. This holds for all dimensions, excepted South & Isles, where the increase does not seem so pronounced if measured by the empirical hazards, or even completely offset if measured by the estimated hazards. The opposite occurs in the women subsample, where to a longer duration in TE corresponds a lower probability of finding a permanent contract.

2) The probability that men exit employment after one year of TE is always smaller than women's, especially women based in South & Isles.

3) After two years of TE the probability of exiting to NE markedly reduces in both subsamples and for all dimensions.

4) In both subsamples school-leavers show an unstable position in the labour market: after one year of TE, they have a relatively small exit rate to PE and a relatively high exit rate to NE.

We conclude therefore that TE of longer duration are stepping stones only for men. They protect both men and women from unemployment, decreasing for both the exit to NE in 2 years, but at the expenses for women to remain trapped in precariuos jobs. Also for school leavers TE are a dead end, not only in the sense of increasing their permanence in the TE status, but also in possibly increasing their transit to NE in the short run.

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[19]Results are available upon request.

6 Conclusions

In this paper we have used a very recent 2004-2007 longitudinal data-set on individuals to assess whether, after the last reforms implemented in Italy to flexibilise the labour market, the widespread use of temporary contracts has had either a stepping stone or a dead end effect. The estimation of a discrete-time competing risk model substancially confirms some of the results found with other methodologies for previous years and other data. In particular we find that temporary contracts have a stepping stone effect only for men. If in general temporary contracts seem to protect from unemployment, this happens at the expense of letting employees trapped in precarious jobs, especially women and school leavers.

Finally, we also find strong regional effects, since temporary jobs in Southern Italy have a lower probability, compared to the rest of Italy, of ending with a permanent position both in the first and in the second year, and for both sexes.

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Appendix 1

Our unrestricted sample contains four years, 2004-2007. But, on restructuring the data to pick TE entrants we lose the 2004 wave for the individuals in Group 1. Similarly, the 2005 and 2006 waves are lost for Groups 2 and 3, respectively. As a result, the estimation sample contains non-censored durations up to two years. Considering also censored durations, the longest spell in the data lasts up to three years. Specifically, individuals in Group 1 contribute with uncensored spells of 1 and 2 years and censored 3-year spells; those in Group 2 with 1-year and 2-year spells, uncensored and censored, respectively; and finally those in Group 3 with censored 1-year spells.

We assume that conditional on z, the process allocating individuals into groups is independent from the process generating the duration data, which does not seem unlikely, considering the rotating nature of the panel (see on this Bover et al. (2002)).

Given the above considerations and the general formula for the likelihood function reported in Section 3 of the paper, the likelihood contribution of an individual in Group 1 specializes to

$$L_i\left(\theta|z_{it}\right) = \begin{cases} \prod_{t=1}^{3}\left(1-h_{it}^{PE}-h_{it}^{NE}\right) & if \quad t_i = 3 \\ \left(h_{i2}^{PE}\right)^{\delta_i^{PE}}\left(h_{i2}^{NE}\right)^{\delta_i-\delta_i^{PE}}\left(1-h_{i2}^{PE}-h_{i2}^{NE}\right)^{1-\delta_i}\left(1-h_{i1}^{PE}-h_{i1}^{NE}\right) & if \quad t_i = 2 \\ \left(h_{i1}^{PE}\right)^{\delta_i^{PE}}\left(h_{i1}^{NE}\right)^{\delta_i-\delta_i^{PE}}\left(1-h_{i1}^{PE}-h_{i1}^{NE}\right)^{1-\delta_i} & if \quad t_i = 1 \end{cases} ,$$

that of individuals in Group 2 is

$$L_i\left(\theta|z_{it}\right) = \begin{cases} \prod_{t=1}^{2}\left(1-h_{it}^{PE}-h_{it}^{NE}\right) & if \quad t_i = 2 \\ \left(h_{i1}^{PE}\right)^{\delta_i^{PE}}\left(h_{i1}^{NE}\right)^{\delta_i-\delta_i^{PE}}\left(1-h_{i1}^{PE}-h_{i1}^{NE}\right)^{1-\delta_i} & if \quad t_i = 1 \end{cases} ,$$

