

Stepping stones versus dead end jobs.

A comparison of different contract arrangements.

Giugno 2011

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Abstract

In this paper we study labour market transitions of young school leavers out of temporary jobs in Italy. The data-set used is the 2004-2007 IT-SILC panel. Specifically, we apply a discrete time duration analysis and estimate a competing-risk model distinguishing between exits from temporary jobs to permanent employment and no employment. We find that temporary contracts do have a positive impact on young school leavers job dynamics and, *ceteris paribus*, they seem to act slightly more as dead end jobs rather than as stepping stones for both sexes, although men have a higher probability to end out in both outcomes than women.

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

Keywords: mixed multinomial logit, discrete duration data, temporary jobs.

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1. Introduction

Young people's aim is to fill in their gap of work experience. As Clark and Summers (1982) and Freeman and Wise (1982) suggested, labour turnover is a tool for them to become adults. 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, 2008). It is a probation instrument for firms (Loh 1994; Wang e Weiss1998) and a way for young people to signal their skills and motivation to employers (Booth et al., 2002). It is part of the mix of school-to-work transition institutions. Nonetheless, it is questionable whether temporary work is a good substitute for general training (typical of continental-type of welfare state) or active labour market policy (ALMP) (typical of modern Scandinavian-type welfare state). It is also questionable whether reducing firing costs "at the margin" is sufficient to achieve greater flexibility.

A widely debated issue is whether temporary jobs are actually a springboard or stepping stones to permanent work, without causing a long-lasting wage penalty; or a dead end. The available evidence is mixed. Also the size of the impact differs across countries. The springboard effect is confirmed in almost all cases, but in some studies on the USA (Hotchkiss, 1999; Autor and Houseman, 2005; Autor, 1999).

There are only few comparative studies, though (Righi and Sciulli 2009, D'Addio and Rosholm 2005; Scherer, 1999; Brauns at al. 1999, Pavlopoulos 2009). This is essentially an empirical issue and needs longitudinal data with similar characteristics to be answered. It has been noted that the springboard effect might differ by country and also because of the specific arrangements considered, namely the length of contracts (Gagliarducci, 2005; Antoni and Jahn, 2009), whether they include formal or informal training (Autor, 2001), whether they are based on financial incentives or not (Booth et al. 2002) and so on

This paper aims to assess the impact of temporary work arrangements on the probability to find a permanent job instead of exiting the labour market in Italy. Previous evidence for this country comes either from comparative studies on the 1994-2001 waves of the European Community Household Panel (ECHP) (D'Addio and Rosholm 2005; Righi and Sciulli 2009) or from the 2000-2004 biannual Survey of Household on Income and Wealth (SHIW) carried out by the Bank of Italy (Picchio 2008) and from the 1985-2004 Work Histories Italian Panel (WHIP) (Elia 2010).

The two studies carried out on the European Panel follow different econometric strategies. Righi and Sciulli (2009) carry out a typical duration analysis estimating a proportional hazard model that calculates how long does it take to find a stable job and find that, among all the European countries, Italy with Greece plays the worst performance, as it does take a very long time to find a permanent position. On the same data, D'Addio and Rosholm (2005) estimate instead a competing risk model, including or not the unobserved heterogeneity effect. They focus more on the male/female differential in the probability of finding a permanent job instead of exiting the labour market, given that a worker starts with a temporary contract, than on cross-country differences. Therefore, we cannot get direct results for Italy. However in their study, that pools all the European countries, quite strong differences are found between men and women, but only when unobserved heterogeneity is taken into account.

On the Italian survey-data SHIW Picchio (2008) estimates different specifications of dynamic probit models for permanent employment, finding that temporary contracts have a kind of stepping stone effect in 2 years. But the fact the survey is BI-annual strongly affects the result since ad hoc assumptions are needed. Elia (2010) estimates a standard proportional hazard Cox model on Italian administrative data that have the advantage of covering a long time span of 20 years, but the disadvantage of missing relevant information about individuals such as the level of education. Moreover, it is not known whether, once exiting the WHIP, people actually become unemployed (as assumed in the paper) or simply exit the state of employee in the private sector therefore becoming employed in the public sector, or self-employed.

