LONG TERM YOUTH UNEMPLOYMENT OR DISPOSABLE WORKFORCE?

by

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ABSTRACT

This paper explores a process which I denote as "young workforce disposal" (YWD). YWD reflects the fact that many young people enter the labor market as dependent employees, at some later time they are dismissed and (presumably) move into never-ending unemployment. Long term unemployment may last two, three, four years, but, in the end, it should lead to re-entry in working activities. If it does not, i.e. if we observe young men separating from their jobs for whatever reason, and, for as long as ten or more years, disappearing from the labor force altogether, then it becomes problematic to define such events simply as long term unemployment. YWD seems to be an appropriate denomination, as it conveys the idea that young workers become a disposable commodity.

Workforce disposal is evident and dramatic in Italy: out of 100 new young entries, about 70 are still in the labor market 10 years after entry if their first job spell was at least one year long. For those – three times as many - who have started their career with a short employment spell (< 3 months), 10-year survival does not reach 50%. A simple model of the short-medium run development of the YWD process is estimated: labor cost dynamics explains about 50% of the survival process. A comprehensive, structural, exploration of its long run evolution is, instead, problematic for lack of longitudinal data going back to the Seventies.

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1 Introduction

This paper explores a process which I denote as "young workforce disposal" (YWD). YWD reflects the fact that many young people enter the labor market as dependent employees, their services are "used" for few years as a disposable commodity, after which they disappear from the labor market, no longer observable in a longitudinal dataset that covers working careers from start to retirement.

Long term unemployment of the young may last two, three, four years, but, in the end, it should lead to re-entry in working activities. If it does not – this is what I am concerned about - i.e. if we observe young men separating from their jobs for whatever reason, and, for as long as ten or more years, disappearing from the labor force altogether, it becomes, I suspect, problematic to define such events simply as long term unemployment. I claim that 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). The third, more likely possibility, is that many of them may decide (or may be forced for lack of better alternatives) to join the irregular/black economy which goes undetected in any administrative database, and often also in labor force surveys.[1]

These events should be viewed as premature and presumably involuntary exits from the labor force, and/or the consequence of outright processes of young workforce disposal after use. YWD – pass me the term - could be economically "efficient" if the productivity of the disposed workforce is low and training ineffective, but it is dramatic from a social perspective, easily leading to social unrest.

The term "long term unemployment" usually refers to unemployment spells that last 12 months or more (official statistics define long term unemployment as the spells exceeding 12 months). "Very long term" unemployment of the young - lasting many years - has drawn less attention than it deserves, either for lack of long backward looking data, or because it is considered an unusual occurrence in contemporary economies. In Italy it is not such an unusual occurrence.[2]

[1] As will be discussed in some detail in par. 5, the order of magnitude of YWD, *alias* very long term unemployment, is consistent with the official youth unemployment rate in Italy, increased by a reasonable estimate of the number of young workers who end up in irregular, undetectable activities.

[2] Italy is, to my knowledge and for the time being, the only country for which the information is at hand. But I would be surprised if similar developments were not in place also in other countries of Southern Europe.

Out of 100 new labor market entries in any given year between the mid Eighties and the late Nineties, less than 80 are still in the labor market 10 years after entry, provided that their first job spell was at least one year long. For those – three times as many - whose first working experience is short (< 3 months), 10-year survival does not reach 50%.[3] Economic conditions favoring the process of YWD have been in place for over twenty years, and still are: several versions of temporary contracts were introduced in order to enhance youth employability, which provided fiscal benefits to the employers and could be terminated at no cost after two years. In addition, aggregate demand never fully recovered after the deep recession of 1992-94. As a consequence many young people – presumably those with short experience and modest skills - were laid off at termination of the temporary contracts. Seldom was there sufficient advantage for employers to hire individuals laid off in other establishments: experience (usually two years for temporary contracts) was considered of small value, a minimal amount of additional training necessary, and the benefits granted by the existing provisions to additional temporary hires (of different individuals) were higher than other solutions. This may last as long as youth labor supply is sufficient. At some point in the not-too-distant future it may come to a halt.

There are, of course, innumerable studies that touch upon issues closely related to "workforce disposal" as defined here: unemployment duration and state dependence, labor force outflows at young age, low partecipation, permanent displacement after layoff, labor market segmentation, attrition in longitudinal datasets.[4] A survey of this literature would require a contribution of its own JEL-style, and even the selection of the main contributions for each of the above items would be arbitrary.

The paper is organized as follows: par. 2 provides the background picture with a short description of the Italian labor market. Par. 3 describes the WHIP data and the measurement and estimation of survival. Par. 4 illustrates how new estimates of long term unemployment may be obtained from survival analysis. Par. 5 presents a quasi-Markov chain representation of the process of workforce disposal, confirming that the estimates of survival are consistent with the indications of the official LFS, and suggesting that, if Italian youth unemployment

[3] The likelihood of survival is significantly higher for the individuals who have engaged in successful search for new jobs after being dismissed, than for the stayers observed with the same employer since their initial career.

[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.

figures are to be compared with those of highly deregulated countries, an estimate of 13-14% is probably more reasonable than the official 20% rate of the mid Nineties. Descriptive statistics on age wage and labor cost differentials are discussed in par. 6. Par. 7 introduces a model of survival, wages and labor costs, aimed at explaining the short-medium run determinants of the process of young workforce disposal: the model structure is presented in 7.1, while in 7.2 estimation results are discussed. Par. 8 takes up the problems of self-selection and of truncation bias and their possible impact on our results. Par. 9 concludes.

2. Background

According to official statistics, Italy's unemployment rate of the 14-29 has hovered around 20% for many years, the second highest in the European Union. Long term unemployment (defined as > 12 months) touches one half of the unemployed. Not until 2006 did youth unemployment take a downturn of 2-3 p.p., matched, not surprisingly, by an increase in turnover rates.

In Italy 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 partecipation of young women. The trend dramatically reversed in the early Nineties before the 1993 recession: in 2002 dependent employment of the young was back to the level of the mid Seventies, inspite of: (1) several programs aimed at enhancing labor market entry since the mid Eighties; (2) the new cohorts shrank from 900,000 during the baby boom to 500,000 nowadays.

Labor market entry at the end of school is problematic too, compared to EU standards: 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. [5]

The labor market reforms of the last 25 years – all leading to a variety of increasingly flexible working arrangements - have changed the picture only to a limited extent. Before the introduction of the CFL (contratti di formazione e lavoro, 1984) and the Pacchetto Treu (extending the utilization of temporary contracts, 1996), it was common practice to terminate working 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

[5] University graduates (first level degree) face a 8.5 months average waiting time before finding a job, from a minimum of 5 months for engineering graduates and a maximum of 13 months for jurisprudence graduates. The average unemployment rate for university graduates 3 years after the end of studies exceeds 8%

"law in action" quite another matter).[6] The reforms have, as it were, legalized a good many of those terminations, at least as far as young people are concerned.

Fig. 1 below shows the increasing trend of separation rates from standard, open-end positions (with the exclusion of temporary contracts introduced by the Pacchetto Treu, 1996) in the 1986-2003 time window. There is a sudden increase of young workers' separations starting in 1993, three years before the reform. The inclusion of temporary contracts would reveal an even more marked trend.

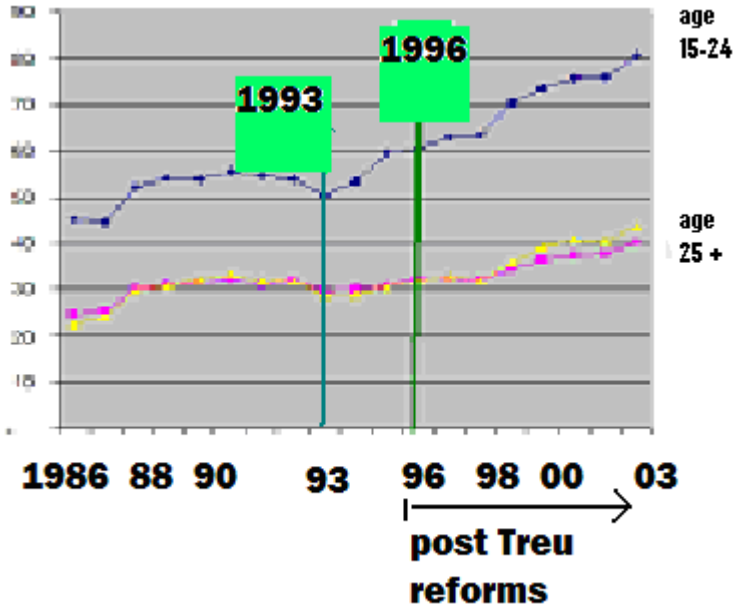


Fig.1-Separation rates from standard, open-end positions 1986-2003

The next graph (fig. 2) shows the new entries in the labor market in the 1986-2002 period: the dotted line displays the newly hired whose first initial spell lasted at least 12 months, the thick one those whose initial spell lasts less than 3 months. The upper graph depicts the age-group 25-30; the lower one the group (19-22). The number of "long" initial spells declines rapidly after peaking 2-3 years after 1986. The number of "very short" ones increases throughout the whole period for the 25-30 group, and until 1994 for the younger age group, after

[6] 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)

which it tapers off and then slightly declines. Throughout the Eighties many of the newly hired were able to stay with their first employer at least one year before undertaking a pattern of mobility; and very short initial spells were relatively rare. We are therefore facing an additional, unambiguous signal of increased flexibility at the beginning of one's career, which persists at all ages.

