Are temporary jobs a port of entry into permanent employment? Evidence from matched employer-employee data

UNIVERSITÀ DEGLI STUDI DI TORINO

Are temporary jobs a port of entry into permanent employment? Evidence from matched employer-employee data

Fabio Berton,
University of Eastern Piedmont and LABORatorio Revelli

Francesco Devicienti[§],
University of Turin, Collegio Carlo Alberto and LABORatorio Revelli

Lia Pacelli,
University of Turin and LABORatorio Revelli

Abstract

Purpose. In this paper we explore whether temporary jobs are a port of entry into permanent employment and argue that the answer crucially depends on the type of temporary contracts being considered.

Design/Methodology/Approach. We base our empirical evidence on a longitudinal sample of labour market entrants in Italy and estimate dynamic multinomial logit models with fixed effects to allow for the non-random sorting of workers into the different types of contracts.

Findings. We show that the transition to permanent employment is more likely for individuals who hold any type of temporary contract than for the unemployed, thus broadly confirming the existence of port-of-entry effects. Yet, not all temporary contracts are the same. An order among non-standard contracts with respect to the probability of taking an open-ended job emerges, with training contracts at the top, freelance work at the bottom, and fixed-term contracts outperforming apprenticeships. Strong SSC rebates, lack of training requirements, and low legal constraints concerning renewals result in poor port-of-entry performance, as in the case of freelance contracts. Instead, mandatory training and more binding legal constraints on the use, extension, and renewals of training contracts tend to enhance the probability of getting a standard job.

Originality/Value. Most of the existing empirical literature aggregates temporary contracts in a single category, thereby ignoring a relevant source of heterogeneity.

JEL classification: J41, J63

Key words: temporary jobs, port of entry, matched employer-employee data, dynamic multinomial logit models, state dependence, fixed effects

---

We thank David Card, Henry Farber, Christopher Flinn and participants at the conference on labour market flows, productivity, and wage dynamics held in Moncalieri in 2007, the XXIII AIEL conference, the III ICEEE conference, and the seminar held at the University of California, Berkeley. We also thank an anonymous referee for substantial and constructive comments. Usual disclaimers apply.

§ Corresponding author. Address: Università di Torino, Corso Unione Sovietica 218bis, 10134, Torino (IT), tel: +390116705062; fax: +390116705061; devicienti@econ.unito.it.

1. Introduction

The liberalisation of temporary contracts has been the main labour market policy in Europe during the last two decades, with the stated objective of increasing labour market flexibility. In many countries, temporary contracts make up the bulk of new hires; for instance, over 90% in Spain (Dolado et al., 2002) and over 50% in Italy. In 2009, the contracts of limited duration represented 14.1% of the employed workforce in the EU25 (Eurostat data).

Several reasons explain these developments. From the employers' perspective, the availability to offer temporary jobs is tantamount to a reduction in firing costs, which is particularly valuable in an environment with incomplete information and high employment protection for standard jobs (Bertola, 1990). Temporary jobs can be attractive from the labour supply standpoint, too − they may allow for a reduction of unemployment duration and contribute to a decline in the unemployment rates of the weakest segments of the labour force (e.g., Alonso-Borrego et al., 2005; Blanchard and Landier, 2002; Bover and Gomez, 2004; De Graaf-Zijl et al., 2004). However, all over Europe, temporary jobs are often associated with poorer labour conditions with respect to standard employment: lower wages, lower training, higher job insecurity, and lower protection from social security (e.g., Booth et al., 2002; Berton et al., 2009; Clark and Postel-Vinay, 2009). Furthermore, concerns have been expressed that people in such flexible working arrangements may be trapped in precarious career paths, increasing the risks of social exclusion (e.g., D'Addio and Rosholm, 2005). At the extreme, temporary jobs may simply provide disadvantaged unemployed individuals with a valuable momentary income-generating opportunity that does not significantly enhance their human capital, social network, and future employability, as in the case of the French temporary jobs considered by Magnac (2000).

Therefore, one of the main questions surrounding the introduction and liberalisation of temporary jobs is whether they ultimately represent a port of entry to open-ended jobs. We contribute to the existing empirical literature showing that the answer to this question crucially depends on the type of temporary contract being considered (e.g., fixed-term, training, apprenticeship, freelance). This is because the different contracts observed in practice are typically characterised by varying combinations of training, tax incentives for firms, and EPL provisions. However, most of the existing empirical literature aggregates temporary contracts in a single category, thereby ignoring a relevant source of heterogeneity.

To support our points, we use a longitudinal matched employer-employee database drawn from the Work Histories Italian Panel (WHIP). This dataset has several advantages for studying empirically the port-of-entry hypothesis, the most relevant of which are that we are able to observe the detailed labour market history of a large number of workers, including the contract they have been hired with, and to identify the employer.

To test the port-of-entry hypothesis, we estimate dynamic multinomial logit models with fixed effects to allow for non-random sorting of workers into the different types of contracts. These models aim to estimate how past employment status affects the chances of transiting toward any other status. Here the main econometric challenge is to disentangle the causal effect of past employment states from spurious selection due to unobserved individual characteristics. By allowing for individual fixed effects, our models are well placed for dealing with this challenge. In addition, the models turned out to be tractable, even when transitions between as many as seven labour market states were considered, which was crucial given our aims. While the Markovian assumption embedded in these models implies that the dynamics of the process is kept relatively simple, the crucial advantage is that the estimates of transition parameters are robust to any specification of the distribution of unobserved heterogeneity (Magnac, 2000).

Our main results are as follows. After controlling for unobserved heterogeneity, we show that the transition to permanent employment is more likely for individuals holding any type of temporary contracts than for the unemployed, thus broadly confirming the existence of port-of-entry effects. However, not all temporary contracts are the same. Training contracts are the best port of entry, while freelance contacts are the least conducive to transition to permanent employment. These results are found when estimating our models at both one- and two-year intervals, a robustness check we carry out to verify that the results are not driven by differences in the average duration of the various types of contracts.

Our paper is related to a number of recent empirical contributions testing the port-of-entry hypothesis of temporary contracts. Booth et al. (2002) for the UK, Hagen (2003) for Germany, and Addison and Surfield (2009) for the U.S. provide evidence in favour of the port-of-entry hypothesis; Hotchkiss (1999) and Autor and Houseman (2002) for the U.S., Güell and Petrongolo (2007) for Spain, De Graaf-Zijl et al. (2004) for the Netherlands, and Magnac (2000) for France instead find little evidence of port-of-entry effects. As for Italy, the evidence is mixed. Gagliarducci (2005) shows that the probability of obtaining an open-ended job grows

with the duration of the current spell of temporary employment but decreases with the number of past temporary spells. However, computational tractability requires that his analysis be confined to only three highly aggregated labour market states. The same aggregation is used by Picchio (2008), who finds evidence of port of entry in a different survey dataset. Ichino et al. (2008) instead focus on one specific type of temporary contracts − agency contracts − and find that this type acts as a port of entry in Tuscany but not in Sicily. By showing that the existence of the port-of-entry hypothesis is intimately linked to the type of temporary contracts being considered, our results intend to add to this strand of the literature.

