LONG TERM YOUTH UNEMPLOYMENT OR DISPOSABLE WORKFORCE ?

by

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ABSTRACT

This paper is about very long term unemployment (a more appropriate denomination could be "out-of-official-employment") in Italy, its concentration and the process of young worker disposal, an important, yet unexplored, determinant. "Very long" is not just "long": we are dealing with 10-20 years of absence from the official labor market of male workers who were young at the beginning of these spells, and are in their thirties, forties or early fifties when we observe them. Young workforce disposal (YWD) reflects the fact that young people are observed at the beginning of their career as dependent employees, their services are "used" for few years (sometimes only few months) as if it were a disposable commodity, after which they disappear from the official labor market,

The magnitude of YWD is dramatic: out of 100 new young entries - aged 19-30 at the start of their working career-, between 79 and 86 % are still at regular work ("survive") after 10 years, and only 78 to 83% by 2009, after 17-22 years, depending on the timing of their initial employment. Many of these people may have joined the irregular economy, but there is no way to estimate their numbers other than by a gross comparison with the estimates of hidden employment provided by ISTAT. These developments imply out-of-official-employment durations four times longer than the unemployment durations provided by official statistics and econometric estimates based on LFS-type microdata.

A simple model of the medium run development of the YWD process explains the medium run impact of several demand-side factors: labor cost dynamics, flexibility, age, initial entry conditions.

1. Introduction

This paper is about very long term unemployment (out-of-official-employment) in Italy and the process of worker disposal, one of its main determinants, yet completely neglected in the economic literature. Industrial crises and early retirement practices are the best known causes of long term unemployment in Italy as everywhere else, but, by no means, the only ones. In this paper we concentrate exclusively on early worker disposal which appears as a real pathology of Italy's labor market (only Italy's ?), observable across the board and almost independently of the business cycle.

"Very long" is not just "long": we are dealing with 10-20 years of absence from the official labor market of male workers who were young at the beginning of these spells, and are in their thirties, forties or early fifties when we observe them.

In this paper "unemployment" does not coincide with the definition used in the LFS, this being already wider than "officially registered" unemployment: many of the LFS-unemployed may be active in the unobserved, black economy, and it is not clear how they will report their status to the interviewers. The same holds for many of those whom we report as "disappeared" from official employment in this paper. Some of the long-term unemployed – a modest number in our view – may be inactive or simply "discouraged" [1]; a very small lot may have reached retirement age by the time we observe them, those who left the country are negligible numbers[2], and the rentiers cannot be numerous. Thus we use the term "extended unemployment" to include all these possibilities.[3]

Object of our investigation is the process denoted as "young workforce disposal" (YWD). YWD reflects the fact that young people get hired at the beginning of their career as dependent employees, their services are "used" for few years (sometimes only few months) as if it were a disposable commodity, after which they disappear from the labor market, no longer observable in WHIP (Work Histories Italian Panel), a longitudinal database drawn from the Social Security administrative archives that covers working careers from start to retirement in the private sector, recently integrated by additional information from the "Casellario degli Attivi" which includes the universe of working people, regardless of sector.

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[1] E. Battistin and E. Rettore (2008) have an excellent study on the classifications resulting from the Italian Labor Force Survey. The borderline between inactivity, unemployment without subsidies and irregular activities defies detection, all the more so in areas where there is a considerable amount of black-grey, unobservable activities. In the LFS a young male who reports to be working, may be a "regular" or an "irregular" worker. He may report to be unemployed even if he works full time in the black. Being classified as "inactive" or "unemployed" depends on the classification rules and the interpretation given to one's "recent" job search activity. There is plenty of anecdotal evidence (to be taken very seriously) that many youth who work in the black economy will report themselves as unemployed or inactive. In the poorest neighbourhoods of Naples estimated youth unemployment is close to 40%, with the extent of the black economy also known to be at its highest. The situation in the banlieus of Paris may not be too different.

[2] Foreign workers have been deleted from the database: those who return to their home-country after leaving a position in Italy would be counted as non-survivors, which would obviously be a mistaken inference.

[3] "Out of official employment" might provide an alternative denomination.

Long term unemployment of the young may last two, three, four years (additional schooling is only one of many possibilities), but, in the end, it should lead to re-entry in working activities. If it does not – this is our concern - i.e. if we observe young men separating from their jobs for whatever reason, and, for as long as ten years or longer, disappearing from the labor force altogether, it becomes, we suspect, problematic to define such events simply as long term unemployment. Young people, either "unemployed" or "out of the labor force" without interruption for many consecutive years, ought to be found back at work before reaching maturity, unless they are either seriously ill or too rich to need a job. Neither of the two seems plausible, given the magnitude of observable events in Italy (and possibly in other countries of Southern Europe, for which no data are for the time being available). If their absence persists, the main remaining destination is the irregular/black economy, which may be joined by free choice or for lack of better alternatives.

The magnitude of YWD is dramatic: out of 100 new young entries - aged 19-30 at the start of their working career-, between 90 and 92 % are still at regular work ("survive") 2 years after entry, 79 to 86% after 10 years, and only 78 to 83% by 2009, after 17-22 years, depending on the timing of their initial employment. Not surprisingly, as will be discussed in par. 3.3 such developments imply "extended unemployment" durations many times longer than the indications provided by official statistics and econometric estimates based on LFS-type microdata. We will not elaborate here on the developments related to the dramatic post-2008 recession.

Young workforce disposal is somewhat puzzling from an economists' perspective. The process is mainly demand driven: it is highly unlikely that any young person starting in a regular position as dependent worker may voluntarily choose to drop out of the labor force and/or join the black economy. The downturn of aggregate demand - nearly stagnant for well over a decade, never fully recovering after the deep recession of 1992-94 – could be one of the factors explaining the negative outcomes of youth employment between the mid Eighties and the early 2000's. Conditional is a necessary *caveat:* overall dependent employment (male and female) grew by a sizeable 37 p.p. between 1985 and 2002; men's employment by 25 p.p. against 66 p.p. of women's. But the employment of young males (<30) increased by a mere 13 p.p., one half the gain of their older counterparts, a consequence of the fact that on-the-job-ageing of the cohorts born during the baby boom coincided with the slowdown of new young hires necessary for replacement of the retirees (forced or voluntary).

YWD hits mainly the individuals who have a bad start in the labor market: the evidence on this point is clear. These individuals could be the least endowed in terms of education, skills, family background: unfortunately no data are available to support this hypothesis. Interestingly, however, the hypothesis of skill mismatch that could be advanced in this respect, is not supported by available empirical evidence, as will be discussed later on. Something seems to be running counter-stream, and we shall attempt to clarify the problem.

In first place, a variety of long run developments related to the supply side would suggest different developments, more favorable to the young. Four supply-side factors would be expected to improve the opportunities for youth employment, given the state of demand: (i) the size of the demographic decline (today's cohorts entering the labor market are almost half those born during the baby-boom); (ii) the impact of early

retirement practices of people in their early 50's, erroneously defended by the social partners on the grounds that it would make room for new young entries; (iii) the low unionization of young workers; (iv) the much higher schooling attainment reached in the course of the last forty years.

Two medium run factors, also potentially beneficial to youth employment, operated from the demand side: (v) the decreasing labor costs of young people vis-à-vis the adults' as a result of a generous implementation of wage subsidies (in addition to the world-wide trend towards rising wage inequalities); (vi) the rapidly increasing flexibility of working arrangements.

Economists may argue that YWD could be economically "efficient" in the short run if the productivity of the disposed workforce were low and training ineffective. But nobody can deny that YWD is dramatic from a social perspective, all the more so if the disposed individuals were a result of the employers' selection. Marginalization and life-dependence on welfare and/or the black economy would be the long term consequences. Moreover, investments and the accumulation of human capital become at risk in high turnover economies, whether or not the process of YWD is under way. In the long run the incentive to invest in human capital both from the company's and the worker's point of view decreases, thereby reducing productivity and hampering economic performance and future growth.

In the next decades demographic trends ought to improve the work perspectives of young people: the cohorts of the baby-boomers will begin to retire by 2020-25, and their replacement will increase the demand of young workers. On the other hand, the labor shortage will also spur new and massive migration inflows of largely unskilled people from non EU-countries with high fertility rates. This will be a cause of additional governance problems for Italy and the European Union, as social unrest will not cease to hide behind the door.

There are innumerable studies that touch upon issues closely related to long term unemployment and "workforce disposal": unemployment duration and state dependence, labor market segmentation, attrition in longitudinal datasets.[4] The vast majority investigate the consequences of long term unemployment, more specifically the deteriorating employability as joblessness persists due to obsolescence of human capital, stigma and signalling of "bad" performance, all resulting in wage loss at the time of re-employment (Machin and Manning, 1999; Van den Berg and Van Ours, 1994 and 1996; Farber and Gibbons, 1996; Topel, 1990; Kletzer and Fairlie, 2001, Arulampulam, Booth and Taylor (2000), Contini and Poggi, 2010). Few sufficiently document the length of unemployment spells, one exception being Mroz and Savage (2006) who report re-employment probabilities for US youth who experienced unemployment spells 10 years or longer. K. Tatsiramos' (2010) estimates of unemployment duration for a number of

[4] Attrition is the term normally used to define such occurrences in survey-based longitudinal databases. It reflects problems of data collection and management. In our data, of administrative origin, observed attrition is the product of perfectly explainable patterns of workforce utilization, which have nothing to do with data collection. I am not claiming that some genuine, undistinguishable, attrition could not be present in the data. Undoubtedly, however, the latter would have to be a minuscule share of the former.

EU countries (including Italy) are based on the ECHP, but look much too optimistic than our findings suggest.

None of the above contributions – to our knowledge – explain how long term unemployment comes about among the young generations, nor do they explore its deep causes. This exploration is, instead, the contribution of this paper. We also present new, striking, estimates of "extended unemployment", almost four times as large as those reported and/ or estimable from official sources.

The paper is organized as follows: par. 2 provides the background picture with a short description of the Italian labor market and the main reforms. Par. 3 describes the WHIP data, the measurement of survival and unemployment duration. Par. 4 introduces a model of survival, wages and labor costs, aimed at explaining the short-medium run determinants of the process of young workforce disposal. Par. 5 presents the estimation results. Par. 6 deals with the problems of self-selection and of truncation bias. Par.7 concludes.

2. Background and labor market reforms

2.1. Basic statistics

According to official statistics, Italy's unemployment rate of the 14-29 has hovered around 20% since the mid Nineties, the second highest in the European Union. Long term unemployment (defined as > 12 months) touches one half of the young unemployed. Not until 2006 did youth unemployment take a downturn of 2-3 p.p., matched, not surprisingly, by an increase in turnover rates. As of today, in the midst of the world-wide recession, youth unemployment has rapidly risen again, reaching 27-28% in 2010.

Youth employment (20-29) steadily increased since the Sixties til 1990 (from 4.0 million in 1968 to slightly less than 5.0 million in 1990), a consequence of the baby boom and of the increased participation of young women. The trend dramatically reversed in the early Nineties before the 1993 recession: as of 2008 young people at work number around 3.4 million. The modal age of employment entry hovered around 21 during the Seventies and Eighties: since the early Nineties the outflow of youth workers from employment began to exceed the inflow within 2-3 years from entry, a strong hint of worker disposal.

Labor market entry at the end of school is problematic compared to EU standards: the average waiting time between the end of secondary school and first employment was estimated at 14 months in 2004; the frequency of youth having completed secondary schooling in 2001 and looking for first employment in 2004 was 26%.[5] The one-year transition probability for youth aged (15-19) is estimated at 0.54 from the Italian LFS, implying an average delay of 2 years after school termination. The same probability at age (20-24) is 0.69, and at age (25-29) is 0.70[6].

[5] ISTAT, National Statistical Institute, "Survey 2004 on school leavers in 2001".

[6] University graduates (first level degree) faced a 8.5 months average waiting time before finding a job in 2006, from a minimum of 5 months for engineering graduates and a maximum of 13

According to OECD statistics, while total employment grew in Italy by 10.3 p.p. between 2000 and 2008, labor productivity shrank by 3 p.p. and multi-factor productivity by 0.7 p.p. As will be argued, one of the motives behind this decline could be the excessive utilization of temporary, low-pay and high-turnover working contracts described in this paper. Additional evidence of Italy's weak position vis-à-vis the rest of its direct EU competitors is signaled by the pattern of real wages: stagnant since the early Nineties, while in the rest of Europe they were increasing by 10% in the market sectors and by 20% and over in manufacturing.

2.2. The reforms

The labor market reforms of the last 25 years, strongly advocated to enhance the employability of the weak fringes of the labor force, led to a variety of increasingly flexible working arrangements in the form of different schemes of tax rebates and exemptions, and new rules governing the labor contracts that guaranteed a much higher degree of flexibility.