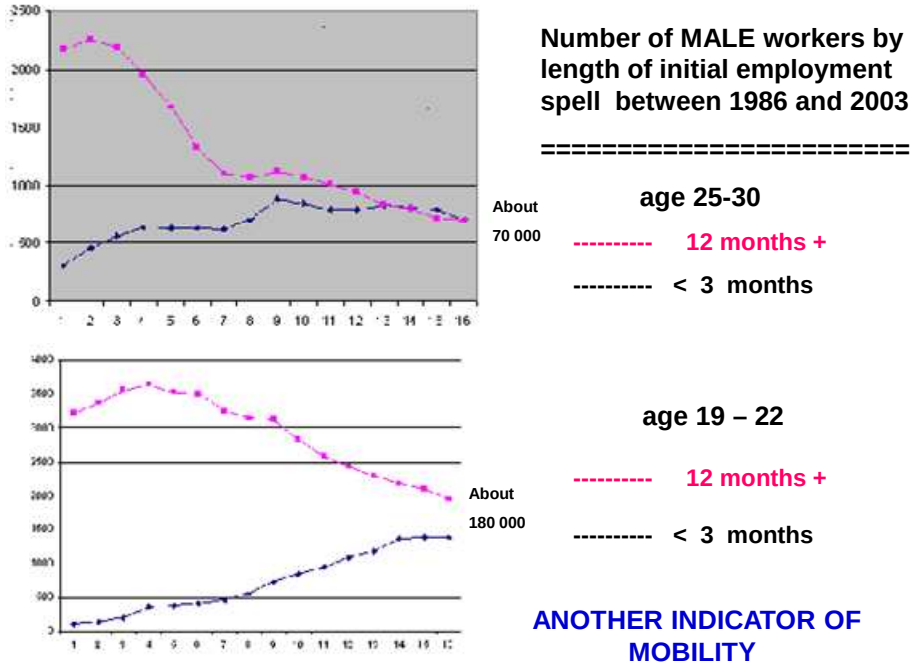


Fig. 2 – No. workers by length of initial employment spell 1986-2003

The key finding of this paper can be summarized as follows: out of 100 new young entries, between 45 and 85 % are still "at work" ("survive") 2 years after entry, 35 to 70% after 10 years, and only 25 to 40% after 17 years. Being "at work" means here that they are observed in any one of the Social Security administrative databases (dependent work, self-employment, project work and other atypical contracts included in the "gestione separata"). A bad start makes a large difference in future outcomes. For those who have had a continuous 12-month employment spell at entry, survival at work after 10 years is about 85%. For those – three times as many - who have started their career with one or more short employment spells (< 3 months), survival does not reach 50%. Among the self-employed survival is higher [7].

These numbers raise several questions, in addition to the obvious preoccupation for the magnitude of the "disposal" pattern as such, and the adverse effects that it will have on the labor market. Where do all the "disposed" workers

[7] The survival pattern of the self-employed will be the object of a separate investigation.

end up ? Given the magnitude of "disposal", voluntary exit from the labor force is out of the question. Some youth may go back to school, but ought to reappear after few years (an observable, although not frequent event). Few are hired each year in the public sectors excluded from the WHIP database (military or police service); the same holds for the university graduates who move directly in professional independent activities. A number of young entrants move into the black economy (by definition, unobservable, the order of magnitude estimated by ISTAT at 15-20% of the labor force).[8] On this hypothesis we have an important confirmation in par. 6 where we present estimates that are consistent with an "extended" definition of unemployment inclusive of the individuals who belong to the irregular (undetectable) sectors of the economy.[9] Which does not reduce the seriousness of the problem, nor the difficulty of formulating policy recommendations.[10]

3 The WHIP data and the measurement of survival

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 all those covered by atypical (non-standard) contracts. The sample - population ratio is 1:90. 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. Since the late Eighties, however, almost all hires of young people in the public sector have taken place via atypical contracts.[11] Likewise, young professionals usually begin their career in professional studies, hired with non-standard contracts. All these categories are observed in WHIP.

[8] Foreign workers who return to their home country after leaving a job in Italy would be erroneously counted as "disposed". For this reason, as explained shortly, they have been deleted form our database.

[9] It is at times advocated that all irregular workers ought to be counted in the employment figures. This is an open and unresolved question which goes beyond the scope of this paper. The main problem being one of classification of what is being self reported in the LFS interviews, which, in turn, depends on the institutional setting and on the rulings of each national labor market.

[10] A similar, preliminary, exploration in Norway and Denmark indicates that the pseudo-survival rate 10 years after entry is between 90 and 95% of the initial lot. Suggesting that the institutional setting explains such a huge difference may be true, but won't tell what is behind the story. Some comparative LFS statistics on long term unemployment in the European Union are provided in the Appendix: Italy lags behind other countries on all counts, but, as suggested before, the standard measurement of long term unemployment may fail to catch some of the most dramatic features of the problem.

[11] Very few, very lucky ones will be granted tenure after 2-3 years. The vast majority will have to wait 8/10 years, and until then they will be observed in WHIP. Once they move into tenured positions they will be well in their thirties, no longer relevant for this exploration.

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.[12] 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 an unemployment spell, applying the extended definition of unemployment discussed at the end of par. 2. Those who have left their job and, at some date, disappear altogether from a database supposed to cover the entire careers of "regular" workers, are the "non-survivors" at that date.[13]

We perform the analysis of survival on cells defined by annual cohorts of young employees, gender, year of labor market entry, length of the initial job spell (< 3 months, 3-12 months, > 12 months), geographical area (North, Centre, South), industry (manufacturing and services) and firm size of initial position. 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.

Cells are observed at one-year intervals from 1986 through 2002. In some cases we also disaggregate cells by size of the first employer (small= <20 employees; medium= 20-200; large = 200+). Each cell includes from a minimum of 4 to a maximum of 1089 individuals (median cell size 26, mean 59).

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. 3 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:

[12] 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.

[13] They may, nonetheless, reappear at some later date. Thus survival observed in, say, 2005 could, in principle, be higher than survival observed in 1998. But 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 elapsed since the initial date of one's first job.

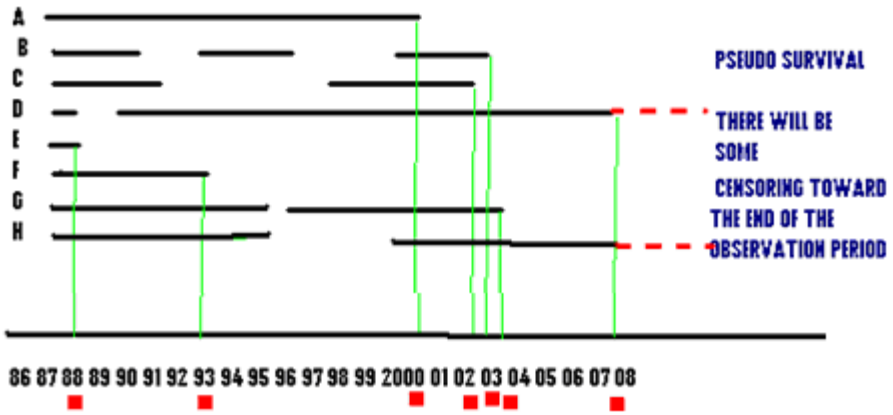


Fig. 3 - Counting survival

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 (extended version) 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 the example below we end in 1998, leaving 6 extra years before truncation). The complete count through 1998 would lead to the following survival schedule:

1986	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**
1	**1**	**7/8**	**7/8**	**7/8**	**7/8**	**7/8**	**7/8**	**6/8**	**6/8**	**6/8**	**6/8**	**6/8**
OUT	**---**	**E**	**E**	**E**	**E**	**E**	**E**	**E,F**	**E,F**	**E,F**	**E,F**	**E,F**