and finally all individuals in Group 3 contribute with

$$L_i\left(\theta|z_{it}\right) = 1-h_{i1}^{PE}-h_{i1}^{NE}.$$
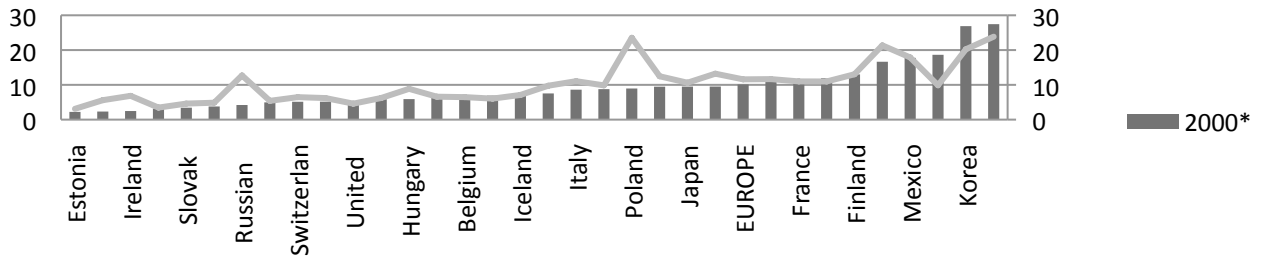
Eventually, the log-likelihood function to be maximized is

$$logL\left(\theta|z\right) = \sum_{i=1}^{N}logL_i\left(\theta|z_{it}\right).$$

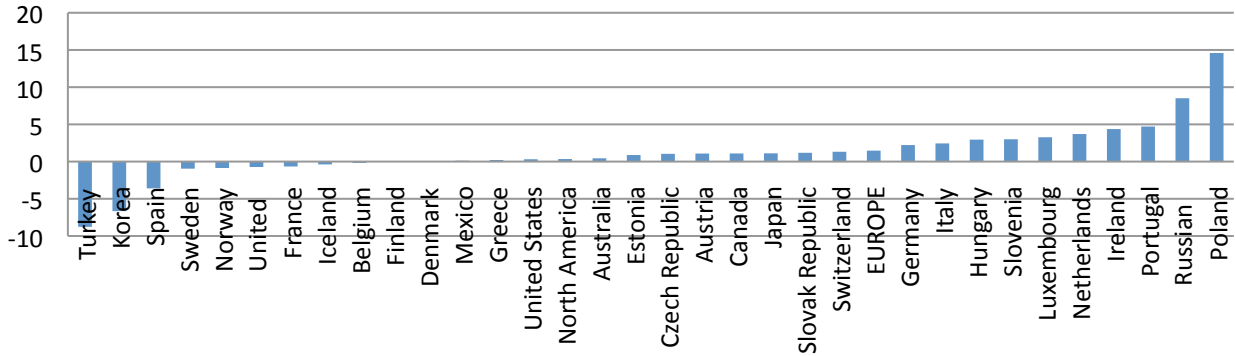# Appendix 2: definition of occupations

Tab. A.1 Definition of occupations used in the regression analysis.

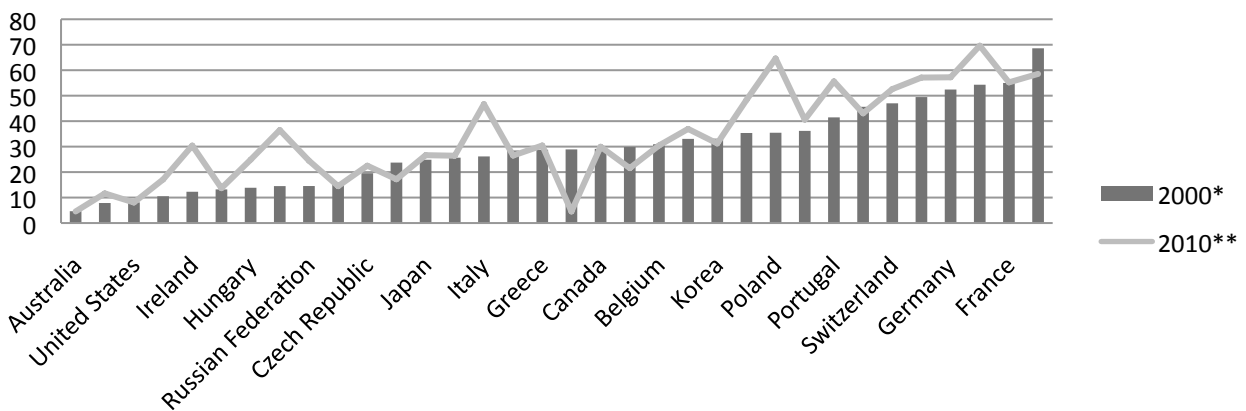| Definition of occupations in original data	Code	Definition of variables
Legislators, senior officials and managers	1	High skill
Professionals	2	High skill
Technicians and associate professionals	3	High skill
Clerks	4	Medium skill
Service workers and shop/mkt sales workers	5	Medium skill
Skilled agricultural andfishery workers	6	Medium skill
Craft and related trades workers	7	Low skill
Plant and machine operators and assemblers	8	Low skill
Elementary occupations	9	Low skill

