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non-employment duration: the case of Italy

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TOWARD AN EXPLANATION OF WORKFORCE DISPOSAL AND NON-EMPLOYMENT DURATION: THE CASE OF ITALY ¹

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Abstract

This study proposes a new approach to the analysis of non-employment and its duration. Non-employment includes the discouraged unemployed as well as the long-term inactives. Italy's non-employment of able male individuals is estimated in 2003 at about 11% of the population in working age, and the mean duration of non-employment is close to 10 years with st. dev. of 4 years, much higher than any available estimate. The database is WHIP, Italy's employer-employee linked longitudinal panel. In this study I make use of the concept of "workforce disposal" aimed at explaining the process that leads people to drop out of the official labour market shortly following entry and become non-employed, often for the rest of their life. An econometric exploration of the determinants of this process indicates that the relative cost of retaining young workers vs. laying off and replacing them with new unexperienced ones has often been too high and widely responsible for such developments. This result has strong policy implications as the EU Commission has for many years advocated low wages for new entrants as a major instrument to promote youth employment. In addition, based on comparisons between the main results and a variety of aggregate official indicators, I estimate that approximately 80-85% of the non-employed joins the irregular economy.

I. Introduction

Italy's labour market suffers from a serious pathology, in addition to the increasing precariousness of the young workforce common to all EU member countries: flows from regular employment to non-employment are very often dead-ends and the magnitude of long-term non-employment is dramatic. A vast number of individuals who lose their job only a few months or years after their first hire enter the ranks of the unemployed or leave the workforce altogether, never to regain regular employment for many years. Many join the ranks of the irregular economy.

It is surprising that this issue has so far drawn poor attention among the economists inspite of its far reaching implications for social policy.

"Workforce disposal" refers to the process generating this pathology. Workforce disposal has been the object of preliminary estimation only in few countries: Italy in first place (2007 and 2013), and more recently Spain and Germany (2014).²

In this paper I explore in detail the Italian case, with an econometric exploration on the factors that explain its development between the late 80's and the early 2000's. Unfortunately an appropriate counterfactual dating back to the Seventies when the Italian economy was strongly expansionary is not available, and therefore the analysis lacks a strong long run perspective. The main driving mechanism in short-medium run lies in the difference between the relative cost of retaining young employees at the end of the contract vs. that of replacing them with new ones. If the former is sufficiently high the replacement option will be exercised with a negative impact on workforce disposal and non-employment duration. The retaining option implies an investment in the workers' human capital, more likely in high technology sectors and among small-size employers.

The paper is organized as follows: sect. 2 illustrates the main aspects of Italy's labor market and development. Sect.3 provides a short survey of the relevant literature. Sect. 4 describes the WHIP database and the survival methodology used to measure workforce disposal. In sect. 5 the estimates of workforce disposal (survival) and long-term non-employment duration are presented. The pieces

¹ This research has been carried out since 2009 at the Collegio Carlo Alberto. I am grateful to Elisa Grand for her very able research assistance for many years in the course of this study.

² B. Contini, I. Garcia Perez and T. Pusch, "New approaches to the study of long-term non-employment duration: Italy, Germany and Spain", unpublished script (2014).

of the puzzle are assembled together in sect. 6, and the econometric explanation follows in sect. 7. The first policy implications are drawn in sect. 8. Sect. 9 contains instructive comparisons with other data sources: in sect. 9.1 I explore the final destination of the “disposed” workers, and in particular the extent to which they may join the irregular economy. This material is explored also from a different perspective in sect. 9.2. after benchmarking the results with the European Household Community Panel 1994-2001. Conclusions follow in sect. 10.

2 Italy’s labour market

2.1 The main reforms

Italy’s unemployment rate hovered around 7-9% from the mid 90s to 2007, rapidly increasing thereafter above 12%. In the early 2000’s youth unemployment was about 20%, the second highest in the European Union, and hiked to 40% and over in 2013. Youth employment had steadily increased 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. However, prior to the 1993 recession and in the aftermath of the baby boom, the trend had already sharply reversed, and as of 2008 only 3.4 million young people had jobs, also as a consequence of the increase in schooling attendance³. The youth participation rate steadily dropped from 45% of the Eighties to 27% in 2013. GDP growth (very modest since the 80’s, except an isolated peak in 1988, fig. 1) exceeded employment growth until 2001, leading to a slight increase of average labour productivity. Thereafter there was a drastic reversal with labour productivity shrinking by 6 p.p. between 2001 and 2012.