In this paper we use the Italian part of the new version of the ECHP, the so-called IT-SILC covering the 2004-2007 period. So, first of all we are in the position to upgrade previous results on similar data, and this is quite interesting since the Biagi law in 2003, after the Treu 1997 law, has enormously increased the probability to be employed in a temporary work. We follow the econometric strategy of D'Addio and Rosholm (2005) estimating a competing risk model that takes into account the alternatives to temporary employment of permanent employment or not employment in the final state, but focusing obviously on Italy, and therefore being more precise on the gender effect in that specific country. The choice is due both to the short time-length of our data, that we can use only in the annual-dimension for the information available on contract characteristics, and to the fact that it fits better the nature of our question: do temporary contracts help in finding a permanent job or do they worsen the

labor market outcome, especially of young people? Another feature that distinguishes in fact our analysis from those already existing in the literature is the focus on school leavers.

The paper is organized as follows: in Section 2 we give descriptive evidence on our data; Section 3 explains our econometric strategy and shows the results of our analysis; Section 4 concludes.

2. 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 version¹. The number of individuals in the age-group 17-64 contained in the panel year by year (our sample of interest), and the distribution between men and women, are reported in Table 1. As we can see, although the number of observations almost doubled over time with respect to the first period, the proportion between men and women is quite constant across waves: 49% women and 51% men. We analyse the two samples separately, as in most of the previous literature.

Table 1: number of observations by sex, age group 17-64.

Year	2004		2005		2006		2007	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Men	5,016	49.01	9,243	49.21	13,098	49.11	13,098	49.11
Women	5,219	50.99	9,538	50.79	13,573	50.89	13,573	50.89
Total	10,235		18,781		26,671		23,661	

Source: IT-SILC 2004-2007

2.1 Definition of variables

In the IT-SILC panel we have both the monthly status of individuals (employed/self-employed full-time, employed/self-employed part-time, student, unemployed, retired, other inactive, compulsory military service), and the information, gathered once a year, on the length of the contract (temporary/permanent) of the principal job. We use this last variable to identify

¹ The longitudinal version of the EU-SILC contains less information than the cross-sectional version of the panel. A number of variables are missing. We are planning to implement the analysis on the cross-sectional version very soon.

people holding a 'precarious' job as those having a 'temporary contract'. The best opportunity in the market is the 'permanent contract'. Both situations can include full-time or part-time employees, self-employed are automatically excluded when considering workers getting a contract.

School leavers are instead identified through the monthly information as follows: if they have been student in at least one of the 12 months, but they have declared to have a contract (temporary or permanent) in the main job in the same year, they have clearly entered the labor market that same year. People studying for 12 months in a year and declaring a contract are clearly people studying in the meanwhile that they work. Actually, we have verified that all people changing their status from student to employee are in the 17-36 age group, we therefore have called them 'young' in our regression analysis.

Other useful information is given by the 'highest level of education' attained in the period. The 6 levels available in the original data have been aggregated as follows: 'eduaggr1' includes pre-primary and primary levels of education; 'eduaggr2' aggregates people with lower secondary, (upper) secondary and post-secondary non tertiary education levels of education; 'eduaggr3' identifies 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), actually aggregated already in the original data.

Among the characteristics related to the family, so far we have included only the dummy variable 'married', taken from the variable 'marital status' that gives information on a number of alternative statuses (never married, separated, widowed, divorced) automatically aggregated in the 0 value of our dummy.

The dummy 'healthg' instead captures the levels of general health declared as 'very good', 'good' and 'fair', as opposed to a 'bad' and 'very bad' perceived status of health.

Unfortunately, the longitudinal version of the IT-SILC panel misses some very useful information about the job, such as the sector of activity, or the firm size. The only characteristic available is the 'occupation' reported according to the ISCO-88 2-digit codes that we have aggregated at the 1-digit level ending up in 9 categories (see Appendix 1 for details). Those occupied in army forces have been excluded.

2.2 Descriptive evidence

Before turning to the econometric analysis, we present in Table 2 some descriptive evidence on transitions in Italy between the 3 states of temporary employment (TE), permanent employment (PE) and not-employed (NE). The numbers shown are averages of year-to-year transitions during the time-span of the survey.

Table 2: number of observations by sex and age group 'young' 'no-young'.