2. The theoretical framework

A number of reasons emerge in the literature to explain why temporary jobs may act as a port of entry into open-ended employment. Within the same firm, temporary jobs can be used as a screening device. Since ability cannot be perfectly observed, employers often decide to post temporary vacancies in order to screen the workers and to retain with an open-ended contract only the ones who proved to be more productive. To assess the relevance of a screening device argument, the analyst is required to have information relative to the length of the learning process about the firm-worker match quality so as to determine whether a worker's permanence in a given firm with a temporary contract is justified by a "normal" screening process. To the best of our knowledge, no such measure is available in the literature.[i]

Temporary work in one firm may also be a port of entry to open-ended employment in another firm. This is more likely to occur if temporary workers receive general-purpose training in their current job, as this would increase their human capital in comparison to that of unemployed individuals. Even if no training is provided, temporary jobs may allow the worker to build a network of contacts that in turn may increase open-ended employment opportunities.

However, temporary jobs may also become a trap. On one hand, when the mechanisms leading to the port of entry are not activated during a temporary contract, the latter will eventually result in either unemployment or successive spells of temporary work. This may lead to human capital depreciation and a deterioration of the prospects of getting a permanent job in the future, representing one case of the true "scarring effect" of temporary work.

On the other hand, the literature points to individual heterogeneity as a mechanism sorting individuals into different contracts, thereby explaining some or all of the observed state dependence. Worker heterogeneity may be present in the budget constraint; i.e., some individuals searching in the labour market may face liquidity constraints. Despite possibly being high productivity workers, they may rationally choose a temporary job because more protected positions are not immediately available. Therefore, the individuals with more stringent budget constraints (those who need to earn wages as soon as possible) are sorted into fixed-term contracts (Alonso-Borrego et al., 2005; Berton and Garibaldi, 2006). In such cases, persistence in temporary contracts is due to a possibly unobservable (to the econometrician) confounding factor, and it should fade as soon as the constraint relaxes.

Persistence in temporary contracts may also arise as a result of employers' behaviour in the face of heterogeneity in the firm-worker match quality. As pointed out by Güell and Petrongolo (2007), even in the presence of perfectly observable worker types, firms may use temporary contracts simply because they are a cheaper and more flexible factor of production. In this case, firms trade lower labour costs with a higher quit rate and the risk of losing productive employees. Using a partial equilibrium search model, Güell and Petrongolo (2007) show that temporary contracts that are never converted could coexist with both early and late conversions. In particular, both a lower match productivity and less favourable workers' outside options, which make a worker's quit threat less credible, reduce the probability of conversion.

When individual ability is not perfectly observable by new prospective employers, there is also room for statistical discrimination (e.g., Phelps, 1972). At least three mechanisms may induce employers to believe that former temporary workers are less productive: i) on the previous job they received less training and had themselves a lower incentive to invest in human capital; ii) the previous employer hired them on a temporary arrangement just to face a demand upturn, but retention was unprofitable due to their low productivity; and iii) they failed the screening period proving to be of lower ability. Employers are therefore prone to offer them another temporary position. In this case, persistence in temporary jobs is not due to some individual characteristic, but to past temporary jobs themselves, leading to a second case of the true scarring effect.

As Dolado et al. (2002) point out, no theoretical approach available is currently able to contemplate all of these mechanisms at once; moreover, in the real world, they are likely to overlap. A fully structural model is beyond the scope of the present work; we instead estimate a reduced-form model, where we control for the

role of individual heterogeneity as well as possible. Any remaining effects will be interpreted in light of what has been discussed above. From this perspective, the possibility of observing transitions between different types of contracts (i.e., different mixtures of labour cost, EPL, and training) constitutes a crucial source of variation for disentangling the various mechanisms at work.

Furthermore, a high probability to move from a temporary to an open-ended position within the same firm would support the hypothesis of temporary contracts as a screening device, provided that the length of the temporary contract is not exceedingly long. A transition from a temporary contract to an open-ended position held in a different firm could instead be interpreted as evidence for a more general port-of-entry hypothesis; e.g., temporary jobs allow workers to gain general-purpose human capital. Persistence in temporary jobs would be interpreted as a true scarring effect of past temporary work when emerging from transitions across firms; when emerging within the firm, it would support the idea of cost-reduction behaviour by the employers. Our dataset allows to observe transitions within and between firms, so that we can provide some hints on these effects as well. The point will be considered in the final section devoted to discussion and future research.

3. The econometric strategy

We are interested in dynamic models in which a high number of labour market states can be taken into account, and it is possible to disentangle the effect of individual heterogeneity from the effect of past labour market experiences. In this respect, a trade off is faced when choosing the appropriate econometric model. On one hand, continuous-time models (e.g., the event-history analysis used by Bonnal et al., 1997) are in general more careful about the dynamics of the process and less on controlling for unobserved heterogeneity, which is often described as a random effect that multiplicatively enters a proportional hazard. On the other hand, multi-state models in discrete time allow the introduction of unobserved fixed effects, possibly correlated with other individual characteristics, and without the need to resort to distributional assumptions but at the cost of a poorer dynamic specification − usually, a Markov chain. Since our main concerns are related to flexibly controlling for unobserved heterogeneity while maintaining a high disaggregation of the labour market states, we follow the second strategy and use the approach proposed by Magnac (2000).[ii]

The model reads as follows. For each individual $i \in \{1,...,N\}$ the latent propensity level y^*_{ijt} to be in state $j \in \{0,...,K\}$ at time $t \in \{2,...,T\}$ is a function of the lagged state variables and of unobserved heterogeneity ε_{ijt}:

$$y^*_{ijt} = \sum_{k=0}^{K} \delta_{kj} 1[y_{it-1} = k] + \varepsilon_{ijt} \quad (1)$$

where $1[\cdot]$ is an indicator function and δ_{kj} are the parameters of interest. The unobserved components ε_{ijt} are decomposed into an individual and state-specific effect α_{ij} and residuals u_{ijt}. Observed states are the states with maximum propensity

$$y_{it} = j \quad if \quad y^*_{ijt} = Max_l(y^*_{ilt}) \quad (2)$$

If the residual components u_{ijt}, conditional on α_{ij}, are extreme-value distributed and independent across states, individuals and periods, the probability to be in state *j* at time *t* for individual *i*, given that she was in state *k* during the previous period, reads

$$Pr\{y_{it} = j \mid y_{it-1} = k;\ \alpha, \delta\} = \frac{exp\left(\delta_{kj} - \delta_{k0} + \alpha_{ij} - \alpha_{i0}\right)}{1 + \sum_{l \neq 0} exp(\delta_{kl} - \delta_{k0} + \alpha_{il} - \alpha_{i0})} \quad (3)$$