The first and main instrument of those years, the training-at-work contract (Contratto di Formazione Lavoro, CFL), was introduced in 1985. The program granted employers a substantial labor cost rebate consisting in a 50% reduction of social security contributions (s..s.c.), at the time averaging 34% of the wage bill, and automatic costless termination at the end of two years. The program featured also an on-the job training component. At the beginning, eligible people were workers aged 16-29. Several reforms of the program were introduced over the years. The first one took place in 1991, when s.s.c. rebates were reduced to 25%, and age eligibility was extended to 32. As a result labor costs increased from 1991 onward, more in the North than in the South, where they were complemented by additional supporting measures. The main one, a generalized exemption of s.s.c. to all employers of Southern Italy, was phased out in 1994 after almost twenty years. In 1994 a new restriction to the CFL contract was introduced: employers were allowed to hire new training-at-work workers during year t, only if at least 60% of the CFL workers whose contract terminated in t-1 and t-2 were retained on a permanent basis.[7] As will be discussed in par. 4, the variability of the CFL normative across regions and through time provides clues improve identification.

In 1996 a new wave of practices was opened by the Treu Reform Package, containing two main novelties: the liberalization of temporary contracts, already available, although subject to several restrictive clauses, and the introduction of contract work (so called "co.co.co."), *de-facto* disguised dependent work, exempt from firing costs and subject to very low social security contributions, that left workers unsheltered from almost all forms of welfare coverage.

Fig. 1 below shows the increasing trend of separation rates from standard, open-end positions (with the exclusion of temporary and "co.co.co" contracts introduced by the

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months for jurisprudence graduates. The average unemployment rate for university graduates 3 years after the end of studies exceeded 8%. Source: Alma Laurea Survey 2008.

[7] This was an attempt to limit a widely used practice consisting of hiring young people, keeping them on the job as long as the benefits accrued to the employers, and then firing and replacing them with new entrants hired with the same contracts as the ones terminated. Sanctions aimed at preventing such practices have been largely ineffective.

Treu Reform, 1996) in the 1986-2003 time window. There is a sudden increase of young workers' separations starting in 1993, three years before the reform. Prior to the introduction of the CFL and the Treu Reform Package, it was common practice to terminate permanent contracts (not only of the young) circumventing a legislation which was very protective on paper, but easily bypassed in practice (as jurists put it, the "law in the books" is one thing, the "law in action" quite another matter).[8] The Treu reform has, as it were, sanctioned and legitimized such practices. Fig. 2 displays the age profile of gross worker turnover before and after the Treu Reform: the upward shift of the curves is notable at all ages.

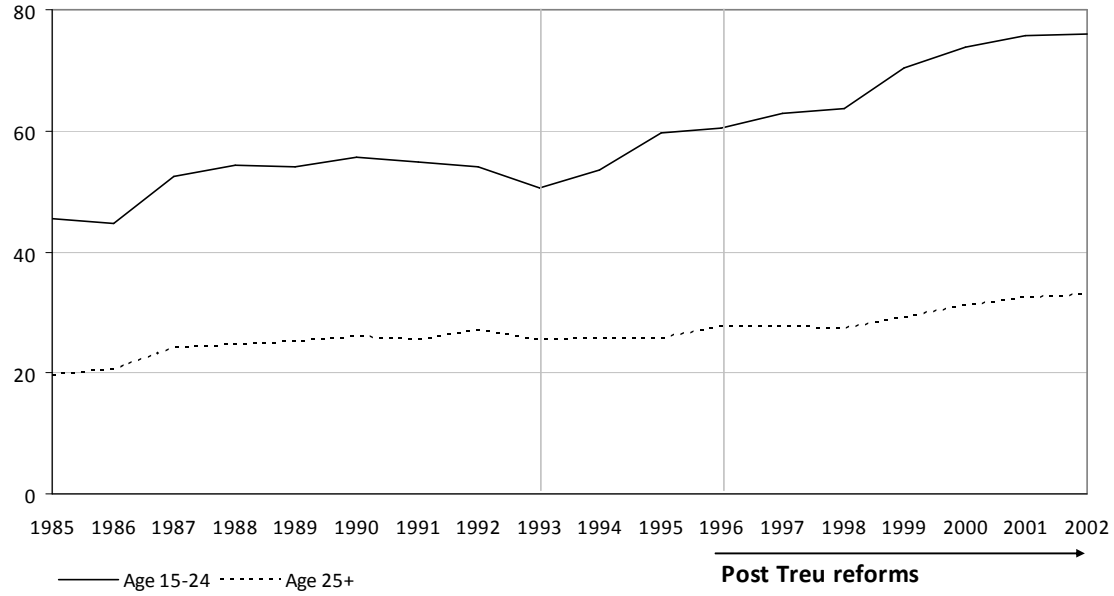

Fig. 1. Separation rates from standard, open-end positions, 1986 – 2002.

The graph in fig. 3 displays a reasonable proxy of contract flexibility: the percentage share of the newly hired, men and women aged 19-30 whose first, initial spell lasted less than 12 months on the total number of new hires. Here too, the data relate to dependent work only, and exclude the "contract work" jobs introduced in 1996 which would boost the number of short initial spells. Throughout the Eighties many of the newly hired were able to stay with their first employer at least one year before undertaking patterns of mobility; and very short initial spells were less frequent. The latter became more numerous towards the end of the Nineties, reaching over 65% of all hires after 2000, even leaving out the jobs activated via contract work (co.co.co.).

[8] On paper the Italian labour market presents a high degree of employment protection. Protection, however, turns out to be mainly "in the books", much less so "in action". An excellent analysis is provided in a recent book by F. Berton, M. Richiardi and S. Sacchi, *Flex-insecurity: perchè in Italia la flessibilità diventa precarietà*, Il Mulino (2009). See also: B. Contini and U. Trivellato (eds.), *Eppur si muove: mobilità e dinamiche del mercato del lavoro*, Il Mulino (2005).

Interestingly, but not surprisingly, while a clear upward trend is visible in the North and Centre areas, it is missing in the South. This is consistent with data that point at the very high worker turnover that has always plagued Southern Italy, much beyond the fragmentation of its industrial basis The upward trend is an unambiguous signal of rapidly increasing labor market flexibility introduced by a wide range of new policies and practices: in the course of our econometric exploration, we shall use these indicators as proxies of regional labor market flexibility.

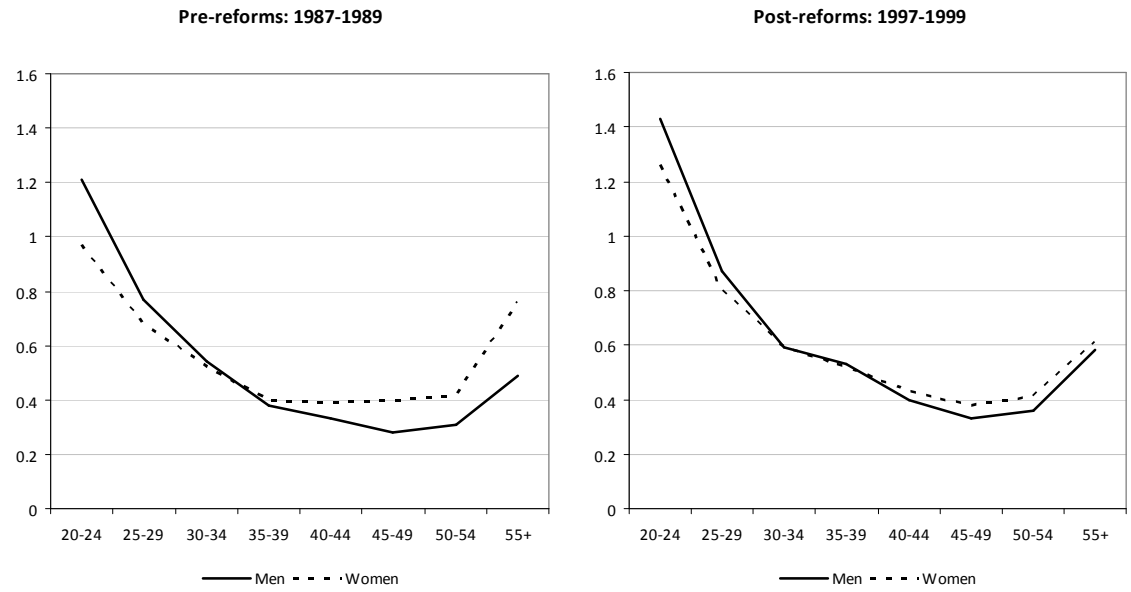

Fig. 2. Gross worker turnover by age and gender, pre and post 1996 reforms.

Finally, it is worth recalling also the recent OECD update of the share of "temporary" positions on all young people's dependent jobs (Italy vs. EU-15, obtained from the LFS, tab. 1) – these data include all atypical working contracts, including the "co.co.co" -, an additional element confirming the story of continuing and rapid evolution of the fragility of the Italian labor market.

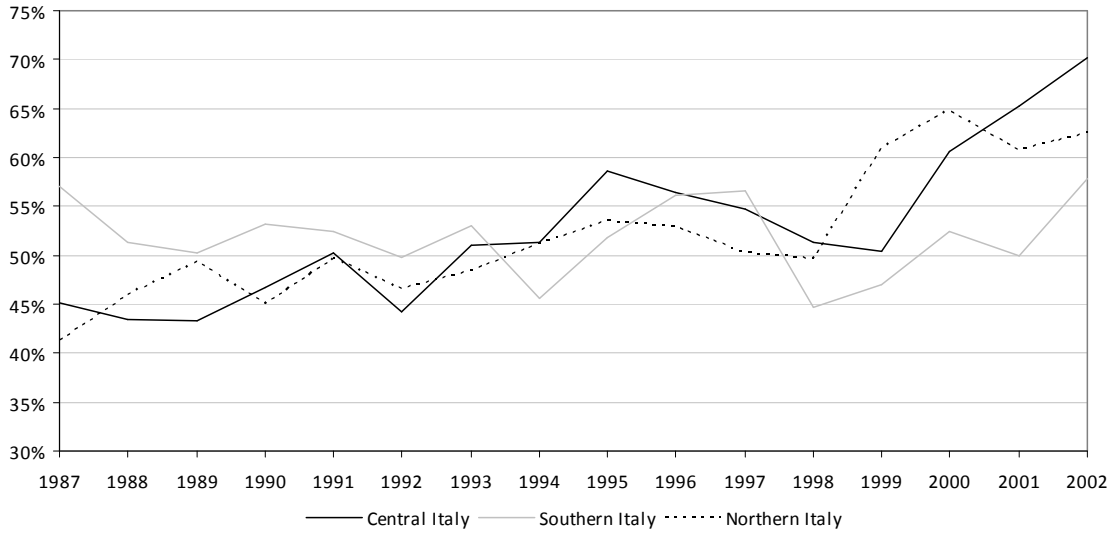

Fig. 3. Share of short spells (< 12 months) started each year : the increasing trend of contract flexibility.

Tab. 1. OECD - Share of temporary (dependent) employment M+F age 15-24

	2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	***2009***
It	26	23	27	27	34	37	41	42	43	44
Eu 15	39	39	34	35	40	41	42	42	41	41

The key finding of this paper can be summarized as follows: out of 100 new young entries- age 19-30 at the start of their working career in 1987 -, 91 % are still at work ("survive") within 2 years after entry, implying that a dramatic 9% of all young entries disappear altogether, without ever showing up again in the official labor market. 10 years after entry, survival is between 79 and 86%, less than 81% after 15 years, and about 82% in 2009, up to 22 years since their first hire, depending on the timing of initial employment. Very young entrants (19-22) do better than the less young (25-30): survival of the former is 84% against 77% of the latter 15 years after the first job spell in 1987. Workers of Northern Italy survive longer than their counterparts of the South: 86% vs. 74% in 2002 for entrants in 1987. A bad start makes a large difference in future outcomes. For those who have had a continuous 12-month employment spell at entry, survival after 15 years is about 92%; if the first employment spells was less than 3 months, it does not reach 75%: the latter totalled 30% of all youth hires in the Eighties, and exceed 50% throughout the 2000's. Moreover, an impressive number of people exit in the two years following initial hire: over 75% of such early exits are still missing from the labor market in 2002, and 65% in 2009. The frequency of early leavers who have had a short initial employment spell (less than 3 months) is three-times as high as those with a long initial spell (12 months +). The same holds with initial wages: workers in Q1 of the wage distribution at the time of exit are three times as likely to be early leavers as those in Q4. Bad starts have a dramatically persistent effect on future labor market outcomes, also when the future is 15-20 years ahead. As a consequence, the concentration of very long "extended unemployment" is high. Average unemployment duration of workers

entered at the end of the Eighties exceeds 7 years; average unemployment duration of all the unemployed in 2002 is close to 4 years. The magnitude of these numbers is the source of serious preoccupation and raises questions that will be addressed in the following paragraphs.

3. The WHIP data and the measurement of survival

3.1. The WHIP database

The WHIP longitudinal data are a representative sample of the population of employees of the private sector, of the public, non-tenured employees, the self-employed, as well as those covered by atypical (non-standard) contracts, with the exclusion of contract-work (the so-called "co.co.co."). The sample - population ratio is 1:90. WHIP is a very rich database, that covers working careers from start to retirement at monthly frequency, with data on skill level, wage, industrial sector and geographical location. WHIP is therefore ideal to describe mobility patterns, much beyond the details provided by LFS-type data collected at six-months intervals (thus underestimating the frequency and length of employment and unemployment spells). In addition it provides detailed information on the workforce dynamics, composition and relative wages of all the employing firms. Data on educational attainment are, instead, unrecorded in the WHIP database. WHIP observations start in 1986 and, as of today, end in 2004. WHIP does not cover tenured employees of the public sector (including the military service and the police), nor the professionals working on their own.[9] In order to fill this gap, a very recent file has been provided by the Social Security Administration (Casellario degli Attivi) which covers the universe of "active" people, therefore including all public employees and all professionals whose social security contributions are paid to different institutions, allowing to integrate the missing information from WHIP through 2009. Each year, about 2% of the WHIP individuals become tenured employees in the public sector; and about 1% are the university graduates who move in professional independent activities after 5-6 years of apprenticeship under atypical employment contracts.