The first measures aimed at increasing employment opportunities were implemented at the end of the 70s, with a generous tax exemption scheme in place in Southern Italy (and phased out in the mid 90s). The main instrument aimed specifically at youth employability was the CFL (*contratto di formazione-lavoro*, work and training contract) introduced in 1985. Eligible people were workers below age 30. The program provided employers with two key benefits: (i) a 30% rebate on labour cost via a reduction of Social Security contributions; (ii) a full exemption from firing costs. In principle, the program featured also an off-the-job training component that was, however, seldom implemented. The CFL contract, although never eliminated, became progressively less important as new instruments were implemented. The last 20 years led to a new proliferation of tax rebates and exemption schemes for the employers and the introduction of new increasingly flexible labour contracts that, *de facto* although not *de jure*, rendered contract termination almost costless. By 1996 the Treu Reform Package completed the liberalization of temporary contracts and introduced forms of contract work (referred to as “co.co.co.” contracts), *de-facto* disguised dependent work, exempt from firing costs and subject to very low social security contributions. The latter left workers almost completely unsheltered from any form of welfare coverage. The share of these contracts picked up after the Treu Reform Package, reaching 65% of all initial hires in 2000, and 70% by 2008. It is fair to say, however, that the new legislation merely sanctioned and legalized practices that were already widely used. According to shared opinions, one of the underlying causes of the fall of labour productivity in Italy is the excessive utilization of temporary, low-pay and high-turnover working contracts, accompanied by the consequent lack of incentives to invest in workers’ human capital. The present government has passed new legislation aimed at reducing the extent of precarious jobs (The Jobs Act, introducing the “contract with increasing protection”): its impact will have to be evaluated in the years to come.

Tab. 1 Selected indicators of long run changes in the Italian labor market

Annual transition probabilities	From UN to EMPL	From NN to EMPL
1983-84	27,1	8,3

³ The long run trends of schooling and youth participation are the object of investigation in B. Contini (2012).

1992-93	17,7	5,9
2000-01	18,7	5,6

Source: B. Contini and U. Trivellato (2005), p.155 from ISTAT LFS

GWT: gross worker turnover	
1987-89	63 %
1997-99	68 %
Source: R. Leombruni and R. Quaranta, ????	

Source: Istat, National Accounts

The transition probability from non-employment to employment was 8,3% in the midst of the expansionary 80's and fell to 5,6% in 2000-01. The transition probability from unemployment to employment dropped likewise from 27% to 18%. In the course of a slightly different time horizon GWT (gross worker turnover) increased from 63% to 68%.

Fig. 1-----GDP-and--employment--growthi

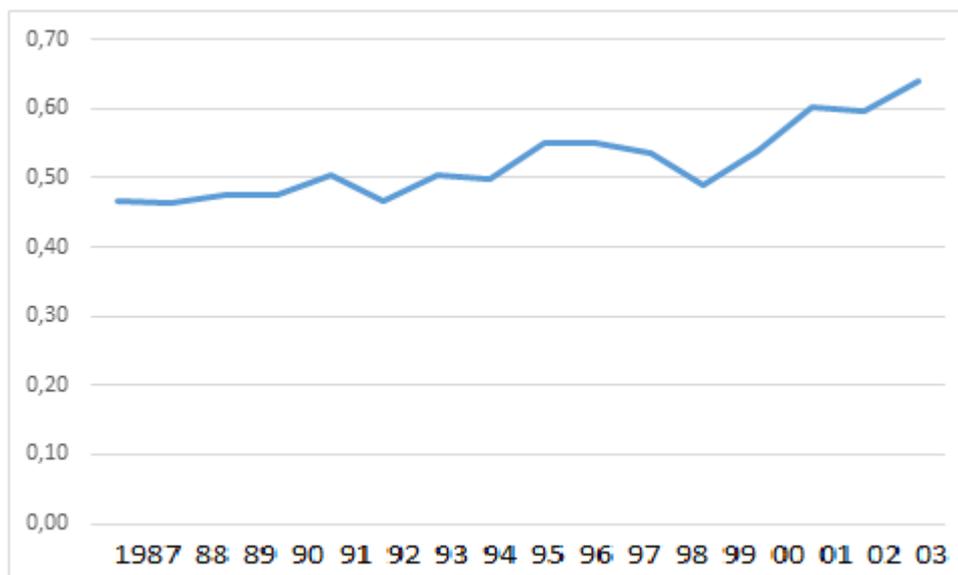


Fig.2 The increasing trend of contract flexibility: share of short-term contracts (< 12 months) on all new hires..