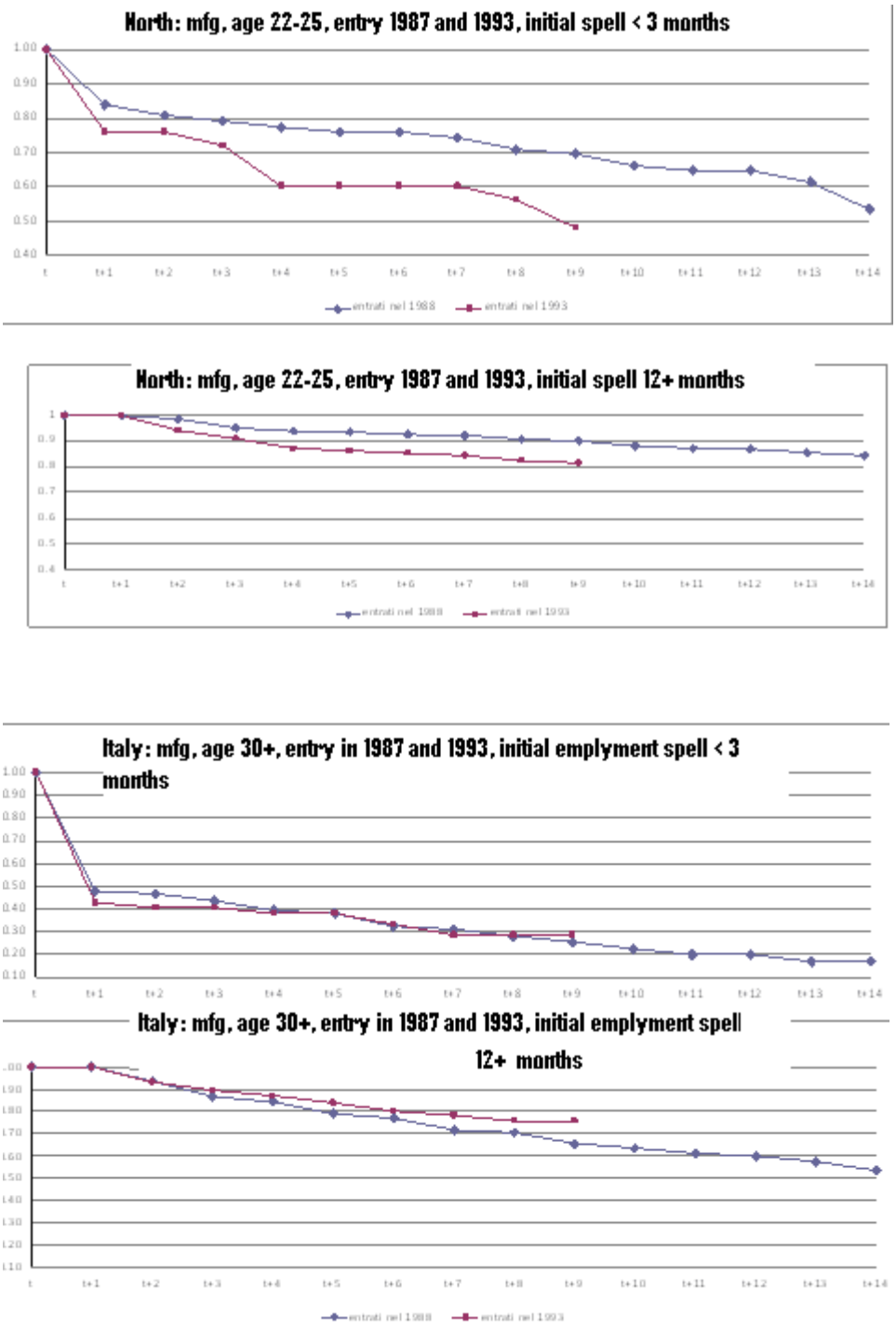
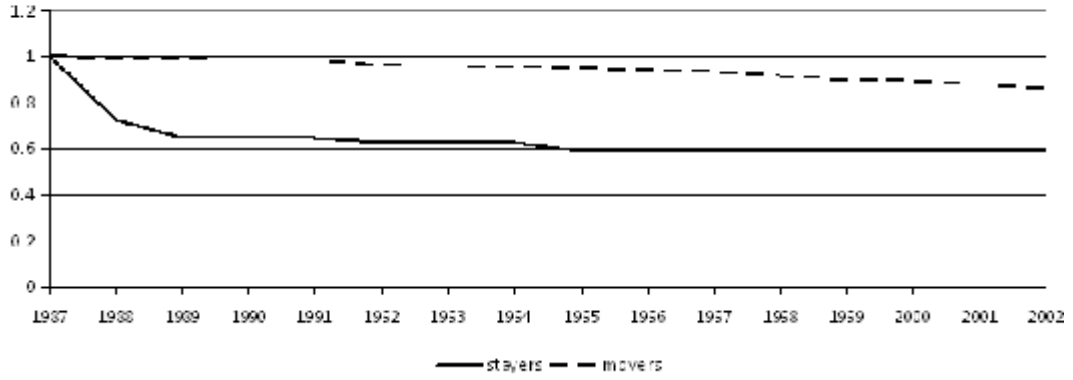
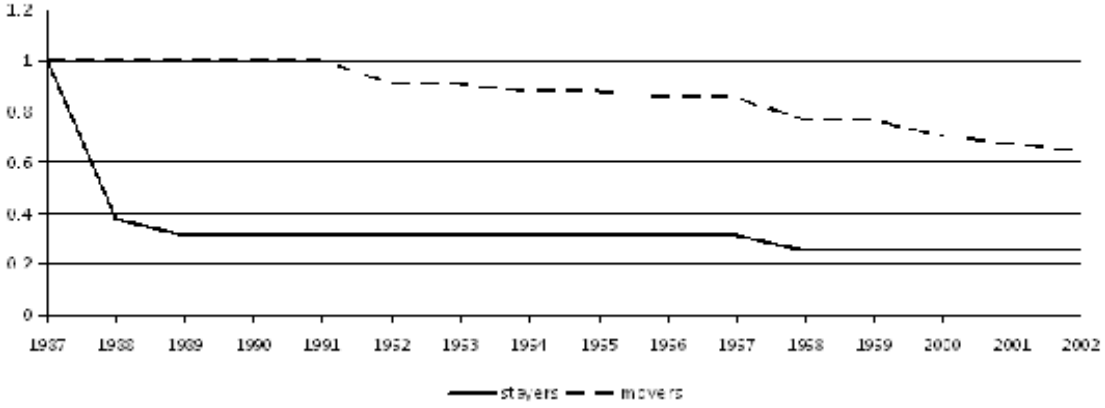


Fig. 4 – 6 - Survival curves: selected cohorts by industry, geography, year-of-entry, initial spell duration.

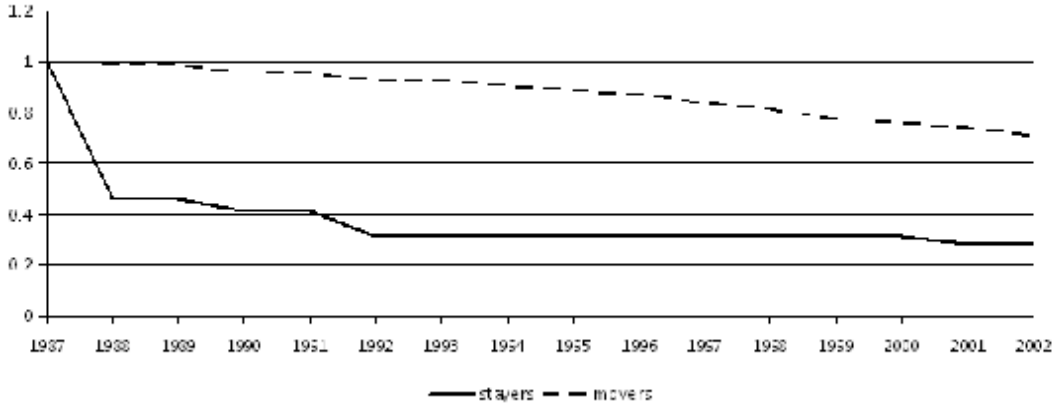
North: manifacturing, age 19-22, entrants in 1987