The basic statistic used in this exploration is survival in the labor market. Survival is estimated counting the number of individuals who have been employed since a given starting year and have not dropped out of the database at the end of the observation period, whether or not they have had intervening unemployment spells in between. Our database provides information on unemployment spells only if the workers receive official unemployment compensation. This is not a frequent occurrence in Italy, where unemployment benefits are available for limited categories of workers.[10] If we observe missing observations of the same individual for some time (months /years), after which he/she re-appears as employed, we attribute the missing period to unemployment. Those

[9] Since the late Eighties, however, almost all hires of young people in the public sector have taken place via atypical contracts. Likewise, young professionals usually begin their career in professional studies, hired with non-standard contracts. All these categories are directly observed in WHIP.

[10] A different form of compensation is instead available for temporary layoffs (Cassa Integrazione Guadagni), in which case workers are kept on the employer's payroll and will be observed in the database as if they were still attached to their post.

who have left their job and, at a later date, disappear altogether from the database, are the "non-survivors" at that date, whom we consider in "extended unemployment" .[11]

3.2. Measuring survival

Survival at year (t) is estimated counting the number of individuals who have not disappeared from the database at the end of t-th observation period. Fig. 4 exemplifies the counting methodology: it shows one cell containing the work histories of 8 individuals, A through H, observed between 1986 (year of entry for all) and 2008.

Let the survival count take place in 2008. In year 1993 we count the following survivors: A, B, C, D, F, G and H (yielding a survival rate = 7/8 = 0.875), as E has exited two years after entry and no longer reappears. In year 2000 the following have survived: A, B, C, D, G and H, yielding a survival equal to 6/8 = 0.75. Notice that, as the count is done in 2008, individual B is counted as survivor through 2003, as he did move into unemployment between 1991 and 1993, and between 1997 and 1999, but his working career continues at least until 2003. Obviously, in 2008 he could find himself in a long spell of unemployment whose ending will occur years later. If that were the case, our survival count in 2003 would be downward biased. This is the truncation problem that we (partially) avoid by narrowing the observation window toward the end (in this example we end in 1998, leaving 6 extra years before truncation).

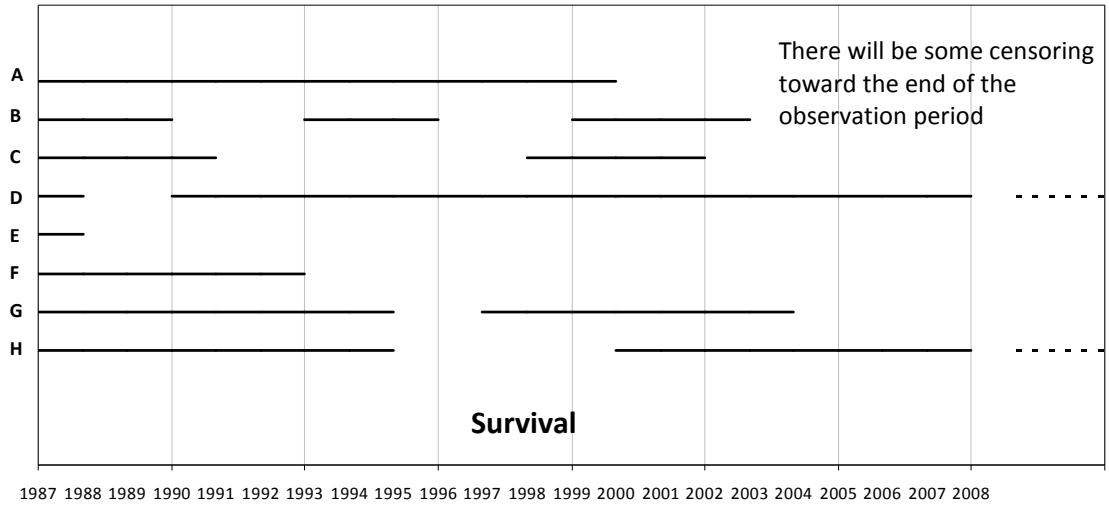

Fig. 4. Counting survival.

The complete count ends in 1998 in order to avoid truncation, and leads to the following survival curve:

[11] They may, nonetheless, reappear at some later date. Thus survival observed in, say, 2005 could, in principle, be higher than survival observed in 1998. If survival is measured from a given initial date to a given final observation point, it will always appear as a non increasing function of time.

Tab. 2. Survival curve from measuring survival example.

	1986	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*
Survival rate	1	1	7/8	7/8	7/8	7/8	7/8	7/8	6/8	6/8	6/8	6/8	6/8
Disposed workers		---	E	E	E	E	E	E	E, F	E, F	E, F	E, F	E, F

The ensuing analysis of survival is performed on cells defined by cohorts of young male employees observed at one-year intervals between 1986 and 2002, along the following dimensions:

- age group of the relevant cohort (3 groups)
- year of first entry in the labor market (14 years, from 1987 to 2001)
- duration of first employment spell (3 groups)
- economic branch of initial activity (2 industries)
- geographical area (3 areas)
- size of first employer (3 size groups)
- mobility (2 types: movers and stayers)
- skill level (2 groups)

In principle we have 9072 cells (the product of all the above attributes): many are empty, and some include only one individual. We retain only those with at least 4 individuals. Median cell size equal to 8, mean 11.5, and standard deviation 11.2.

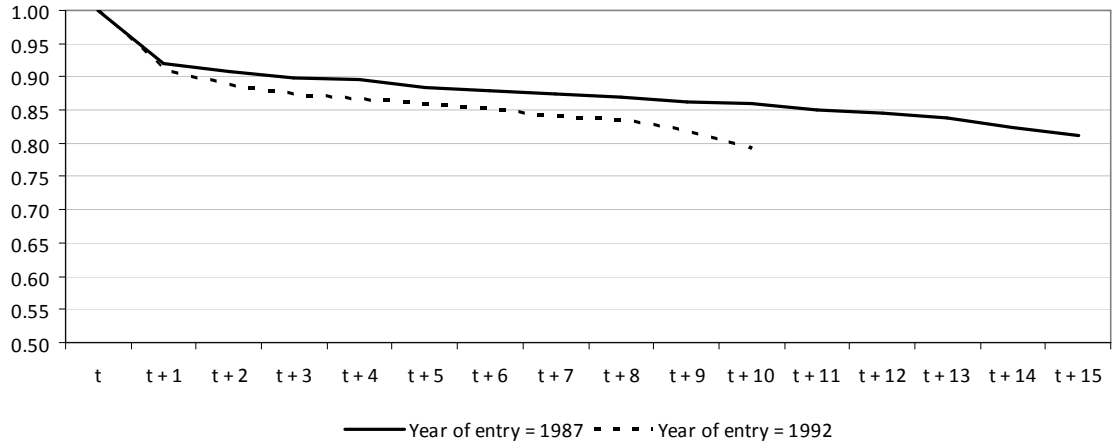

Fig. 5. Young males, survival curves by year of entry.

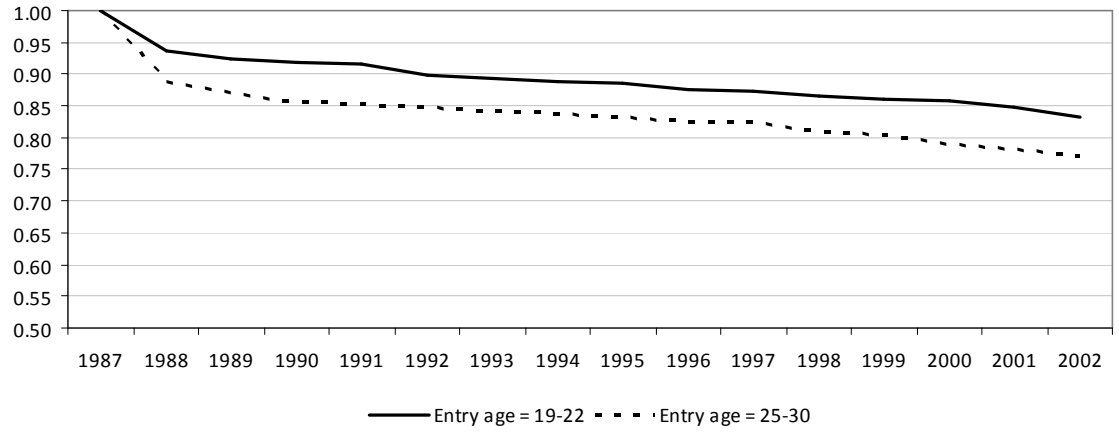

Fig. 6. Young males, survival curves by age at entry.

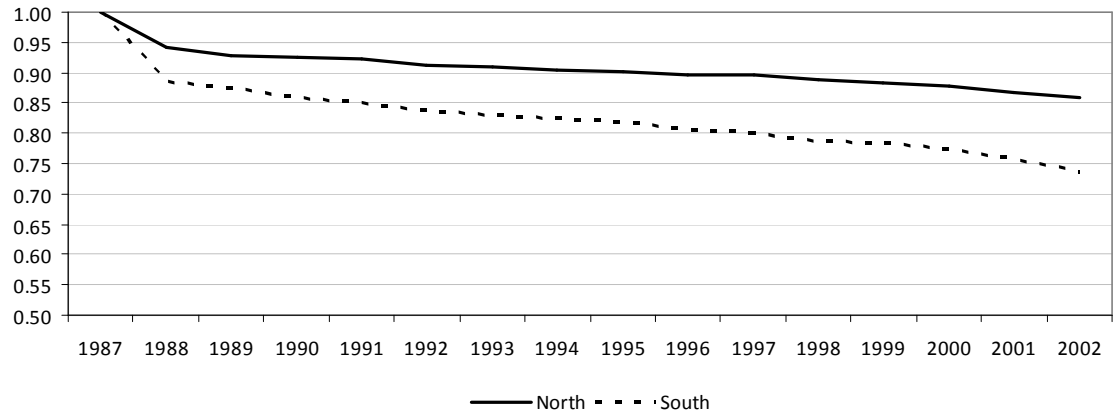

Fig. 7. Young males, survival curves by geographical area.

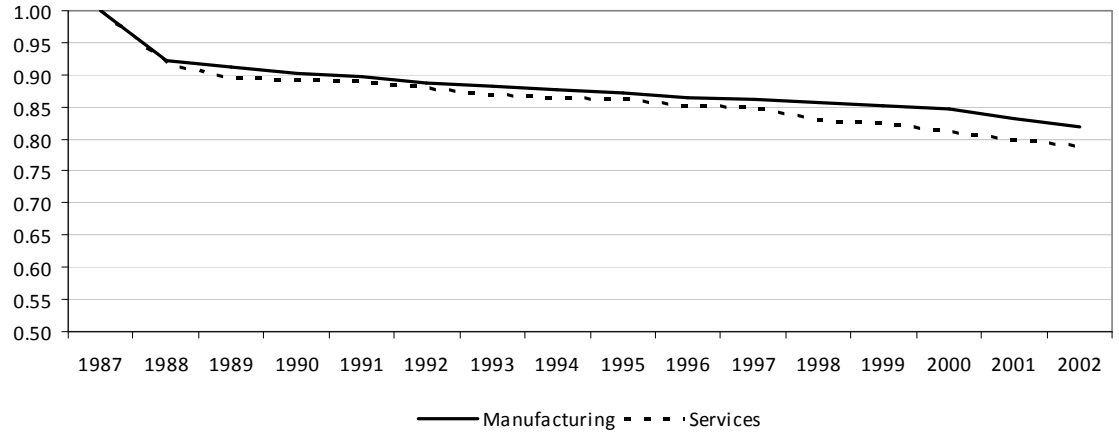

Fig. 8. Young males, survival curves by industry.

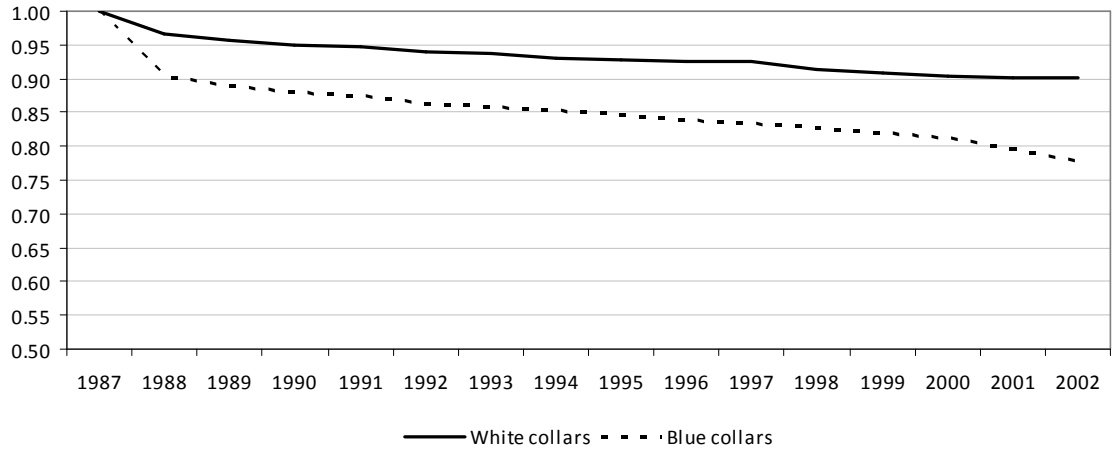

Fig. 9. Young males, survival curves by qualification.