	All			Men			Women		
Young	NE	PE	TE	NE	PE	TE	NE	PE	TE
NE	81.15	10.85	8	75.09	15.66	9.25	84.18	8.44	7.38
PE	3.77	90.72	5.51	2.92	92.22	4.86	4.91	88.7	6.39
TE	13.01	36.05	50.94	11.5	37.06	51.44	14.46	35.08	50.46
Total	30.05	58.05	11.9	20.07	68.31	11.62	39.46	48.37	12.17
NO young									
NE	96.38	2.25	1.36	95.96	2.51	1.53	96.63	2.11	1.27
PE	3.39	94.34	2.27	2.88	94.88	2.24	4.07	93.61	2.31
TE	13.39	30.98	55.63	13.11	35.18	51.7	13.62	27.46	58.92
Total	62.05	34.16	3.79	51.53	44.58	3.89	70.2	26.09	3.71

Source: IT-SILC 2004-2007

As we can see, there is quite strong stability in Italy both for men and women, although young school leavers entering the market are more mobile than older people. There is a sensible stronger (84%) persistence of young women in the NE position with respect to men (75%) of the same age, whereas young men are more stable than women (92% versus 88%) in the PE status. As for the stability of TE kind of arrangements, young men and women are not very different (51% versus 50%) but they are more mobile from this position with respect to older employees that have the same kind of contract (55% versus 58%).

Overall, the transition with the highest probability is the one from TE to PE: 36% for young versus 31% for old employees. This 5-percentage average points difference decreases to 2 when we look at men and increases to 8 for women, due to their very low probability to improve their contractual position when older. The transition from TE to NE has on average only about 3% probability, without great differences between age groups. However, there is quite a sensible difference between sexes as from about 3% of young men, it becomes about 5% for young women.

Therefore, apparently, temporary jobs are stepping stones, and not necessarily only for young people. However this is only what happens in the short time. The following econometric analysis allows us to consider the whole time span and to control for the impact of a number of explanatory variables on the transition probabilities of interest.

3. Empirical analysis

3.1 The model

Following D'Addio and Rosholm (2005), we model individual's transitions with a competing risk regression, where in each period the person can either stay in the temporary job (the reference case), become unemployed/nonparticipant, or find a permanent job therefore generating a sequence of discrete choice multinomial logit models. This overcomes the potential aggregation bias of estimating a single risk duration model, based on the restrictive assumption that the estimated coefficients for the baseline hazard and the covariates are the same for all destination states.

Suppose a population entering a given state at time $T = 0$, with T being a positive discrete random variable associated to the duration in the state. The probability that the individual leaves the state in period t , conditional upon survival in the state up to time t , is the hazard function. Formally, it is written as

$$h(t) = Pr(T = t | T > t - 1).$$

The overall survivor function can be written in terms of the interval specific survivor functions

$$\gamma_t = S(t | T > t - 1) = Pr(T > t | T > t - 1)$$

The survivor function at an arbitrary t is then

$$S(t) = \prod_{j=1}^t \gamma_j.$$

We assume that a person can exit a state to enter more than one destination. A person working in a temporary job can put an end to his (her) contract by getting a permanent job or by entering non-employment. Obviously, there is a duration associated to these two destinations: T_{PE} , i.e. the duration for time spent in a temporary job until getting a permanent job, and T_{NE} , i.e. the duration spent in temporary job until exiting to nonemployment.

We observe only the shorter of the two durations, thus we only observe

$$T = \min(T_{PE}, T_{NE}).$$

If we assume that the discrete interval-specific hazard is multinomial logistic, with discrete duration data, the model can be seen as a proportional odds hazards model in a competing

risks framework where $h_m(t) = \frac{\exp(Z_m(t))}{\sum_{j=1}^3 \exp(Z_j(t))}$, $h_m(t)$ being the hazard for exit into the state m .

m takes the values: (1) permanent employment (PE); (2) non-employment (NE, i.e. unemployment and non-participation); (3) temporary employment. $Z_m(t)$ is the timevarying index-function which accounts for the effect of the baseline hazard, observed and/or unobserved variables. We leave it for the moment unspecified.

