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Have labour market reforms at the turn of the millennium changed job durations of the new entrants?

A comparative study for Germany and Italy

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Abstract

According to the aims of the labour market reforms of the 90s implemented in many European countries, workers may stay at their first job for a shorter time, but should be able to switch jobs easily. This would generate a trade-off between job opportunities and job stability. This paper addresses this issue using administrative longitudinal data for Germany and Italy, two countries which have undergone changes in regulations that can be summarised under the header of "deregulation".The estimated piecewise constant job and employment duration models show that changes in the durations of the first job and employment - measured as the sum of multiple consecutive jobs - are observed in periods of labour market reforms. However, the existence of a trade-off is not confirmed by the results. In Germany, men have experienced an increase in employment stability over time, mated with somewhat longer job durations, while women have not benefitted from an increase in employment durations as a compensation for the marked decrease in their first job durations. In Italy, employment stability of the new entrants of both sexes has not improved after the reforms. The reduction in the duration of the first job has not been counterbalanced by an increase in the opportunity to find rapidly another job. These results suggest that the objective of increasing job opportunities by means of labour market deregulation has not been fully achieved.

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Keywords: employment duration, work career, tenure, precarious jobs, labour market reforms, mixed proportional hazard

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1 Introduction

"È la flessibilità la vera arma contro la precarietà."[1]

This paper deals with the issue of flexibility that has recently dominated the scene of labour market changes, namely, the growing tendency of labour to lose its permanent features. The general framework concerns the trade-off between job stability and employment opportunities for the new entrants into the labour market and this paper aims at contributing to the theme of the choice of labour market regulations for reconciling stability with flexibility. The first question addressed is if labour market reforms aimed at easing entry into the labour market and reducing unemployment have actually led to a decrease in job stability of the new entrants. Then, from the job concept, the focus is turned to the employment concept, namely, to what happens to the new entrants' careers after the first job has elapsed. The problem is whether employment, defined as a series of job spells only interrupted by short periods of search, has increased or decreased in stability during - and after - the years of labour market reforms. Is it true that more job opportunities have been created, especially for a vulnerable group like the new entrants, thus favouring the stability of employment at the expense of the duration of single jobs?

The objective of the analysis is to ascertain whether the reforms can be related to changes in young people's job stability in terms of the duration of their employment and to compare the outcomes of the strategies towards flexibility of two European countries, Germany and Italy which, during the 90s and the early 2000's, have undergone changes in regulations which can be summarised under the header of "deregulation". A common feature of the reforms adopted in Germany and in Italy is that they took place mainly through a series of legislative changes that only affected newly entered workers - the marginal increase of the employment stock - leaving the legislation concerning insider workers and the terms and conditions of their open-end contracts largely unchanged.
In both countries, the major goals of the reforms were to stimulate new hires and to ease mobility between jobs. In Germany, however, the reforms consisted in modifications to an already existing legislation for non-standard working contracts and for dismissal protection. In Italy, the reform process appears to be concentrated in a handful of laws that were mainly focussed on easing the use of flexible working contracts, nearly forbidden by the preceding legislation. For the period under

[1] "Flexibility is the real weapon against precariousness." Antonio D'Amato, president of Confindustria, Italy's main employers' association, in his address to the annual assembly of Confindustria in 2003, referring to Biagi's law (see Section 3).

study, an interesting feature of the German reforms is a partial (and temporary) reversal towards more regulation after the parliamentary elections in 1998.

The method of analysis is based on the study of durations of first jobs and employment in the new entrants' careers. The research strategy consists of two steps: i) testing the hypothesis of a tendency towards shorter first job durations of the new entrants during the period of labour market reforms and ii) addressing the issue of the scope of the reforms, namely, the creation of more employment opportunities to reduce the risk of unemployment. The analysis is therefore extended from the duration of the first job to the duration of the first employment, considering as first employment spell an uninterrupted - or shortly interrupted - period of employment in different job spells, also with different employers. The idea is to test, for example, if a short first job is rapidly followed by another job and if this type of job mobility has become more common in the period analysed. Such an observation would indicate an increase in job opportunities over the period under study. As to the econometric technique, mixed proportional hazards models with constant time pieces and unobserved heterogeneity are employed for the analysis of job and employment durations.

The data used for both countries are drawn from the archives of the national social security contributions for dependent employment, IABS for Germany and WHIP for Italy, respectively. These are longitudinal data that allow reconstructing the workers' careers from their first entry into the labour market. The data show a high degree of comparability and have the further advantage of a large number of observations after the sample selection.

This paper aims at contributing to the existing literature in several ways. First, it presents a comparative micro-analysis of job and employment stability in Germany and Italy for cohorts of new entrants during the 90s up to the early 2000s who are followed thereafter for three years. To the authors' knowledge, this is the first comparative study on job and employment durations conducted on two sets of administrative micro data. Second, it proposes a method to measure the job opportunities versus stability trade-off using the concepts of job and employment durations. Third, while trying to find a relation between job/employment stability and the reforms, it also compares different reform strategies adopted in two different labour market regimes. Fourth, it addresses the issue of stability for the whole group of entrants into the labour market, whereas the focus of existing studies on this subject has been mainly on atypical employment.

The analysis leaves room for further research on at least two grounds which have not been dealt with. First, the question whether sequences of shorter job spells, even if leading to longer total

durations in employment, might have detrimental consequences for the accumulation of human capital. Second, the question of how unemployment incidence and unemployment duration of new entrants have changed during the period under study.

The paper is structured as follows. Section 2 reviews the literature on the evaluation of labour market reforms in general and, in particular, for Germany and Italy. Section 3 gives an account of the institutional background of labour market reforms in Germany and Italy. Section 4 describes the data sources. Section 5 presents the model and the results of the empirical analysis. Section 6 concludes.

2 The literature

Recently, economists have analysed the important changes occurred since the 90s in the European labour markets focusing on the effects of the institutional reforms on the level and structure of employment, the performance of firms and the workers' well being. The available literature, both macro and micro, is rich, but, given the complexity of the issues at stake, the results are far from giving uncontroversial answers, as the following short survey of the literature shows.

As to the use of duration to measure job stability, Booth et al. (1999), using work-history data over the period 1915-1990 from the British Household Panel Survey, find that separation hazards were higher for more recent cohorts, implying a secular increase in job instability, particularly marked in the lowest occupational classification. Duration of the first job is also used as an indicator of potential precariousness. Cockx and Picchio (2009), for example, find for Belgium that (fe)male school-leavers accepting a short-lived job are, within two years, 13.4 (9.5) percentage points more likely to find a long-lasting job than in the counterfactual in which they reject short-lived jobs.
Scherer's (2005), in the only study close to the research question of this paper, uses survey data to compare job durations of school leavers in Italy (1983-1997), Great Britain and West Germany (1993-1998). Differentiating between first and first stable job, Scherer finds that labour market entry may be characterized as rapid but unstable in Great Britain, rapid and relatively stable in Germany and very protracted and - given an entry - rather stable in Italy. She concludes that attempts for deregulation alone will not be sufficient to ease labour market entry.

As noted in the introduction, the literature concentrates on labour market outcomes of workers with atypical working contracts or of workers affected by changes in dismissal protection. In Germany, there is micro evidence for several legislative changes concerning the flexibility of working

contracts. Boockmann and Hagen (2008), for example, estimate the effect of initial episodes under fixed term contracts on job duration in the further course of the employment spell, using data from the German Socio-Economic Panel (SOEP) from 1985 to 2002. They find that job exit rates are initially much higher if the employment spell began with a fixed term contract. However, exit rates fall below those of comparable spells spent entirely in permanent employment after a few years time. They interpret this result in the sense that fixed terms contracts accelerate the sorting process of probationary periods. Another focus of labour market deregulation has been the introduction of temporary agency work. Based on the IABS and estimating duration models including time-varying covariates for periods in which labour market reforms took place, Antoni and Jahn (2009) conclude, that the extension of the maximum length of loan periods did increase employment durations in temporary work agencies. The study of Kvasnicka (2008) also relies on the IABS. Using the evaluation approach by Sianesi (2004), Kvasnicka constructs matched samples stratified by duration of unemployment before taking up work in a temporary agency. His results imply that temporary agency work does not serve as a stepping stone to regular work (the chances to get a regular job do not change over time). For Italy, Gagliarducci (2005) analyses the effects of a temporary first job applying a duration model with competing risks and multiple transitions. He finds that the length of the first temporary contract positively influences the probability of getting a permanent job. The study of Ichino, Mealli and Nannicini (2008) on the effects of temporary agency work finds diverging results within Italy (a sensitivity analysis confirms positive effects in Tuscany, but rejects significance for Sicily). Berton, Devicienti and Pacelli (2007) look at labour market transitions of young entrants in Italy. They find that heterogeneity partially explains workers' sorting between types of contract. Different kinds of temporary contracts are found to have different effects on the probability of getting a permanent job: temporary jobs represent a port of entry towards permanent employment mainly within, but not across firms.

Both in Italy and in Germany, the effect of dismissal protection has been studied by exploiting the fact that small firms beneath a certain threshold of employees are exempted from the dismissal law. In Germany, this threshold has been increased in 1996 to the level of ten employees and then set back to five employees under the new government in 1999 (see next section). While a study of Bauer et al. (2007) does not find clear effects of these reforms on the dismissal and hiring behaviour of firms, Boockmann et al. (2008) analyse individual employment durations in combination with establishment information for firms with six to ten employees (for whom the threshold has been changed) within a differences-in-differences approach and find a positive influence of dismissal protection on employment stability. Boeri and Jimeno (2005) look at the effects of the threshold value exempting small firms from strict dismissal protection in Italy. They find that dismissal

probabilities are indeed higher for workers in firms with less restrictive employment protection. Looking at the size distribution of firms over time, they cannot identify an impact of the 1990 reform tightening employment protection by making severance pay mandatory for small firms.

3 Institutional background

According to the OECD indexes (OECD 1999), both Germany and Italy, together with many other European countries, have undergone a significant process of relaxation of employment protection legislation (EPL) between the second half of the 80's and the late 90's. In these two countries, as in most of Europe, this process has mainly regarded temporary employment, since EPL in permanent employment remained nearly unchanged in this period[2] (see OECD 1999, Table 2.2, p. 57). Both in Germany and in Italy, the reforms have introduced a "two-tier system" (Boeri and Garibaldi 2007), as the increase in labour market flexibility took place mainly through legislative changes that only affected newly entered workers.

The process of deregulation in Germany has started earlier than in Italy. As a result, Germany shows a higher level of flexibility than Italy already from the start, the positive gap persisting until the end of the period (see OECD 1999, Table 2.3, p. 63).

Tables 1 and 2 give an overview of the reforms in the two countries. The focus is on employment protection legislation, which includes reforms of dismissal protection laws, reforms of temporary work (both fixed term and agency) and reforms regarding the payment of social contributions. For Germany, two periods may be defined. The first period begins in 1985 and ends in 1998, together with the sixteen years' government of Helmut Kohl, the "Kohl era". In this period, several modifications in the conditions of fixed-term contracts (1985, 1996) and of temporary agency work (1985, 1994 and 1997) were undertaken. As already noted in the previous section, the scope of the dismissal protection law was limited to firms with more than 10 (previously: 5) employees in 1996. In the second period, starting with the parliamentary elections in 1998 and the formation of the red-green coalition under chancellor Gerhard Schröder, the first reform in 1999 reform takes back the 1996 changes in the dismissal protection law. The second reform in 2001, besides of establishing new rules for non-discrimination of part-time work, restricted the use of fixed-term contracts without objective reason. While this represents "more" employment protection, new as well as older workers are excluded. Furthermore, the list of objective reasons for fixed-term contracts was extended. Thus, entrants after vocational training or university can be hired in fixed-term

[2] With the exception of Spain where the overall strictness of protection against dismissals in permanent employment shows a significant drop.

employment without the need of any further objective reason. Because of the tendency to take back earlier reforms of the Kohl era, the second period is termed "reregulation" as opposed to the preceding period of "deregulation".

Even if beyond the observation window defined for this paper, there should be a remark on the "Hartz" reforms. These reforms, provoked by the "placement affair" (Vermittlungsskandal)[3] in the Federal Employment Services and implemented from 2002 to 2005, comprised a number of changes in active labour market policies, programmes as well as fundamental institutional changes. Thus, the present analysis should not be taken as an evaluation of these latter reforms.

As to Italy, since the mid 90s, the Italian labour market has undergone important reforms towards flexibility. The reforms have substantially liberalised temporary agency work – introduced for the first time in Italy, several years after Germany and France - fixed term contracts and regulated the use of independent collaborators to perform ordinary tasks. Table 2 summarises the changes in employment protection legislation for Italy.

Fixed term contracts were nearly absent in Italy since 1962 (Law n. 230), which stated that permanent contracts should be the norm while fixed term contracts could be applied only in a number of objective reasons listed in the law. Examples of these objective reasons were temporary replacement of workers in maternity or sickness leaves and some types of seasonal occupations, mostly in agriculture. Fixed term contracts started to be liberalized in 1987, when Law n. 56 allowed the possibility that both the objective reasons for their application and the percentage of new hires with fixed term contracts could be bargained with the most representative unions in collective labour agreements[4].