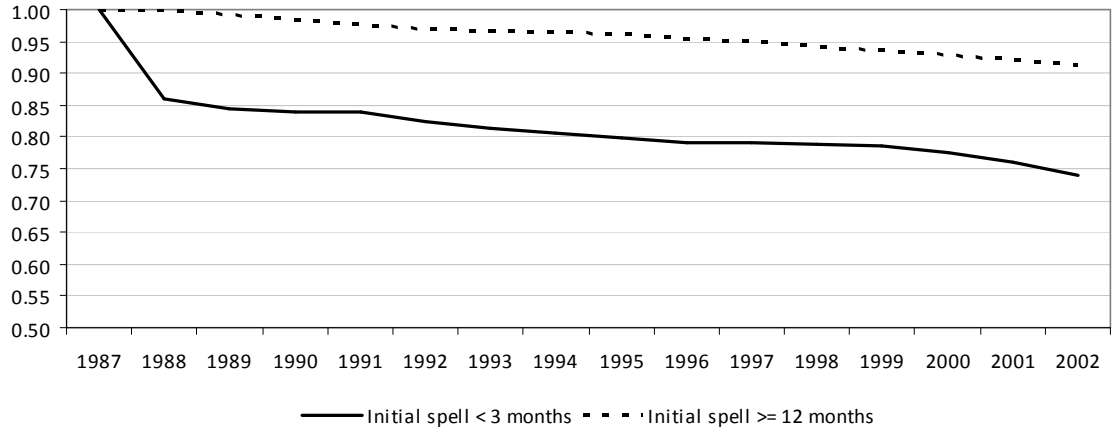

Fig. 10. Young males, survival curves by duration of first spell.

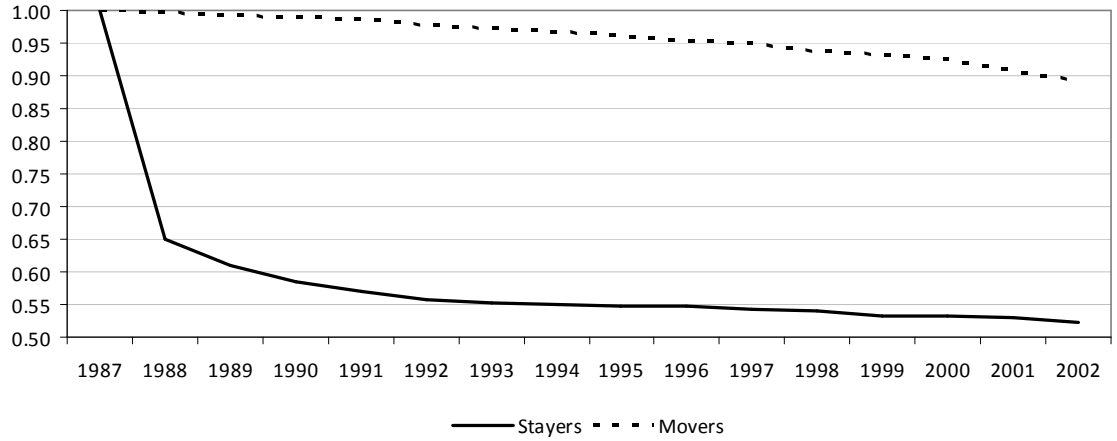

Fig. 11. Young males, survival curves by mobility following the initial job.

A few selected survival curves are displayed above, calculated on the basis of the WHIP database, adjusted after the INPS integration. The timing of labor market entry is relevant (fig. 5): if the initial job starts in expansionary years (1987), survival is higher than if the working career begins during recession times (1992 is the beginning of a three-year downturn of the economy). Fig. 6 shows the impact of age at entry: the younger cohorts (19-22) have a somewhat higher survival than the less young (25-30). Fig. 10 displays the survival of cohorts that experienced a very short initial employment spell (< 3 months) vs. the same cohorts with a long spell (> 12 months). The impact of the first spell duration is very clear: an immediate drop of survival in (t+1) and (t+2) for entrants whose initial job spell is short, followed by a continuing relatively steep fall. Entrants with a longer initial employment spell (12+ months) do better on all counts. The lack of data on educational attainment may hide the fact that many of the people with short employment spells could be low- skilled. True as this may be, we will later show that the evidence of skill mismatch is weak. In addition, we know that no university graduates belong to the cohorts aged 19-22, whose survival is higher than the remaining age groups. The last and foremost additional factor is mobility following the initial job (fig. 11): the likelihood of survival of the movers is much higher than the stayers'. Interestingly, however, the difference is huge at the very beginning of one's career: three years later the survival rate is about the same. As will be seen, the surviving stayers hold a wage advantage over the movers. Initial wages are also good predictors of survival: the probability of surviving after a bad start (first job spell < 3 months *cum* wage in first quartile of the distribution) is about four times as low as that following a good start.[12]

Let it be clear what the survival rates imply. We observe 81 survivors in 2002 among the cohort of entrants in 1987 [13], 15 years after their initial job[14] (individuals having entered the labor market at age 19-22 will be 34-37 in 2002). Such people have not been necessarily at work for 15 consecutive years: they may have had several employment spells (possibly in different firms), and may have moved into unemployment during the observation period, having re-entered official employment before the end of 2002.

The big question "where do the majority of the "disposed" workers end up ?" is yet unanswered. The unofficial/unobserved/hidden economy is a natural candidate destination, although there is no way to prove the argument, other than comparing our figures with the ISTAT estimates of employment-population ratios and of the unofficial labor market, itself the result of a reasonable, but gross mix of indirect evidence.[15]

[12] A similar finding on UK data is reported in Stewart, Mark B & Swaffield, Joanna K, 1999. "Low Pay Dynamics and Transition Probabilities," Economica, vol. 66(261), pages 23-42, February.

[13] The 2002 - rate of "extended unemployment" of the cohort of young males entered in 1987 is 19%, also a simple indicator of "unused working capacity".

[14] Survival through 2009 is about 82%. The integration to the WHIP data does not allow to compute the entire survival function between 2003 and 2009, but it provides the elements to estimate it at the end of the time-window 2003-2009.

[15] The extent of the unofficial economy poses serious problems in all countries, and indirect evidence from a variety of sources is the only available instrument that allows coarse estimation.

3.3. Extended unemployment and LFS estimates

The first comparison is between our findings on survival and the LFS employment-population ratios of selected age groups: a reasonable compromise, nonetheless problematic in view of the unavoidable differences between administrative data like ours and survey data. The foremost difference is very substantial: as widely emphasized in the literature, in the LFS the borderline between inactivity, unemployment and irregular activities defies detection: an individual who reports to be working may be a "regular" or an "irregular" worker; on the other hand, he may report to be unemployed even if he works full time in the black. Being classified as "inactive" or "unemployed" depends on the classification rules and the interpretation given to one's "recent" job search activity. The second and important difference lies in the fact that while the LFS indicators describe individual status at a given date, irrespectively of the status that precedes this date, our survival estimates refer to people, many of whom have left an official job in times far removed in the past, and therefore may carry a heavy backlog of long "extended unemployment" spells. Finally, there is a difference in the age groupings. The LFS employment-population data are available only for large 10-year age groups, that we break down in order to compare with our finer groups.

Given the necessary *caveats*, the following can be said:

(i) there is only one almost identical age group: our 34-45 vs. LFS's 35-44. Survival is 81% against E/P of 91.6%: the 10 p.p. difference could be reasonably attributed to people who work in the irregular economy, self-reporting as working in the LFS, while absent from our records;

(ii) the same may hold for our 40-45 group vs. LFS's 45-54, although the latter contains twice as many people, some of whom may be near retirement: survival is 77% against E/P of 85.6%;

(iii) turning to younger cohorts (27-38 and 25-36 in our data vs. LFS's 25-34), we find survival to be larger than E/P: between 83 and 86% the former, against 78.1% the latter. A plausible explanation lies in the fact that many (relatively young) individuals who hold jobs perceived as "temporary or precarious" may self-report to the LFS interviewers as active in job search also when they are "officially" at work, although with undesirable jobs.

(iv) the youngest comparable age group is our 22-25 against the LFS's 20-24: here the difference is enormous (87% survival vs. 48.5% E/P), but quite understandable. Our data count young people who have already had at least one job; in the LFS a vast number of interviewed individuals of this age group is still outside the labor market, in search of their first job.

Tab. 3. Survival in 2002 by entering cohorts of male workers.

Year of initial employment	*Age at entry*	*Survival rate*	*Age in 2002*	*Comparable age group*	*Employment/ Population Ratio (LFS 2000)*
1987	**19 – 30**	**81**	**34 – 45**	**35- 44**	**91.6**
1987	19 – 22	88	34 – 37		
1987	25 – 30	77	40 – 45	45 – 54	85.6
1990	19 – 30	81	31 – 42		

1993	19 – 30	79	28 – 39		
1993	19 – 22	80	28 – 31		
1993	25 – 30	75	34 – 39		
1994	**19 – 30**	**86**	**27 – 38**	**25 – 34**	**78.1**
1995	19 – 22	89	26 – 29		
1995	25 – 30	80	32 – 37		
1996	**19 – 30**	**83**	**25 – 36**	**25 -34**	**78.1**
1999	19 – 30	88	22 – 33		
1999	19 – 22	87	22 – 25	20 – 24	48.5
1999	25 – 30	91	28 – 33		

We now turn to the estimation of "average extended unemployment duration" of the "extended unemployed" (AEUD).[16] Let s(t) be the survival function for a given cohort (fig. 12). Survival at (t+13) is S = 0.68, implying that at the date of (t+13) the unemployment rate specific of that cohort is 32%. Of the 32% unemployed at (t+13), a few have left the market for the whole period of 13 years; 16% (= 100 - 84) for 5 years; very few, less than 1% for 1 year, between years 12 and 13. Average extended unemployment duration (AEUD) for the unemployed belonging to this cohort- about 6.5 years - is given by:

$$\textit{Average extended unemployment duration} = AEUD = \int_0^T tf(t)dt$$

where f(t) = s(t) / K is the p.d.f. subsumed by the survival function s(t). AEUD is a lower bound: workers who have survived through T may have had interrupted unemployment spells of any length in the course of their career, which are left out of this calculation. Survival implies only that they have reappeared in the database before T. Notice that while s(t) is seldom known, AEUD can be easily calculated from the empirical survival curve. A quick and approximate estimate of AEUD is one half the length of the observation period (here 6.5 years), its precision being highest when survival is a straight down-sloping schedule. When it is upward concave, the AEUD estimate is downward biased.

[16] A different concept is the "cohort overall unused capacity" (COUC): the COUC refers to the full cohort – working and out-of-work - , and measures the share of unused working capacity of the cohort since labor market entry through the end of the observation period. COUC is the ratio between the shaded area above s(t) and the area of the rectangle with sides 0-100 on the ordinate and 0-T in the abscissa (i.e. the complement to 1 of the share of the area below s(t) and T). In the example above COUC is about 15%.

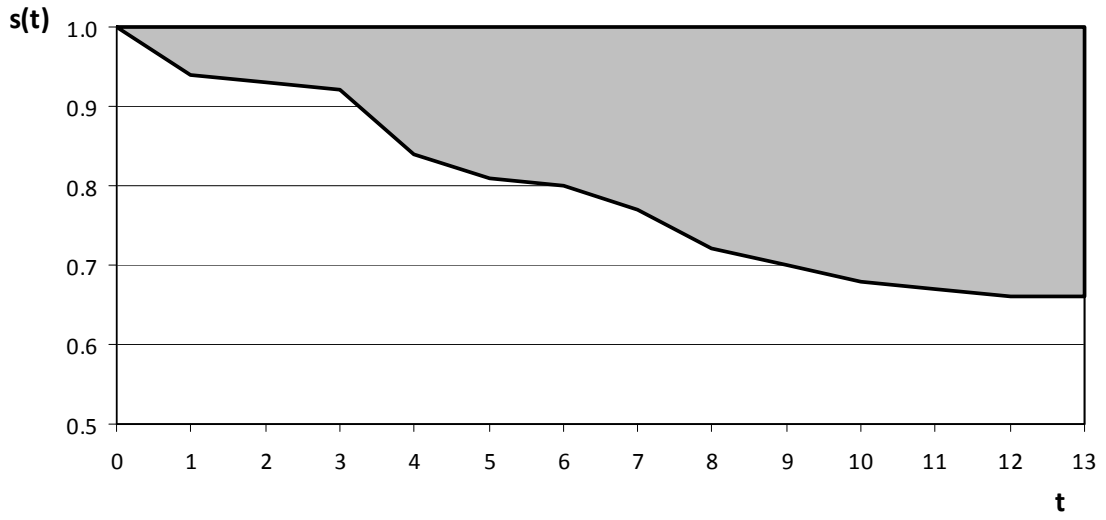

Fig. 12. Survival and long term "extended" unemployment duration

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The distribution of unemployment durations for more than 700,000 individuals is tentatively calculated (the above *caveat* apply here as well) and displayed in tab. 4. Workers aged 55+ are unobserved in our data as their labor market entry is prior to 1987: their AEUD is optimistically estimated at 10 years under the assumption that YWD between the mid Seventies and Eighties may have been less intense than in the years that followed. A conspicuous number of people have been in "extended unemployment" for as long as 15 years. The mean duration of "extended unemployment" in 2002 is 3.87 years, four times as large as the OECD estimates of mean unemployment duration reported below.
For reasons already explained, our estimates are not comparable with the ISTAT unemployment figures: 1,092,000 men in 2002 - 9.1% of the male labor force - 290,000 in search of first employment - 59.4 % of the unemployed estimated to be out of work for at least 12 months.