Identification of the state dependence parameters δ_{kj} requires a normalisation constraint, namely to set to zero the parameters related to one of the destination states, here *j*=0. Therefore, $\alpha_{i0} = 0$ and $\delta_{k0} = 0$, for any *k*. The interpretation of the δ_{kj} is easier once the following ratio is considered, independent of the individual and state-specific effect α_{ij}:

$$\frac{\frac{Pr\{y_{it} = j \mid y_{it-1} = k;\ \alpha, \delta\}}{Pr\{y_{it} = 0 \mid y_{it-1} = k;\ \alpha, \delta\}}}{\frac{Pr\{y_{it} = j \mid y_{it-1} = 0;\ \alpha, \delta\}}{Pr\{y_{it} = 0 \mid y_{it-1} = 0;\ \alpha, \delta\}}} = \exp\left(\delta_{kj} - \delta_{0j}\right) \quad (4)$$

The state parameters δ_{kj} are identified once the additional normalisation $\delta_{0j} = 0$, for any *j*, is imposed. The interpretation is as follows: if δ_{kj} is positive, the odds of being in state *j* with respect to state 0 when the lagged state is *k* are larger than when the lagged state is 0.

Choosing "non-work" as the reference state, the estimated δ_{kj} are informative of the nature of state dependence found in the data; i.e., whether a port-of-entry or a trap effect dominates for the different types of contracts considered. If a trap effect holds, the estimated transition parameters are larger when the lagged and the current states are equal than when they differ; i.e., $\delta_{kk} > \delta_{kj}$, for any $j \neq k$. In principle, this type of state dependence does not exclude a port-of-entry effect; i.e., $\delta_{kj=1} > 0$, where *j*=1 denotes open-ended

employment. In this case, the positive state parameter $\delta_{kj=1}$ means that getting an open-ended contract as the destination state is easier if the current state is *k* (e.g., any of the temporary contracts) instead of non-work. Finally, $\delta_{kj=1} > \delta_{hj=1}$ implies that contract *k* provides a better port of entry with respect to contract *h*.

Estimation uses a conditional maximum likelihood method (CML). As shown by Magnac, the individual likelihood contribution is

$$Pr\{y_{i2}, \dots, y_{iT-1} \mid y_{i1}, Y_{i1}, \dots, Y_{iK,} y_{iT}\} = \frac{exp \sum_{k>0} \sum_{j>0} \left(\sum_{t>1} 1[y_{it} = k] \times 1[y_{it-1} = j] \times \delta_{jk}\right)}{\sum_B exp \sum_{k>0} \sum_{j>0} \left(\sum_{t>1} 1[y_{it} = k] \times 1[y_{it-1} = j] \times \delta_{jk}\right)} \quad (5)$$

where $Y_{ik} = \sum_{t=2}^{T-1} 1[y_{it} = k]$ is the number of occurrences of state *k* for individual *i* from time 2 to *T*-1, and $B = \{b = (y_{i2}, \dots, y_{iT-1}) \mid \forall k > 0; \sum_{t=2}^{T-1} 1[y_{it} = k] = Y_{ik}\}$ is the set of all the possible state sequences that are compatible with the number of occurrences of each state. This method compares the work histories that are equivalent in terms of the number of occurrences but that differ for the sequence of the states. The variability between time 2 and *T*-1 is informative about the transitions among states; for this reason, stable histories do not enter the likelihood function, and at least four periods must be observed. As we explain below, our specification includes seven labour market states, and up to seven yearly observations are used in the analysis.

Three considerations are in order before applying this econometric approach to our case. First, the model is estimated conditionally on the first-observed employment status. Heterogeneity in initial endowments of human capital and ability is controlled for with individual fixed effects. Heterogeneity in previous work history is instead virtually eliminated by focusing on a sample of labour market entrants.

Second, the model proposed by Magnac works out the problem of unobserved heterogeneity in a very elegant way without incorporating any distributional assumption. Nonetheless, it's not able to take into account the effect of time-varying covariates. In other words, the state dependence we observe after controlling for fixed effects could be due to some individual characteristics that vary in the time interval we observe.[iii] One obvious candidate is human capital, which is expected to increase more in open-ended and in training contracts. However, no obvious candidates emerge once we control for the contract type and hence indirectly for the possibly different rate of accumulation of human capital.

Finally, persistence within a contract can in fact be due to an ongoing screening process on the match quality instead of being due to a true scarring effect. Since in this case the main issue is the length of the screening period, one way to at least partially control for this is to look at transitions over increasing time intervals; we do this by estimating the model at one- and two-year intervals.

4. The data

To perform our empirical analysis, we use WHIP, a large work histories dataset built up by LABORatorio Revelli from the Italian social security archives. This choice enables us to perform the following:

- To observe many different contracts, whose characteristics are summarized in Table 1 and further discussed in the appendix.
- To select a flow sample of entrants in employment and follow them for the first seven years of their working careers. Specifically, we select native people up to 30 years of age never observed in employment between 1985 and 1997 who start their first paid job during 1998, and we follow them until the end of 2004. We focus on a period in which the legislation on temporary contracts was quite constant, since the last two major reforms − laws 196/97 and 30/03 − were only just and not yet actually implemented, respectively[iv]. In this way, we minimise the potentially confounding effects of unobserved portions of workers' careers − the pre-observation employment state is indeed non-employment for everybody – and of changes in the option set, in terms of work arrangements, available to workers and firms[v];
- For dependent employees, to distinguish between contract transformation within the same firm and proper labour market transitions across different employers.

Notice that WHIP's reference population excludes only civil servants hired on an open-ended contract, high skill professionals (e.g., lawyers) and workers in the black economy, by definition. Hence, we exclude from the analysis those who work with a fixed-term contract in the public sector, as their transition to an open-ended contract in the same public sector would be unobservable. In this setting, absences from the archive can be easily labelled non-work spells, as transitions back and forth to unobserved contracts are extremely unlikely[vi].

As our econometric approach models transitions across states as a Markov chain, we record the entry contract as well as the labour market position of the workers in October for every year from 1998 to 2004. Since identification requires a minimum of four observations for each individual, the series allows the estimation at one- as well as at two-year intervals.