In 1995, Law n. 335 extended compulsory payment by employers of social contribution to external independent collaborators[5]. This reduced the cost advantage of hiring an external (independent) collaborator instead of an employee with a fixed term contract. Anyway, the cost gap remained in favour of external collaborators – severance payments, holiday, sickness and other allowances not

[3] The numbers of successful placements in the official statistics of the Federal Employment Services had proved to be exaggerated.

[4] For example the bargained percentage was 10 per cent in the collective contract for metal workers signed in 1998.

[5] This is a form of employment which had been introduced for the first time in 1973 with Law n. 533. It is an employment relation which is halfway between dependent and independent employment. It is similar to dependent employment because the worker performs tasks for the same firm for a continuous period – a "continuous" collaboration - this being often his/her only source of labour income. However, the worker remains self-employed, being his/her collaboration with the firm only "coordinated" and not managed by the employer. For these reasons these workers are termed "coordinated and continuous collaborators" (co. co. co.).

being due. However, the law was progressively reformed[6] to avoid the abuse of these contracts for performing ordinary tasks, in such a way that the firm would incur the risk of sanctions (conversion to an open end contract, for example) after a legal action on the part of the "co. co.co." worker.

The Treu measures in 1997 (Law 197/1997), named after then-Labour Minister Tiziano Treu, were the first legislative measures explicitly aimed at increasing the employment rate, particularly in the South, and overall labor market flexibility. The Treu law introduced temporary agency contracts and provided incentives for part-time. The law states that the application of these contracts should be bargained by the most representative unions in sectoral collective agreement. The renewal of the contracts, which practically enforced the temporary agency work, took place in 1998.

A complete liberalization of fixed term contracts occurred in 2001 with the Law decree n. 368. The decree, which carried out the Council Directive 1999/70/EC of 28 June 1999 concerning the framework agreement on fixed-term work, , introduces a general clause according to which a fixed term contract can be applied for "technical, productive, organisational and substitution reasons".

The Biagi Law in 2003[7], has started the second phase of the flexibilisation process, introducing other tools for easing the hiring process for firms (work on call, staff leasing, new probation contracts). Note that the data set used ends in 2003: the effects of this reform go beyond the observation window and thus are not included in the analysis.

Compared to Germany, in Italy the number of laws directly affecting labour flexibility is much more limited, amounting to just one in the period under study.

Table 1. Labour market regulations concerning employment protection, Germany 1985-2001.

DEREGULATION			
Year	Month	Reform	Type of Measure
1985	5	Beschäftigungsförderungsgesetz	▪ Permission of fixed-term contracts without objective reason for new hires with a maximum duration of 18 months (24 months for new firms) ▪ Extension of the maximum loan period in temporary work agencies from 3 to 6 months)
1990	1	Beschäftigungsförderungsgesetz 1990	▪ Prolongation of regulations for fixed-term contracts and temporary agency work

[6] For example with decree with the force of law 10th September 1991 n. 303.
[7] Named after Marco Biagi, an Italian labour law and industrial relations expert murdered by terrorists in 2002.

1994	1	Erstes Gesetz zur Umsetzung des Spar-, Konsolidierungs- und Wachstumsprogramms (1. SKWPG) from December 1993	▪ Extension of the maximum loan period in temporary work agencies from 6 to 9 months) ▪ Permission of synchronization of fixed-term contract in temporary work agency and first assignment for hard-to-place unemployed
1994	8	Beschäftigungsförderungsgesetz 1994	▪ Prolongation of regulations for fixed-term contracts and temporary agency work
1996	10	Arbeitsrechtliches Beschäftigungsförderungsgesetz 1996	▪ Maximum duration of fixed-term contracts extended to 24 months ▪ Permission of chain contracts in fixed-term employment: up to three prolongations within maximum duration possible ▪ Permission of fixed-term contracts without objective reasons for workers of age 60 and more ▪ Fixed-term contracts after a vocational training in the same firm facilitated (elimination of requirement for employer to argue with lack of permanent job for the trainee) ▪ Change in employee threshold defining the scope of the dismissal protection law (from more than 5 to more than 10 employees) ▪ Restriction of criteria for "social choice" in case of layoffs
1997	4	Arbeitsförderungsreformgesetz AFRG (Reform of the old Labour Placement Act AFG; Modification of the law regulating temporary agency work; Arbeitnehmerüberlassungsgesetz AÜG)	▪ Extension of the maximum loan period in temporary work agencies from 9 to 12 months) ▪ Permission of one-time fixed-term contract in temporary work agencies; prolongation allowed if the new contract follows without interruption ▪ Permission of one-time synchronization of fixed-term contract in temporary work agency and first assignment
REREGULATION			
1999	1	Gesetz zu Korrekturen in der Sozialversicherung und zur Sicherung der Arbeitnehmerrechte (Korrekturgesetz)	▪ Withdrawal of 1996 change in employee threshold defining the scope of the dismissal protection law ▪ Withdrawal of 1996 change in criteria for "social choice" in the case of dismissals because of economic reasons
2001	1	Gesetz über Teilzeitarbeit und befristete Arbeitsverträge (part-time and fixed-term employment act; replaces the former Beschäftigungsförderungsgesetz)	▪ Non-discrimination of part-timers (harmonization with EU law) ▪ Part-time work may be requested by employees - employer has to find counterarguments ▪ Non-discrimination of fixed-term employees ▪ Permission of fixed-term employment without objective reasons for new employees ▪ Extension of the list of objective reasons for fixed-term contracts ▪ Prolongation of fixed-term contracts (at most three prolongations up to a total contract length of two years) possible only for new employees ▪ Permission of fixed-term contracts without objective reasons for persons of age 58 and more

Table 2. Labour market regulations concerning employment protection, Italy 1985-2001.

Year	Month	Reform	Type of Measure
1987	2	Norme sull'organizzazione del mercato del lavoro, legge n. 56	▪ Introduction of new objective reasons for the application of fixed term contracts ▪ Fixation in sectoral collective agreements of a maximum percentage of new hires with fixed term contracts
1995	8	Riforma del sistema pensionistico obbligatorio e complementare, legge n. 335	▪ Extension of compulsory social security to coordinated and continuous collaborators, "co. co. co", and freelance workers. Payment by employers of 2/3 of social contributions. Contribution initially set to 10% of the pay (progressively increased afterwards, up to 26.7% in 2010, while for dependent employment they are set to 32.7%)
1997	6	Norme in materia di promozione dell'occupazione, legge n. 196, Treu law	▪ Introduction of temporary agency work. Enforcement in 1998 after the renewal of sectoral collective agreements ▪ Incentives to part-time work and working hours reduction ▪ Regulation of chain contracts in fixed-term employment. Conversion to permanent if a new fixed term contract is signed before the 20th or the 30th day from the end of the previous one for contracts shorter or longer than six months respectively
2001	9	Attuazione della direttiva 1999/70/CE relativa all'accordo quadro sul lavoro a tempo determinato, decreto legge n.368, 2001.	▪ Abrogation of law 230/1962 and liberalisation of fixed term contracts (applicable for "technical, productive, organisational and substitution reasons").

4 Data sources

The study makes use of two large administrative data sets based on the records of employers' declarations of employees for payment of social security contributions. These records cover all persons with a working episode subject to social security contributions at least once in their career. For Italy, this condition excludes employment in the public sector and some categories of self-employees (lawyers or notaries) – who have an autonomous security fund. From 1996 on, also freelance workers without any other security fund and coordinated and continuous collaborators (co.co.co – see section 3) have been included. For Germany, this excludes civil servants employed as "Beamte"[8], self-employed and persons in "mini-jobs"[9] before 1999, as their employment is exempt from obligatory social security contributions. In addition, working episodes in East Germany taking place before reunification are not recorded.

[8] Other public sector employees are included. The status of Beamte is a special feature of public services in Germany. Beamte are traditionally seen as representatives of the state, they are usually life-time employed - without unemployment insurance - and have pensions payed out of the public budget.

[9] The term "mini-jobs" is used for jobs with a regular working time below a certain threshold of hours per week, jobs with earnings below a certain monthly wage and jobs lasting only a short period. After 1999, these jobs have been made subject to (some) social security payments and now are included in the administrative data.

The use of these data offers a number of advantages. First, the two data sets are highly comparable with respect to the nature and the structure of the information contained. Second, administrative data guarantee a precise recording of the timing of work episodes as compared to work histories based on recall data. Third, they offer a high number of observations, good for conducting finer analyses. Among the disadvantages, the most relevant one is that they contain a limited number of individual characteristics, in particular with respect to family background and household composition.

For Germany, the data are drawn from the individual administrative data collected at the Institute for Employment Research (IAB), Nürnberg. The IAB Employment Samples (IABS) represent a 2 per cent sample of persons employed from 1975 to 2004 and contain information on the employment history of employees liable to social security on a daily basis.[10]

For Italy, the data are drawn from the WHIP (Work History Italian Panel) which is a sample collection extracted from the Italian National Institute of Social Security (INPS)[11]. The WHIP represents a sample of about 1 per cent (sampling ratio 1:90) of all the people (Italian and foreign) who have worked in Italy even only for a part of their working career from 1985 to 2003. For each of these people all episodes of their working careers are observed if they are enrolled in private, self-employment or atypical contracts, but also if they are in retirement spells or non-working spells in which they receive social benefits (i.e. unemployment or "mobility" benefits, namely benefits ruled by Law 1991 n.223 for dismissed employees).

5 The empirical strategy

To start with, the hypotheses to be tested are set out. Then the econometric model and the sampling strategy adopted are described. Thereafter, some descriptive evidence of the duration of the first job spell in different periods and by gender is presented. This will give an impression of the data for both countries and allow for a first assessment of whether there have been changes in the duration of the first job over time. Finally, the results of the job/employment duration analysis are presented.

5.1 The hypotheses to test

[10] The IABS also contains data on unemployment benefit receipt drawn from the Federal Employment Agency, which is however not exploited in this paper.

[11] The data is managed by LABORatorio Revelli thanks to an agreement between the INPS and the University of Torino.

As it has been discussed, in Germany as well as in Italy, several reforms enforced during the 90s have to be considered as influential for the labour market opportunities of the new entrants.
Both countries had been suffering for several years of persistently high unemployment and one major goal of the reforms was to reduce it. Administrative data, recording the first entry into employment without any information on individuals' previous history (e.g. periods spent out of the labour force or in unemployment), does not allow to investigate the issue whether reforms have increased entry into the labour market. The focus is therefore on another relevant aspect, that is, the stability of employment after entry, through the estimation of models of job and employment duration of workers entering the labour market for the first time. The first three years of employment of workers who entered the labour market in the years 1994 to 2001 are followed for Germany, and 1990 to 2000 for Italy, where the choice of these periods is dictated by the time pattern of reforms described in the previous section.[12]

The first hypothesis to test is whether jobs for the new entrants into the labour market have become less stable in periods of labour market reforms that have liberalized the duration of contracts. By "less stable" it is meant here "of shorter duration" compared to the duration of jobs of people who entered the labour market at the beginning of the 90s.

The loss in stability of the first job would have been compensated, in the intentions of policy makers, by the gain in the opportunities to find a new job enhanced by the liberalization of the duration of labour contracts. Thus, another question is whether workers, after the reforms, were able to switch jobs more easily than before the reforms. To test this hypothesis, each worker's durations of multiple consecutive jobs are summed up into an overall employment duration, which becomes the dependent variable of the second estimated model. In case a worker experiences a spell of unemployment after the first job, his/her first employment duration will coincide with his/her first job duration. Thus, the reforms may be claimed to have been successful if the duration of employment has increased after the reforms, even if the first job has a shorter duration. These are all testable predictions, and the main objective of this piece of analysis is to investigate the direction of changes in employment durations as compared to the direction of changes in job durations.

5.2 The econometric model

[12] For Germany, the first years of the 90s are excluded because considered a transition period after reunification.

To analyse how labour market reforms have affected the durations of the first job and of the first spell of employment (formed by multiple consecutive jobs) a mixed proportional hazard rate model (see e. g. Lancaster 1990) is estimated. For the estimation of the hazard function the variable (t) that measures either the duration of the first job or of the first employment spell is defined. A flow-sampling scheme is adopted, according to which each individual is selected upon entry into the first job/employment, at which point its individual clock is set to zero, and followed over a fixed time interval. Hence, left censoring is eliminated by construction, but right censoring exists and is taken into account.