South: services, age 19-22, entrants in 1987



South: manifacturing, age 19-22, entrants in 1987



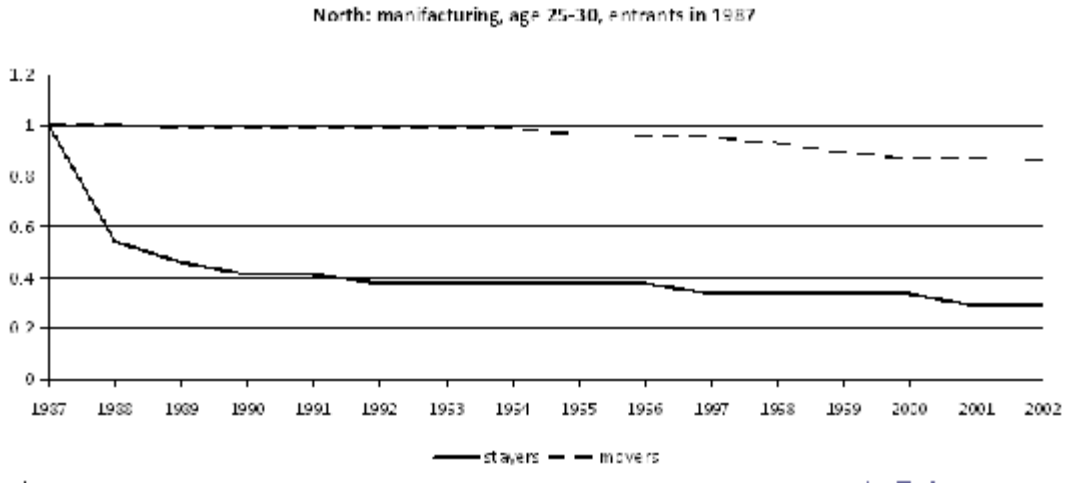


Fig. 7 - 9 - Survival curves: selected cohorts by industry, geography, year-of-entry, mobility

A few selected survival curves are displayed above. Fig. 4 -6 display the survival of cohorts who 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 less than 3 months, followed by a continuing relatively steep fall. Entrants with a longer initial employment spell (12+ months) do much better on all counts.

The timing of labor market entry is also relevant: if the initial job starts in expansionary years, survival is likely to be higher than if the working career begins during recession times. In fig. 4-6 two cohorts are compared: the dotted line refers to cohorts who first entered in the expansionary 1988, and are followed til (t+ 14 = 2002), the thick one refers to entries of the recessionary 1993, followed til (t+9 = 2002): the fall of survival is steeper for the cohorts entering in 1993. Less clear, at first sight, is the impact of the age group and that of the sector of economic activity.

The next and foremost additional factor is mobility following the initial job: the likelihood of survival of the movers is much higher than the stayers' (who, as will be seen, retain a slight wage advantage). The second set of fig. 7-9 display the impact of mobility.

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.[14]

[14] 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.

Let it be clear what the survival rates imply. Suppose we observe 60 survivors 10 years after the initial job: these are not people necessarily at work for 10 consecutive years: in addition to having had different employment spells (possibly in different firms), they may have had unemployment spells in the 10-year period, but have re-entered employment at the end of the 10-th year of observation, after which they are no longer present in the data.

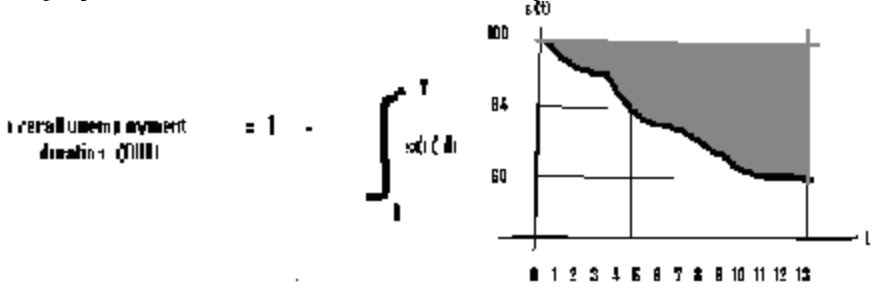
4 Estimating unemployment duration from survival functions

Survival schedules allow to compute long term unemployment duration, *strictu sensu*, i.e. of given cohorts currently unemployed (extended definition as discussed in par. 2 and 3). This is the concept referred to by official statistics under the heading "share of unemployment exceeding 12 months" (i.e. among the unemployed).[15]

Consider the following example, relative to male workers in the manufacturing industry of Northern Italy, aged 22.25:

Year of entry Initial spell 12 months +	**1987-2002 15 yrs. Span**	**1987-1997 10 yrs. Span**	**1992-2002 10 yrs. Span**
1987 - all	**9.49**	**7.86**	\ ---------
1992 - all	-----	---------	**5.47**
1987- stayers	**11.51**	**8.97**	--------
1987- movers	**5.15**	**3.44**	--------
1992- stayers			**6.15**
1992- movers			**3.60**

[15] A different concept is "overall unemployment duration" (OUD) referred to the whole labor force. The "overall" concept estimates the total amount of time spent in unemployment within a given subset of the labor force. The survival functions allow a simple calculation of "overall unemployment duration", as depicted in the following graph:



The 2002-unemployment rate of the above cohort is 21%; the share of long term unemployed (12 months+) of the group 15-24 in 2000, according to OECD is 46% Average unemployment length – as estimated here - is dramatic, longer for those entered in 1987, observed throughout the 15-year window 1987-2002, than for those entered 5 years later. The order of magnitude of these estimates suggests that the share of long term unemployment provided by official sources may be very misleading. The differences between movers and stayers are big and reflect those depicted in fig.7-9.

5 A quasi-Markov chain representation of the youth labor market

The youth labor market lends itself to a representation in terms of a quasi-Markov chain[16]. The chain is defined by states that correspond to employment and "extended unemployment of different durations: one-year employment, more-than-one-year employment, one-year unemployment, two-year unemployment, more-then two-years unemployment. Transition probabilities are estimated on the basis of a standard logit model à la Heckman on individual careers of male workers aged 16-29 [17]. Transitions are allowed only between time-contiguous states:

from / to	U1	U2	U3+	E1	E2+
U1	0	0.60	0	0.4	0
U2	0	0	0.85	0.15	0
U3+	0	0	0.93	0.07	0
E1	0.05	0	0	0	0.96
E2+	0.04	0	0	0	0.96
Steady-state U = 27%	**0.03**	**0.02**	**0.22**	**0.03**	**0.70**

The steady state distribution of the above matrix (reached in 6-7 iterations from a starting position close to the one observed in the late Nineties) yields the following result: 73% of the workforce in employment (70% in more-than-one-year positions E2+); 27% unemployed, extended definition (of which 22% in long term unemployment U3++). The steady state unemployment figure is 6-8 p.p. higher than the official youth unemployment rate at the beginning of the Millennium: this difference is coherent with the hypothesis that over 200 thousand young men may be hidden in the irregular sectors, without any presence in the

[16] A quasi-Markov chain is defined as a process in which states may not be of equal length. Transitions are estimated as usually, and the steady state is calculated and interpreted as in any Markov chain, but a concept like the mean recurrence time is no longer applicable.
[17] See B. Contini and A. Poggi (2008).

official economy[18], and therefore undetected in the Labor Force Survey.[19] The figure of 200 thousand male individuals (16-29) is a conservative estimate of the presence of young men in the black economy, estimated at least 15% of total labor force according to official statistics.[20] This exercise suggests that comparative analyses of youth unemployment between Italy and highly deregulated countries ought to be done with utmost care: in the US, UK, Ireland, Denmark (and others too) the vast majority of jobs that would be considered irregular in Italy - the main reason being tax evasion (in particular, social security contributions) - are perfectly regular as they are usually exempted from s.s.c. Thus, an estimate of 13-14%, which accounts for the extra 6-8 p.p. attributable to irregular activities, is probably more reasonable than the official 20% rate of the mid Nineties.

6 In search of explanations: wages and labor cost

Do wages and labor costs explain the dynamics of workforce disposal ? We start by showing a few descriptive indicators, and in the par. 7 we turn to econometric estimation.

Italy is following the world-wide trend of increasing wage differentials, attributable to the demand for high skills. Wage differentials between young and adult-older individuals have increased also independently from the skill component; and 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. A displays mean and percentiles of the earnings differential ratios between blue-collars, aged <25 and >45, regularly employed as

[18] Excluding, therefore, people who work for black money, in addition to holding a regular job (for instance a blue-collar at Fiat who rounds the budget doing plumbing maintenance during the week-ends). Furthermore, the earnings of criminal and/or mafia-type activities are often laundered / invested in "regular" covering businesses; thus, also outright criminals may appear as "regular" workers.

[19] The 200 thousand - figure is reached as follows: 6-8 p.p. of the male workforce aged 16-24 (population 4.2 million, participation rate 30% = 1.2 million workforce) yields 100 thousand individuals. 6-8% of the male workforce 25-29 (population 2 million; participation 60% = 1.2 million workforce), yields the remaining 100 thousand.

[20] The borderline between inactivity, unemployment without subsidies and irregular activities defies detection in the WHIP data, but similar problems arise also in LFS-type surveys, all the more so in areas where there is a considerable amount of black-grey (or next-to-criminal) activities. Here, 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 (see E. Battistin and E. Rettore, 2008). 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.

dependent workers. In 1985 the mean ratio was 0.71; it steadily declined through 2003. In principle, this trend ought to favor the utilization of young workforce.