5. Descriptive evidence

We observe 5454 individuals aged 15 to 30 in 1998; about 46% of them are women. Table 2 details the entry contract in 1998: 31% of individuals start with an open-ended contract, 30% as apprentice, and shares between 7% and 13% are covered by the other contracts. Hence, more than 60% of the individuals start their labour market careers in temporary contracts.[vii]

Gender is a proxy for tastes and a relevant dimension of heterogeneity in general. Age at entry is a proxy for the initial endowment of ability and time spent looking for one's first job. As Table 2 shows, differences by gender and age at entry are sizeable. Females are more likely than males to start their working career with a fixed-term or freelance contract. The modal age at entry is between 20 and 24 years. Younger workers (15-19 years old) enter mainly as apprentices. Individuals starting with a fixed-term contract are younger than individuals starting with a training contract, while the other contracts (freelance ones in particular) are more often the entry contracts of more mature individuals. The share of open-ended contracts at entry increases markedly as age increases.

Table 3 shows average transition rates in the raw data. The panels contain transitions at one-, two-, four-, and six-year distances. In general, individuals move to the same contract they had, to an open-ended contract, or to non-work; all other transitions are quite rare. Persistence along the diagonal appears to be substantial.

Self-employees display the largest persistence, with levels fading down slowly at increasing intervals. Persistence is high for open-ended contract workers too, but this falls more rapidly. Open-ended contract workers exhibit a growing transition rate to non-work, confirming that open-ended contracts do not prevent the possibility of losing one's job. Fixed-term workers and freelancers display lower and decreasing levels of persistence that nonetheless does not completely disappear at larger intervals. Both types of contracts suffer

from frequent exits to unemployment but enjoy increasing transition rates to open-ended employment. Training contracts have a legal maximum duration of 24 months and apprenticeships of 60 months; they both experience a growing transition rate to open-ended jobs and a low possibility of exit to other contracts. The degree of persistence in training contracts completely fades away at longer intervals[viii], while it declines less rapidly for apprentices. Persistence in non-work decreases over time, but it remains at 23% after six years.

Focusing on the last panel of the table, we can observe the six-year outcome of these career paths conditional on their status in October 1998, the year in which they entered employment for the first time. As mentioned, one out of four individuals is not working. However, those who had a freelance contract or an open-ended one in 1998 face the highest probabilities of being not working in 2004 (a further indication that Italian open-ended contracts are not so permanent). Almost one out of two is employed with an open-ended contract; those who started with a training contract enjoy the highest probability of working with an open-ended contract in 2004 − even higher than those who started with an open-ended contract. In 2004, 8% are employed with a fixed-term contract; they entered more often with a fixed-term or with a freelance contract, or they were already out of work in October of the entry year. The self-employed face the highest persistence in the contract and the lowest probabilities of moving to anything else but freelance, even to an open-ended contract or non-work. This confirms that self-employment is a separate segment of the labour market, with little leakage to dependent employment. On the other hand, freelancers move to dependent employment much more often than "true" self-employees.

6. Econometric Results

In this section, we present our CML estimates of δ_{kj} at 12- as well as at 24-month intervals. The estimates are arranged in tables that show, for each δ_{kj}, the origin state (k) by rows and the destination state (j) by columns. In other words, within each row, one reads the odds of taking different contracts, keeping the origin state constant; each column in turn displays the odds of taking one specific contract for different lagged conditions. Non-work is taken as the reference state. Therefore, positive (negative) figures mean that the odds of taking contract j with respect to non-work, when the lagged state is k, are larger (smaller) than when the lagged state is non-work. Thus, if $\delta_{k'j} > \delta_{k''j}$ the odds of taking contract j when the lagged state is k' are

larger than when the lagged state is k''. Similarly, if $\delta_{kj'} > \delta_{kj''}$, the odds of taking contract j' when the lagged state is k are larger than the odds of taking contract j''.

First, we compare our CML estimates of δ_{kj}, obtained after the individual fixed effects have been eliminated, with simpler estimates of δ_{kj}, call them d_{kj}, obtained from a multinomial logit approach that only controls for the lagged state; i.e., without controlling for the individual fixed effects. The CML estimates of δ_{kj} are reported in Table 5 for the one-year transitions and in Table 7 for the two-year transitions. The corresponding d_{kj} estimates are reported, respectively, in Tables 4 and 6. This comparison is informative about individual heterogeneity; as long as it plays a role in sorting workers among different contracts, we expect the state dependence coefficients to change after individual effects (α_{kj}) are controlled for. In particular, we expect the coefficients on the main diagonal to decrease, since the same individual characteristics that sort workers into one contract are likely to further retain them there. Our findings support this hypothesis: persistence decreases substantially after fixed effects are controlled for, as it is immediately clear upon comparing the main diagonals in Tables 5 and 7 and in Tables 4 and 6.

Claim 1 Individual heterogeneity explains part of the observed persistence in the same contract. The effect is an overestimation.

Insights about the port-of-entry hypothesis are provided by the estimates reported under the column labelled "open-ended" in Tables 5 and 7. All the estimated $\delta_{kj=1}$ are positive and significant, with the only exception of k = freelance at the two-year interval. Therefore, once individual fixed effects are controlled for, open-ended jobs are more easily accessible from employment than from non-employment. This is true for every contract of origin but freelance work, whose port-of-entry effect fades away before two years. An order among non-standard contracts with respect to the probability of taking an open-ended job emerges, with training contracts at the top, freelance work at the bottom, and fixed-term contracts outperforming apprenticeships. Training contracts display the highest coefficient both at one- and at two-year distance, possibly implying a positive effect of their formal training content – an effect not so evident for apprentices, probably due to their longer maximum duration (5 years). Notice that Magnac (2000) finds the opposite

result: in France, training programmes are not more effective than off-the-job search in finding an open-ended position.[ix]

Claim 2 The port-of-entry hypothesis holds; in particular, training contracts represent the best port of entry to open-ended employment, with freelance work the worst.

This notwithstanding, persistence is still far from fading away. Table 5 shows that, for any given contract, the most likely destination state is the same contract, even after fixed effects have been removed. At one-year distance, contract duration might play a role; training and apprenticeship contracts, whose maximum legal durations are two and five years, respectively, may be an example, but not freelancers or fixed-term contract workers, whose work relationships are shorter than one year on average. However, we expect persistence to decrease when computed at larger intervals. Table 7 shows that the coefficients on the main diagonal actually decrease, but are still the highest row-specific figures. Two aspects are worth comment: i) persistence in open-ended jobs falls dramatically at 24 months, confirming that open-ended contracts do not completely prevent workers from losing their current job, and ii) self-employment is more likely to be a permanent choice of the worker; this induces the high persistence and the low transition coefficients we see in the tables.