First job/employment durations for the N individuals are modelled with a specification which allows for period-specific differences in the risk of job exit, namely, a piecewise constant mixed proportional hazard rate model. The single-spell model where each spell corresponds to an individual *i* is the following:

$$\lambda_{ij}(t \mid x_i\beta) = \lambda_0(t)\exp(x_i\beta) \qquad i=1,\ldots,N;\ j=1,\ldots,J \qquad (1)$$

which is a multiplicative model of the hazard, where the first term is:

$$\lambda_0(t) = \lambda_j \text{ with } \tau_{j-1} < t < \tau_j \qquad (2)$$

that is, $\lambda_0(t)$ is the baseline hazard that depends on duration *t*, where the λ_j are *J* constant time pieces to be estimated. In this case the baseline hazard $\lambda_0(t)$ is constant with *J* different values. The *jth* interval starts at duration τ_{j-1} and ends at duration τ_j. The τ_j are the points where there are discrete changes in the baseline hazard. In the *jth* interval the baseline hazard is constant and equal to λ_j. The second term depends on x_i, a set of individual, firm and macroeconomic time invariant explanatory variables which are specific of the individual at the moment of entry in the labour market (e.g. the age of individual *i* at entry, the size of the firm where individual *i* is employed, the growth rate of the valued added in the region of residence and year of entry of each individual *i* and so on).

The administrative register starts recording individual and firm characteristics at the time of entry. No information is available on earlier pre-employment periods or on previous employment experiences different from dependent employment in the private sector. This might raise the problem of self-selection, since the characteristics of potential workers who do not enter the labour market are not observed. However, as shown by Ridder (1984, p. 62) under the hypothesis that the

probability to flow into employment is separable into observable and unobservable characteristics, there need not be problems of initial conditions.

Duration analysis produces incorrect results, both on the estimated duration dependence and on the estimated effects of the covariates, if unobserved heterogeneity is ignored. For instance, Lancaster and Nickell (1980) show that unobserved heterogeneity in a proportional-hazards model gives rise to spurious negative-state dependence, that is, even if the baseline hazard is constant, negative duration dependence is observed. To control for the effect of selection due to unobservable factors in the survival process, an individual-specific heterogeneity term ν_i, which represents the cumulative effect of one or more omitted variables, is introduced multiplicatively in the hazard function. Lancaster (1979) has proposed for the first time the use of a gamma distribution in a study of duration of unemployment and this result has been recently generalised by Abbring and Van den Berg (2007). Following this approach the model then becomes:

$$\lambda_{ij}(t \mid x_i\beta, \nu_i) = \lambda_0(t)\exp(x_i\beta)\nu_i \qquad (3)$$

where ν_i has a gamma distribution with unit mean and variance θ. The survival function is then obtained by integrating out the unobservable ν_i and θ, the variance of ν_i, can be estimated.

The effect of reforms is captured by dummy variables included in x_i for the year of entry into the first job (employment). The coefficients for these dummy variables indicate changes in the dependent variable for different cohorts of entrants over time and hence should reflect whether the reforms had an influence on job and employment durations. The method is very similar to the strategy adopted in Antoni and Jahn (2009) who introduce dummy variables indicating the time of enforcement of a legislative change. While the strategy of Antoni and Jahn (2009) is informative if the effects of a reform do not show up before its enforcement, the approach chosen here allows to observe both anticipatory and delayed effects. Reforms are usually preceded by intense political debates so that their effects might well be anticipated by workers and employers. In this case, jumps in the coefficients also before the enforcement of a new law might be observed. A potential outcome of the anticipatory effects of a relaxation of employment protection legislation might be, for example, that because these reforms usually affect the new entrants, an increase in the duration of first jobs before the reforms is observed. This is because employers would become very choosy in hiring, and employees would refrain from quitting their jobs, if the expectation is to hire or be hired with shorter term contracts after the reform. By the same line of reasoning, there might well

be delayed effects, especially of reforms that are small and incremental and, in such cases, jumps in the coefficients may be observed after the year of enforcement of a new law.
Another complication occurs if there are multiple reforms in a short period of time, like in Germany. It should be underlined that the strategy chosen does not allow to disentangle the effects of each one, and attribute the value of their coefficients to single, specific laws.
An obvious objection to the outlined approach is that the time dummies could also capture the effects of the economic cycle. To deal with this problem, in addition to individual and firm related characteristics included in the *x* vector, local economic aggregate variables, such as the local yearly change in value added and the local unemployment rate, are introduced. The hypothesis to test is if the changes in labour market regulation that aimed at liberalising the duration of labour contracts have generated time patterns in the coefficients of the dummy variables which may be attributed to single reforms or periods of reforms.

The second part of the empirical analysis deals with the question of what happens to the new entrants when the first job ends within the observation window. The subsequent jobs, their number, their duration and the duration of search time is analysed. If the duration of search time is short (less than a fixed amount of months), and thus can be considered as frictional, the sum of the durations of all jobs is taken as a single employment spell. Then the duration of employment is analysed, again using a piecewise constant proportional hazard model specification.

5.3 Sample selection and description of first job duration

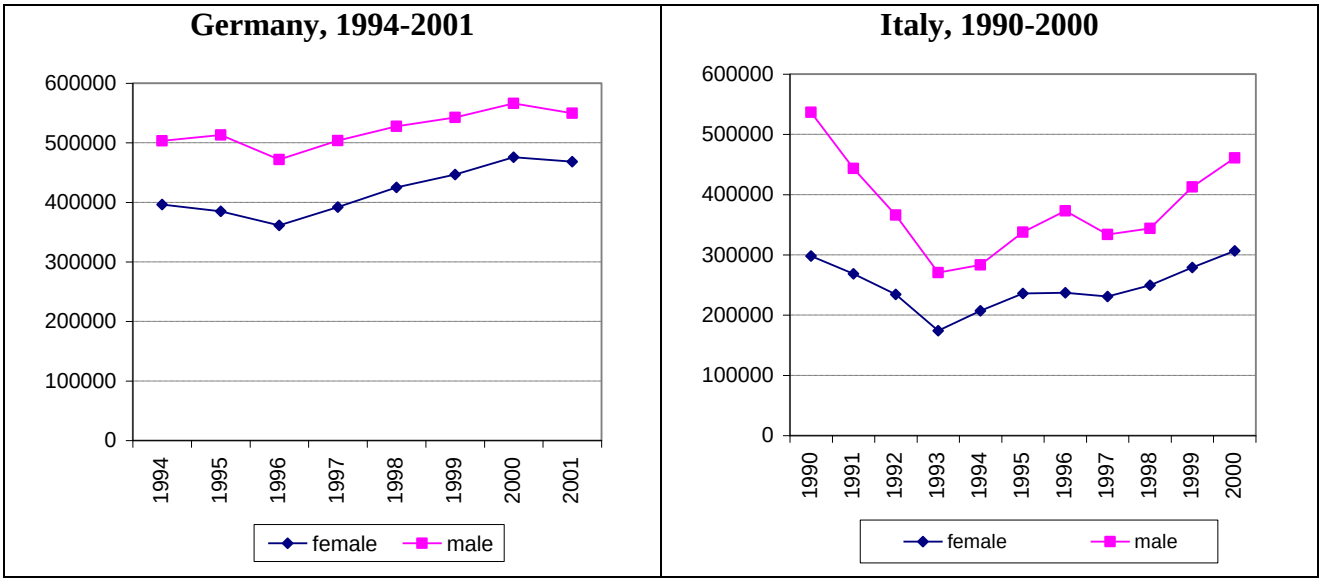
The sample selection is motivated by the idea of looking at changes in job and employment durations for the whole group of labour market entrants. Some selections are necessary because the information in the data is not sufficient to model durations in these cases. The focus is on entry into dependent employment. For Germany, "mini-jobs" and for Italy, co.co.co and freelance workers are not included in the analysis. In Germany, information on these jobs is missing before 1999, in Italy, the timing of payments of social security contributions for these jobs does not necessarily coincide with the timing of employment which makes it impossible to observe the exact employment durations.
“Entrants” are defined as those employees who are recorded for the first time in the archive at year *t*, never observed from date of start of the IAB and WHIP samples (1975 and 1985 respectively) up to *t*. Moreover, in order to minimize the possibility that those observed are not first spells, the sample is further restricted to people aged between 15 and 39. For Germany, the skill level is measured by the level of education in combination with information on vocational training. The

sample is restricted to persons having already reached their highest level of education. This should exclude periods of employment in which some individuals may be moving back and forth between the educational system and the labour market. Also, persons in an apprenticeship or vocational training are excluded since in Germany, these are very different from workers in regular jobs[13].

For Italy, the WHIP data set contains information on the workers' skill level, while the level of education is not collected. Thus it is not possible to control for the occurrence of transitions back and forth between education and work. However, people who enter the labour market before completing their educational careers are more likely to experience spells of independent employment (for example with co.co.co. contracts) which are excluded from this analysis. Differently from Germany apprentices and workers with training contracts called "formazione and lavoro" are included since they are very similar to the other workers (of the same age) except for the level of social security contributions paid by the firm[14].

Graph 1 shows the number of the "new entrants" in the labour market as dependent workers each year.

Graph 1. Number of new entrants into dependent employment by sex.



Note. IABS and WHIP results are weighted by inverse sampling ratios.

[13] The duration of such training periods is usually between two and four years and is determined by special regulations for each occupation. The vocational trainees do not receive a wage, but instead are paid an allowance which is much lower than the normal wage. After vocational training, a further employment of a trainee - even if in the same firm - requires a new working contract.

[14] 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.

The training contract "formazione e lavoro" 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.

In Germany, extrapolating IABS values to the population, about 940,000 new entrants are observed on average each year, with a strong seasonal pattern (Graph A.1 in the appendix) and more entries since 1996. The majority of entries still occurs after vocational training (Graph A.2) and the number of male entrants is higher than the number of female entrants, with a constant differential in entry over time. The average age at entry is constant around 24 years.

For Italy, again extrapolated to the total population, on average about 650,000 new entrants are observed each year, with a strong seasonal pattern (see Graph A.3). For immigrant workers, there are two peaks contemporaneous to two important regularization laws (Graph A.3). After a drop in the early 90s, due to a strong recession that brought the unemployment rate of young people (15-24 years) from 25% of 1991 to 29% of 1994, the number of entrants shows a moderate increase. More men than women enter the labour market, the difference remains fairly stable over time (except for some pro-cyclical increases). The average age at entry is slightly increasing over time from a low of 22.5 in 1994 to a high around 24.7 in 2002.

Turning to the definition of the duration of the first job, a spell is defined as continuous when it is an uninterrupted period of employment always with the same employer.[15] A spell might be either completed or censored if it ends during the last year of the observation window.[16]
A non-parametric analysis of the duration of the first job spell shows that its length has decreased for several groups over the period under consideration. Graph 2 and Graph 3 show the differences in the first job survivor functions of people who entered the labour market in the first and the last year of the respective observation window for Germany and Italy.

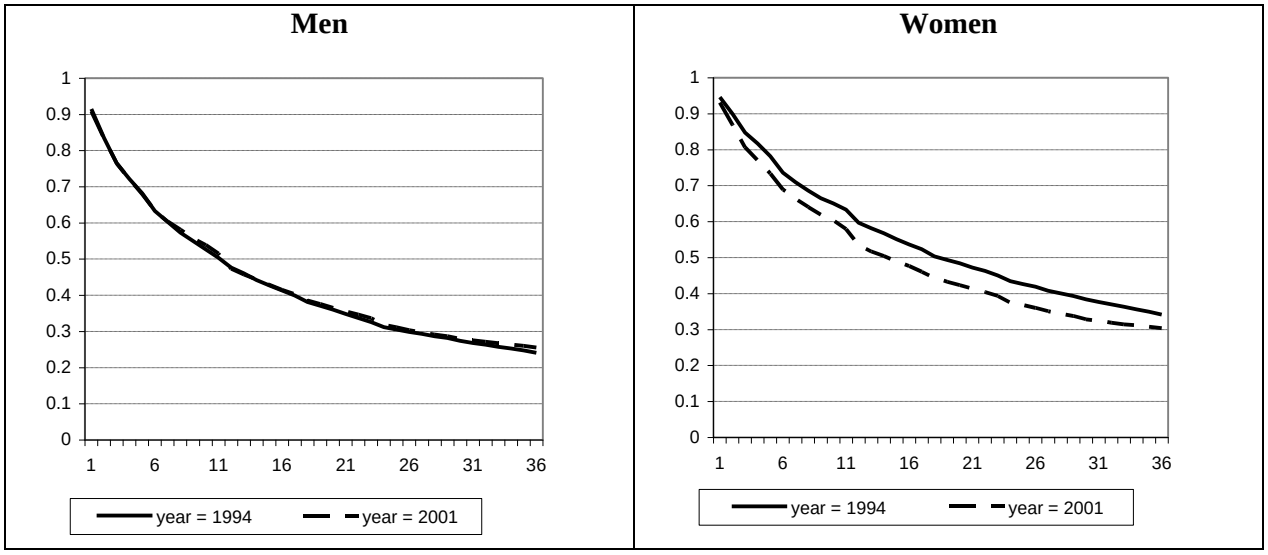
The tendency towards a downward shift in the survivor function is especially pronounced in Italy, where it affects both males and females. In Germany there is no clear downward trend for men, while there is a significant decrease in the average survival probability for women. Interestingly, the graphs highlight that women have higher survival rates than men in both countries. Furthermore, both in Italy and Germany the tendency towards a reduction in the first job spell seems to have affected in particular female employment. A supply-side explanation for these patterns might be a lower degree of job mobility for women because of family responsibilities. On the demand-side, occupational segregation and the concentration of women in certain industries making intense use of the "new", atypical work forms, might lead to a greater loss in job stability for women in the period under study.