Tab. A.1 - Gross earnings differentials young/adult workers

wage differential by age (<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			

Labor cost/wage ratios have followed a different pattern (tab. A.2): the North-South differential was very sizeable for all the young age groups til the mid Nineties in the manufacturing sectors, and declined thereafter when some of the provisions in favor of the industrialization of the South were phased out. Differentials were, instead, smaller in the service sectors through the whole observation period.

Tab.A.2 - Labor costs

	labor cost / wage ratio						
			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

Since the Eighties various pieces of legislation were introduced to enhance youth employment: one the one hand they have made young workers less expensive than adults; on the other hand they have guaranteed a high degree of flexibility as long as the young hires are retained under the contracts that granted such benefits. These provisions, however, have often made it profitable to hire

young people, keep them on the job as long as the benefits accrue to the employers, and then fire and replace them with new entrants hired with the same contracts as the ones terminated. Apparently, provisions aimed at preventing such practices have not been very effective. For the time being labor supply allows such practices, but it may no longer do so in the next future.

The main instrument of those years, the training-at-work contract (Contratto di Formazione Lavoro, CFL), started operating in 1985. The program granted employers willing to hire eligible workers a substantial labor cost rebate consisting in a 50% reduction of social security contributions (s.s.c.) and automatic 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 took place over the years. The main one, for our purpose, 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 measures. The main one being a generalized tax rebate to all employers of Southern Italy, that had been in place for many years, and was phased out in 1994.[21] As we shall see in par.7.2 changes in labor costs explain about 50% of the process of workforce disposal.

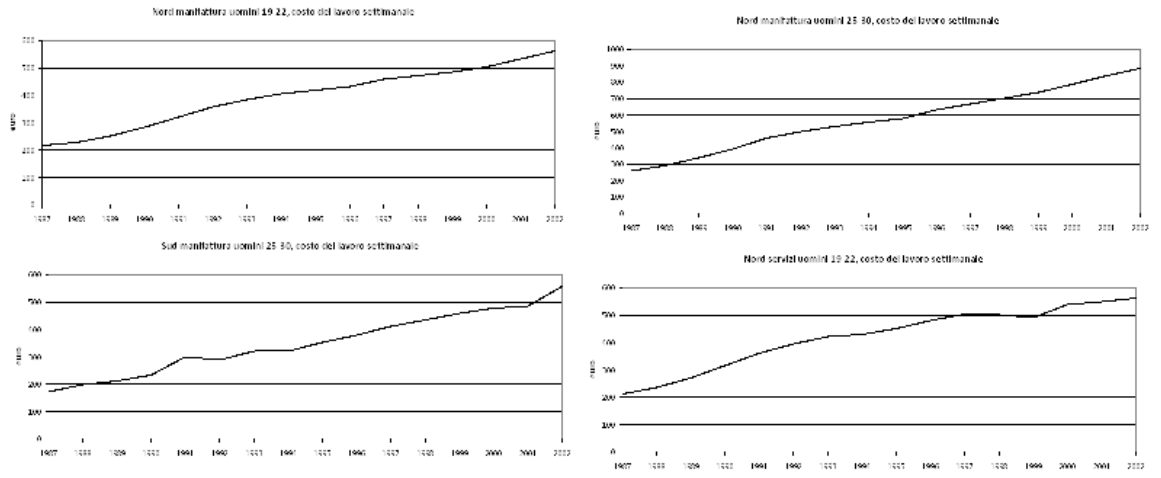


Fig. 11 - Labor cost dynamics (selected cohorts, area, and age)

[21] Moreover, in 1994 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. Thus, this new reform change affected the duration of youth unemployment with minor impact on labor costs.

7. A model of survival, labor cost and wages

7.1 - Structure

While the process of "disposal" is essentially demand driven, supply characteristics emerge as we observe the different survival and unemployment performance of the movers compared to the stayers. In this paper, however, supply factors are left aside as second-order determinants.[22] Our focus will be on the demand side: the available data can be used to estimate reasonable specifications derived from demand considerations, while few would be available in order to unveil the supply side of the story.[23]

The structural determinants of survival are estimated on cells of young homogeneous individuals defined by the following items:

- age group of the relevant cohort (3 groups)
- year of first entry in the labor market (15 years, from 1988 to2001)
- duration of first employment spell (3 groups)
- economic branch of activity (2 industries)
- geographical area (3 areas)
- size of first employer (3 size groups)
- mobility (2 types: movers and stayers)

In principle we have 4860 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, which leaves over 2500 cells in Northern Italy and over 1800 in Southern Italy of male workers (and about 2/3 as many of women, which we are not using for the time being).

Cell (grouped) estimation is advisable when long term interpretations are sought: between estimators (estimation on cell data are indeed between estimators) are more appropriate than within estimators, intended to follow short run 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,

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[22] The supply side becomes first-order relevant for the explanation of youth participation to the irregular economy, as will be discussed in Appendix 3.

[23] Standard theory of labor demand is not sufficient, however, 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 (often subsidized and with minimal firing costs) have been made freely available to employers who hire according to comparative profitability. A simple two-period model of firm choice of hiring by means of permanent vs. temporary contracts is presented in Appendix 2.

provided that heterogeneity is uncorrelated with factors that impact on the dependent variable (i.e. regressors and defining dimensions of each cell).

Regression analysis on survival ought to be done with care: all survival schedules are monotonically decreasing in time, each having at most 17 time observations for the first observable labor market entries (from 1986 to 2003), and only 7 for the most recent ones (1996-2003). Therefore the introduction of many dummies will yield high R2, leaving little of substance to be explained.

It is, therefore, prudent to perform estimation on first differences of survival, rather than levels.

Graphical exploration has already helped to single out three important factors: the duration of the first employment spell as a proxy of initial conditions, the timing of labor market entry that catches the impact of the business cycle, and mobility. All three have been used to define the cells. The defining attributes enter as control regressors, altogether 20 dummy variables.

A number of additional factors may "co-explain" survival:

- the annual rate of change of labor cost, specific to each age group [24]
- the inflows of potential female competitors
- youth labor supply (proxied by the youth participation rate)

In addition we shall introduce a number of instrumental variables, corresponding to the timing of legislative reforms intended to enhance the employment opportunities of young people. Such programs ought to have an important impact on the dynamics of workforce disposal, and – as will be explained – are crucial for identification.

The model includes three endogenous variables, SURV, LCOST, WAGE, and two weakly endogenous variables: DUR and MOB. The latter receive a different treatment for reasons that need explanations:

(i) 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 should be treated as exogenous. As fig. 1-2 indicate, the duration of one's first job spell has a clear historical trend, with the steady growth of short initial employment spells (< 3 months) vs. longer ones (12+) throughout the Nineties, a consequence of several pieces of legislation that increased flexibility at entry.

[24] Total labor cost includes social security contributions and other indirect elements, and is net of employer subsidies. Individual labor costs are difficult to estimate because monetary benefits accrue to employers –in the form of tax and/or social security contribution subsidies and/or 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.

BOX: variables denomination

SURV(i,t) = survival
LCOST(i,t) = labor cost
WAGE(i,t) = wages
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)
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
WAGE-0 (i) = average initial wages = IV
ENT-YR(i) = year of labor market first entry (dummy)
W-PART(i,t) = inflows of potential female competitors
Y-PART(t) = youth partecipation rate (proxy of labor supply)
IV = instrumental variables; i = cohort; t = observation year
FLEX(t) = contract flexibility (unobservable)

(ii) MOB. In principle, the two-way causal relation between mobility and survival is beyond doubt: movers may (and will) survive longer than stayers, but, at the same time, low survival may provide the incentive to move to the best, more endowed, individuals. Our problem is one of measurement: as previously explained, at the end of the observation period 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. Therefore it cannot be treated as endogenous, as it would imply that a job change occurred at year (t=1) can be explained by survival many years later (say, at t=16). While, it goes without saying, survival could (and is) explained by the individuals' previous history, mobility being one of its attributes.
It is, nonetheless, instructive to run a descriptive probit regression, aimed at showing the extent to which initial conditions (age at entry, year of entry, geography, industry, initial wage) explain the different status of movers and stayers.