There is no need to emphasize that the extent of inflows and outflows from extended unemployment could be a less dramatic social outcome if it were shared by a vast number of people. Job sharing has, at times, been advocated as a beneficial mode of labor market governance in times of low activity (the Netherlands provide the classical example). Unfortunately extended unemployment of very long duration is highly concentrated among the seemingly weakest fringes of the young or once-young labor force.

In conclusion, the number of men who are forced out of the official labor market at early age is dramatically high, denoting a pathology dense of serious social consequences and leading to difficult problems of governance, especially in the wake of increasingly large immigration flows of unskilled labor from Africa, Asia and Eastern Europe.

Tab. 4. AEUD (average extended unemployment duration) by age in 2002

Age groups	*Workers in "extended unemployment"*	*Year of entry in labor market*	*AEUD (years)*
55 +	63 000	Ante 1987	About 10
45-54	104 000	Ante 1987	8
39-45	70 100	1987-89	7.5
34-39	70 100	1987-89	7.5
37-42	46 350	1990-92	6
31-37	46 350	1990-92	6
33-39	30 700	1993-95	4.5
28-33	30 700	1993-95	4.5
31-36	34 750	1996-98	3
25-31	34 750	1996-98	3
28-33	33 500	1999-01	1.5
22-28	33 500	1999-01	1.5
19-21	125 000	1999-02	0,5
All	722.000	Overall average AEUD	**3.87**

Tab. 5. Selected estimates of unemployment duration (male, age 20-60).

	Unemployment Mean duration (months) (*)	*Expected unemployment duration of non-recipients of unempl. Benefits (*)*	*Fraction of long term unemployed (12 months +) 2000 (**)*	*Fraction of long term unemployed (12 months +) 2007 (**)*
DK	6.06	9.11	13.6	6.7
UK	10.09	10.51	17.4.	20.0
FR	8.91	11.01	20.0	28.9
GE	7.60	10.51	23.7	35.3
GR	8.69	8.29	42.5	32.3
IRE	7.16	8.73	22.2	25.3
IT	**12.01**	**11.60**	**58.0**	**46.0**
SP	7.82	8.50	30.9	12.9

(*) Estimates from K. Tatsiramos (2010) on ECHP 1994-2001,
(**) OECD, Statistical Extracts

3.4. Wages and labor costs

Italy followed the world-wide trend of increasing wage differentials, attributable to the demand for high skills. Wage differentials between young and older individuals have increased also independently from the skill component: the reforms aimed at enhancing the job opportunities of young people – by granting wage subsidies to employers - have had an additional effect of widening them. Tab. 6 displays mean and percentiles of the earnings differential ratios between blue-collars, aged <25 and >45, regularly employed as dependent workers. In 1985 the mean ratio was 0.71; it steadily declined through 2003. At the top of the wage distribution the gap between young and mature workers has

increased even more markedly. In principle, this trend ought to favor the utilization of young workforce.

Tab. 6. Gross earnings differentials young / adult workers.

<25 / >45	*mean*	*p10*	*p50*	*p90*
1985	0.71	0.66	0.76	0.66
1991	0.62	0.68	0.70	0.54
1996	0.60	0.70	0.68	0.49
2003	0.56			

Table 7 displays selected labor cost / wage ratios.[17] The standard employer tax is the social security contribution (s.s.c.), between 33 and 36% on gross wages, depending on industry and firm size. The labor cost / wage differential in manufacturing activities was much higher in the North than in the South until the mid-Nineties; it drastically declined thereafter as the provisions in favor of the industrialization of Southern Italy were phased out. The differential was somewhat lower for the younger generations. Recall, however, that the big difference between the young and the adults is the base-pay, which is the denominator of the ratios. Differentials were smaller in the service industries, largely excluded from the fiscal benefits accorded to the Southern manufacturers.

Tab. 7. Labor costs / wage ratio.

Sector	*Area*	*Age*	*1987*	*1993*	*1998*	*2002*
Mfg	North	19-22	1.27	1.32	1.30	1.28
Mfg	South	19-22	1.13	1.15	1.22	1.22
Mfg	North	22-25	1.35	1.40	1.39	1.36
mfg	South	22-25	1.13	1.15	1.28	1.23
mfg	North	25-30	1.38	1.42	1.41	1.41
mfg	South	25-30	1.12	1.14	1.30	1.29
serv	North	19-22	1.33	1.38	1.34	1.34
serv	South	19-22	1.26	1.28	1.27	1.29
serv	North	22-25	1.37	1.43	1.37	1.35
serv	South	22-25	1.28	1.31	1.26	1.23
serv	North	25-30	1.41	1.44	1.39	1.38
serv	South	25-30	1.29	1.32	1.30	1.26

[17] Total labor cost includes social security contributions and other indirect elements, and is net of employer subsidies. Labor costs are difficult to estimate because monetary benefits accrue to employers –in the form of tax and/or social security contribution rebates - in different years, as a function of workers' age, industry and geographical location of the workplace, and following rules that get often changed as politics suggests.

4. A model of survival, labor cost and wages

4.1 Attempting to explain the puzzle

The puzzle posed by the process of "young workforce disposal" and its implications for the length of "extended unemployment" duration has been presented in the introduction of this paper. A complete in-depth analysis of YWD – when and how it came about, why it evolved in spite of developments that might have led to its decline, if and how long is it going to last - would require an in-depth historical analysis and a micro-macro-model putting together all the elements since the Sixties or early Seventies, when Italy's labor market was, presumably, relatively immune from this pathology. This task is now out of reach because long micro-data series are simply not available. We are, therefore, left with a problem as there is no valid benchmark against which to confront more recent events. Our analysis aims, more modestly, at providing an empirical explanation of the medium run determinants of young workforce disposal between the mid Eighties til the early years of the new millennium.

We formulate a simple model of the structural determinants of survival to be estimated on cells of homogeneous individuals defined by several dimensions. The reason for renouncing to estimate on individual micro-data is methodological. We argued that YWD is driven by the demand side: decisions to hire, layoff and/or replace workers are taken by the employers. If complete firm data were available it would undoubtedly be appropriate to perform a full micro-econometric exploration aimed at explaining firm behavior leading to YWD. But they are not. On the other hand, in our environment workers are more often subjected to the employers' decisions, than decision makers on their own as in many studies on supply-side behavior.

Graphical exploration has already helped to single out five important elements that impact on workers' disposal: the duration of one's first employment spell, the timing of labor market entry, age, geography and mobility. All, but mobility, are outside of the individual workers' control. All, and others too, are among the defining dimensions of the cells.

Cell (grouped) estimation is advisable when medium-long term interpretations are sought: between estimators (cell data estimation yields between estimators) are more appropriate than within estimators, intended to follow individual behavior as it evolves over time. In addition, cell estimation helps to bypass the problem of unobserved heterogeneity: to the extent that each cell includes a sufficient number of individuals with similar characteristics, unobserved heterogeneity gets averaged out leaving the estimators unbiased, provided that heterogeneity is uncorrelated with factors that impact on the dependent variable (i.e. regressors and defining dimensions of each cell).

A number of testable hypotheses are provided by a very simple "nutshell" model of labor demand summarized in next para. 4.3. The results of our econometric exploration are promising and confirm all the *a priori* hypotheses on YWD.

4.2. Skill mismatch ?

We have, for the time being, left aside the discussion on skill mismatch, another potential explanation of the process of YWD. Could the lack of sufficient skills among

the young explain the low level of hirings compared to the less young (in spite of their higher cost)? Does it justify the rapid turnover of the young workforce, once hired ?

As before, data on educational attainment would help the answer, but we have to do without them. A weaker, although not unreasonable, identifying procedure relies on age and skill level. If young workers are scarcely qualified, adult workforce should make a preferable option for the employers, and their survival, once hired, ought to be higher.

Available evidence does not support this hypothesis (tab. 8): among the blue-collars, the youngest cohorts (that do not include any university graduate, present among the 22-25 and 25-30 groups) survive longer than either of the older cohorts: 81% for the 19-22 age group entered in 1987, 77% for the 22-25, and 70% for the 25-30. Among the white-collars the differences are smaller despite the fact that here the university degree may be present, but the ordering is preserved (91% for entrants in age 19-22; 90% for the 22-25 group; 89% for the 25-30. The same differences are found also for entrants after 1987.

The ordering is preserved also disaggregating by industry, with one exception among the young blue-collars in the service sectors (survival among the 19-22 is 73%, against 80% among the 22-25, with the 25-30 group dipping down to 67%). This is a small group compared to all the others: it includes qualified technicians and truck drivers, hired in the transportation and business services, whose specific skills may be of difficult replacement.

Tab. 8. Survival rate by age, skill group and sector (first job in 1987)

	19-22	***22-25***	**25-30**
Blue-collars			
All	**81**	**77**	**70**
Manufacturing	83	77	77
Services	*73*	*80*	67
White-collars			
All	**91**	**90**	**89**
Manufacturing	96	95	91
Services	84	83	87

4.3 A nutshell model of labor demand with permanent and temporary contracts

Standard theory of labor demand explains the level and dynamics of hirings and firings over the business cycle, but is not sufficient to explain the process of workforce disposal. An additional ingredient is necessary, namely the dualistic structure of the labor market, where permanent and temporary contracts (subsidized and easily terminated) are available to employers who hire according to comparative profitability.[18] A very simple two-period model of a firm that has the option of hiring young workers via permanent **(*P*)**

[18] B. Contini (2005). The nutshell model explains the composition of labor demand, not its level. It was intended to explain the employers' options between permanent (*P*) and temporary (*T*) contracts. Similar arguments apply here: P-jobs are near equivalent to jobs lasting 12+ months and *T*-jobs to jobs lasting less than 3 months.

or subsidized temporary contracts **(*T*)** provides the necessary framework and suggests identifying conditions, useful also for our investigation.[19] Leaving aside the model details, here is the main result, from which all the rest follows:

contract ***P*** (permanent) is preferred to contract ***T*** (temporary) if

$$V(P) > V(T) \qquad \text{if} \qquad w(1-s) + (1-gp)FC < f$$

where ***V( )*** is the value of the contract, **w** the wage paid to ***P***-workers, **s** the fiscal subsidy granted to the ***T*** contracts (***T*** workers will be paid ***w*s***) , ***FC*** the firing cost associated to the ***P*** contract (an inverse proxy for contract flexibility: zero for the ***T*** contract), ***f*** the training cost of a newly hired person with a ***T***-contract (or the productivity loss associated with hiring an unexperienced worker), ***g*** and ***p*** two probabilities denoting, respectively, two favorable events: a positive business cycle and a "good" worker. With **(1 - *g*)** probability the business cycle is favorable and the firm stays in activity, otherwise it shuts down; if the ***T***-worker is found "good" he is retained and promoted with a ***P***-contract, otherwise he is fired. The condition states that the ***P*** contract will be preferred if the opportunity cost of not using a ***T*** contract **[*w*(1 - *s*)]** plus the expected firing cost **[(1 – *gp*) * *FC*]** is less than the training cost ***f*** associated with the ***T***-contract. The firing cost will be incurred if both events turn out unfavourable ("bad" business cycle and "bad" worker, with probability **(1 – *gp*))**.

The negative tradeoff between labor cost and firing costs (the inverse of flexibility) is given by

$$\frac{\Delta w(1-t)}{\Delta FC} = -(1-gp)$$

The more favorable is the environment faced by the firm (in terms of workers' ability and business cycle, implying **(1 – *gp*)** approaching 0 **),** the flatter is the tradeoff, i.e. the less important becomes flexibility vis-à-vis labor cost. It follows that a high preference for ***P***-contracts implies also less worker disposal.

The model suggests the following testable hypotheses:

(i) the permanent ***P***-contract will be preferred in positions that require skills, i.e. where ***f*** (training cost or foregone productivity) is high and the opportunity loss associated to the subsidy is sufficiently low;

(ii) the higher the "quality" of the candidate recruits (i.e. the higher ***p***), the higher the advantage of hiring via permanent ***P***-contracts;

[19] See S. Bentolila, P. Cahuc, J. Dolado and T. Le Barbanchon, "Two-tier labor markets in the great recession: France vs. Spain", CEMFI, W.P. 1009 (2010). This is a much more sophisticated model of labor demand that yields testable hypotheses similar to the ones delivered by the nutshell model.