Claim 3 Retaining the same contract is always the most likely destination, at one- as well as at two-year intervals, even after individual effects are controlled for.

7. Discussion and Future research

We can identify separately transitions of employees to the same or to a different firm. The fixed effects model cannot be applied here, as the transition matrix is not symmetric (transitions from non work to "same firm" are clearly impossible). Hence, we can analyse this aspect only in a simple descriptive way. Non the less it is worth discussing it, as it provides hints for future research as well as insights into the theoretical implications of these transitions, as discussed in section 2.

Table 8 presents such transitions, at both 12- (upper panel) and 24-month (lower panel) intervals.[x] As expected, the majority of open-ended contract employees is employed in the same firm 12 or 24 months later (mainly with the same contract: 58% and 77% at one-year distance for short- and long-elapsed tenure, respectively), although the share decreases the longer the interval considered (the previous figures become 43% and 61%). Also, fixed-term contract workers show a high persistence within the same firm: 20% of those who have worked for a given firm for at least 24 months are observed again within the same firm after 24 more months under a fixed-term contract (fifth column in the lower panel). This is an example of a "very long" (at least 48 months) screening process. A comparable share is observed within the same firm after 24 more months with an open-ended contract (column three).

Training contracts can last up to 24 months within the same firm; if they are transformed into an open-ended one before expiring, the firm retains the social security rebate until the original end of the training contract. Nonetheless, firms seem to wait for the end of the contract to eventually transform it into an open-ended one. In fact, of those who have spent less than one year as trainees in a firm, more than half are still trainees in the same firm after 12 more months (column seven in the upper panel), while only 13% are still working there with an open-ended contract. After two years, nobody can be still a trainee in the same firm, and 48% of them are converted into an open-ended contract (lower panel, third column, shorter tenure); another 19% has moved to a different firm. Apprentices follow a similar pattern; i.e., the majority of them is still employed as apprentices in the same firm at one-year distance; about 19% of longer tenure apprentices are promoted to an open-ended contract instead; at two-year distance 25% of them is still an apprentice in the same firm, while about 31% have an open-ended contract within the same firm. For them, an open-ended contract with a different firm is a less likely event (10% of long tenure apprentices).

In conclusion, it seems that workers can face quite a long *cursus honorum* within the firm before obtaining an open-ended contract. However, the evidence depicted here mixes up the effects of heterogeneity, of genuine port of entry, and of true scarring. Further research is needed to apply a fixed effect model in this context, a methodology not available in the literature yet.

8. Conclusions

Are temporary jobs a port of entry toward more stable career patterns, or do they engender a trapping risk into precarious employment? Studying the transitions of an Italian sample of labour market entrants over a long time period, and controlling for workers' sorting across the different contracts due to unobserved heterogeneity, we have highlighted several aspects of this issue.

First, fixed-term jobs, apprenticeship, and training programmes act as a port of entry into open-ended employment, providing a significantly higher probability of obtaining such contract with respect to the one faced by non-working individuals, while freelance contracts don't. We have stressed how different combinations of EPL provisions, public subsidies, formal training contents, and legal bindings may provide firms with different incentives to retain workers under temporary contract arrangements as opposed to converting these jobs into open-ended positions. Strong SSC rebates, lack of training requirements, and low legal constraints concerning renewals result in poor port-of-entry performance, as in the case of freelance contracts. Instead, mandatory training and more binding legal constraints on the use, extension, and renewals of training contracts tend to enhance the probability of getting a standard job, as in the case of the training programmes.

Second, this port-of-entry effect coexists with a trap effect, meaning that, even if working is (almost) always better than not working in order to get an open-ended job, the most likely outcome of an employment spell is retaining the same contract. Persistence is therefore substantial too.

A joint interpretation of these two facts becomes easier once a third indication is taken into account. Descriptive evidence hints that both the port-of-entry and the trap effects can be accompanied by an internal *cursus honorum* effect; i.e., a long persistence with temporary contracts within the same firm possibly followed by an advancement to an open-ended contract. We interpret it as evidence of little general-purpose training received by temporary workers and of a cost-reduction strategy followed by the employers, who retain their employees under a flexible arrangement as long as they can and in any case well beyond a reasonable screening period. However, further research on this last point is needed.

9. Appendix: Institutional framework and contracts

Our analysis covers the years 1998 - 2004, i.e. the period immediately after the flexibilization of the Italian labour market was fully implemented. In fact, the period of analysis follows the Law 196/1997 ("Treu" law) that introduced agency contracts, reformed fixed term contracts and apprenticeship, promoted the diffusion of part-time jobs and training contracts and reintroduced probation contracts (*tirocinio*). Another type of flexible jobs, freelance work, had been introduced in the seventies, but strongly promoted only since 1996. The last year in the data is 2004, before another comprehensive reform, the Law 30/2003 ("Biagi" law), was actually implemented. So we focus on a period in which legislation on temporary contracts was quite constant (with the exception of a further liberalization of freelance and fixed-term contracts in 2001).

A brief discussion of the different features of the various contract types is in order.

- Open-ended contracts have no stated duration, no training obligations and no social security rebates. They can be broken through individual or collective layoffs. Individual layoffs in Italy are allowed at no cost for just cause only.[xi] If a judge rules that the dismissal lacked the ground of just cause, larger firms (more than fifteen employees) are forced to re-hire the worker and to pay her a compensation; in smaller firms a severance payment is due.[xii] In larger firms layoffs occur mainly through collective dismissals, whose access is not difficult.
- Fixed-term contracts were introduced in Italy in 1962 but never widely used; collective bargaining allowed their use more and more over the '90s and the 1997 law set an easier access to them for all firms by law; their almost complete liberalisation occurred in 2001. In fact, there is no maximum duration for fixed-term contracts and sequences of fixed term contracts within the same firm are allowed.[xiii] They provide for no training obligations and no social security rebates.
- Agency contracts were introduced in 1997 and became effective in 1998. For this reason the share of agency workers in our sample - the flow of workers who entered the labour market on 1998 - is very small and we aggregate them to fixed-term workers. With agency contracts the provider hires the worker and sends her to the firm; the firm pays the wage to the worker (without reductions) and a search cost to the provider. They can last for a maximum of 24 months but are renewable within the same firm. They provide for no training obligations and no social security rebates.[xiv]
- The training contract was introduced in 1984. It can last a maximum of 24 months and is not renewable within the same firm. Only individuals under 32 years of age can be hired with this contract. It provides to the firm from 25% to almost 100% rebate on the Social Security contributions; to the worker a minimum of formal training.[xv]
- Apprenticeship was introduced in the early Fifties. Apprentices receive a minimum amount of external and on-the-job training and the employer enjoys a full Social Security contributions rebate. Its maximum duration is 5 years and is not renewable within the same firm. Only individuals under 24 years of age can be hired with this contract.