The structure of the model is as follows (<lin> stands for linear function; endogenous variables are underlined):

(1) Δ SURV = lin1 (LCOST, FLEX, MFG, GEO, SIZE, AGE, DUR, ENT-YR, MOB, W-PART, Y-PART)
(2) WAGE = lin2 (MFG, GEO, SIZE, AGE, MOB, CPI, UNEMPL)
(3) LCOST = lin3 (WAGE, MFG, GEO, AGE, TAXRED, CFL-GEO1, CFL-GEO2)

The probit specification for MOB is

(4) MOB = probit (AGE, MFG, GEO,ENT-YR, WAGE-0)

Identification of the model rests on the introduction of various instrumental variables:

Eq.1= <Δ SURV > includes two endogenous variables in the r.h.s.: the main one, labor cost LCOST, is strictly endogenous, while MOB is only weakly endogenous. LCOST is the driving factor from the demand side and is likely to embody the influence of contract flexibility (FLEX), a multidimensional concept that often defies observation. FLEX is a very attractive feature from the employers' perspective, and, sometimes, also from the employees': it may impact on survival in both directions, by increasing it if the employers value workers' experience and extend the contract duration beyond legal termination; or by reducing it if the employers decide instead to hire a new individual, taking advantage of the almost zero firing costs, of the renewable fiscal benefits and of the availability of a prompt replacement. From the estimation perspective, the potential two-way impact of FLEX reduces the omission bias: if its regression coefficient is pulled in both directions, it could be close to zero. Otherwise the coefficient of LCOST is the most likely target of omission bias.
At least three restrictions are necessary for identification, but more than three are available. They are provided by three regressors reflecting policy changes appearing in eq. (3) – to be described below - , as well as by the additional exogenous <CPI> and <UNEMPL> included in any specification of wage equations. The influence of the business cycle is caught by the <ENTR-YR> dummies. Not unexpectedly, MOB is correlated with the residuals, and will have to be instrumented (the appropriate IV being W_DEVST).

Eq. 2 = <WAGE> is in reduced form as it includes no strictly endogenous regressors in the r.h.s., MOB being only weakly endogenous. We shall test for potential correlation of residuals and MOB, and proceed accordingly if necessary. In order to test the validity of instruments that will be necessary in the labor cost eq. (3) - where <WAGE> appears as the main regressor - we shall fictitiously introduce them in the r.h.s. of eq. (2): if they turn out to have no significant impact on <WAGE> - as they do -, they may be safely used as instruments in eq.

(3). In equation (2) we may count also on the additional zero restrictions on DUR, ENT-YR, W-PART;

Eq. 3 = <LCOST> includes one endogenous variable – WAGE - in the r.h.s. The additional explanatory power is provided by three exogenous variables corresponding to the timing of reform changes aimed at reducing young people's labor costs (TAXRED, CFL-NORTH and CFL-SOUTH). In addition, the same restrictions as in eq. 2 apply here.

7.2 Estimation

All regressions are weighted by the cell size.

It is convenient to discuss first the <WAGE> equation (2): it is as a linear function of exogenous regressors, and of the weakly endogenous MOB. All results are in line with standard priors. Firm size and age confirm well known patterns of wages, increasing with respect to both. The CPI price index and UNEMPL are respectively positive and negative, and highly significant. Inspite of its weak endogeneity, MOB turns out to be correlated with the residuals and is instrumented (via the standard deviation of the cell initial wages <W-DEVST> yielding a positive coefficient, in line with our prior, but below significance. In addition and more importantly, the three dummies reflecting policy changes in the hiring rules of young workers (CFL-NORTH, CFL-SOUTH, TAXRED) are non-significant, enabling their use as instrumental variables in equation (3), where <WAGE> enters as the main explanatory variable.

LCOST = equation (3) explains labor cost. The driving explanation is 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, it is specified in semi-reduced form: OLS estimates are therefore unbiased if <WAGE> is directly used as regressor, instead of its predictor. Age, industry and geography display their well known impact. More importantly, two policy change dummies – the CFL contract in the North (<CFL-NORTH>) and the generalized tax reduction in favor of employers located in the South (TAXRED) - are highly significant with the expected negative sign, reflecting the fact that both exerted a beneficial (reducing) effect on labor costs before the implementation of more stringent rules during the mid Nineties. Not surprisingly, the CFL contract adopted in the South (CFL_SOUTH) had almost no impact until the generalized tax rebate was available. By the early Nineties policy change was responsible for a 17-20 eu monthly labor cost increase (about 1.5% each month).

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). As expected, labor cost (<LCOST_hat> is negative and highly significant. Between 1986 and 2002 the yearly growth rate of real labor cost was about 2 p.p. corresponding to somewhat less than 25 eu / year [25]. This translates into a change in survival of - 0.75 p.p. each year vis-à-vis a change equal to the average yearly growth of labor cost of 25 eu (the estimated coefficient delivers - 0.0003 * 25 = - 0.0075). Holding everything else constant at the benchmark cell, the labor cost dynamics explains almost half of average survival in the observation period: - 0.75 p.p. for 16 consecutive years yields - 12 p.p. implying that, initial survival being 100%, 16 years later it is down to 88 %, against an observed overall survival of about 75%. This result may, however, be affected by the forced omission of FLEX. As explained above, contract flexibility may exert both positive and negative influence on survival. Its negative impact is proxied, to some extent, by the length of the initial employment spells <DUR>. As depicted in fig. 2, since the early Nineties, hires of new entering individuals have been more and more frequently characterized by short initial employment spells, a consequence of increased contract flexibility. <DUR> displays positive and significant coefficients in the equation of <Δ SURV >: the reduced frequency of initial employment spells 12+ months long (against the growth of less-than-3-month- initial spells) reduces survival by 1.2 p.p. The positive impact of FLEX – if any – is instead embodied in the regression coefficient of <LCOST_hat>:

it may lead to a downward biased estimate of the impact of LCOST on survival, the magnitude of which is difficult to assess from the available data[26].

Age, industry and geography are all influential as expected, while firm size is not. Interaction variables between AGE and DUR are not significant. The years of labor market entry <ENTR-YR> catch the impact of the business cycle. Finally, the change of women's entries in the labor market (<W-PART>) positively affect young men's survival in the South – a remarkable, although slight, signal of complementariety – but not in the North. Last but not least, as in eq. (2) and inspite of its weak endogeneity, MOB is correlated with the residuals and instrumented via <W_DEVST>: it has the expected positive sign – movers survive longer than stayers - but, here too, it is below significance. The striking

[25] The overall average labor cost in 1986 was about 1500 eu/month, and 1800 eu/month by 2002 (expressed in real 2000-prices).

[26] Suppose, for simplicity, that Δ SURV = b LCOST + c FLEX + res, with b<0 and c>0. The omission bias leads to underestimate b. In fact plim b^ = b + c [cov(LCOST. FLEX) / var (FLEX)]. It is reasonable to assume that cov (LCOST. FLEX) < 0, i.e. that reforms aimed at enhancing employability will reduce labor cost and increase contract flexibility. Hence it will then hold that plim b^ < b.

impact of mobility on survival – displayed in fig. 7-9 – is evidently caught by the rest of the specification.

A linear probit regression – a useful appendix to the model - explains the mobility dichotomous variable <MOB> : AGE, GEO, MFG at the start of each worker's career, the year of labor market entry <YR-ENT> appear as highly significant in determining whether the cell components will choose to be movers or stayers. In addition, and very interestingly, average initial cell wage (W-INITIAL) appears as an important determinant of future mobility – the higher the wage, the lower the probability of mobility – while the first employment spell duration (DUR) is non- significant.

Estimation results [27]

B.1 <WAGE>	**IV estimation**		
	Coefficient	| t-statistic |	1150 cells
MOB	65.63	1.07	instrumented by <W_DEVST> non-significant
MFG	- 9.68	2.65	
GEO	- 21.76	1.17	non-significant
SIZE –MEDIUM	31.60	7.39	
SIZE-BIG	106.98	9.05	
AGE 22-25	39.86	8.14	
AGE 25-30	102.32	18.56	
CPI	- 3.12	38.42	
UNEMPL	- 4.17	5.06	
CFL-NORTH	- 5.64	0.57	non significant
CFL-SOUTH	- 1.71	0.12	"
TAX-RED	- 5.30	0.43	"

[27] Cell numerosity is different in each equation, depending on the degree of disaggregation allowed by the data. Estimation on Δ -**SURV** is performed on 8842 cells, as several interactions have been introduced in the equation, yielding more disaggregated cells that are not necessary in the **WAGE** equation (1150 cells). The **LCOST** equation instead is estimated on 192 cells only, which is the maximum allowed by the measurement of labor costs.

B.2 <Δ -SURV>	**2 SLS**		
	Coefficient	**t-statistic**	8842 cells
LCOST- hat	- 0.000033	6.79	
MOB	0.0197	0.99	n.s.
AGE 22-25	0.0007	0.30	n.s.
AGE 25-30	0.0059	1.89	
MFG	- 0.0015	1.32	n.s.
GEO(North)	0.0078	6.05	
DUR 3-12	0.0033	2.37	
DUR 12+	0.0121	2.43	
AGE * DUR Interaction	n.s.		n.s.
SIZE	n.s.		n.s.
W_PART	0.0006	2.26	
W_PART * NORTH	-0.0005	2.02	
YR-ENTR 1998-2002			n.s.