[15] Within a job with the same employer, a spell that shows interruptions up to 6 months has been considered as continuous to account for the occurrence of missing data, a maternity leave, a sickness period and the like.
[16] Durations are measured in days for Germany, and in months for Italy. The descriptive results are presented in months for both countries.

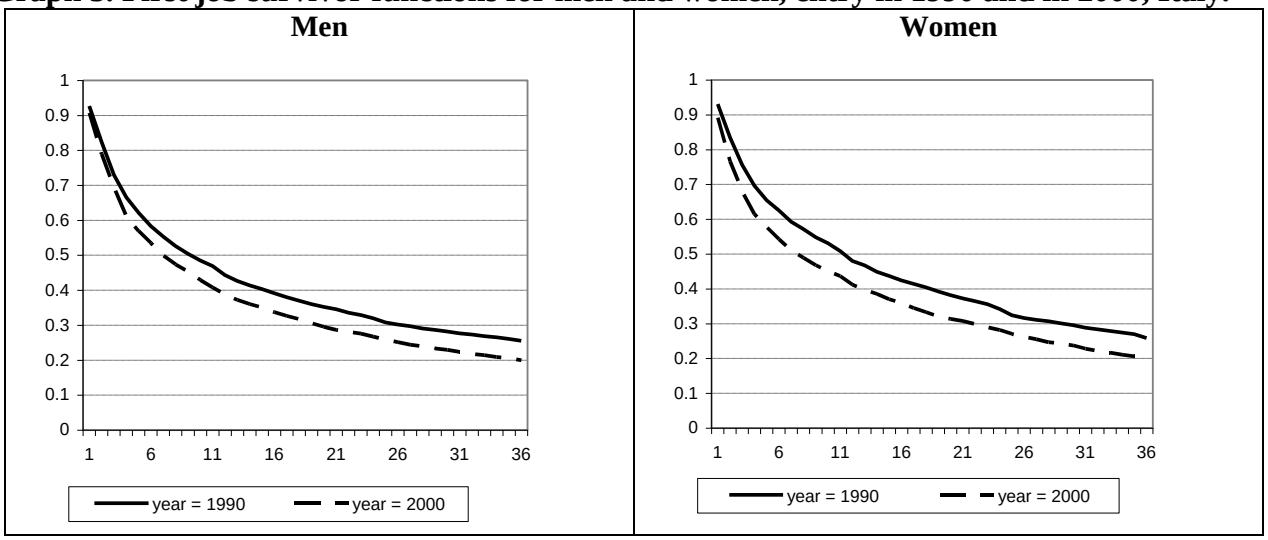
In Germany, both in 1994 and in 2001, roughly 50 per cent of all first jobs for men ended within the first 12 months. For women, in 1994, a much lower share of 40 per cent of first jobs ended in the first year, whereas in 2001, the respective share was 47 per cent. At the end of the 3-years window, about 25 per cent (men, with a slight increase from 1994 to 2001) and 30 per cent or more (women, the survival rate falling from 34 per cent in 1994 to 30 per cent in 2001) of all first jobs were still going on.

In Italy, in 1990, 44 per cent and 48 per cent of jobs ended within the first 12 months for men and women respectively, while 26 per cent of all first jobs were still going on for both at the end of the 3-years window. In 2000 the share of jobs that ended within the first year has reduced to 39 and 42 respectively for men and women. At the end of the 3-years window, only 20 per cent of jobs for men and women were still going on.

Graph 2. First job survivor functions for men and women, entry in 1994 and in 2001, Germany.



Graph 3. First job survivor functions for men and women, entry in 1990 and in 2000, Italy.



5.4 The estimated model of job duration

Turning to the parametric analysis, the same piecewise constant duration model for both countries is estimated. The main focus is on the coefficients of the dummy variables indicating the year of entry into the first job. These coefficients should reflect whether there have been changes in job durations in periods of changes in labour market regulations. The time pieces, instead, should catch the effects of duration dependence. They show to which extent the risk of leaving the first job is changing during the course of the spell. For the dependent variable, job tenure, negative duration dependence is expected, which implies a decreasing risk of losing the first job.

The estimated coefficients are presented in the form of hazard ratios. Values greater than one indicate a higher hazard ratio associated with that specific covariate, namely, the covariate has a reducing effect on the duration of the spell; while values lower than one indicate a lower hazard ratio, namely, the covariate has the opposite effect of increasing the duration of the spell.

Table 3. First job duration: hazard ratios of the "year dummies". Germany and Italy, males and females, models with and without unobserved heterogeneity.

GERMANY	Males				Females			
	model without unobs. het.		model with unobs. het.		model without unobs. het.		model with unobs. het.	
Year of entry	Hazard ratio	z	Hazard ratio	z	Hazard ratio	z	Hazard ratio	z
1995	0.953	-2.37	0.919	-3.20	1.012	0.48	1.014	0.50
1996	0.970	-1.48	0.938	-2.35	1.010	0.49	1.003	0.12
1997	1.020	1.06	1.014	0.53	1.107	4.46	1.125	4.40
1998	0.976	-1.26	0.948	-2.10	1.116	4.85	1.134	4.85
1999	0.950	-2.45	0.907	-3.52	1.112	4.92	1.130	4.91
2000	0.980	-0.98	0.947	-1.97	1.166	8.03	1.196	7.87
2001	0.972	-1.44	0.945	-2.22	1.118	5.30	1.148	5.34
ln(θ)			-0.41	-7.19			-0.79	-8.24
No. of individuals	68604				54991			
ITALY	Males				Females			
	model without unobs. het.		model with unobs. het.		model without unobs. het.		model with unobs. het.	
Year of entry	Hazard ratio	z	Hazard ratio	z	Hazard ratio	z	Hazard ratio	z
1991	1.027	1.19	1.025	1.13	0.992	-0.26	0.992	-0.28
1992	1.027	1.11	1.024	0.99	0.950	-1.59	0.947	-1.69
1993	1.014	0.48	1.011	0.39	1.006	0.16	1.002	0.07
1994	0.999	-0.04	0.995	-0.2	0.963	-1.12	0.958	-1.27
1995	1.112	4.14	1.103	3.84	1.080	2.36	1.071	2.12
1996	1.146	5.38	1.137	5.07	1.112	3.19	1.102	2.92
1997	1.150	5.16	1.137	4.73	1.121	3.27	1.110	3.01
1998	1.053	1.92	1.039	1.43	1.064	1.82	1.051	1.46
1999	1.091	3.33	1.074	2.74	1.083	2.3	1.070	1.97
2000	1.035	1.46	1.023	0.96	1.093	2.92	1.084	2.65
ln(θ)			-18.79	-0.06			-37.64	-0.06
No. of individuals	45552				29785			

Notes. The reference years are 1994 for Germany and 1990 for Italy. The coefficients are estimated with maximum likelihood using the Newton-Raphson method. The specification includes variables at different levels of aggregation (individual and local variables), standard errors are therefore adjusted for intra-group correlation.

Table 3 reports the relative risk of exiting from a job spell for workers entering in the labour market in each year of the observed period, where the reference years of entry are 1994 for Germany and 1990 for Italy [17].

[17] For Germany, separate estimations for West and East Germany have been performed. For space reasons and in order to not overload the presentation, only the results for West Germany are presented. Also, biographies for persons in East Germany are more likely to be incomplete because of the lack of employment information before reunification (see section 4).

The non-parametric evidence of the survival curves is confirmed by the hazard ratios of the year dummies. Controlling for all variables, including those capturing the local macro economic performance, in both countries an increase in the probability of ending the first job is observed for females. For males, the decline is observed only in Italy. The inclusion of the unobserved heterogeneity term in the estimated model does not lead to dramatic changes in the coefficients, its variance θ being statistically significant only for Germany.

For Germany, the hazard ratios of the model with unobserved heterogeneity are slightly smaller for men and larger for women, thus meaning that the changes in duration are even reinforced with this specification as compared to the specification without unobserved heterogeneity. In accordance with the descriptive analysis (Graph 2), for German men there is no clear trend towards shorter job durations. Instead, over the years a slight increase in job durations is observed, where only the 1999 one could be explained in terms of the "reregulation period". For German women in contrast, there is a clear and significant tendency towards shorter first job durations from 1997 onwards, lasting until the end of our observation window in 2001. In terms of the timing of reforms, this can be interpreted as an effect of the "deregulation period" which is not reversed afterwards. The divergence in these patterns for German men and women might be due to sectoral segregation by gender, with women working more often in industries making intense use of flexible work arrangements.

In Italy, the process of reduction in the first job duration occurs likewise for males and females. It starts in 1995 and it is visible until 2000, the last year of entry in our observation window, before the complete deregulation of fixed term contracts which occurred one year after. Notably, the first marked increase in the hazard ratio is in 1995, two years before the Treu law[18]. In that year, a major legislative change took place, which raised the social contributions to be paid by firms to external self-employed collaborators and reduced the cost gap with respect to dependent employees (see Section 3). Then, a possible interpretation of this result, is that employers began finding cheaper hiring dependent workers instead of external collaborators in jobs that required short time contracts. The subsequent enforcement of temporary agency work in 1998, made it convenient to switch, for these jobs, that new type of contract, and this might explain why a break in the decline of job durations is observed in this period - the decreasing effect being captured, from then on, by the

[18] Contini and Grand (2009), using the same data set, find similar evidence on this point.

variable "temporary agency contract"[19]. The reduction in durations is larger for females than for males in the years 1995 to 1997, pointing to a stronger responsiveness to the deregulation process by the weaker segment of the labour force.

Comparing both countries, for males, the changes in the hazard ratios for the "year dummies" are opposite in sign, and only in Italy there is a relation to the timing of the reforms. For females, the hazard ratios point to decreasing job durations in both countries and the time pattern is corresponding to the enforcement of laws making the use of short term contracts easier and more convenient. In Germany, the reduction in first job durations for females is even more marked and lasting than in Italy.

A number of individual, firm and local-macro characteristics are also controlled for (see table A.5 in the appendix for the list of variables, and Table A.8 and A.9 for the descriptive statistics for Germany and Italy respectively).

Although very similar, the specifications for the two countries show some noteworthy differences. For Germany, the level of education is used to control for the skill level. For Italy, education is missing in the data, while the skill level is available (three dummies, blue collars, apprentices and workers with training contracts called "formazione and lavoro", being the white collars the benchmark). As to the contract type, part-time is available in both data sets; for Italy also the contract with a temporary agency is available. Of course, for this type of contracts a substantially higher hazard rate of ending the first job is expected.
The effects of the cycle are proxied for both countries by the unemployment rate and by the rate of growth of value added, at a regional level for Italy and at a district level for Germany.

The results concerning the control variables are worth commenting. The coefficients of the time pieces are large and negative in both countries, indicating that the risk of leaving the first job decreases for longer durations. Also for many of the other control variables the two countries show similar results (see Table A.6 and A.7 in the Appendix[20]): significant and strong effects of seasonal dummies, significant and strong effects of firm size, with longer job durations in larger firms for both men and women; significant effects of industry, significantly shorter durations for foreign workers with the exception of foreign males in Italy, significantly longer durations for higher entry ages, strong and significant effects of training and education with a positive relationship between skill level and first job duration. Moreover both countries display different patterns across geographical areas, with job durations regularly being shorter in regions with high unemployment. Thus, the hazard ratios are higher in southern as confronted to northern Italian provinces and also

[19] Temporary agency work is in fact controlled for. Temporary agency work contracts as opposed to permanent ones have much higher hazard ratios, as expected.
[20] Wages are not included among the regressors because of endogeneity. The specification is a reduced form, and therefore all the variables determining wages available in the data set are included.

higher in German regions and federal states situated in the middle or the north of West Germany. Probably due to differences in the structure and functioning of the two labour markets, some variables produce diverging estimates for Germany and Italy. German part-timers show shorter durations while Italian part-timers have higher durations than full-timers[21]. Also, the macroeconomic controls have different effects in the two countries. They are measured on the relatively small district level, with 327 regional units in West Germany and 480 sectoral units by region in Italy. The effect of demand (approximated by the change in value added) is positive but significant only in Italy, while - conditional on the differences between northern and southern regions commented above - the local unemployment rate shows opposite signs in Italy and Germany. For Italy there is a positive association between the unemployment rate and job duration which could be explained by the "insider" theory - the higher the unemployment rate, the higher the power of the insiders and the lower the probability to leave their jobs. In Germany, the same association is found to be negative but slightly significant.

In conclusion, the comparative analysis yields evidence of a tendency to shorter durations in the first job in both countries. In West Germany, however, this phenomenon affects only women, whereas in Italy it affects all entrants.

As to the relation of these changes with legal reforms, for Italy it is rather plausible to attribute the decrease in first job stability of dependent employees to labour market reforms even if the observed changes start with a certain degree of anticipation with respect to what is generally believed to be the most relevant step towards flexibility - as if the Treu law were legitimating a process that had already begun. Also in Germany, where legislative changes have occurred more gradually than in Italy and have partly followed a zigzag course, the sensible decrease in job stability observed for female workers seems to go along with the intensification of norms easing the application of short term contracts.