Fig. 1 Share of temporary employees over total employees OECD Coutries

Estonia, Ireland, Slovak, Russian, Switzerlan, United, Hungary, Belgium, Iceland, Italy, Poland, Japan, EUROPE, France, Finland, Mexico, Korea

2000*

Fig. 2 Share of temporary employment over total employment perc. variation

Turkey, Korea, Spain, Sweden, Norway, United, France, Iceland, Belgium, Finland, Denmark, Mexico, Greece, United States, North America, Australia, Estonia, Czech Republic, Austria, Canada, Japan, Slovak Republic, Switzerland, EUROPE, Germany, Italy, Hungary, Slovenia, Luxembourg, Netherlands, Ireland, Portugal, Russian, Poland

Fig. 3 Share of temporay employees over employees aged 15-24 OECD Coutries

Australia, United States, Ireland, Hungary, Russian Federation, Czech Republic, Japan, Italy, Greece, Canada, Belgium, Korea, Poland, Portugal, Switzerland, Germany, France

2000*

2010**

 * Australia 2001, Korea 2004, Poland 2001, Slovenia 2002, United States 2001, Estonia 2002

** Australia 2006, Iceland 2009, Mexico 2004, United States 2005, Russia Federation 2008

Fig. 4 Share of temporary employment over employment aged 15.24
Perc. variation
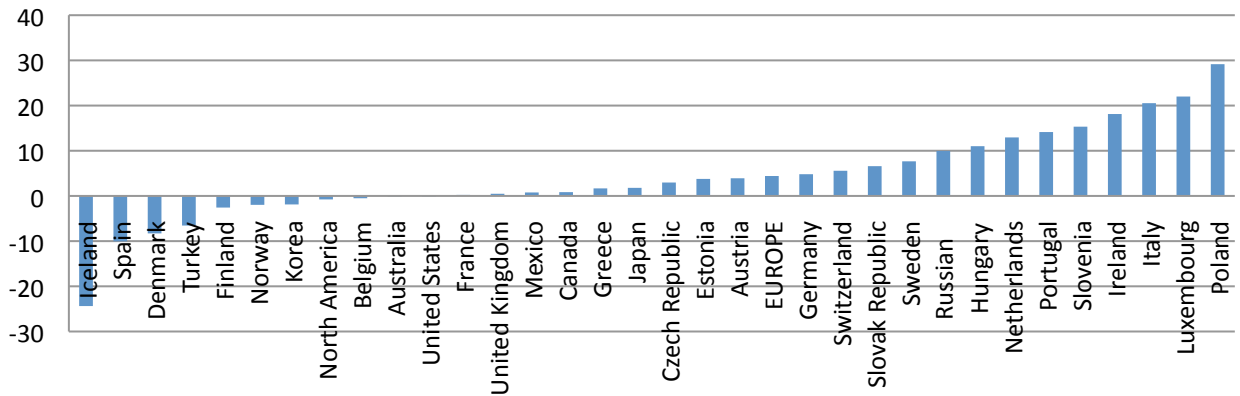
Tab. 1 Average of yearly transitions from temporary employment between 2004 and 2007.

	All			Men			Women		
Age 16-66	**TE**	**PE**	**NE**	**TE**	**PE**	**NE**	**TE**	**PE**	**NE**
TE	52.41	31.26	16.33	49.63	34.77	15.61	54.83	28.22	16.95
Total	*6.23*	*50.3*	*43.47*	*6.19*	*63.05*	*30.76*	*6.26*	*39.63*	*54.11*
Age 16-25									
TE	49.64	32.61	17.75	49.5	34.11	16.39	49.8	30.83	19.37
Total	*15.63*	*52.24*	*32.13*	*15.04*	*57.02*	*27.93*	*16.29*	*46.82*	*36.89*
Age 26-39									
TE	53.68	32.23	14.09	51.42	36.38	12.2	55.34	29.19	15.47
Total	*9.27*	*63.98*	*26.75*	*8.57*	*79.22*	*12.22*	*9.86*	*51.23*	*38.92*
Age 40-66									
TE	52.63	28.57	18.8	47.12	33.01	19.87	57.51	24.65	17.85
Total	*3.07*	*42.76*	*54.16*	*3.15*	*55.47*	*41.38*	*3.02*	*32.65*	*64.33*

Source: IT-SILC 2004-2007

Tab. 2 Patterns of durations in the estimation sample.