B.3 <LCOST>	**OLS**		
	coefficient	t-statistic	192 cells
WAGE	1.35	136.23	
CFL-NORTH	- 19.65	7.02	
CFL-SOUTH	- 4.31	1.12	
TAX-REDUCTION	- 17.45	6.10	
MFG	- 3.39	2.67	
GEO(North)	32.62	21.63	
AGE 22-25	3.03	2.09	
AGE 25-30	5.05	2.82	

B.4 < MOB >	**probit**		
	Coefficient	| z - statistic |	16607 cells
GEO(North)	0.45	18.40	
MFG	- 0.161	6.77	
AGE 22-25	- 0.078	2.74	
AGE 25-30	- 0.052	1.54	
W-INITIAL	- 0.005	13.01	
YR-ENT	Yes	Yes	(1988 – 2002)

Do these estimates provide a reasonable explanation of the evolution of workforce disposal ? I have argued that labor cost dynamics alone explains almost half of average survival in the observation period: about - 12 percentage points, a fall from 100% initial survival to 88 % at the end of the observation window, against an observed overall survival of about 75%. Notice, however, that a large fraction of the increase in labor cost is attributable to a reversal of policy decisions – the reduction of fiscal benefits accorded in the Eighties - which accounts for an increase of 17-20 eu / year, about ¾ of the growth rate of labor costs. Hence a substantial amount of workforce disposal may be attributable to the fiscal restraint that followed the more generous approach of the Eighties, inspite of the increasing flexibility granted to the vast majority of labor contracts. The additional flexibility appears, instead, to have reinforced the process of workforce disposal.

8 Self-selection and truncation behind the door ?

8.1 – 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 professions, on a path of upward mobility. There are reasons to believe that the problem is negligible, and that none of our results would be harmed.

The first and stronger argument derives from para. 3 where I explain that almost all the young people who move into the public sector are observed in the WHIP database, the only exceptions being the military service and the police corps. I also explain that the number of those moving in the professions at age below 30 is negligible. The second consideration 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 early disposal has very negative connotations. Which is not sufficient to exclude self-selection, but is a signal that points in this direction.

The third and final argument – basically a robustness test - integrates the last one. I 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. Many have had unemployment spells of various length in the course of their initial 5-year career. Wages appear to be strongly negatively influenced by the length of the initial employment spell. Additional controls are necessary to account for the impact that job-to-job mobility may have on wages. Not only do I distinguish between stayers and movers, but, for the latter, I also take into account the firm size of origin and destination of the last change (there could be more than one). 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). Deflated post-5-year wages are regressed against the variables that define the cells, including those reflecting mobility. Results are displayed in Appendix 1. Self-selection might arise, in that the individuals included in this sub-sample are the "lucky" ones who have not been disposed in the first 5 years of career. This occurrence, however, strengthens our conclusion as the significance of the initial job spell on post-entry wages would be hidden by the selection. It is not: a good start at entry (employment spells >12 months) is very significant and yields a premium of 48 EU/month over the shorter spells (the 3 -12 month-dummy is below significance, the benchmark being provided by the <less than 3 months> spell).[28] The premium of a good start (12+ months) may, at first sight, appear small compared to the one associated with a bad start (< 3 months). This is not the case as it amounts to 5% of an average monthly wage of 1000 eu. Here we are imposing a strong restriction: even the bad starts must last at least 5 years, which is done by selecting out a very large number of "bad starts" (i.e. those that get "disposed" before ever reaching that moment). Altogether, I feel therefore confident that self-selection is an unlikely event.

8.2 - Truncation

Truncation at the end of the observation period could upward bias the estimate of workforce disposal for those entering in the late Nineties. This too does not seem to be a major problem: the order of magnitude and characteristics of survival in the first 5-7 years of career of those who entered the labor market in the mid Eighties is similar to what is observed for the younger entries that follow in 1992 an 1995. In my judgement, the 8-10 year-absence of a young male from

[28] Some of the other results are not surprising: age matters; so does the geographical area (North outperforms South) and the activity branch (manufacturing looses to the services). The mobility pattern yields an interesting and highly statistically significant ranking: <big-big> is the benchmark and tops the list, followed by: <med-big> - 107, <stayers> - 111, <small-big> -137, <big-med> - 189, <med-med> - 239, <small-med> - 251, <big-small> - 258, <med-small> - 290, <small-small> - 319.

administrative files that cover the entire population of economically active people is more than sufficient to consider him hit by "disposal".

Evidence is provided by tab. 9. Survival after a certain number of years since one's first job (restricting to initial spells longer than 12 months) is reported for labor market entry in 1988, 1992 and 1995. Truncation bias – if it is relevant - must lead to lower survival for all the 1995- entries compared to those of 1988 and 1992. The data do not reveal such pattern, the only exception being the service industry of the South for the very young cohorts. This result is unclear, but calls, I believe, for explanations that are unrelated to the truncation issue.

Tab. C - Pseudo survival 2, 4, 5, 7 years since labor market entry

C.1 - north - manufacturing

Age 19-22					
Year of entry	T+2	t+4	t+6	t+7	
1988	.98	.93	.90	.88	
1992	.99	.97	.95	.86	
1995	.98	.95	.92	.90	
age 25-30					
1988	.96	.88	.83	.82	
1992	.98	.89	.78	.75	
1995	.99	.92	.84	.84	

C.2 - north - services

age 19-22	T+2	t+4	t+6	t+7	
1988	1	.99	.96	.96	
1992	.94	.90	.90	.90	
1995	.98	.95	.95	.90	
age 25-30					
1988	.98	.87	.83	.79	
1992	.93	.85	.80	.75	
1995	.98	.95	.90	.88	

C.3 - south – services

age 19-22	t+2	t+4	t+6	t+7	
1988	1	1	.90	.90	
1992	1	1	.96	.96	
1995	.94	.83	.72	.72	
age 25-30					
1988	1	.97	.94	.94	
1992	.92	.85	.81	.81	
1995	1	.89	.82	.79	

9 Conclusion

The overall picture is now sufficiently clear: workforce disposal is evident and quite dramatic. Unemployment duration is much longer than official sources indicate. The order of magnitude of workforce disposal is consistent with the LFS youth unemployment rate increased by an estimate of the number of workers who end up in irregular, undetectable activities which is in line with the official ISTAT estimates of the irregular economy.

Regression analysis catches the medium run impact of several factors: age, initial entry conditions, mobility, business cycle, labor cost. Labor cost dynamics alone explains almost half of average survival in the observation period. As it turns out, however, a large fraction of the increase in labor cost is attributable to a reversal of policy decisions – the reduction of fiscal benefits accorded in the Eighties - which accounts for an increase of 17-20 eu / year, about ¾ of the growth rate of labor costs. Hence a substantial amount of workforce disposal may be attributable to the fiscal restraint that followed the more generous approach of the Eighties, inspite of the increasing flexibility granted to the vast majority of labor contracts. Indeed the additional flexibility appears to have reinforced the process of workforce disposal.

A complete structural explanation of the - by now 25-years long - process of workforce disposal is out of reach, for lack of data that cover the Seventies, i.e. years preceding its early stages. Its long run development was undoubtedly fueled by a sequence of labor market reforms initiated in the mid Eighties, aimed at enhancing youth employability with the introduction of highly flexible and often subsidized working contracts. To a large extent, however, the reforms sanctioned a process which was already under way.

Additional hints on the long run perspective is provided by cross-country comparisons of a few significant macro indicators (tab. D). Italy and Spain are the two European countries where labor market reforms aimed at introducing labor market flexibility have been more profound: both have made extensive use of temporary contracts. As it turns out, Italy and Spain are the only two European countries where employment growth 2000-08 exceeds GNP growth (at constant prices). Not only does labor productivity turn downwards (a direct consequence of the latter), but so does multi-factor productivity since 1995. Stagnation of aggregate demand and lagging investments must have had an important role in these long run developments. Moreover, our findings suggest that the utilization of atypical and temporary contracts for the vast majority of new hires[29], and the

[29] As is well known Spain introduced a major reform in 1996 that allowed almost all new hires to be on a temporary basis. A few years later, more restrictive rules were introduced in the legislation; nevertheless, the share of temporary workers in Spain is still much higher than anywhere else in Europe.

ensuing process of workforce disposal (and waste of human capital) may have been an additional driving force behind this involution.

Evidence of Italy's weak position vis-à-vis the rest of its direct EU competitors is also 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 (fig. 12).