5.5 Job mobility

The next step is to study what happens after the first job, concentrating on the subsequent employment experiences of the new entrants. A first insight into this issue is given by the number of jobs held by each individual in the first three years after entry. Graph 5 reports the distribution of the new entrants by number of jobs held in the first three years. In both countries, the share of workers with only one job spell within three years decreases, while the share of those with three or more spells increases. This process is particularly marked in Italy. In addition, in both countries a

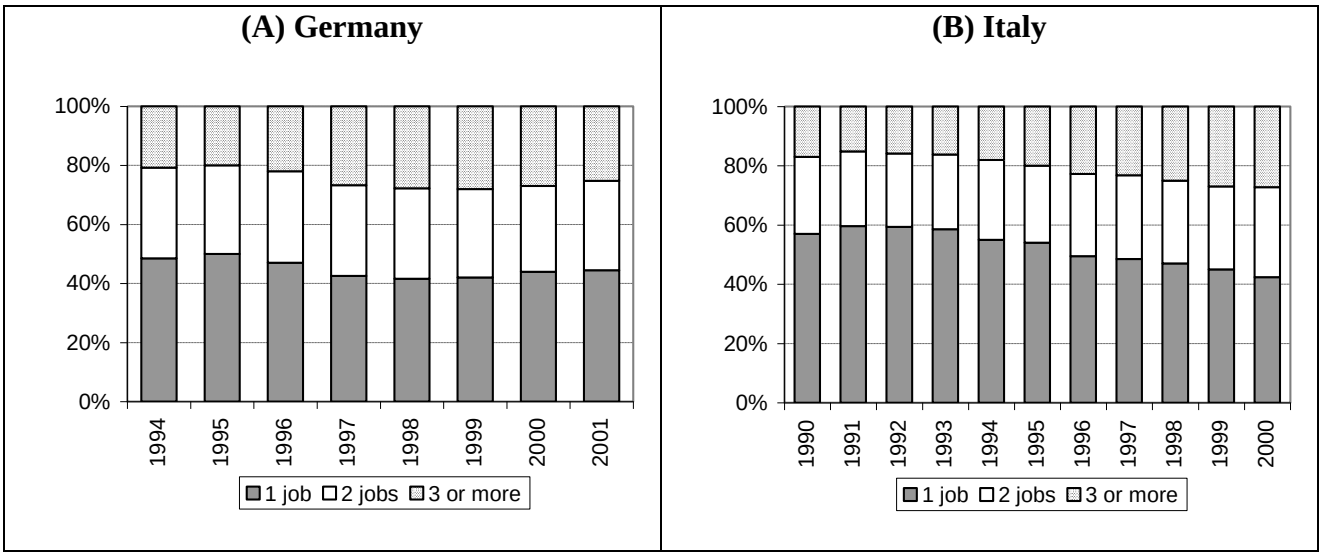
[21] In Italy part time jobs, although well protected, are scarcely available.

sort of polarization occurs, since the share of people with three jobs or more increases faster than the share of people with two jobs.

In Germany (Graph 4A)**,** the share of persons with only one job spell goes down from 49 per cent for the 1994 entrants to 42 per cent for the 1999 entrants. It increases thereafter up to 45 per cent for the 2001 entrants.

In Italy (Graph 4B), the number of people with only one job drops from 57 per cent in 1990, to 42 per cent in 2000.

Graph 4. Distribution of the new entrants by number of jobs held in the first three years after entry by year of entry – Germany and Italy.



The comparison with Germany shows that at the beginning of the period (1994 for this comparison) the share of Italians who held only one job was much higher than the corresponding share of Germans, while at the end of the period the situation becomes more similar. The general impression is that at the beginning of the period, job mobility was higher in Germany and that, after the reforms, job mobility in the two countries tended to converge.

5.6 The estimated model of employment duration

If labour market entrants tend to change jobs more often and maybe more easily than before, does that imply that the chance to be in employment has increased? In order to measure the total duration spent in employment, the length of the first employment spell is defined as a continuous period of

employment composed by one or more job spells (with the same or different employers), with a maximum interruption of three months between them.[22]

If the duration of the first employment spell does not decrease after the introduction of less strict employment protection rules, this could mean that the probability to stay in employment - even if in shorter job episodes - has not decreased after the reforms. Such an observation would in fact represent a piece of evidence for the existence of a trade-off between job stability and employment opportunities. As already mentioned, the detrimental effects of multiple (short) job spells on the accumulation of human capital and on the probability to end up in a stable job are left aside (see, on this issue, D'Addio and Rosholm (2005), on the risk of being trapped into precarious career paths in Europe). The hypothesis of a change in first employment durations in the period under study is therefore tested.

An inspection of the number of jobs forming the first employment spell[23] reveals that in Germany, the degree of mobility between jobs after entry seems quite large, since around 40 per cent of the employment spells are composed of more than one job, of which half of more than two jobs. In the period 1994-1999, there is a slight tendency towards an increase of job mobility: the share of workers holding more jobs within one employment spell increases and the share of those with only one job spell reaches the minimum values of 58 per cent. This trend is inverted in the following years, leading to 66 per cent of the 2001 cohort having a first employment spell coinciding with the first job spell.

In Italy, the share of one-job spells is much higher than in Germany, around 75 per cent on average, and remains fairly stable over the whole period. This confirms the previous evidence of a lower degree of job mobility in Italy, and suggests the possibility that the results of the estimated duration model will not change dramatically for this country when switching from the first job spell to the first employment spell model.

[22] A sensitivity analysis shows that setting the length of the interruption to one month the results do not change significantly.

[23] Note that one-job employment spells and the last job of multiple-jobs employment spells might be censored or might end in unemployment.

Table 4. First employment duration: hazard ratios of the "year dummies". Germany and Italy, males and females, models with and without unobserved heterogeneity.

GERMANY	Males				Females			
	model without unobs. het.		model with unobs. het.		model without unobs. het.		model with unobs. het.	
Year of entry	Hazard ratio	z	Hazard ratio	z	Hazard ratio	z	Hazard ratio	z
1995	0.999	-0.05	0.980	-0.75	1.040	1.52	1.049	1.52
1996	0.982	-0.80	0.961	-1.36	1.030	1.09	1.037	1.11
1997	0.970	-1.23	0.967	-1.06	1.063	2.21	1.098	2.83
1998	0.861	-7.12	0.826	-6.88	0.986	-0.53	0.994	-0.19
1999	0.796	-10.91	0.735	-10.92	0.961	-1.58	0.946	-1.83
2000	0.884	-5.44	0.823	-6.65	1.047	1.69	1.049	1.45
2001	0.910	-4.25	0.876	-4.65	1.065	2.39	1.087	2.61
ln(θ)			-0.09	-1.55			-0.18	-3.14
No. of individuals	68559				54920			
ITALY	Males				Females			
	model without unobs. het.		model with unobs. het.		model without unobs. het.		model with unobs. het.	
Year of entry	Hazard ratio	z	Hazard ratio	z	Hazard ratio	z	Hazard ratio	z
1991	1.060	2.44	1.064	2.54	1.011	0.33	1.010	0.30
1992	1.096	3.53	1.101	3.66	1.014	0.41	1.015	0.43
1993	1.038	1.24	1.033	1.05	1.045	1.13	1.049	1.20
1994	0.986	-0.47	0.976	-0.82	0.946	-1.50	0.943	-1.57
1995	1.103	3.55	1.101	3.42	1.069	1.90	1.068	1.84
1996	1.165	5.55	1.158	5.27	1.084	2.22	1.088	2.31
1997	1.090	2.90	1.092	2.95	1.085	2.14	1.086	2.14
1998	0.986	-0.48	0.980	-0.69	0.989	-0.29	0.990	-0.27
1999	0.978	-0.77	0.976	-0.84	0.972	-0.75	0.982	-0.46
2000	0.928	-2.89	0.925	-2.95	0.970	-0.92	0.968	-0.95
ln(θ)			-19.27	-0.04			-18.10	-0.05
No. of individuals	45552				29785			

Notes. The reference years are 1994 for Germany and 1990 for Italy. The coefficients are estimated with maximum likelihood using the Newton-Raphson method. The specification includes variables at different levels of aggregation (individual and local variables), standard errors are therefore adjusted for intra-group correlation.

Similarly to Table 3, Table 4 reports the hazard ratios of the year dummies for Germany and Italy. In this case the explanatory variables x_i included in the model, refers to individual, firm and macroeconomic conditions at the time of entry in employment.

The two models, with and without unobserved heterogeneity, do not yield, overall, extremely different results (the unobserved heterogeneity term is here significant only for German females, for German males, in contrast to the job duration model, the variance of the assumed distribution of the unobserved heterogeneity term is not significant).

In Germany, the results reinforce the evidence emerging from the job spell model for males, who experience a significant increase in the duration of first employment from 1998 onwards, with a peak in 1999 (the risk of ending the first employment period is 20 percentage points higher compared to 1994 in the model neglecting unobserved heterogeneity). Females do not experience clear changes in first employment duration over time, with only two significant and positive coefficients in 1997 and 2001. The hazard ratios are increasing in size after 1999 and because their values are greater than one it might be concluded that women in Germany have not compensated their decrease in job durations with higher employment stability.

In Italy, the decrease in duration is confirmed also for the employment spells, exactly in the years of the reforms, after which there is a tendency to recover the length of the beginning of the period. The phenomenon is more marked for males as compared to females.

In conclusion, the results for German males indicate an increase in employment duration during the period of labour market reforms, suggesting that the opportunity to switch rapidly from one job to the other has even increased. For females, instead, the opportunity to stay in employment does not seem to have increased, even if the first job duration has decreased. So, under this respect, the reforms might be thought to be not completely successful. The results for Italy, instead, are more linked to the timing of the reforms but, at the same time, even less encouraging. The reduction in the first job duration has not been counterbalanced by an increase in the opportunity to find rapidly another (or more than one) and possibly more stable job. This is true for both sexes, for all years, also during periods of important labour market reforms.

6 Conclusions

During the late 90s, both Germany and Italy experienced changes in labour market legislation aimed at achieving more employment flexibility. These reforms mainly affected newly entered workers, while leaving the terms and conditions of working contracts for insiders largely unchanged.

This empirical analysis has documented the trends in job and employment durations of entrants into dependent employment in Germany and Italy during the period of these reforms. The job duration estimates have yielded evidence of decreasing first job durations for German women and for both men and women in Italy, whereas German men have experienced a limited increase in job durations.

The existence of a trade-off between job stability and job opportunities has been investigated by looking at periods of continuous employment rather than at single job spells. Only German men - for whom job durations did not show a downward trend - were found to have an increase in employment durations over time, while German women's employment durations seem to have remained pretty stable. The rather smooth reforms in Germany seem to have benefitted only male entrants, as their opportunities to experience longer first employment periods have, to some extent, increased. Instead, employment stability of German women has not improved along the course of the reforms.

The picture for Italy is more mixed. The reduction of the duration of the first job observed in the mid 90s - even before what is generally believed to be the most important reform, the Treu law, that took place in 1997 - has not been counterbalanced by an increase in the opportunity to find rapidly another job, since the duration of employment has decreased. After 1997, while job duration has continued to decrease, employment duration has just recovered the levels of the early 90s.

In conclusion, the empirical results for Italy imply that the employment stability of the new entrants has not improved after the reforms. With the exception of German males, the evidence for both countries is of an effect that goes in the direction of decreased job durations in periods of labour market reforms that increase flexibility. This effect is not compensated by an increase in the opportunity to rapidly find another job. This is particularly true for the weaker segments of the labour force, like women, and where reforms are isolated, like in the case of Italy. The existence of a trade-off between job stability and job opportunities is therefore not confirmed by these results.

References

Abbring, J. and G. Van den Berg (2007), The Unobserved Heterogeneity Distribution in Duration Analysis, Biometrika, 94(1), 87-99

Antoni, M., and E.J. Jahn (2009), Do Changes in Regulation Affect Employment Duration in Temporary Work Agencies?, Industrial and Labor Relations Review, 62 (2), 226-251

Bauer, T.K., S. Bender and H. Bonin (2007), Dismissal Protection and Worker Flows in Small Establishments, Economica, 74, 804-821

Bentolila, S. and G. Saint Paul (1992), The Macroeconomic Impact of Flexible Labour Contracts: An Application to Spain. European Economic Review, 36(5), 1013-1047

Berton, F., F. Devicienti and L. Pacelli (2007), Temporary jobs: Port of Entry, Trap, or just Unobserved Heterogeneity? LABORatorio Revelli Working Paper No. 68

Boeri, T. and P. Garibaldi (2007), Two Tier Reforms of Employment Protection: A Honey Moon Effect?, The Economic Journal, 117, F357-F385

Boeri, T. and J.F. Jimeno (2005), The Effects of Employment Protection: Learning from Variable Enforcement, European Economic Review, 49, 2057-2077

Boockmann, B., and T. Hagen (2008), Fixed Term Contracts as Sorting Mechanisms: Evidence from Job Durations in West Germany, Labour Economics, 15(5), 984-1005

Boockmann, B., D. Gutknecht, and S. Steffes, (2008), Die Wirkung des Kündigungsschutzes auf die Stabilität "junger" Beschäftigungsverhältnisse, Journal for Labour Market Research (ZAF) 41(2/3), 347-364.