(iii) the higher ***[w(1-s)],*** i.e. the opportunity cost of not using ***T***- contracts, the higher the employers' preference for ***T***- hires;

(iv) in times of recession (***g*** → **0**) – of low labor demand *tout-court*, ***T***-hires will be preferred to ***P*** hires, changing the workforce composition in favour of ***T***-contracts. As a consequence, job destruction in the course of recessions will mainly hit ***T***-jobs;

(v) firms with low firing costs (often the small ones) will have a relative preference for ***P***-workers, and will be less sensitive to the fiscal rebate (i.e. less wage-cost elastic) than firms with high firing costs;

(vi) high growth firms / industries will have a preference for ***P***-contracts.

4.4. Structure and identification

Our analysis aims at providing an empirical micro-based explanation of the medium run determinants – mainly demand related - of young workforce disposal between the mid Eighties through the early years of the new millennium. Supply-related elements are present (leaving aside long run developments), as we observe the different survival and unemployment performance of the movers compared to the stayers. Supply-related arguments are necessary to explain how the irregular / black economy may absorb the disposed workforce (Appendix), but they need not belong to the main model.

Regression analysis on survival ought to be done with care: all survival schedules are monotonically decreasing in time, each having at most 16 time observations for the first observable labor market entries (from 1987 to 2002), and only 7 for the most recent ones (1996-2002). Therefore the introduction of many dummies will yield high R2, leaving little of substance to be explained.[20] It is, therefore, prudent to perform estimation on first differences of survival Δ *SURV(i,t) = SURV(i,t)- SURV (i,t-1),* rather than levels. First differences of a time-decreasing function are, obviously, non-positive.

We shall introduce a number of instrumental variables, corresponding to the timing of legislative reforms intended to enhance the employment opportunities of young people in a variety of modes, in different areas and at different times. Such programs ought to have an impact on the dynamics of workforce disposal, and – as will be explained – are important for identification.

The full model includes three endogenous variables, Δ SURV, LCOST, WAGE, and the lagged, weakly endogenous MOB variable.

BOX: variables denomination

Δ SURV(i,t) = survival (first differences)

LCOST(i,t) = labor cost

---

[20] Recall that analysis is performed on cells of cohorts of young male employees observed between 1986 and 2002, defined along several dimensions. All the defining attributes enter as covariates, in the form of dummy variables.

WAGE(i,t) = wages
FLEX (t) = flexibility (a macro variable)
DUR(i) = duration of first job spell (one dummy for each of three spell length)
MOB(i) = mobility (dummy)
MFG(i) = manufacturing (dummy)
AGE(i) = age at entry (one dummy for each of three age groups)
GEO(i) = geography (one dummy for each of three regional groups)
SIZE(i) = firm size (one dummy for each of three size groups)
SKILL (i) = skill level: white vs. blue collars (dummy)
CPI(t) = consumer price index
UNEMPL(i,t) = unemployment rate (regional)
CFL-NORTH(i,t) = dummy (for CFL-contract in the North, activated until 1990)
CFL-SOUTH(i,t) = dummy (for CFL- contract in the South, activated until 1990)
TAXRED(i,t) = generalized tax reduction in the South (dummy = 1, through 1994)
W_DEVST(i) = standard deviation of initial wages = IV
W_INITIAL(i) = average initial wages = IV
ENT-YR(i) = year of labor market first entry (dummy)
W-PART(i,t) = inflows of potential female competitors
IV(i,t) = instrumental variables; i = cohort; t = observation year

The structure of the model is as follows (endogenous variables underlined):

(1) $\Delta \underline{SURV} = k_1 + \alpha \underline{LCOST} + \beta FLEX + \eta DUR + \theta_1 ENT\text{-}YR + \lambda_1 MOB + \gamma_1 MFG + \mu W\text{-}PART + \delta_1 GEO + \zeta_1 AGE + z_1 SKILL + \omega_1 IV + interactions + u_1$

(2) $\underline{WAGE} = k_2 + \gamma_2 MFG + \delta_2 GEO + \varepsilon SIZE + \zeta_2 AGE + \lambda_2 MOB + \pi CPI + \rho UNEMPL + z_2 SKILL + \omega_2 IV + u_2$

(3) $\underline{LCOST} = k_3 + \varphi \underline{WAGE} + \gamma_3 MFG + \delta_3 GEO + \zeta_3 AGE + \chi TAXRED + \omega_3 IV + \psi_n CFL\text{-}NORTH + \psi_s CFL\text{-}GEO + z_3 SKILL + u_3$

4.5. Identification

Labor costs, demand conditions and workforce flexibility are the main explanations of hiring decisions. According to the nutshell model of par. 4.3 they will also affect the composition of labor demand, and hence worker disposal itself. Aggregate demand does not appear in the Δ *SURV*-equation, but its impact is caught by several covariates, all of which reflect in different forms the variability of the business cycle: *FLEX* itself, *DUR*, *ENT-YR*, *MOB* and *UNEMPL*.

Let us consider the influence of labor costs on workforce disposal (YWD). The nutshell model indicates that the higher the opportunity cost ***[w(1-s)]*** of not using ***T***-contracts, the higher the employers' preference for ***T***- hires. Labor costs are proportional to ***w(1-s)***. Thus, in first instance, increasing labor cost will lead to a larger proportion of ***T***-workers in the workforce, and higher turnover in the labor market. This may help YWD, but it is not a sufficient condition. Its impact depends also on the relative cost of

retaining a young, previously hired, individual vs. laying him off and hiring a new one in place. Such a detailed information is not available. To some extent, the ability argument helps to clarify the issue. Given that ability and skills are unobservable beyond the white-collar / blue-collar distinction, pay can be used as a proxy for ability, conditional on skill level. The assumption that white-collars may be, on average, more skilled than blue-collars (as reflected by their higher pay) is reasonable, also in view of the fact that a growing number of white-collars are university graduates. A simple test is available, namely the white-collars' labor costs should exert – c*eteris paribus* - a positive impact on the probability that they will be retained, i.e. reduce workforce disposal compared to the impact of blue-collars' wages. Thus, the influence of labor costs on YWD is indeed expected to be negative, but less so for the white-collars than for manual workers.

Another potential identifier is available: the 1994 reform of the CFL-contract extended eligibility from age 18-29 to age 18-32 and reduced the possibility of replacing workers with new subsidized hires at termination of the two-year contract. If the impact of labor cost were found more stringent after 1994, it would mean that the expected negative impact of the reform on new hirings prevails over the ability issue. The test does not reach significance, hinting at the modest influence of ability on the employers' decision to "dispose and replace", an additional argument against the skill mismatch hypothesis discussed in the previous par. The reform did, instead, affect the modal age of new hires, increasing it from 21-22 to 23-24.

Consider now workforce flexibility. Flexibility vastly increased in the observation period. It is, however, almost impossible to measure it at the micro-level: ISTAT, the Italian statistical institute, counted 48 different typologies of working contracts utilized in the early 2000's [21], and no such data are available in our or any other existing dataset. In its place we use the regional macro indicator of flexibility, the share of short initial employment spells (< 12 months) on all hirings of young workers, depicted in fig. 3.

From a theoretical perspective flexibility can be viewed as a component of labor cost. As with labor cost, the impact of flexibility on YWD is twofold and in opposite directions: on the one hand a high degree of contract flexibility – *de facto* a reduction of labor cost - will have a positive impact on the overall hiring rate, and may reduce the employers' incentive to increase turnover. On the other hand, the mere availability of flexible contracts will ease worker dismissal once it is perceived profitable. Here too, untangling the influence of flexibility from that of labor cost is not a trivial task. Overall, we may expect a modest influence of flexibility on workforce disposal, but it is difficult to predict *a priori* which of the two opposite effects will prevail (as will be seen, its negative impact is robustly evident). The case of Southern Italy helps to provide part of the answer: its industrial structure is more fragmented and based on small firms than in the rest of the country, a fertile ground for tax evasion and illegal labor practices, sanctions are difficult to impose, the grey-black economy is more pervasive. One might say that disrespect of the legal system pervades many sectors of the Southern economy and styles of life. Therefore additional "legally recognized" flexibility of the labor market should be less valued than in the rest of the country. In fig. 3 our macro- indicator of flexibility for the South shows none of the upward trend characterizing the other Italian regions. As a consequence, also labor costs ought to be less crucial for labor demand in the South, due to the proximity of a variety of quasi-illegal practices. In line with

[21] ISTAT, Nuovi contratti di lavoro, Roma (2002).

proposition (iv) of the nutshell model, we expect the impact of labor costs on workforce disposal in the South to be less negative than in the Centre-North. Here too, this differential can be tested via an interaction dummy between labor cost and the South.

A few words clarify the nature of two important variables, *MOB* and *DUR*, characterized by weak (time distant) elements of endogeneity.

(i) Mobility (*MOB*). In principle, the two-way causal relation between mobility and survival is beyond doubt: movers survive longer than stayers. At the same time, low (expected) survival may provide the incentive to move for the best, more endowed, individuals. The problem is one of measurement: as previously explained, we sort individuals who have been employed all the time with the same firm vs. those who have moved at least once, and use mobility defined thereof as one defining dimension of our cells. If *MOB* were treated as endogenous, it would erroneously imply that a job change occurred at year (t = 1) can be explained by survival many years later (say, at t=10). On the other hand, survival is explained by the individuals' previous history, mobility being one of its attributes. In spite of its weak endogeneity, *MOB* may be correlated with the residuals of the equations where it appears in the r.h.s.: this being the case, it will have to be instrumented. We have a descriptive probit regression on *MOB*, aimed at showing the extent to which initial conditions (age at entry, year of entry, geography, industry, initial job duration, initial wage) explain the different status of movers and stayers, as defined here.

(ii) Duration of first job spell (*DUR*). While it may reflect individual characteristics at the beginning of one's career (people who have been able to secure a "long" first job duration may be sorted according to their ability), it must be treated as exogenous. As a matter of fact *DUR* is robustly influenced by several pieces of legislation aimed at increasing contract flexibility (fig. 3). Moreover, the duration variables – specific to each individual's year of entry – catch also the influence of the business cycle.

The model is robustly over-identified.

Eq. 1 = <Δ *SURV*> includes one endogenous variable in the r.h.s. (*LCOST*). More restrictions than necessary are available, provided by three regressors reflecting policy changes appearing in eq. (3) – to be described below - , and by two additional exogenous variables <*CPI*> and <*UNEMPL*> appearing in eq. (2). *FLEX*, *DUR*, *MOB*, *AGE*, *SKILL*, *ENT-YR*, *MFG*, *GEO*, *W-PART* are the relevant exogenous variables. All are self-explanatory except the last one: *W-PART* is intended to catch the impact of women's labor market participation as potential competitors of young males.
In view of its weak endogeneity, *MOB* could be correlated with the residuals: if this is the case, it will be instrumented by the standard deviation of initial wages (*W_DEVST*), which turns out to be an appropriate instrument. In addition, we make use of three identifying interactions: *LCOST**(*SKILL* = white), *LCOST***SOUTH*, *LCOST***1994*, aimed at disembodying the joint impact of labor cost and flexibility, as explained in par. 4.2.

Eq. 2 = <*WAGE*> is in reduced form as it includes no strictly endogenous regressors; MOB, lagged and weakly endogenous, appears in the r.h.s. in order to explain the wage

differentials between stayers and movers. As above, we will test for potential correlation of residuals and *MOB*, and proceed accordingly if necessary. Additional exogenous and self-explanatory variables are *MFG*, *GEO*, *SIZE*, *AGE* and *SKILL*. We also introduce as covariates three policy variables (*TAXRED*, *CFL-NORTH*, *CFL-SOUTH*) that must appear in the labor cost eq. (3) where <*WAGE*> is the main (endogenous) regressor: if they turn out to have no significant impact on <*WAGE*> - as they do -, their significance in eq. (3) will be strengthened.

Eq. 3 = <*LCOST*> includes one endogenous regressor, *WAGE*, in the r.h.s. Additional explanatory power is provided by the three exogenous variables corresponding to the timing of legislative programs aimed at reducing young people's labor costs (*TAXRED*, *CFL-NORTH* and *CFL-SOUTH*). Other exogenous and self-explanatory variables are *MFG*, *GEO*, *SIZE*, *AGE*.

5. Estimation

5.1 Results

All regressions are weighted by cell size.

Eq. (2): It is convenient to discuss first the <*WAGE*> equation: it is as a linear function of exogenous regressors, one of which is *MOB* is weakly endogenous. The results are in line with standard priors. Skill (white), age (25-30) and, to some extent, firm size confirm their expected positive impact on wages. The price index *CPI* and *UNEMPL* are respectively positive and negative, and highly significant. In spite of its weak endogeneity, *MOB* turns out to be correlated with the residuals: it is instrumented by *W_DEVST*, but yields a non-significant coefficient. The three dummies reflecting policy changes in the hiring rules of young workers (*CFL-NORTH*, *CFL-SOUTH*, *TAXRED*) are non-significant in this equation, strengthening their role in the *L-COST* equation (3), where <*WAGE*> is the leading explanatory variable.

Tab. 8. Estimated models.