Tab. D - OECD: 2000-2008 growth rates and multi-factor productivity

	Employ= Ment		GNP constant prices	Labor productivity	1985-95 MFP	1995-07 MFP	2001-07 MFP
Au	8,2	<	23,4	15,1			
Be	6,7	<	16,0	9,3			
Dk	3,9	<	10,4	6,5	1,5		0,6
Fl	8,4	<	25,0	16,6	1,3	0,3	1,6
Fr	5,8	<	14,1	8,3	1,7	2,1	1,0
Ge	6,0	<	9,7	3,7	1,4	1,1	0,6
Gr	11,8	<	35,8	24,0		1,0	
Ire	26,1	<	43,4	17,3	3,3	3,5	2,5
It	**10,3**	>>	**7,3**	**-3**	**1,3**	**0,1**	**-0,7**
Nl	7,7	<	16,5	8,8	1,0	0,8	0,7
Por	3,1	<	7,9	4,8		1,2	0,3
Sp	**29,9**	>>	**28,0**	**-1.9**		**0,1**	**-0,1**
Swe	10,4	<	19,8	9.4	0,5	1,8	2,7
Uk	8,5	<	20,4	11,9	1,0	1,2	1,2

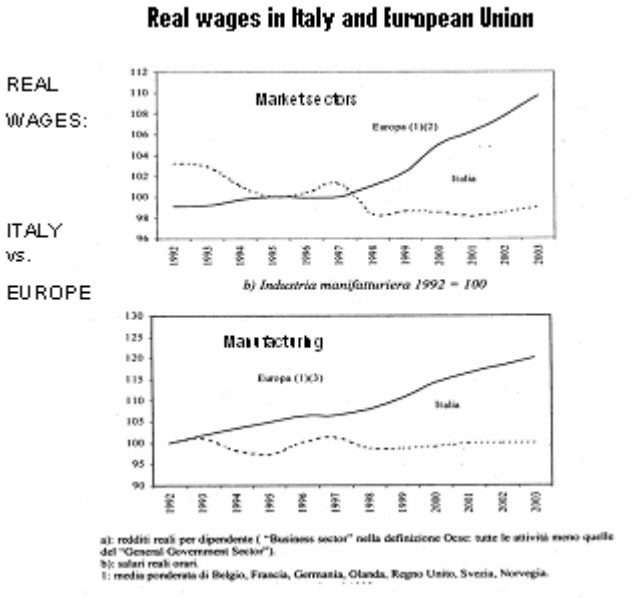

Fig. 12 - Real wages: Italy vs. EU

APPENDIX 1

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

	Coeff.
Age 22-25	43 **
Age 25-30	114 ***
North	165 ***
Manufacturing	- 109 ***
First spell 3-12 months	15
First spell 12+ months	**48 ****
Year-of-entry dummies	Yes ***
Stayer	- 111 ***
Big-med	- 189 ***
Big-small	- 258 ***
Med-big	- 107 **
Med-med	- 240 ***
Med-small	- 290 ***
Small-big	- 137 ***
Small-med	- 251 ***
Small-small	- 319 ***
No. obs. cells	2922
R**- adj.	0.34

APPENDIX 2

A nutshell model of labor demand involving permanent vs. temporary contracts

The firm faces a vacancy (V) which may be filled by two alternative contracts: (1) a permanent working contract with an experienced worker; (2) a subsidized temporary contract (training-and-work contract restricted to young workers, CFL). Which will the firm choose ?

The permanent contract (R) pays a wage w and carries a firing cost equal to FC.
The temporary contract (F) is a one-year contract, that can be interrupted at no cost at the end of year 1. It pays a lower wage t w - (where [1 – t] is the subsidized fraction of total wage) - and requires a training at a cost of f per year. At the beginning of year 2 it must be renewed as a R - contract.

Nature has two states: a "profitable" state, with probability g; and a "recessionary" state with probability (1-g). If "good" occurs, the firm's revenue is P, otherwise it is 0. At the end of period 1 the firm assesses the performance of each worker, after observing her/his performance: "good" with probability p and "bad" with probability (1 –p).

Only if nature is "profitable" will the firm continue operations in period 2. If year 1 is "recessionary", the firm will fire her worker (at cost FC if the contract is permanent), no matter how good he/she is.

If the worker turns out to be "good" he is retained; otherwise he is fired.

This is the decision tree faced by the firm:

Initial choice	State of nature period 1	Payoff in period 1	Observe worker's performance	Renew or fire	State of nature period 2	Payoff in period 2
	G	P – w	P	Renew R	g	P – w
	G	P – w	P	Renew R	1 - g	- w - FC
R	G	P – w	1 –p	Fire & open new vacancy	new start	V – FC
	1 – g	- w	P	Fire & closeout	exit	- FC
	1 – g	- w	1 – p	Fire & closeout	exit	- FC
	G	P – f – t w	P	Renew & transform in R	g	P – w
F	G	P – f – t w	P	Renew & transform in R	1 – g	- w – FC
	G	P – f – t w	1 – p	Fire & open new vacancy	new start	V
	1 – g	- f – t w	P	Fire & closeout	exit	0
	1 – g	- f – t w	1 – p	Fire & closeout	exit	0

Letting E(R) and E(F) be the expected values of filling a vacancy by way of R or F, the following condition is obtained after working out the details of the model

$$E(R) > E(F) \text{ iff } \quad w(1-t) + (1 - g\,p)\,FC < f$$

which has a straightforward interpretation: the permanent contract R is preferred to the temporary youth contract F if the fiscal opportunity cost of not using a CFL (temporary) contract plus the expected firing cost is less than the training cost associated with the subsidized contract.

The following empirical results are to be expected:

- the subsidized temporary contracts will be preferred when the wage subsidy (t) is sufficiently high;
- the temporary contract is preferred in positions that require low skills, i.e. where the training cost of the unskilled or their foregone productivity (f) is low;
- the advantage of hiring via permanent contracts is higher, the higher the "quality" of the candidate recruits (when p is large);
- the temporary contract is preferred in times of recession (when g is small);
- large firms will have a relative preference for temporary workers, as firing costs (FC) are higher than in small firms.[30]

APPENDIX 3

SELECTED STATISTICS ON LONG TERM UNEMPLOYMENT

	UNEMPLOYMENT MEAN DURATION (MONTHS) (*)	% STILL UNEMPLOYED AFTER 12 MONTHS (KAPLAN-MEIER SURVIVOR FN) (*)	EXPECTED UNEMPLOYMENT DURATION OF NON-RECIPIENTS OF UNEMPLOYMENT BENEFITS (*)	FRACTION OF LONG TERM UNEMPLOYED (12 MONTHS +) 2000 (**)	FRACTION OF LONG TERM UNEMPLOYED (12 MONTHS +) 2007 (**)
AU				10.0	13.9
BE				29.4	37.2
DK	6.06	0.199	9.11	13.6	6.7
FL				8.8	5.9
FR	8.91	0.362	11.01	20.0	28.9
GE	7.60	0.282	10.51	23.7	35.3
GR	8.69	0.227	8.29	42.5	32.3
IRE	7.16	0.200	8.73	22.2	25.3
IT	**12.01**	**0.352**	**11.60**	**58.0**	**46.0**
SP	7.82	0.223	8.50	30.9	12.9
NL				9.1	13.5
NO				1.3	3.1

[30] Three of the four above expected results were found to hold in B. Contini (2005). No evidence was available on the one related to workers' "quality", for lack of appropriate indicators of quality.

POR				18.8	28.4
SWE				11.0	3.4
UK	10.09	0.265	10.51	17.4.	20.0

(*) ECHP 1994-2001 - MALE AGE 20-60 (from K.. TATSIRAMOS, "Unemployment insurance in Europe: unemployment duration and subsequent employment stability", IZA WP 2280 (2006), forthcoming JEEA.
(**) OECD STATISTICS - MALE AGE 15-24

APPENDIX 4 - LABOR SUPPLY

Fig. 6 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 no less than w*, can find a job in the irregular economy at lower pay, up to the intersection of demand and supply (BC is the irregular employment); the remaining CD represent the unemployed.

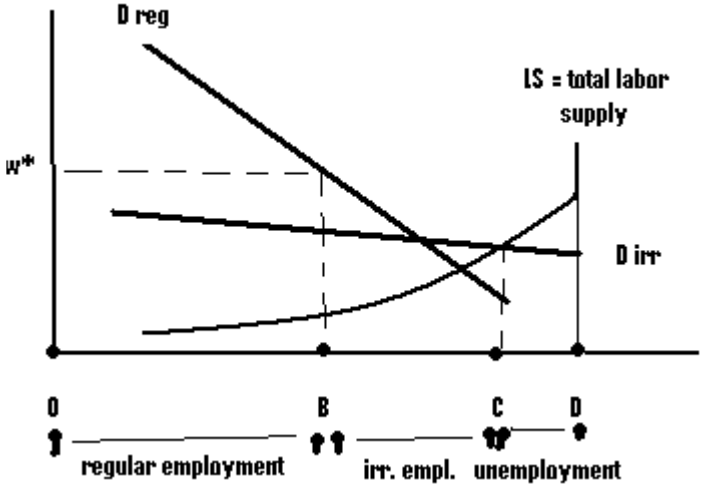

Fig. 6 - Labor demand and supply with regular and irregular economies

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