Booth, A.L., M. Francesconi and C. Garcia-Serrano (1999), Job Tenure and Job Mobility in Britain, Industrial and Labor Relations Review, Vol. 53, No. 1, 43-70

Booth, A., M. Francesconi and J. Frank (2000), Temporary Jobs: Stepping Stones or Dead Ends?, IZA Discussion Paper No. 205

Cockx, B. and M. Picchio (2009), Are Short-Lived Jobs Stepping Stones to Long-Lasting Jobs?, IZA Discussion Paper No. 4007

Contini B. and E.Grand (2009), Disposable Workforce in Italy, LABOR, mimeo

D'Addio, A.C, and Rosholm, M. (2005), Exits from Temporary Jobs in Europe: A Competing Risk Analysis, Labour Economics 2005; 12; 449-468

European Commission (2007), Employment in Europe, Ch. 1

Feil, Michael; Tillmann, Lisa; Walwei, Ulrich (2008): Arbeitsmarkt- und Beschäftigungspolitik nach der Wiedervereinigung, Zeitschrift für Sozialreform, 54(2), 161-185

Gagliarducci, S. (2005), The Dynamics of Repeated Temporary Jobs, Labour Economics 12, 429-448.

Ichino, A., F. Mealli, and T. Nannicini (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

Kvasnicka, M. (2008), Does Temporary Help Work Provide A Stepping Stone to Regular Employment?, NBER Working Paper 13843

Lancaster, T. (1979), Econometric Methods for the Duration of Unemployment, Econometrica 47, 939 – 956

Lancaster T. (1990), The Econometric Analysis of Transition Data, Cambridge University Press, Cambridge

Lancaster, T. and S. Nickell (1980) The Analysis of Re-Employment Probabilities for the Unemployed, Journal of the Royal Statistical Society, Series A, 43, 142-152.

OECD (1999), Employment Outlook, Ch. 2

Ridder G. (1984), "The Distribution of Single-Spell Duration Data", in Neumann, G. and N. Westergaard-Nielsen (eds.), Studies in Labor Market Dynamics, Darmstadt: Springer-Verlag

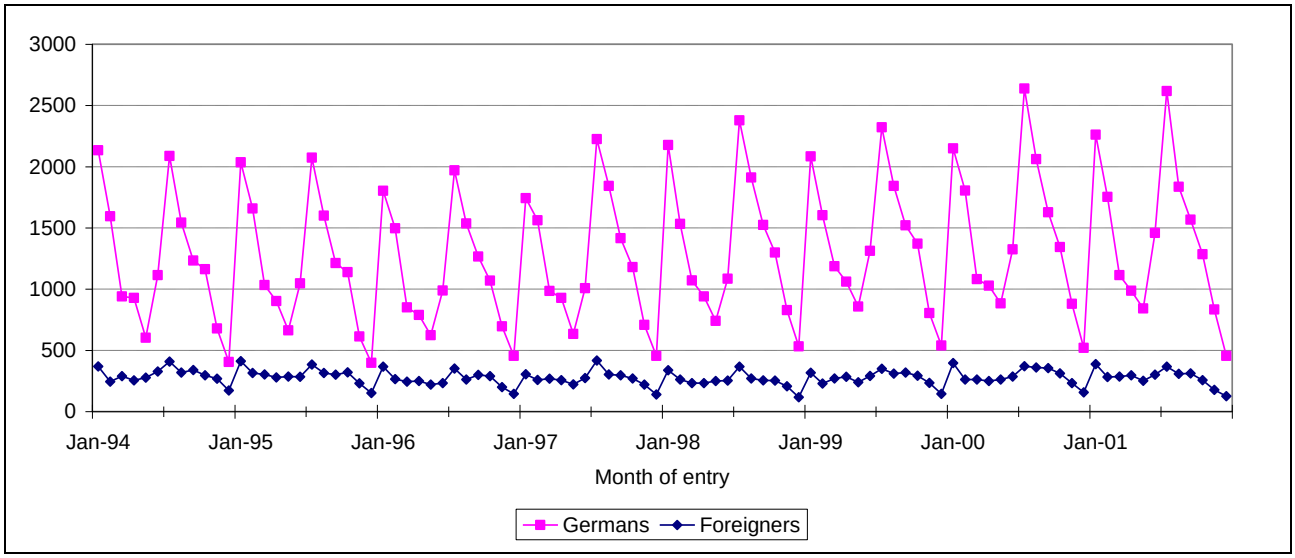
Scherer, S. (2005), Patterns of Labour Market Entry - Long Wait or Career Instability? An Empirical Comparison of Italy, Great Britain and West Germany, European Sociological Review, 21(5), 427-440

Sianesi, B. (2004), An Evaluation of the Swedish System of Active Labor Market Programs in the 1990s, The Review of Economics and Statistics, 86(1), 133-155

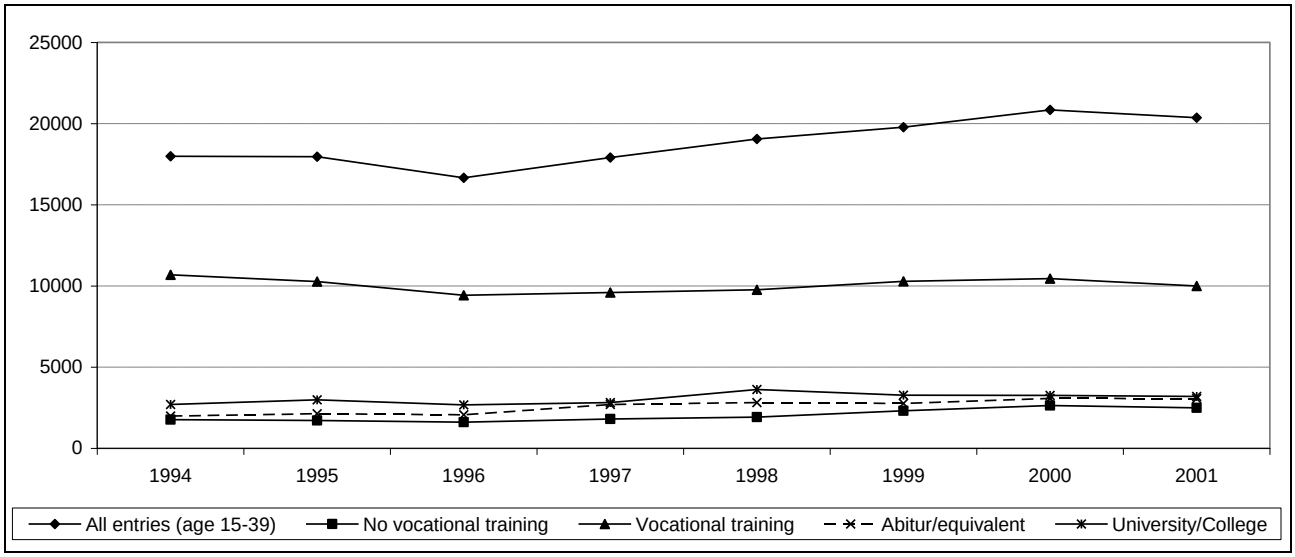
Treu, T. (2007), Labour Law and Industrial Relations in Italy, Giuffrè

APPENDIX

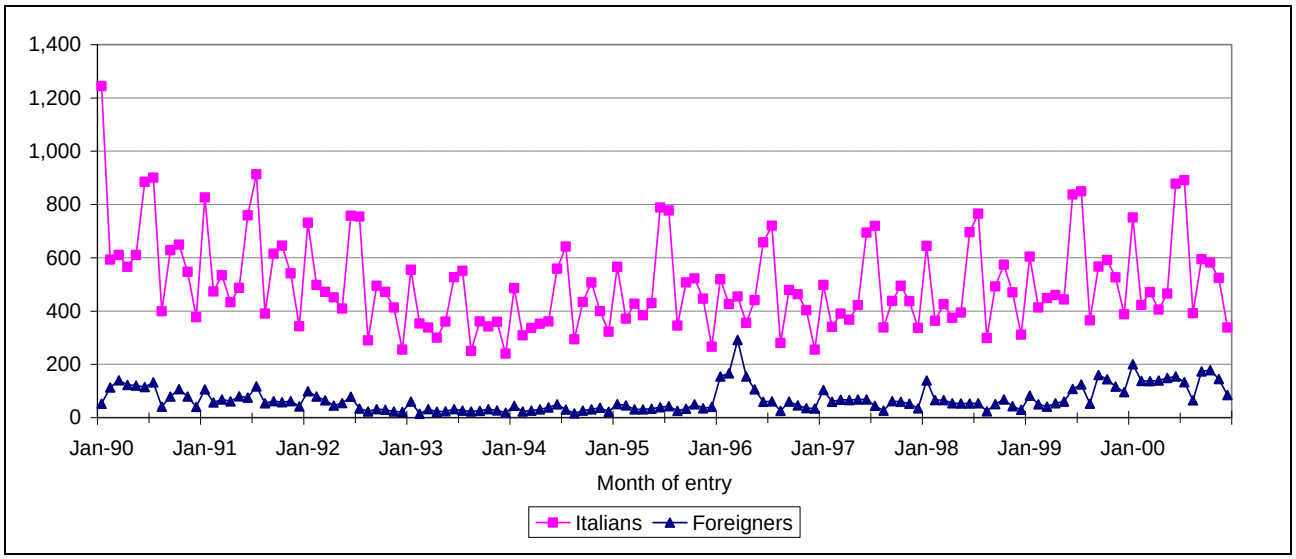
Graph A.1 Seasonal pattern in number of entries in IABS 1994-2001. Germany.



Graph A.2 Number of entries by year and skill level in the IABS 1994-2001. Germany.



Graph A.3 Seasonal pattern in number of entries in WHIP 1990-2000. Italy.



Graph A.4 Number of entries by year and skill level in WHIP 1990-2000. Italy.

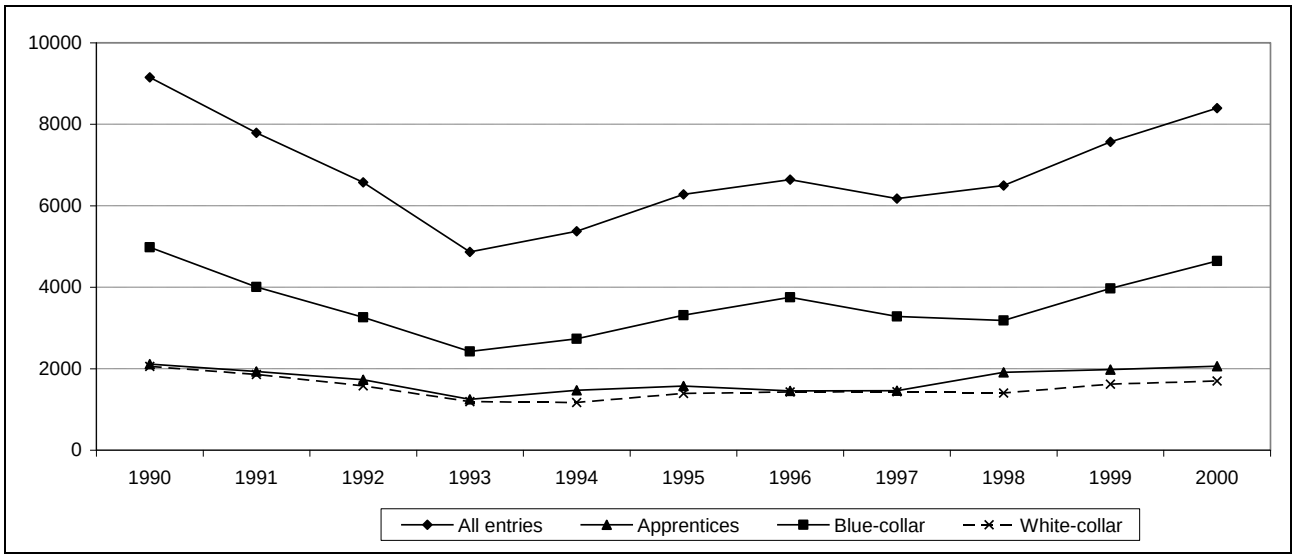


Table A.5: Individual, firm and local-macro variables in all duration models

GERMANY	ITALY
- seasonal dummies	- seasonal dummies
- local unemployment rate (by district)	- local unemployment rate (by region)
- local value added growth (by district)	- local value added growth (by region)
- region (Bundesländer)	- region
- firm size	- firm size
- industry	- industry
- foreign (by nationality)	- foreign (by place of birth)
- age	- age
- education and vocational training	- skill (education: not available)
- part time	- part time
- type of contract: not available	- temporary help agency contracts

Table A.6 Germany: Estimation results for job duration and employment duration models