	2SLS (IV)	**IV**	**OLS**	**Probit**	**Probit**
	Dependent variables *(t-values in script)*				
	Δ *SURV* (1)	***WAGE* (2)**	***L-COST* (3)**	***MOB* (4)**	***MOB* (5)**
CONSTANT	**-0.043**	39.453	**-10.959**	**1.048**	**0.980**
	-3.79	*0.20*	***-5.30***	***22.13***	***21.41***
FLEX	**-0.310**				
	-2.49				
L-COST_HAT	**-0.000037**				
	-4.31				
L-COST_HAT*WHITE	**0.00002**				
	-2.64				
L-COST* 1994	0.00001				
	n.s.				
SKILL (WHITE)	-0.0022	**118.760**	**2.222**		

	n.s.	***11.69***	***1.79***		
MFG.	-0.00007	11.512	-1.184	-0.028	**-0.087**
	n.s.	*1.63*	*-1.30*	*-1.32*	***4.26***
NORTH	**0.015**	-8.481	**33.922**	**0.336**	**0.350**
	4.42	*-0.22*	***29.13***	***14.72***	***15.58***
CENTRE	**0.016**	-18.101	**29.310**	**0.123**	**0.130**
	4.02	*-0.74*	***21.66***	***4.53***	***4.84***
L-COST_HAT*1994	0.000004				
	n.s.				
L-COST_HAT*SOUTH	**0.00002**				
	2.51				
L-COST_HAT*CENTRE	0.000004				
	n.s.				
MOB	**0.0413**	-286.310			
	4.38	*-1.28*			
DUR3_12	**0.0042**			0.051	
	3.82			*1.75*	
DUR12	**0.0183**			**-0.577**	
	6.95			***-21.93***	
AGE22_25	0.0008	5.163	0.531	**-0.157**	**-0.192**
	n.s.	*0.41*	*0.51*	***-6.44***	***-8.03***
AGE25_30	-0.001	**45.129**	**2.969**	**-0.261**	**-0.264**
	n.s.	***2.96***	***2.58***	***-10.34***	***-10.49***
E1988	0.001			**-0.130**	**-0.126**
	n.s.			***-2.70***	***-2.66***
E1989	0.001			**-0.097**	-0.070
	n.s.			***-1.92***	*n.s.*
E1990	0.003			**-0.161**	**-0.116**
	1.93			***-3.11***	***-2.27***
E1991	0.001			**-0.120**	-0.290
	n.s.			***-2.22***	*n.s.*
E1992	0.002			**-0.152**	-0.699
	n.s.			***-2.64***	*n.s.*
E1993	0.002			**-0.135**	-0.029
	n.s.			***-2.21***	*n.s.*
E1994	0.003			**-0.091**	-0.017
	n.s.			*-1.52*	*n.s.*
E1995	0.003			-0.049	-0.068
	n.s.			*-0.90*	*n.s.*
E1996	0.002			-0.062	-0.076
	n.s.			*-1.09*	*n.s.*
E1997	-0.0012			**-0.129**	-0.004
	n.s.			***-2.37***	*n.s.*
E1998	0.002			**-0.167**	-0.063
	n.s.			***-3.04***	*n.s.*
E1999	0.001			**-0.242**	-0.096
	n.s.			***-4.64***	*-1.87*
E2000	0.000			**-0.428**	**-0.225**
	n.s.			***-8.23***	***-4.39***
E2001	**0.011**			**-0.632**	**-0.428**
	2.21			***-11.99***	***-8.25***
E2002	(dropped)			**-0.997**	**-0.75**
				-17.82	***-13.69***

Δ W-PART	**0.00085**				
	3.65				
Δ W-PART*NORTH	**-0.00061**				
	-2.63				
Δ W-PART*CENTRE	-0.0001				
	n.s.				
SIZE*MEDIUM		**16.466**			
		1.81			
SIZE*BIG		27.244			
		0.64			
CPI		**3.086**			
		18.94			
UNEMPLOYMENT		**-4.333**			
		-3.21			
CFL CENTRE-NORTH		-10.406	**-23.771**		
		-0.61	***-12.70***		
CFL SOUTH		5.569	**-17.803**		
		0.23	***-6.67***		
TAXRED			**-18.894**		
			-8.44		
WAGE			**1.345**		
			221.43		
W-INITIAL					**-0.0013**
					-8.63
OBSERVATIONS (*)	**9774**	**2979**	**576**	**20177****	**20177****

(*) The number of observations varies across the specifications (1) – (3) depending on the disaggregation allowed by the regressors: for instance, labor costs cannot be calculated by firm size, mobility and job duration, leaving only 576 observable cells for the estimation of eq. (3).
(**) The *MOB* probit equation is estimated on individual data.

Eq. (3) *LCOST*: the explanation of labor costs rests almost entirely in <*WAGE*>, with a regression coefficient equal to 1.35: 0.35 is the average rate of social security contributions on gross wages. While <*WAGE*> is endogenous, its regression (2) is specified in reduced form: as a consequence OLS estimates of eq. 3 are unbiased even if <*WAGE*> is directly used as regressor *in lieu* of its predicted value**.** Age, skill level and geography display their expected impact. More importantly, all three dummies reflecting policy change – the CFL contract in the North (<*CFL-NORTH*>) and in the South (<*CFL-SOUTH*>), and the generalized tax reduction in favor of employers located in the South (*TAXRED*) - are highly significant with the expected negative sign, reflecting their contribution to the reduction of labor costs before the early Nineties when the main reform changes were implemented. The impact of the CFL contract in the South is smaller than in the North, due to the contemporaneous availability of the generalized tax rebate for Southern Italy.

Eq. (1): <Δ *SURV* > is the change in each cell's survival in year (t). Eq. (1) is estimated by 2SLS, using the predicted values of <*LCOST*> obtained from (3). Labor cost <*LCOST_HAT* is, as expected, significantly negative (the estimated coefficient is -

0.000037) The interaction *L-COST_HAT*WHITE* is also significant and, as predicted by the nutshell model, with a positive sign (+ 0.00002): thus the impact of labor cost gets almost halved on the white-collars (-0.000037 + 0.000020 = - 0.000017), embodying the positive influence of workers' ability. Likewise for the interaction *LCOST_HAT* *South, positive and significant (+ 0.00002), which confirms the hypothesis that labor costs in Southern Italy carry less weight than in the rest of Italy (- 0.000037 + 0.00002 = - 0.000017). The interaction *LCOST*1994* – aimed at catching the potential influence on survival of the measures introduced to the CFL contract in 1994 - is, instead, non-significant. Such a negative inference is not completely unexpected in view of the fact that, by 1994, the utilization of CFL contracts had declined compared to the late Eighties when it was at the peak of its popularity (in 1988 35 % of all hires of young people were CFL's, and only 14% in 1994).

The *FLEX* macro-variable has a robust negative impact on survival (the estimated coefficient is -0.31), suggesting that the increase of flexibility helps the process of workforce disposal. The potential opposite influence via increased hirings appears to be negligible.

MOB has a strong expected positive impact on survival: movers do much better than stayers (+ 0.0413 corresponding to 4.1 p.p. on average Δ SURV).[22] The same holds for the duration variable *DUR12* (coefficient = + 0.0183, i.e. 1.83 p.p. on average Δ SURV). As pointed out, the *DUR* variables catch also some of the business cycle effect: in expansionary years the frequency of initial hires that lead to "long" job durations is significantly higher than in years of low activity.

Age and industry are non- significant while the geographical dummies reflect the higher survival of the North and Centre compared to the South. Last but not least, the change of women's entries in the labor market (<Δ *W-PART*>) positively affects young men's survival in the South and Centre – a remarkable, although slight, signal of complementariety. Complementariety appears more fragile in the North.

MOB (eqs. 4 -5): a useful appendix to the model is provided by a linear probit regression of the mobility dichotomous variable, estimated in two versions that tell identical stories from different perspectives. In the first one (eq. 4) the first job duration <*DUR*> variables enter as regressors, but initial wages <*W_INITIAL*> are left out; in the second one (eq. 5) the former are absent while initial wages are present. The coefficients of all other regressors entering both versions are almost identical. In eq. 4 *DUR12+* displays a robustly negative sign, implying that a "good" start provides incentives not to leave one's job. Similarly, in eq. 5, *W_INITIAL* is negatively signed, suggesting that low initial wages enhance mobility. DUR12+ and *W_INITIAL* are two sides of the same story and lead to similar behavior: a "good" start carries, on average, relatively high initial wages, and hence workers will refrain from searching alternative options. The order of magnitude on the predicted probability of mobility is roughly the same: - 0.58 for DUR-12 (expressed as a dummy), and - 0.70 (= - 0.0013 * average initial pay of 580 eu/month) for *W_INITIAL*.

[22] MOB is correlated with the residuals and instrumented by <W_DEVST>.

Other regressors like *AGE*, *GEO* and *MFG* are significant and in line with our priors (very young workers are more prone to mobility than the less young; mobility is higher in the North; it is also higher in the service industries than in manufacturing). Finally, the *YR_ENTRY* variables have an interesting pattern that, to some extent, reflects the business cycle: at the beginning – the expansionary end of the Eighties - they display a significant negative sign hinting at lower mobility; approaching the downturn of the early Nineties the coefficient loses significance (hovering around zero) implying a higher degree of mobility during the recession. In the last three years of observation, 2000-02, the increasingly large negative signs reflect, by construction, the fact that late entrants have less time to take the mobility option.

5.2. Some quantification

Quantification of the impact of the main regressors on $\Delta SURV$ may be assessed considering the contribution of each to the predictor $\Delta \hat{SURV}$. Tab. 9 exemplifies the contributions for a selection of cells. Mobility positively impacts on $\Delta \hat{SURV}$ more than any other single factor (rows 1, 2, 3, 4; in row 5 where mob = 0, $\Delta \hat{SURV}$ is much more negative than elsewhere). Labor cost and flexibility contribute negatively to survival, the weight of the former being somewhat larger than the latter for the blue-collars. For the blue-collars the average contribution of labor cost with labor market flexibility is roughly equivalent (with opposite sign) to that of mobility (rows 2 and 3). Somewhat less for the white-collars (row 1) where labor cost embodies the positive influence of ability. Also in the South (row 4) the impact of labor cost (*cum* interactions) is smaller than elsewhere, in line with our priors. The "long" duration of one's first employment spell (12 months +) reduces survival by less than one half than mobility, and the intermediate duration (3-12 months) by one tenth. Row 2 shows the strong negative impact of very short job duration (<3 months), almost as large as no mobility (row 5). Other regressors with a non-negligible, but smaller impact, are not displayed.

The explanatory power of the model can be also be assessed by the distribution of the residuals defined by the difference between observed survival and estimated survival (denoted by $SURV\_RES(t) = SURV(t) - \hat{SURV}(t)$. Notice that the *SURV_RES* residuals are not those of the Δ *SURV* regression, which estimates the difference of survival between (t) and (t—1). The latter must be "integrated" in order to obtain an estimate of survival $\hat{SURV}(t)$ at any given year.[23] Fig. 13 depicts the distribution of *SURV_RES* for the complete sample (weighted by the numerosity of each cell), while fig. depicts the time variation of $\Delta \hat{SURV}(t)$ - the elements that, once "integrated", yield the estimate of $\hat{SURV}$.

[23] The $\Delta SURV$ regression yields - for each cell - a sequence of residuals <1988-1987>, <1989-1988>, ….. <2002-2001>. "Integration" amounts to adding the terms of the sequence (as many terms as the time span over which survival is estimated).

Tab. 9. Contributions of the main covariates to the estimate of $\Delta\hat{SURV}$ for a selection of cells (contribution = $\hat{b}$* *regressor mean*). Benchmarks: [age 19-22; dur < 3; south; mob = 0).

	$\Delta\hat{SURV}$	*flex*	*l_cost^*	*l_cost^ cum interactions*	*mob*	*dur-12+*	*dur 3-12*	*centre*	*north*	*const*	*CELL*
1	**-.0086**	-.0187	- .0260	-.0175	.0413	.0183			.0149	-.0428	**25-30 MFG NORTH WHITE 12+**
2	**-.0247**	-.0187	- .0159	-.0204	.0413				.0149	-.0428	**19-22 MFG NORTH BLUE < 3**
3	**-.0209**	-.0187	- .0148	-.0184	.0413		.0043	.0159		-.0428	**22-25 MFG CENTRE BLUE 3-12**
4	**-.0090**	-.0187	- .0121	-.0077	.0413	.0183				-.0428	**22-25 MFG SOUTH BLUE 12+**
5	**- .0352**	- .0164	- .0234	- .0106	0	.0183		.0159		-.0428	**25-30 SERV CENTRE WHITE 12+ MOB=0**

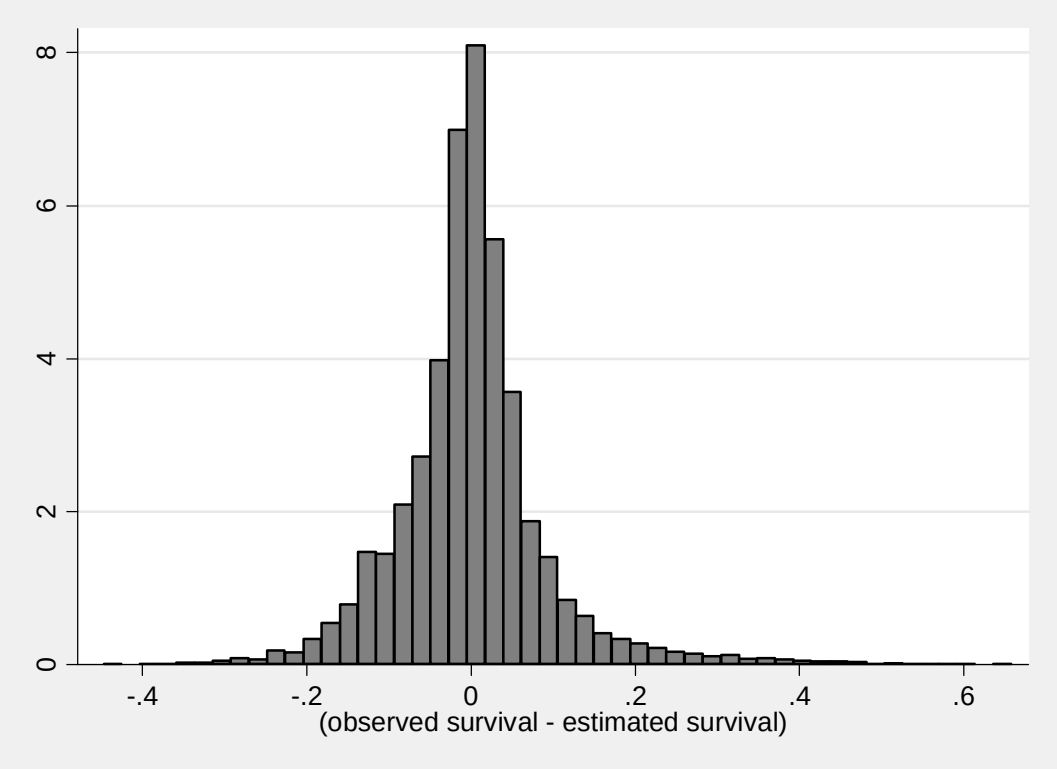

Fig. 13. Histogram of differences between observed survival and estimated survival.