- Free-lancers are formally self-employed but in most cases their income depends on only one contractor and their tasks are equal to those performed by employees; they are often called quasi-subordinate workers or (wage and salary) independent contractors. No training has to be provided by the firm. Social security contributions are lower than those of dependent workers. When the contract was introduced in 1996 it was for non-manual jobs only, but this limitation disappeared in 2001. Freelance contracts can be extended and repeated at will.
- Self-employed workers observed in WHIP include all professional persons without an autonomous social security fund, as well as artisans and traders. Since they are proper self-employees, there's no room for questions about maximum duration, extensions and renewals.

In general, the use of temporary contracts of any kind to substitute workers on strike is forbidden and sequences of temporary contracts face no limits provided the employer is different.

References

Addison JT, Surfield CJ. (2009) Does atypical help the jobless? Evidence from a CAEAS/CPS cohort analysis. Applied Economics, 41, 1077-1087.

Alonso-Borrego C, Fernández-Villaverde C, Gáldon-Sánchez JE. (2005) Evaluating labor market reforms: a general equilibrium approach. NBER WP 11519.

Autor DH, Houseman SN. (2002) Do temporary help jobs improve labor market outcomes? A pilot analysis with welfare clients. Cambridge, Massachusetts Institute of Technology, mimeo.

Bertola G. (1990) Job security, employment, and wages. European Economic Review; 34; 851-886.

Berton F, Garibaldi P. (2006) Workers and firm sorting into temporary jobs. LRR Working Paper; 51.

Berton F, Richiardi M, Sacchi S. (2009) Flexinsecurity. Perchè in Italia la flessibilità diventa precarietà. Il Mulino: Bologna.

Blanchard OJ, Landier A. (2002) The perverse effect of partial labor market reforms: fixed duration contracts in France. Economic Journal; 112; F214-F244.

Bonnal L, Fougere D, Serandon A. (1997) Evaluating the Impact of French Employment Policies on Individual Labor Market Histories. Review of Economic Studies; 64(4); 683-713.

Booth A, Francesconi M, Frank J. (2002) Temporary jobs: stepping stones or dead ends? Economic Journal; 112; F189-F213.

Bover O, Gomez R. (2004) Another look at unemployment duration: Exit to an open-ended vs. a temporary job. Investigaciones Econòmicas; 28(2); 285-314.

Browning M, Carro, JM. (2010) Heterogeneity in dynamic discrete choice models. Econometrics Journal; 13(1); 1-39.

Clark A, Postel-Vinay F. (2009) Job security and job protection. Oxford Economic Papers; 61; 207-239.

Contini B, Cornaglia F, Mapede C, Rettore E 2003. Measuring the impact of the Italian CFL programme on the job opportunities for the youths. In: Castellino O, Fornero E (Eds), Pension policy in an integrating Europe, Edward Elgar Press: ; 2003.

D'Addio AC, Rosholm M. (2005) Exits from temporary jobs in Europe: A competing risk analysis. Labour Economics; 12; 449-468.

De Graaf-Zijl M, Van den Berg G, Heyma M. (2004) Stepping stones for the unemployed: the effect of temporary jobs on the duration until regular work. IZA Discussion Paper 1241.

Dolado JJ, Garcìa-Serrano C, Jimeno JF. (2002) Drawing lessons from the boom of temporary jobs in Spain. The Economic Journal; 112; F270-F295.

Gagliarducci S. (2005) The dynamics of repeated temporary jobs. Labour Economics; 12; 429-448.

Garibaldi P, Pacelli L, Borgarello, A. Employment protection legislation and the size of firms. Il giornale degli Economisti 2004

Güell M, Petrongolo B. (2007) How binding are legal limits? Transitions from temporary to permanent work in Spain. Labour Economics; 14; 153-183.

Hagen T. (2003) Do fixed-term contracts increase the long-term employment opportunities of the unemployed? ZEW Discussion Paper; 03-49.

Honorè BE, Kyriazidou E. (2000) Panel data discrete choice models with lagged dependent variables. Econometrica; 68; 4; 839-874.

Hotchkiss JL. (1999) The effect of transitional employment on search duration: A selectivity approach. Atlantic Economic Journal; 27; 1; 38-52.

Ichino A, Mealli F, Nannicini T. (2008) From temporary help jobs to permanent employment: What can we learn from matching estimators and their sensitivity? Journal of Applied Econometrics; 23(3); 305-327.

Magnac T. (2000) Subsidised training and youth unemployment: distinguishing unobserved heterogeneity from state dependence in labor market histories. The Economic Journal; 110; 466; 805 - 837.

Phelps ES. (1972) The Statistical Theory of Racism and Sexism. American Economic Review; 62; 659-661.

Picchio M. (2008) Temporary jobs and transition to stable jobs in Italy. Labour; 22(1).

Tables

Table 1: Main characteristics of the contracts

Contract	EPL	Formal training	Social Security Contribution
Open-ended	High	No	High
Fixed-term	Low	No	High
Training	Low	Yes	Low
Apprenticeship	Low	Yes	Very low
Freelance	Null	No	Very low
Self-employed	Null	No	Low
Note: see appendix for further details.			

Table 2: Entry contract in 1998. Distribution by gender and age at entry

Entry contract	All	Gender		Age at entry		
		Males	Females	15-19	20-24	25-30
Open-ended	30.9	30.5	31.3	17.7	34.1	39.3
Fixed-term	13.3	11.5	15.5	9.7	16.4	11.8
Training	10.5	11.1	9.9	3.5	10.9	17.6
Apprenticeship	29.7	32.0	27.0	65.0	24.3	1.3
Freelance	6.8	5.2	8.7	2.2	5.8	13.6
Self-employed	8.8	9.7	7.6	1.9	8.6	16.5
Total	100.0	54.5	45.5	28.0	46.2	25.8
Notes: column percentages; total: row percentages.						