Models with unobserved heterogeneity

	Job duration				Employment duration			
	Male		Female		Male		Female	
Duration	Haz. ratio	z	Haz. ratio	z	Haz. ratio	z	Haz. ratio	z
0-31 days	0.003	-97.40	0.001	-113.38	0.002	-106.73	0.0004	-97.07
32-61 days	0.003	-94.46	0.001	-110.43	0.002	-101.20	0.0005	-98.47
62-91 days	0.003	-90.64	0.001	-106.21	0.002	-96.12	0.0005	-92.57
92-122 days	0.004	-92.21	0.002	-100.86	0.002	-98.50	0.0004	-93.57
123-183 days	0.003	-98.14	0.001	-113.59	0.001	-105.74	0.0003	-102.52
184-365 days	0.003	-90.99	0.001	-119.41	0.001	-100.92	0.0003	-110.24
366-548 days	0.002	-91.82	0.001	-111.99	0.001	-101.16	0.0003	-104.68
549-731 days	0.003	-70.68	0.001	-97.09	0.001	-94.32	0.0003	-101.17
732 days and more	0.002	-68.74	0.001	-95.13	0.001	-98.58	0.0003	-108.89
Year of entry								
1995	0.919	-3.20	1.014	0.50	0.980	-0.75	1.049	1.52
1996	0.938	-2.35	1.003	0.12	0.961	-1.36	1.037	1.11
1997	1.014	0.53	1.125	4.40	0.967	-1.06	1.098	2.83
1998	0.948	-2.10	1.134	4.85	0.826	-6.88	0.994	-0.19
1999	0.907	-3.52	1.130	4.91	0.735	-10.92	0.946	-1.83
2000	0.947	-1.97	1.196	7.87	0.823	-6.65	1.049	1.45
2001	0.945	-2.22	1.148	5.34	0.876	-4.65	1.087	2.61
Month of entry								
february	1.281	9.57	1.080	3.04	1.379	12.32	1.124	3.20
march	1.273	9.60	1.291	7.62	1.312	8.34	1.352	6.86
april	1.188	6.12	1.128	3.88	1.170	5.04	1.188	4.33
may	1.483	12.03	1.380	8.48	1.477	10.98	1.508	9.27
june	1.372	11.49	1.255	8.39	1.440	11.25	1.270	6.87
july	1.353	12.40	1.137	5.06	1.451	13.42	1.084	2.21
august	1.422	13.01	1.232	7.58	1.502	14.96	1.241	5.61
september	1.344	11.19	1.218	6.95	1.351	9.48	1.299	7.01
october	1.284	8.65	1.191	5.97	1.231	5.99	1.166	4.52
november	1.494	13.66	1.525	10.66	1.412	9.30	1.594	9.53
december	1.540	10.01	1.440	9.48	1.461	8.04	1.480	7.83
Local labour demand (district level)								
unemployment rate	1.007	1.70	1.007	1.67	1.012	2.66	1.016	2.91
gdp growth	0.879	-0.60	0.973	-0.11	1.178	0.64	0.890	-0.39
Federal state								
Schleswig-Holstein, Hamburg	1.148	3.34	1.125	3.81	1.169	2.73	1.087	1.83
Niedersachsen, Bremen	1.134	5.27	1.032	1.00	1.227	7.86	1.086	2.52
Hessen	0.937	-1.87	0.947	-1.70	0.946	-1.18	0.950	-1.21
Rheinland-Pfalz, Saarland	1.024	0.57	1.010	0.22	1.102	1.74	1.134	1.74
Baden-Wuerttemberg	0.962	-1.29	0.983	-0.57	0.953	-1.50	1.031	0.80
Bayern	0.993	-0.24	0.979	-0.57	1.020	0.75	0.996	-0.11
Firm size (1st job)								
20-49	0.959	-2.40	1.015	0.85	0.940	-3.59	1.058	2.72
50-249	0.927	-3.39	0.955	-2.03	0.924	-3.45	1.020	0.70
250-999	0.825	-8.08	0.792	-9.97	0.873	-5.00	0.873	-5.70
1000 and more	0.796	-7.59	0.766	-7.41	0.890	-3.40	0.866	-3.70
Industry (1st job)								
agriculture, mining	1.104	1.77	1.238	2.77	1.503	6.06	1.733	5.82
energy, traffic and information	0.825	-4.63	1.091	2.01	0.809	-4.23	1.025	0.43
manufacturing	0.593	-15.34	0.877	-3.72	0.708	-8.87	1.065	1.53
construction	0.821	-5.17	0.863	-2.53	1.007	0.16	1.117	1.48
trade and retail	0.703	-10.77	0.948	-1.87	0.768	-6.91	1.065	1.59
personal and domestic services	0.908	-2.36	1.297	7.00	1.037	0.79	1.551	10.20
social and public services	0.689	-10.64	0.744	-10.31	0.853	-3.79	0.852	-4.36
Foreigner	1.173	5.43	1.222	7.39	1.202	4.81	1.567	11.75
Age								
age 15-19	0.955	-2.34	1.007	0.28	1.041	1.85	0.966	-1.10
age 25-29	0.621	-24.32	0.976	-1.40	0.526	-25.20	1.085	3.48
age 30-34	0.603	-21.78	0.831	-8.04	0.526	-21.77	0.960	-1.34
age 35-39	0.525	-15.90	0.558	-10.30	0.488	-11.82	0.571	-8.42
Skill/Education								
no information on educational level	1.535	9.40	1.694	13.80	2.328	16.16	2.999	24.20
no vocational training with at most intermediate degree	1.946	23.09	2.249	26.31	2.088	24.22	3.689	38.35
Abitur/equivalent; with or without vocational training	0.795	-8.63	0.934	-2.59	0.829	-5.96	1.052	1.38
University/Technical/Professional College degree	0.555	-18.70	1.016	0.67	0.427	-24.36	1.118	3.44
Part-time (min. 18h/week)	1.410	10.10	1.325	13.82	1.555	12.99	1.555	16.12
/ln_the	-0.413	-7.19	-0.788	-8.24	-0.088	-1.55	-0.178	-3.14
theta	0.662		0.455		0.915		0.837	
Wald chi2	783835.1		642533.3		624442.3		724116.1	
Log pseudolikelihood	-110017.7		-85964.2		-96440.7		-68282.6	
persons	68604		54991		68559		54920	
episodes after splitting	423472		362618		478602		415111	

Table A.7 Italy: Estimation results for job duration and employment duration models

Models with unobserved heterogeneity	Job duration				Employment duration			
	Male		Female		Male		Female	
	Haz. ratio	z	Haz. ratio	z	Haz. ratio	z	Haz. ratio	z
Duration of first job								
1 month	0.058	-63.04	0.065	-42.94	0.062	-46.75	0.034	-47.68
2 months	0.094	-53.59	0.097	-37.2	0.103	-38.87	0.050	-42.69
3 months	0.099	-52.11	0.089	-38.12	0.108	-37.83	0.046	-43.62
4 months	0.083	-54.86	0.076	-39.92	0.089	-40.52	0.038	-45.51
5-6 months	0.056	-64.09	0.049	-46.96	0.056	-48.46	0.024	-52.39
7-12 months	0.045	-71.48	0.039	-52.11	0.044	-53.85	0.018	-58
13-18 months	0.031	-77.24	0.029	-55.16	0.028	-59.75	0.013	-61.78
19-24 months	0.027	-77.68	0.027	-55.6	0.024	-61.25	0.011	-62.57
more than 24 months	0.024	-82.41	0.024	-58.64	0.019	-66.04	0.009	-67.23
Year of entry								
1991	1.025	1.13	0.992	-0.28	1.064	2.54	1.010	0.3
1992	1.024	0.99	0.947	-1.69	1.101	3.66	1.015	0.43
1993	1.011	0.39	1.002	0.07	1.033	1.05	1.049	1.2
1994	0.995	-0.2	0.958	-1.27	0.976	-0.82	0.943	-1.57
1995	1.103	3.84	1.071	2.12	1.101	3.42	1.068	1.84
1996	1.137	5.07	1.102	2.92	1.158	5.27	1.088	2.31
1997	1.137	4.73	1.110	3.01	1.092	2.95	1.086	2.14
1998	1.039	1.43	1.051	1.46	0.980	-0.69	0.990	-0.27
1999	1.074	2.74	1.070	1.97	0.976	-0.84	0.982	-0.46
2000	1.023	0.96	1.084	2.65	0.925	-2.95	0.968	-0.95
Month of entry								
February	1.082	3.02	1.005	0.16	1.014	0.47	0.965	-0.95
March	1.131	4.87	1.018	0.56	1.096	3.24	0.992	-0.23
April	1.124	4.42	1.214	6	1.094	3.07	1.181	4.59
May	1.227	8.03	1.190	5.43	1.177	5.77	1.166	4.29
June	1.543	19.4	1.415	12.18	1.612	19.59	1.494	12.77
July	1.685	23.46	1.695	18.7	1.667	20.97	1.746	17.84
August	1.742	20.01	1.813	17.26	1.670	16.93	1.828	15.95
September	1.172	6.39	1.091	2.76	1.101	3.47	1.060	1.61
October	1.153	5.8	1.123	3.72	1.106	3.66	1.078	2.14
November	1.193	6.81	1.164	4.79	1.152	4.91	1.097	2.56
December	1.192	5.9	1.300	7.61	1.139	3.9	1.262	6.02
Local labour demand								
Regional Unemployment rate	0.986	-3.87	0.984	-3.05	0.994	-1.38	0.991	-1.52
regional gdp growth	0.750	-2.12	0.650	-1.8	0.644	-2.98	0.712	-1.29
Skill/contract								
apprentices	0.922	-3.63	0.809	-9.26	0.898	-4	0.795	-8.3
blue collar	1.396	18.8	1.257	12.85	1.477	18.98	1.316	13.71
part time	0.956	-2.11	0.837	-9.94	0.981	-0.84	0.844	-8.5
training and work (“formazione lavoro”)	0.570	-30.1	0.545	-25.91	0.526	-29.37	0.518	-24
agency	3.177	21.32	3.356	18.8	1.638	8.4	1.740	7.64
Firm size (1st job)								
log(size)					0.969	-9.41	0.982	-4.8
firm size 20-199	1.014	1.02	1.001	0.04				
firm size 200-999	0.860	-6.19	0.937	-2.29				
firm size > 999	0.622	-15.89	0.723	-10.41				
Foreigner	1.010	0.61	1.151	5.19	0.944	-3.03	1.172	5.37
Age								
linear (5 classes)	0.874	-22.87	0.899	-15.19	0.630	-17.5		
15-19							1.205	8.65
25-29							0.948	-2.47
30-34							0.880	-4.54
35-39							0.853	-4.91
Industry (1st job)								
Extraction of fuel minerals	2.415	3.04	0.000	0	1.182	0.5	0.891	-0.23
Extraction of non-fuel minerals	1.064	0.54	0.874	-0.3	1.162	1.21	1.726	9.83
Food industrie	1.336	9.33	1.569	9.28	1.407	10.1	1.071	1.3
Textile industrie	1.009	0.23	1.060	1.31	1.048	1.05	1.179	2.49
Hide and leather industries	1.061	1.36	1.060	1	1.084	1.66	1.087	0.65
Wood industry	1.079	1.93	0.991	-0.08	1.085	1.87	1.105	1.21
Paper, printing and publishing	0.802	-4.56	1.020	0.28	0.864	-2.71	0.283	-1.78
Coke manufacturing and refineries	0.474	-2.47	0.431	-1.68	0.519	-1.96	0.944	-0.56
Chemical product manufacturing	0.775	-3.94	0.940	-0.69	0.715	-4.38	1.003	0.03
Rubber and plastics	0.912	-2.02	0.929	-0.99	0.974	-0.52	1.060	0.6
Processing of non-metallic minerals	0.909	-2.21	0.989	-0.13	1.001	0.02	0.000	0
Manufacturing and repair of machinery	0.869	-3.89	0.793	-2.84	0.889	-2.87	0.841	-1.81
Manufacturing of electrical machinery	0.920	-2.58	0.856	-2.82	0.846	-4.42	0.846	-2.55
Vehicle manufacturing	0.846	-2.74	0.937	-0.56	0.791	-3.34	0.961	-0.3
Other manufacturing industries	1.217	5.57	1.325	5.03	1.286	6.49	1.441	5.74
Electrical energy, gas and water	0.504	-3.66	0.517	-2.35	0.466	-3.56	0.623	-1.61
Construction	1.330	13.99	1.154	2.3	1.391	14.49	1.265	3.3
Commerce	0.996	-0.16	1.185	4.06	1.001	0.04	1.221	4.05