	Spell length			
	t=3	t=2	t=1	Total
N. spells	30	208	934	1172
%	2.56	17.75	79.69	100

Source: IT-SILC 2004-2007 panel.

Tab. 3 Descriptive statistics of the explanatory variables used for regressions.

Variable	Observations	Mean	Std. Dev.	Min	Max
Males	1440	0.4618056	0.4987122	0	1
Females	1440	0.5381944	0.4987122	0	1
Age	1440	34.03056	10.71777	18	67
Age2	1440	1272.869	805.9792	324	4489
NE previous period	1440	0.4256944	0.4946196	0	1
School leaver	903	0.0598007	0.2372486	0	1
dur1	1440	0.8090278	0.3932038	0	1
dur2	1440	0.1701389	0.3758853	0	1
dur3	1440	0.0208333	0.1428758	0	1
Ever married	1440	0.44375	0.4969985	0	1
No married					
Education primary	1440	0.06875	0.2531164	0	1
Education secondary	1440	0.76875	0.4217784	0	1
Education tertiary	1440	0.1625	0.369037	0	1
Experience	1440	10.36944	9.059277	1	46
Occupation H skill	1440	0.2854167	0.4517695	0	1
Occupation M skill	1440	0.3444444	0.4753519	0	1
Occupation L skill	1440	0.3701389	0.4830094	0	1
Full time	1440	0.7395833	0.4390144	0	1
Part time	1440	0.2604167	0.4390144	0	1
Children less 12	1440	0.2986111	0.4578079	0	1
No children less 12					
Year of birth	1440	1972.32	10.73023	1940	1988
North-East	1440	0.1701389	0.3758853	0	1
Noerth-West	1440	0.2277778	0.4195442	0	1
Centre	1440	0.2361111	0.4248388	0	1
South	1440	0.2729167	0.4456131	0	1
Islands	1440	0.0930556	0.2906112	0	1
Health bad	1440	0.0284722	0.1663754	0	1
Health good	1440	0.9715278	0.1663754	0	1
Income	1440	8302.631	6833.288	0	49346
Benefits	1440	0.0444444	0.206152	0	1
No benefits					
Unemployment	1440	7.135972	3.66869	3.1	15.3
Growth	1440	1.429552	.6629647	-0.1875401	2.828836

Source: IT-SILC 2004-2007

Tab. 4 Marginal effects for the *estimation sample.*

MARGINALS	ALL						MEN						WOMEN					
	TE		PE		NE		TE		PE		NE		TE		PE		NE	
d1	1.747	***	-1.094	***	-0.653	***	1.994	***	-1.327	***	-0.667	***	1.618	***	-1.059	***	-0.559	***
d2	1.760	***	-1.028	***	-0.732	***	1.977	***	-1.187	***	-0.790	***	1.661	***	-1.055	***	-0.606	***
d3	3.725	***	-2.310	***	-1.414	***	3.871	***	-2.563	***	-1.308	***	3.372	***	-2.058	***	-1.314	***
Women	0.016		-0.035	*	0.018													
NE precedent	0.012		-0.041	**	0.029	*	0.000		-0.026		0.026		0.020		-0.046	**	0.027	
School leavers	0.022		-0.055	*	0.033		0.017		-0.054		0.037		0.037		-0.056		0.019	
Age	0.001		-0.001		0.000		0.000		-0.002		0.001		0.000		0.000		0.000	
North-West	0.069	**	-0.052	**	-0.017		0.080	*	-0.083	**	0.004		0.062		-0.034		-0.028	
Centre	0.614	***	-0.405	***	-0.209	***	0.669	***	-0.477	***	-0.191	***	0.568	***	-0.360	***	-0.209	***
South	2.259	***	-1.470	***	-0.789	***	2.598	***	-1.908	***	-0.690	***	1.994	***	-1.159	***	-0.835	***
Islands	2.448	***	-1.603	***	-0.845	***	2.708	***	-1.999	***	-0.709	***	2.270	***	-1.327	***	-0.942	***
Health bad	0.063		-0.028		-0.034		-0.020		0.055		-0.035		1.086	***	-1.265	***	0.180	**
Married	-0.052	*	0.022		0.030		-0.026		0.006		0.020		-0.057		0.020		0.037	
Children less 12	0.052	**	-0.015		-0.037	**	0.040		0.015		-0.055	**	0.055	*	-0.037		-0.018	
Education 2	0.005		0.037		-0.042		0.065		0.006		-0.071	**	-0.092		0.074		0.018	
Education 3	0.008		0.033		-0.041		0.077		0.010		-0.087		-0.085		0.059		0.025	
Occupation M-skill	-0.045	*	0.017		0.027		-0.009		-0.002		0.010		-0.047		0.017		0.030	
Occupation L-skill	-0.070	**	0.013		0.057	***	-0.054		0.009		0.046		-0.068	*	0.003		0.064	**
Part-time	0.021		-0.003		-0.019		0.001		-0.022		0.021		0.038		0.002		-0.040	*
Income	0.000		0.000		0.000	**	0.000		0.000		0.000	*			0.000		0.000	
Experience	-0.002		0.002		-0.001		-0.002		0.003		-0.001				0.002		-0.001	
Benefits	-0.059		0.049		0.010		-0.009		0.014		-0.005		-0.104	*	0.069		0.035	
Unemployment	-0.275	***	0.175	***	0.100	***	-0.310	***	0.223	***	0.087	***	-0.248	***	0.140	***	0.108	***
Growth	-0.118	***	0.058	***	0.060	***	-0.166	***	0.089	***	0.076	***	-0.075	**	0.033		0.042	**