Since simultaneous exits cannot occur, the overall hazard out of the state currently occupied $h(t)$ and the corresponding conditional probability of survival γ_t can be expressed as:

$$h(t) = \sum_{j(t) \neq j(t-1)} h_j(t). \quad \gamma_t = 1 - h(t) = 1 - \sum_{j(t) \neq j(t-1)} h_j(t)$$

The probability that an individual makes a transition into state m in period t , $P_m(t)$, is the product of the probability of survival until time t and the conditional probability of exiting to state m at time t

$$P_m(t) = h_m(t)S(t-1) = \frac{\exp(Z_m(t))}{\sum_{j=1}^3 \exp(Z_j(t))} S(t-1) \quad m = 1, \dots, 3.$$

Z_m defined as follows:

$$Z_m(t) = x_t' \beta^m + D_t' \gamma^m + \alpha^m$$

where D_t , is a 2 X 1 vector of four dummy variables, where only one of them is 1, corresponding to the duration being equal to either 1 or 2 years (the longest possible duration in the sampl since in 2007 all observations are censored), x_t denotes the observed vector of explanatory variables at time t ; γ^m is a vector of the duration dependence parameters; and α^m is the destination state specific, time-constant, unobserved individual effect.

As for the interpretation of parameters, we are principally interested in the probability of leaving for a certain destination state relative to staying in a temporary job, the odds ratio, which is, say, P_1/P_0 The marginal effect of a variable x_k on the log odds ratio is

$$\partial \log \frac{P_1}{P_2} / \partial x_i = \beta_i^1.$$

Therefore, in interpreting the results below, we must bear in mind that the parameters inform

us about the probability of leaving a temporary job for a certain destination state, relative to the probability of staying.

3.2 Results

The results of the estimation of our model are shown in Table 3, grouped by 'arrival' state (either PE = Permanent contract or NE = no employment) respectively for men and women. As we can see, all the explanatory variables, except the level of health, are significant for men. For women instead, also the highest level of education is not significant in determining both the probability of finding a permanent contract and of exiting employment. The second level of education has a stronger impact on the probability of exiting employment for women than for men, and this effect is even stronger (0.84) than the impact of the highest level of education of men both on finding a permanent job (0.78) and on transiting to a non-employment status (0.74). These results seem to suggest that an high level of qualification helps more men than women in finding a stable job, but in any case does not guarantee from the no-employment status.

In general, we can notice that the estimated parameters are not so different for transitions to permanent employment and to no-employment, although school leavers that enter the labor market with a temporary contract have an higher probability of becoming not employed than to move to permanent positions.

Table 3: results of competing risk models.

	PE		NE	
	Men	Women	Men	Women
young	1.558**	1.544**	1.710**	1.640**
eduaggr2	0.643**	0.871	0.636**	0.843**
eduaggr3	0.785**	1.171	0.747**	1.072
married	0.442**	0.675**	0.453**	0.683**
healthg	1.109	1.123	1.178	1.086
occ2	2.520**	4.284**	2.839**	5.194**
occ3	2.091**	3.685**	2.393**	4.792**
occ4	2.573**	3.645**	3.224**	4.834**
occ5	3.898**	5.417**	4.436**	6.682**
occ6	4.361**	7.917**	4.264**	7.730**
occ7	2.859**	4.240**	3.297**	5.166**
occ8	2.778**	5.607**	3.407**	7.296**
occ9	7.630**	9.173**	8.689**	11.395**

** significant 5%; * significant 10%

Source: IT-SILC 2004-2007

4. Conclusions

Although preliminary, since not all the explanatory variables are still available to us, the analysis carried out in this paper suggests that temporary contracts do have a positive impact on young school leavers in the labor market. *Ceteris paribus*, they seem to act with a slightly higher probability as dead end jobs than as stepping stones for young people of both sexes, although men have a slightly higher probability to end up in both the outcomes than women.

Further analysis is needed for improving our estimation of the model, and it can go in 3 directions: 1) increasing the number of explanatory variables using the cross-section version of the IT-SILC; 2) try to correct the competing risk model estimation taking into account of unobserved heterogeneity; 3) compare the results with the usual method of Cox regression, although this might imply the introduction of assumptions on the monthly-characteristics of contracts.

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Appendix 1: definition of occupations

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

Definition	Code
Legislators, senior officials and managers	1
Professionals	2
Technicians and associate professionals	3
Clerks	4
Service workers and shop/mkt sales workers	5
Skilled agricultural and fishery workers	6
Craft and related trades workers	7
Plant and machine operators and assemblers	8
Elementary occupations	9