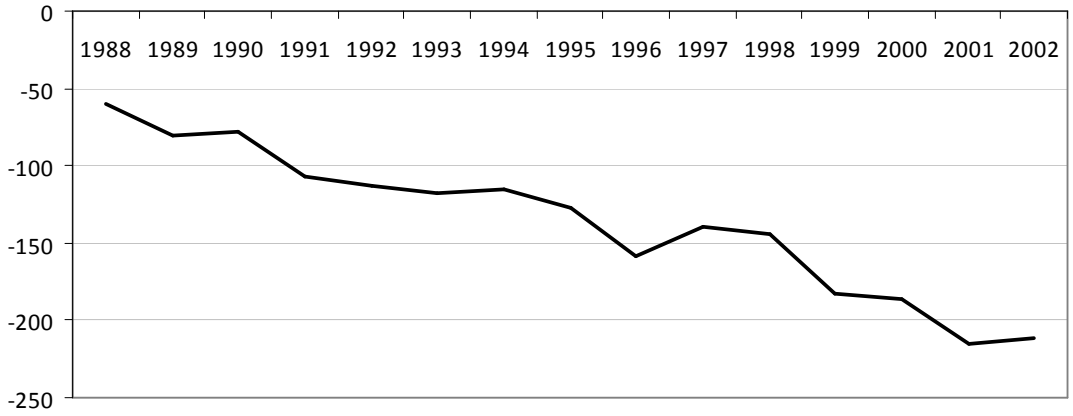

Fig. 14. Cell: manufacturing, north, age 25-30, first job duration 3-12 months, mobility = 1, white-collars. Estimated $\Delta \hat{SURV}(t)$ values multiplied by 10.000. Adding together ("integrating") yields -0.204, i.e. estimated survival 1987-2002 equal to 1 - 0.204 = 0.796.

6. Self-selection and truncation behind the door?

6.1. Self-selection

A problem of self-selection could be raised in connection with our measurement of "disposable" workforce. The individuals whom we consider "disposed" once they leave the panel and are no longer observable could, in principle, be entering the world of big business (excluding self employment, which we do observe and account for), or the political arena, on a path of upward mobility.

The first counter-argument is that the large majority of the quickly "disposed" individuals have had very short initial employment spells and are in the lowest percentiles of the wage distribution. This strongly suggest that, by enlarge, early disposal has very negative connotations. Which is not sufficient to exclude self-selection, but points in this direction.

The second argument integrates the previous one. We select the subset of individuals who have "survived" in the first five years of career, and observe their wage 5 years after their first job spell. Some of the selected workers may have had unemployment spells of various length in the course of their initial 5-year career. Deflated post-5-year wages are regressed against the variables that define the cells, including mobility (tab. 11). Here self-selection may arise, but works in the opposite direction, strengthening our conclusion: the individuals included in this sub-sample are the "lucky" ones who have not been disposed in the first 5 years of career and the significance of the initial job spell on post-entry wages could be hidden by the selection. But it is not: a good start at entry (employment spells >12 months) is very significant and yields a premium of 53 EU/month over the shorter spells. The premium of a good start (12+ months) may, at first sight, appear small. But here we are imposing a strong restriction: even the bad starts must last at least 5 years, i.e. we select out the worse

starters who get "disposed" before reaching the 5-year seniority in the labor market. Wages react positively to a long (12+ months) initial employment spell, and increase with the workers' age. Geography and industry reveal the same impact as in eq. (2). Additional controls are introduced to account for the impact of job-to-job mobility. Not only do we distinguish between stayers and movers, but, for the latter, we also take into account the firm size of origin and destination of the last job change (there could be more than one).[24] Movers do better than stayers on almost all counts: those who switch from smaller-size firms to larger ones top the list of wage premiums.[25] Finally, the year of entry reflects well the ups-and-downs of the business cycle: entry in 1987 yields the wage premium earned five years later, in 1992, the last year of expansionary cycle. The premium is zero as 1987 is the benchmark. From then on, as the economy moves into recession, the premium becomes progressively negative, reaching the bottom in 1994, five years after entry in 1989. By 1997-98 (corresponding to entry in 1992-93) the recovery is under way and the wage premium is back to the 1992 level. In 1994 the Italian economy turns again into recession and the wage premium becomes negative once again.

To conclude, there seem to be good reasons to exclude self-selection.

Tab. 10. Weighted OLS regression on real wages 5 years after first job entry.

	Coefficient	***t-value***
Δ W-PART	-0.24	-0.9
Δ YOUTH-PART	-9.00	-2.2
AGE 22-25	40.18	4.7
AGE 25-30	108.11	12.6
NORTH	156.27	19.6
MFG	-88.42	-11.6
DUR3-12	16.76	1.6
DUR12	52.47	5.4
STAYER	63.42	6.8
BIG_TO_BIG	304.96	28.9
BIG_TO_MED	138.29	6.8
BIG_TO_SMALL	68.87	2.7
MED_TO_BIG	222.29	13.6
MED_TO_MED	106.31	10.8
MED_TO_SMALL	35.30	2.2
SMALL_TO_BIG	190.84	11.6
SMALL_TO_MED	74.38	5.3
E1988	-22.57	-1.6

[24] This multiplies the number of original cells by a factor of 9 (3 x 3 firm sizes), but, as done before, we retain only those that are left with at least 3 individuals (2922).

[25] The mobility pattern yields the following statistically significant ranking: <*SMALL-SMALL*> is the benchmark, at the bottom of the list. The <*BIG-BIG*> change tops the list (305), followed by: <*MED-BIG*> 222, <*SMALL-BIG*> 191, <*BIG-MED*> 138, <*MED-MED*> 106, <*SMALL-MED*> 74, <*BIG-SMALL*>69, <*STAYERS*> 63, <*MED-SMALL*> 35. As mentioned above, not surprisingly, switches to large-size firms are the most profitable. Similar results were found in a previous study on data of the same source (B, Contini and C. Villosio, 2005).

E1989	-52.65	-3.5
E1990	-40.19	-2.7
E1991	-44.70	-2.8
E1992	-2.35	-0.1
E1993	9.09	0.5
E1994	-25.86	-1.6
E1995	-29.92	-1.9
E1996	-42.41	-2.8
E1997	-38.13	-2.5
CONSTANT	801.41	45.8
OBSERVATIONS		**2922**
ADJUSTED R-SQUARED		**0.4401**
ROOT MSE		**184.25**

6.2. Truncation

Truncation at the end of the observation period could upward bias the estimate of workforce disposal for those entering in the late Nineties. Bias would lead to lower survival for the most recent entries as compared to those occurred earlier. This is not the case, as tab. 12 below shows. Survival in the first 2 - 4 - 7 years of career of those who entered the labor market in the mid Eighties is almost identical to what is observed for the younger entries that follow til 1997. Entrants in 1995 survive longer than their predecessors, an exception that strengthens our point. The survival of workers aged 19-22 at entry are displayed separately, but the pattern is identical. The impact of the recession is also evident: individuals hired in 1992 have a lower survival rate than all the others (in script). Similar patterns obtain as we disaggregate the data by industry and geographical location.

Tab. 11. Survival 2, 4, 7, 10, 12 years since labor market entry. All ages.

Year of entry	*t+2*	*t+4*	*t+7*	*t+10*	*t+12*
1987	.91	.90	.87	.86	.84
1989	.90	.88	.87	.84	.82
1992	***.89***	***.87***	***.84***	-	-
1995	.94	.92	.86	-	-
1996	.91	.87	-	-	-
1997	.90	.85	-	-	-

Tab. 12. Survival 2, 4, 7, 10, 12 years since labor market entry. Age 19-22.

Year of entry	*t+2*	*t+4*	*t+7*	*t+10*	*t+12*
1987	.92	.92	.89	.87	.86
1989	.94	.93	.92	.89	.87
1992	***.91***	***.90***	***.89***	-	-
1995	.96	.95	.89	-	-
1996	.91	.88	-	-	-
1997	.92	.88	-	-	-

7. Conclusion

"Very long" unemployment is not just "long": we are dealing with 10-20 years of absence from the official labor market of people who were young at the beginning of these spells, and are in their thirties, forties or early fifties when we observe them. Nor is "unemployment" officially registered unemployment: the majority of these people may be active in the unobserved, black economy, and it is not clear how they will report their status to the Labor Force Survey interviewers. Some – a modest number in our view – may have become inactive or simply "discouraged": a very small lot has reached retirement age by the time we observe them, foreign workers (some may have returned to their home country) are excluded from our data, and the rentiers cannot be numerous. Thus we use the term "extended unemployment" to include all these categories, although "out of official employment" might provide a better denomination.

The overall picture is sufficiently clear: workforce disposal is evident and dramatic for its consequences on lifestyles and social problems. In addition it points at a huge long term under-utilization of working capacity. A conservative estimate of the average duration of extended unemployment in 2002 is close to four years, four times as large as estimated from LFS and /or ECHP.

Regression analysis does a fairly good job at catching the medium run impact of several factors: labor cost dynamics, flexibility, workers' age, initial entry conditions, business cycle, mobility. A fully structural explanation of the - by now 25-years long - process of workforce disposal is out of reach for the time being. It would have to include the main long run supply-side factors taking us back to the Seventies, the crucial years preceding the early stages of YWD, that would benchmark its development.

The long run development of worker disposal was fueled by a sequence of labor market reforms initiated in the mid Eighties and pursued ever since, aimed at enhancing youth employability with the introduction of highly flexible and often subsidized working contracts. To some extent the reforms sanctioned a process which was already under way. And, to a large extent, they have failed to attain their objectives.

APPENDIX 1 – Labor supply in a dual economy

Fig. 13 depicts how the labor market operates when, in addition to the regular (official) economy that includes permanent and temporary jobs (there is no need here to keep the two types separate), there is an irregular economy, black or grey, which is undetected in labor force surveys. D-reg is the demand schedule of regular jobs (permanent and/or temporary), w* being a minimum wage-equivalent negotiated at the institutional level (in Italy there is no mandated minimum wage); D-irr is a very elastic demand schedule of the irregular economy. LS is labor supply (total labor supply = OD). OB are the regularly employed persons. Those who do not get hired in the regular sector at a wage equal to w*, can find a job in the irregular economy at lower pay (w**), up to the intersection of demand and supply (BC is the irregular employment); the remaining CD represent the unemployed.

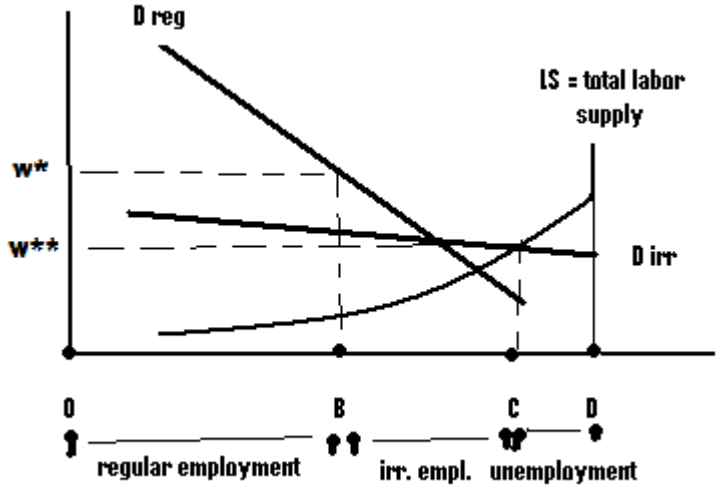

Fig. 15. Labor demand and supply with regular and irregular economies.

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