Source: our computations on WHIP data

Table 3: Raw transition rates among contracts, at increasing time intervals

Origin	Destination						
One year	Non work	Open-ended	Fixed-term	Training	Apprentice.	Freelance	Self-empl.
Non work	60.7	14.1	7.6	3.3	8.2	2.3	3.8
Open-ended	12.4	80.5	3.2	1.3	1.0	0.5	1.2
Fixed-term	24.6	26.7	37.6	5.3	3.1	1.4	1.3
Training	12.0	40.0	5.1	40.2	1.2	0.5	1.0
Apprentice.	15.2	15.6	2.3	1.6	63.7	0.3	1.3
Freelance	32.0	11.9	7.1	2.6	2.2	37.5	6.8
Self-empl.	5.7	2.7	1.0	0.4	0.3	0.5	89.4
Total	27.2	37.1	6.4	4.3	12.3	1.8	10.9
Two years	Non work	Open-ended	Fixed-term	Training	Apprentice.	Freelance	Self-empl.
Non work	48.4	20.4	8.6	4.1	10.5	2.5	5.5
Open-ended	16.3	72.6	4.5	1.9	1.7	0.7	2.4
Fixed-term	25.3	34.7	25.2	6.0	4.9	1.9	2.2
Training	15.7	69.9	4.7	5.8	1.3	0.5	2.2
Apprentice.	17.4	28.8	3.5	3.0	43.7	0.6	3.1
Freelance	38.6	17.3	6.7	4.4	3.8	19.6	9.6
Self-empl.	8.8	5.2	1.6	0.6	0.4	0.8	82.6
Total	26.3	39.9	6.6	3.2	11.1	1.7	11.3
Four years	Non work	Open-ended	Fixed-term	Training	Apprentice.	Freelance	Self-empl.
Non work	33.9	31.4	9.8	3.0	10.9	2.6	8.5
Open-ended	21.7	62.9	5.7	1.6	2.2	1.2	4.6
Fixed-term	22.7	49.4	15.5	2.9	4.1	1.3	4.2
Training	15.8	74.1	3.9	1.2	0.9	0.8	3.4
Apprentice.	19.1	47.1	4.6	2.4	19.2	1.2	6.5
Freelance	35.4	30.3	6.8	1.4	2.8	10.0	13.3
Self-empl.	14.4	10.0	2.2	0.4	0.7	1.2	71.2
Total	24.4	44.7	7.0	2.1	8.0	1.8	12.0
Six years	Non work	Open-ended	Fixed-term	Training	Apprentice.	Freelance	Self-empl.
Non work	23.2	44.5	10.9	0.9	8.9	2.1	9.5
Open-ended	29.3	52.8	6.6	0.9	1.9	1.4	7.1
Fixed-term	20.9	55.5	10.4	2.3	2.8	1.7	6.5
Training	19.3	69.5	3.5	0.4	0.6	1.2	5.5
Apprentice.	21.6	50.2	6.3	1.3	11.4	0.9	8.3
Freelance	36.0	35.1	8.4	0.5	1.4	5.1	13.6
Self-empl.	16.8	11.5	2.0	0.3	0.5	1.8	67.1
Total	23.7	47.6	7.7	1.0	5.9	1.7	12.5

Note: row percentages

Source: our computations on WHIP data

Table 4: d(kj) estimates without individual fixed effects, one-year interval

Origin	Destination					
	Open-ended	Fixed-term	Training	Apprenticeship	Freelance	Self-employed
Open-ended	**3.111**	**0.420**	**0.394**	**-0.571**	-0.289	0.101
	(0.040)	(0.070)	(0.103)	(0.095)	(0.157)	(0.107)
Fixed-term	**1.041**	**2.332**	**0.988**	**-0.518**	-0.064	**-0.636**
	(0.062)	(0.061)	(0.112)	(0.131)	(0.198)	(0.200)
Training	**2.234**	**0.803**	**4.138**	**-0.659**	-0.353	-0.057
	(0.072)	(0.123)	(0.084)	(0.215)	(0.345)	(0.236)
Apprenticeship	**0.911**	**-0.330**	0.120	**3.127**	**-1.183**	-0.251
	(0.055)	(0.104)	(0.128)	(0.050)	(0.269)	(0.140)
Freelance	0.122	0.102	0.188	**-0.977**	**3.410**	**0.799**
	(0.115)	(0.151)	(0.211)	(0.232)	(0.098)	(0.155)
Self-employed	**0.484**	0.126	-0.018	**-1.089**	**1.751**	**5.401**
	(0.127)	(0.187)	(0.058)	(0.311)	(0.168)	(0.086)

Notes: standard errors in second rows; bold if 95% significant

Source: our computations on WHIP data.

Table 5: δ(kj) estimates controlling for individual fixed effects, one-year interval

Origin	Destination					
	Open-ended	Fixed-term	Training	Apprenticeship	Freelance	Self-employed
Open-ended	**2.576**	**0.563**	0.014	**-0.572**	0.253	0.359
	(0.069)	(0.098)	(0.139)	(0.138)	(0.217)	(0.191)
Fixed-term	**1.229**	**1.786**	**1.018**	0.030	**0.545**	0.103
	(0.097)	(0.105)	(0.170)	(0.186)	(0.260)	(0.312)
Training	**1.620**	**1.218**	**3.839**	-0.133	0.640	0.295
	(0.122)	(0.176)	(0.203)	(0.283)	(0.434)	(0.348)
Apprenticeship	**0.679**	0.099	0.328	**2.284**	-0.729	-0.305
	(0.095)	(0.155)	(0.210)	(0.095)	(0.418)	(0.273)
Freelance	**0.470**	**0.864**	0.709	-0.101	**2.282**	**1.176**
	(0.201)	(0.212)	(0.376)	(0.414)	(0.198)	(0.287)
Self-employed	**0.464**	0.575	0.076	-0.125	**0.908**	**3.725**
	(0.233)	(0.320)	(0.446)	(0.434)	(0.440)	(0.189)

Notes: standard errors in second rows; bold if 95% significant

Source: our computations on WHIP data.

Table 6: d(kj) estimates without individual fixed effects, two-year interval

Origin	Destination					
	Open-ended	Fixed-term	Training	Apprenticeship	Freelance	Self-employed
Open-ended	**2.139**	**0.290**	**0.390**	**-0.703**	**-0.287**	-0.012
	(0.039)	(0.067)	(0.089)	(0.083)	(0.139)	(0.088)
Fixed-term	**0.844**	**1.475**	**0.931**	**-0.285**	0.020	**-0.746**
	(0.060)	(0.069)	(0.104)	(0.105)	(0.179)	(0.170)
Training	**2.150**	**0.413**	**2.675**	**-0.920**	-0.439	0.113
	(0.066)	(0.122)	(0.091)	(0.191)	(0.302)	(0.164)
Apprenticeship	**0.851**	**-0.209**	**0.341**	**2.263**	**-0.907**	-0.061
	(0.049)	(0.087)	(0.101)	(0.050)	(0.204)	(0.101)
Freelance	-0.084	-0.237	**0.338**	**-0.920**	**2.399**	**0.495**
	(0.100)	(0.150)	(0.165)	(0.183)	(0.110)	(0.136)
Self-employed	**0.299**	-0.015	-0.144	**-1.458**	0.451	**4.476**
	(0.107)	(0.167)	(0.244)	(0.287)	(0.238)	(0.082)

Notes: standard errors in second rows; bold if 95% significant

Source: our computations on WHIP data.