Levels of significance: * 10% - 5%; ** 5%-1%; *** less than 1%

Tab. 5 Empirical and estimated hazards: Men sample.

| | Years | Hazard to PE | | Hazard to NE | |
		Empirical	Estimated[a]	Empirical	Estimated
All	1	0.140		0.091	
		(0.111, 0.169)		(0.067, 0.115)	
	2	0.236		0.009	
		(0.154, 0.318)		(-0.009, 0.028)	
South & Isles	1	0.110	0.119	0.089	0.092
		(0.070, 0.150)		(0.052, 0.126)	
	2	0.167	0.117	0.024	0.008
		(0.049, 0.284)		(-0.024, 0.072)	
North & Centre	1	0.162	0.156	0.092	0.090
		(0.121, 0.203)		(0.060, 0.125)	
	2	0.281	0.314	0	0.010
		(0.168, 0.394)		(64)[b]	
Age < 30	1	0.124	0.132	0.091	0.086
		(0.084, 0.163)		(0.057, 0.125)	
	2	0.228	0.237	0	0.008
		(0.116, 0.340)		(57)	
Age ≥ 30	1	0.156	0.148	0.091	0.096
		(0.113, 0.200)		(0.057, 0.125)	
	2	0.245	0.234	0.020	0.011
		(0.120, 0.370)		(-0.021, 0.061)	
School leavers	1	0.090	0.093	0.115	0.113
		(0.025, 0.155)		(0.043, 0.188)	
	2	0.150	0.138	0	0.010
		(-0.021, 0.321)		(20)	

[a] Since an exhaustive set of dummies is included, empirical and estimated hazards coincide for the whole sample.

[b] 95% asymptotic confidence intervals for the empirical hazards are in parentheses, except when the empirical hazard is exactly 0, in which case the relevant sub sample size is reported.

Tab. 6 Empirical and estimated hazards: Women sample.

	Years	Hazard to PE Empirical	Estimated[a]	Hazard to NE Empirical	Estimated
All	1	0.130		0.115	
		(0.103, 0.157)		(0.090, 0.141)	
	2	0.079		0.036	
		(0.034, 0.125)		(0.005, 0.067)	
South & Isles	1	0.124	0.132	0.154	0.154
		(0.078, 0.170)		(0.104, 0.205)	
	2	0.075	0.038	0.025	0.025
		(-0.010, 0.160)		(-0.026, 0.076)	
North & Centre	1	0.133	0.129	0.097	0.097
		(0.100, 0.166)		(0.068, 0.125)	
	2	0.081	0.096	0.040	0.040
		(0.026, 0.135)		(0.001, 0.080)	
Age < 30	1	0.107	0.108	0.120	0.115
		(0.072, 0.142)		(0.083, 0.158)	
	2	0.059	0.071	0.015	0.037
		(0.001, 0.116)		(-0.015, 0.044)	
Age ≥ 30	1	0.152	0.151	0.111	0.116
		(0.112, 0.192)		(0.076, 0.146)	
	2	0.099	0.087	0.056	0.035
		(0.028, 0.170)		(0.001, 0.111)	
School leavers	1	0.091	0.095	0.131	0.122
		(0.033, 0.149)		(0.064, 0.199)	
	2	0.067	0.053	0	0.031
		(-0.028, 0.161)		(30)[b]	

[a] Since an exhaustive set of dummies is included, empirical and estimated hazards coincide for the whole sample.

[b] 95% asymptotic confidence intervals for the empirical hazards are in parentheses, except when the empirical hazard is exactly 0, in which case the relevant sub sample size is reported.