Hotels and restaurants	1.780	24.53	2.003	16.32	1.925	25.55	2.195	15.91
Transport and communications	1.053	1.67	1.240	3.66	1.041	1.15	1.248	3.27
Financial intermediation	1.177	5.85	1.205	4.26	1.155	4.61	1.167	3.02
Business services	2.354	19.86	2.153	14.16	2.552	20.35	2.253	13.24
Other community, social and personal service activities	1.506	10.96	1.378	6.9	1.620	11.68	1.537	7.99
Region								
Piemonte	1.037	1.42	1.079	2.44	0.996	-0.15	1.147	3.86
V Aosta	1.376	3.45	1.334	2.87	1.554	4.57	1.354	2.79
Liguria	1.119	2.81	1.187	3.46	1.114	2.4	1.279	4.48
Trentino A A	1.022	0.57	1.159	3.39	1.089	2.06	1.156	3.04
Veneto	1.147	6.52	1.140	4.93	1.097	3.84	1.125	3.81
Friuli V G	1.177	4.17	1.177	3.48	1.177	3.74	1.122	2.13
E Romagna	1.313	12.56	1.412	13.17	1.321	11.43	1.442	12.28
Marche	1.187	5.03	1.088	2.01	1.237	5.63	1.197	3.81
Toscana	1.164	5.79	1.212	5.99	1.216	6.73	1.306	7.43
Umbria	1.091	1.81	1.179	2.77	1.113	1.97	1.369	4.79
Lazio	1.111	3.56	1.162	3.9	1.272	7.47	1.394	7.85
Campania	1.128	1.93	1.143	1.5	1.268	3.52	1.408	3.59
Abruzzo	1.265	6.26	1.163	3.01	1.375	7.77	1.410	6.29
Molise	1.392	3.92	1.173	1.34	1.594	5.2	1.511	3.27
Puglia	1.200	3.59	1.230	2.97	1.330	5.2	1.526	5.64
Basilicata	1.243	3	1.166	1.57	1.425	4.62	1.481	3.77
Calabria	1.286	3.26	1.352	2.81	1.360	3.7	1.718	4.72
Sicilia	1.363	4.75	1.372	3.44	1.464	5.44	1.663	5.15
Sardegna	1.420	5.17	1.498	4.45	1.503	5.56	1.808	6.04
/ln_the	-18.794	-0.06	-19.692	-0.02	-19.272	-0.04	-18.100	-0.05
theta	6.89E-09		2.80E-09		4.27E-09		1.38E-08	
Wald chi2	272435.7		184020.3		277645.39		181828.510	
Log pseudolikelihood	-69747.8		-45693.712		-64987.331		-42032.655	
persons	45552		29785		45552		29785	
episodes after splitting	257409		172503		276068		187697	

To improve convergence of the model the specification in some cases is slightly changed

Table A.8 West Germany: – 1st Job Model
Summary of variables – men & women

			Male (68604 obs)		Female (54991 obs)	
	Min	Max	Mean	Std. Dev.	Mean	Std. Dev.
Duration*						
0-31 days	0	1	0.079	0.270	0.061	0.240
32-61 days	0	1	0.074	0.261	0.058	0.233
62-91 days	0	1	0.061	0.240	0.048	0.213
92-122 days	0	1	0.056	0.230	0.049	0.215
123-183 days	0	1	0.077	0.267	0.070	0.255
184-365 days	0	1	0.159	0.366	0.146	0.353
366-548 days	0	1	0.087	0.282	0.092	0.290
549-731 days	0	1	0.070	0.256	0.076	0.266
732 days and more	0	1	0.336	0.472	0.399	0.490
Year of entry						
1994	0	1	0.118	0.323	0.117	0.322
1995	0	1	0.123	0.328	0.115	0.319
1996	0	1	0.112	0.316	0.109	0.312
1997	0	1	0.120	0.324	0.117	0.322
1998	0	1	0.126	0.332	0.126	0.332
1999	0	1	0.130	0.336	0.132	0.339
2000	0	1	0.137	0.344	0.143	0.350
2001	0	1	0.134	0.341	0.141	0.348
Month of entry						
january	0	1	0.131	0.337	0.129	0.335
february	0	1	0.121	0.326	0.083	0.276
march	0	1	0.080	0.271	0.055	0.227
april	0	1	0.068	0.252	0.061	0.239
may	0	1	0.057	0.233	0.046	0.209
june	0	1	0.075	0.264	0.080	0.271
july	0	1	0.129	0.335	0.162	0.368
august	0	1	0.098	0.297	0.119	0.324
september	0	1	0.084	0.277	0.092	0.289
october	0	1	0.074	0.262	0.090	0.286
november	0	1	0.051	0.220	0.051	0.220
december	0	1	0.032	0.175	0.032	0.176
Local labour demand (district level)						
regional unemployment rate	3.023	20.854	9.479	2.964	9.532	2.943
regional gdp growth	-0.198	0.324	0.026	0.032	0.025	0.031

Table A.8 (continued)

			Male		Female	
	Min	Max	Mean	Std. Dev.	Mean	Std. Dev.
Federal state						
Schleswig-Holstein, Hamburg	0	1	0.069	0.254	0.078	0.268
Niedersachsen, Bremen	0	1	0.116	0.321	0.119	0.324
Nordrhein-Westfalen	0	1	0.270	0.444	0.261	0.439
Hessen	0	1	0.098	0.297	0.101	0.302
Rheinland-Pfalz, Saarland	0	1	0.070	0.256	0.067	0.250
Baden-Wuerttemberg	0	1	0.171	0.377	0.167	0.373
Bayern	0	1	0.205	0.404	0.207	0.405
Firm size (1st job)						
less than 20	0	1	0.310	0.463	0.342	0.475
20-49	0	1	0.264	0.441	0.242	0.429
50-249	0	1	0.134	0.340	0.138	0.345
250-999	0	1	0.147	0.355	0.158	0.365
1000 and more	0	1	0.145	0.352	0.119	0.324
Industry (1st job)						
agriculture, mining	0	1	0.024	0.152	0.010	0.099
energy, traffic and information	0	1	0.057	0.232	0.038	0.191
manufacturing	0	1	0.289	0.453	0.145	0.352
construction	0	1	0.121	0.326	0.012	0.111
trade and retail	0	1	0.118	0.323	0.164	0.371
business services	0	1	0.196	0.397	0.198	0.398
personal and domestic services	0	1	0.080	0.271	0.117	0.321
social and public services	0	1	0.116	0.320	0.316	0.465
Foreigner	0	1	0.229	0.420	0.161	0.368
Age						
15-19	0	1	0.123	0.329	0.144	0.351
20-24	0	1	0.447	0.497	0.518	0.500
25-29	0	1	0.263	0.441	0.221	0.415
30-34	0	1	0.140	0.347	0.096	0.295
35-39	0	1	0.027	0.162	0.021	0.143
Skill/Education						
no information	0	1	0.070	0.255	0.060	0.237
no vocational training with at most intermediate degree	0	1	0.128	0.334	0.103	0.303
vocational training with at most intermediate degree	0	1	0.508	0.500	0.528	0.499
Abitur/equivalent; with or without vocational training	0	1	0.117	0.322	0.175	0.380
University/Technical/Professional College degree	0	1	0.183	0.387	0.144	0.352
Part-time (min. 18 hours/week)	0	1	0.069	0.253	0.163	0.370

* spells with durations of 3 years or more are censored

Table A. 9–Italy – 1st Job Model
Summary of variables – men & women

			Male (45555 obs)		Female (29790 obs)	
	Min	Max	Mean	Std.	Mean	Std. Dev.
Duration of first job						
1 month	0	1	0.079	0.270	0.088	0.284
2 months	0	1	0.115	0.319	0.115	0.319
3 months	0	1	0.101	0.301	0.087	0.281
4 months	0	1	0.070	0.256	0.062	0.241
5-6 months	0	1	0.043	0.202	0.038	0.192
7-12 months	0	1	0.158	0.364	0.134	0.341
13-18 months	0	1	0.088	0.283	0.089	0.284
19-24 months	0	1	0.053	0.225	0.056	0.231
more than 24 months	0	1	0.294	0.455	0.330	0.470
Year of entry						
1990	0	1	0.129	0.335	0.110	0.313
1991	0	1	0.106	0.308	0.099	0.298
1992	0	1	0.088	0.283	0.086	0.281
1993	0	1	0.065	0.247	0.064	0.245
1994	0	1	0.068	0.252	0.076	0.265
1995	0	1	0.081	0.273	0.087	0.281
1996	0	1	0.089	0.285	0.087	0.281
1997	0	1	0.080	0.272	0.085	0.279
1998	0	1	0.083	0.275	0.092	0.289
1999	0	1	0.099	0.299	0.103	0.303
2000	0	1	0.111	0.314	0.113	0.316
Month of entry						
January	0	1	0.114	0.318	0.111	0.314
February	0	1	0.071	0.257	0.071	0.257
March	0	1	0.078	0.269	0.077	0.267
April	0	1	0.068	0.252	0.072	0.258
May	0	1	0.074	0.261	0.076	0.264
June	0	1	0.121	0.326	0.113	0.316
July	0	1	0.126	0.332	0.118	0.323
August	0	1	0.053	0.224	0.054	0.225
September	0	1	0.085	0.280	0.083	0.276
October	0	1	0.089	0.284	0.087	0.282
November	0	1	0.073	0.260	0.081	0.273
December	0	1	0.048	0.213	0.058	0.233
Local labour demand						
Regional Unemployment rate	2.710	28.010	10.046	6.464	9.438	6.109
regional gdp growth	-0.234	0.396	0.054	0.047	0.058	0.037
Skill/contract						
apprentices	0	1	0.257	0.437	0.242	0.428
blue collar	0	1	0.585	0.493	0.433	0.496
part time	0	1	0.069	0.254	0.198	0.399
training and work (“formazione lavoro”)	0	1	0.126	0.331	0.134	0.340
agency	0	1	0.012	0.109	0.011	0.103
Firm size (1st job)						
firm size 1-20	0	1	0.630	0.483	0.630	0.483
firm size 20-199	0	1	0.240	0.427	0.228	0.420
firm size 200-999	0	1	0.065	0.247	0.070	0.254
firm size > 999	0	1	0.065	0.247	0.072	0.259

Foreigner	0	1	0.158	0.365	0.064	0.245
Age						
15-19	0	1	0.325	0.468	0.281	0.449
20-24	0	1	0.323	0.468	0.389	0.488
25-29	0	1	0.190	0.392	0.182	0.385
30-34	0	1	0.100	0.300	0.086	0.281
35-39	0	1	0.063	0.243	0.062	0.241
Industry (1st job)						
Extraction of fuel minerals	0	1	0.00033	0.018	0.000	0.000
Extraction of non-fuel minerals	0	1	0.0021	0.046	0.000	0.000
Food industrie	0	1	0.039	0.194	0.048	0.214
Textile industrie	0	1	0.023	0.150	0.098	0.298
Hide and leather industries	0	1	0.018	0.131	0.025	0.156
Wood industry	0	1	0.021	0.144	0.005	0.067
Paper, printing and publishing	0	1	0.016	0.126	0.013	0.115
Coke manufacturing and refineries	0	1	0.001	0.025	0.000	0.020
Chemical product manufacturing	0	1	0.010	0.100	0.009	0.092
Rubber and plastics	0	1	0.017	0.128	0.012	0.111
Processing of non-metallic minerals	0	1	0.019	0.137	0.008	0.089
Metal and metallic products	0	1	0.108	0.310	0.034	0.182
Manufacturing and repair of machinery	0	1	0.031	0.174	0.011	0.105
Manufacturing of electrical machinery	0	1	0.044	0.205	0.036	0.185
Vehicle manufacturing	0	1	0.011	0.105	0.005	0.067
Other manufacturing industries	0	1	0.028	0.166	0.026	0.160
Electrical energy, gas and water	0	1	0.002	0.042	0.001	0.033
Construction	0	1	0.195	0.396	0.020	0.139
Commerce	0	1	0.137	0.344	0.205	0.404
Hotels and restaurants	0	1	0.102	0.302	0.158	0.365
Transport and communications	0	1	0.050	0.218	0.025	0.156
Financial intermediation	0	1	0.086	0.280	0.160	0.366
Business services	0	1	0.017	0.128	0.030	0.170
Other community, social and personal	0	1	0.024	0.152	0.070	0.255
Region						
Piemonte	0	1	0.070	0.255	0.078	0.269
V Aosta	0	1	0.003	0.054	0.004	0.062
Liguria	0	1	0.024	0.152	0.025	0.157
Lombardia	0	1	0.186	0.389	0.194	0.395
Trentino A A	0	1	0.022	0.147	0.026	0.158
Veneto	0	1	0.098	0.298	0.100	0.300
Friuli V G	0	1	0.021	0.143	0.024	0.152
E Romagna	0	1	0.086	0.281	0.097	0.297
Marche	0	1	0.028	0.164	0.030	0.171
Toscana	0	1	0.064	0.244	0.071	0.257
Umbria	0	1	0.014	0.118	0.015	0.120
Lazio	0	1	0.093	0.290	0.095	0.294
Campania	0	1	0.079	0.269	0.061	0.239
Abruzzo	0	1	0.024	0.153	0.022	0.147
Molise	0	1	0.005	0.067	0.004	0.063
Puglia	0	1	0.057	0.232	0.052	0.221
Basilicata	0	1	0.009	0.092	0.008	0.087
Calabria	0	1	0.023	0.150	0.018	0.133
Sicilia	0	1	0.070	0.255	0.052	0.221
Sardegna	0	1	0.026	0.158	0.025	0.155