Table 7: δ(kj) estimates controlling for individual fixed effects, two-year interval

Origin	Destination					
	Open-ended	Fixed-term	Training	Apprenticeship	Freelance	Self-employed
Open-ended	**1.734**	**0.462**	-0.210	**-0.501**	-0.131	0.690
	(0.137)	(0.182)	(0.243)	(0.222)	(0.412)	(0.387)
Fixed-term	**0.775**	**1.654**	**0.703**	0.636	**1.228**	-0.748
	(0.179)	(0.239)	(0.339)	(0.338)	(0.555)	(0.624)
Training	**1.405**	**0.771**	**2.169**	0.005	-0.496	1.224
	(0.204)	(0.323)	(0.538)	(0.447)	(0.854)	(0.631)
Apprenticeship	**0.364**	0.409	0.563	**1.944**	-0.886	-0.701
	(0.174)	(0.249)	(0.371)	(0.215)	(0.178)	(0.464)
Freelance	-0.075	**0.848**	0.970	0.160	**1.542**	**1.217**
	(0.366)	(0.408)	(0.749)	(0.748)	(0.448)	(0.558)
Self-employed	**1.093**	0.558	0.883	-0.595	-0.218	**3.952**
	(0.462)	(0.639)	(0.883)	(0.999)	(1.205)	(0.524)

Notes: standard errors in second rows; bold if 95% significant

Source: our computations on WHIP data.

Table 8: Raw transition rates at one- and two-year intervals, to the same or to another firm

Origin		Destination								
1 year		Non work	Open-ended		Fixed-term		Training		Apprenticeship	
			Other	Same	Other	Same	Other	Same	Other	Same
Non work		60.7	14.1		7.6		3.3		8.2	
Open-ended	< 12 months	19.3	12.0	58.2	3.9	0.7	1.6	0.7	1.4	0.4
	> 12 months	8.5	9.7	76.7	2.1	0.3	0.6	0.1	0.5	0.1
Fixed-term	< 12 months	26.9	11.8	14.4	13.1	21.5	3.4	2.8	2.7	0.6
	> 12 months	17.6	10.2	18.0	8.6	38.6	1.0	1.2	2.2	0.6
Training	< 12 months	11.6	6.7	13.4	2.9	2.9	5.5	53.1	1.6	0.1
	> 12 months	12.6	10.7	60.8	1.8	2.1	1.8	9.1	0.3	0.1
Apprenticeship	< 12 months	19.0	4.8	2.4	2.4	0.2	1.6	0.1	10.3	58.2
	> 12 months	11.7	4.8	18.6	1.7	0.2	1.3	0.1	5.9	53.5
Total		28.0	11.5	23.3	4.8	1.6	3.0	2.0	6.3	7.1
2 years		Non work	Open-ended		Fixed-term		Training		Apprenticeship	
			Other	Same	Other	Same	Other	Same	Other	Same
Non work		48.4	20.4		8.6		4.1		10.5	
Open-ended	< 24 months	21.8	20.6	43.3	5.6	0.4	2.6		2.2	0.4
	> 24 months	12.5	17.2	61.4	3.0	0.3	1.1		0.9	0.1
Fixed-term	< 24 months	26.1	18.8	15.7	13.0	11.2	4.7		4.7	0.4
	> 24 months	22.5	15.1	20.2	9.1	19.7	3.1		3.1	1.1
Training	< 24 months	17.0	18.5	47.6	4.1	1.3	3.3	(notes)	1.6	0.1
	> 24 months	13.5	20.1	56.0	2.1	1.2	2.6		0.6	0.0
Apprenticeship	< 24 months	20.4	10.4	6.3	3.4	0.2	3.2		15.0	38.1
	> 24 months	14.3	9.8	31.0	3.0	0.4	2.5		8.6	25.7
Total		27.2	17.5	19.6	5.6	0.9	4.0		8.0	4.3

Notes: row percentages. Freelancers and self-employed not included since the firm code is not observed. A training contract cannot last more than 24 months in the same firm; it can be observed as a spell of 25 months for data construction reasons.

Source: our computation on WHIP data.

Notes:

[i] Anecdotal evidence collected through interviews with human resource managers points to relatively short screening periods, of no longer than nine months, depending also on the occupation.

[ii] In our experience, a random-effect multi-state multi-spell approach is also computationally more demanding, especially when the number of states considered is high.

[iii] Honorè and Kyriazidou (2000) propose a solution to this problem. However, the conditions for the identification of the coefficients of time-varying characteristics (i.e., x(t) should be almost constant when the state changes) are too data-demanding to be reasonable in our context.

[iv] See the appendix for details.

[v] By reducing the heterogeneity of the sample, we also make less severe any concern about the implicit homogeneity hypothesis across individuals of the transition parameters δ. Despite the relevance of the topic, the literature has not yet reached complete maturity (Browning and Carro, 2010).

[vi] Unemployment benefit recipients are included in the "non-work" state, as inevitably also are employment spells in the black economy.

[vii] Our analysis does not distinguish between part-time and full-time jobs. Robustness checks showed that the exclusion of part-time jobs is inconsequential on our results.

[viii] We observe a minimal number of training contracts lasting 25 months, possibly driving up the estimation of persistence at two-year intervals; this is mainly for data construction reasons: starting and ending a 24-month contract during the same calendar month two years later is recorded as a 25-month spell in administrative data.

[ix] The objection that employers are forced by law to retain at least 50% of the trainees is not relevant, since retention rate is well above 50% (see Table 3).

[x] For an alternative reading of Table 8, one can interpret the rows as the labour market state in period t and the columns as the labour market state in period t+n, where n is one year in the upper panel and two years in the lower one. From this perspective, subrows (i.e., elapsed tenure) are informative about the labour market state in period t-n. In addition, one should also keep in mind that the data firm coding for freelancers is different from firm coding for employees, so we cannot observe whether freelancers become employees in the same or in a different firm; eventually, this distinction is not meaningful for the self-employed.

[xi] Misconduct, but also firm restructuring or lack of demand.

[xii] See Garibaldi et al. (2004) for details.

[xiii] A limitation at 36 months at renewal (including previous fixed-term contracts with the same firm) has been introduced in 2007 and enforced from 2008.

[xiv] For details on this contract see Ichino et al. (2008). The share of agency workers on total employed workforce is however still quite small, about 1%, and has remained stable throughout the period.

[xv] The rebate differs according to regional unemployment rate, and has been decreased over time. See Contini et al. (2003) for details.