Source: our calculations on WHIP database

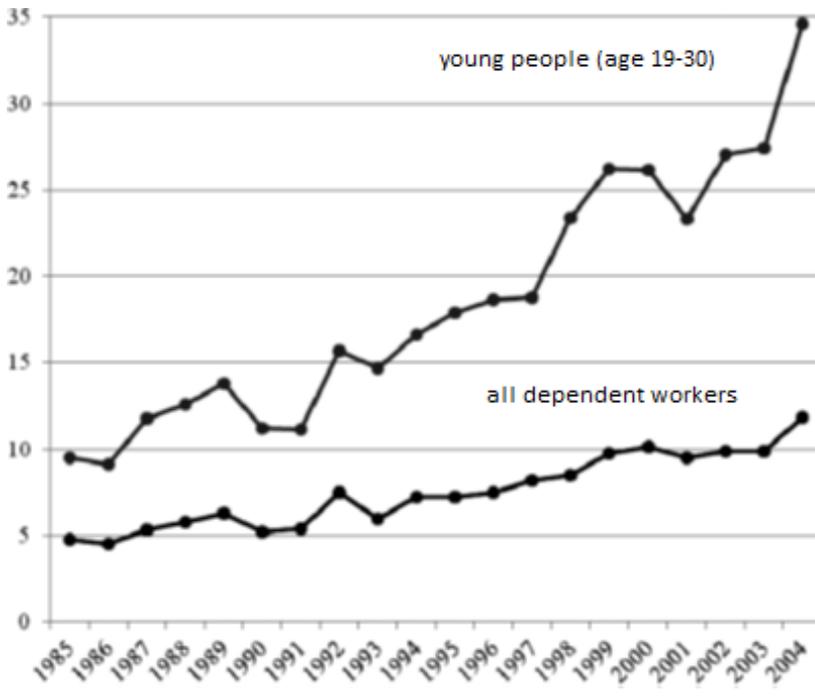


Fig. 3 Employment with atypical contracts (in % on total employment): the “atypical contract” is a catch-all denomination that includes all work typologies allowed after the Treu Reform.

Source: OECD Statistics 2013.

2.2 Inactivity and the irregular economy

According to ISTAT (National Statistical Institute) at the eve of the 2008 recession, while unemployment reached 2 million individuals, inactivity (but willing to work) numbered 3 million, and irregular employment an additional 3 million.

In 2012 the EU-LFS reported estimates of the “inactives, but willing to work if given the option” (tab.2) In 2010 Italy’s rate was almost three times the EU average and far above all the larger EU countries, including Spain whose unemployment rate was much higher than Italy’s. By 2014 the number of Italy’s “inactives but willing to work” exceeded 3.2 millions. Many of the inactives are presumably discouraged unemployed and many may be working part or full time in the irregular economy. My evidence suggests that only a minority of the long term non-employed will ever return to a regular working life.

Tab. 2. Unemployment and out-of-labour force (2011).

	Unemployed 2010 (000)	Unempl. rate 2010	OLF- 2010 not searching, but willing to work	OLF Rate (M+F) 2010	Empl. rate 2010 (M)	Empl. rate 2010 (F)	Youth unempl. rate 2010 (15-24)
Italy	2102	8.4	2764	11.6	56.9	46.1	27.9
France	2653	9.4	309	1.1	64.0	59.9	22.5
Germany	2946	7.1	530	1.3	71.2	66.1	9.7
UK	2440	7.8	837	2.7	70.3	65.3	19.1
Spain	4632	20.1	973	4.2	59.4	53.0	41.6
EU	22906	9.6	8250	3.5			

Source: ISTAT,

See also B. Contini and R. Revelli (1996). A plausible explanation for the Italian OLF-exception is that only a small fraction of Italy's working population is eligible for unemployment benefits: Italy's reciprocity rate is 32%, against 50% of the UK, 60% of France, 65% of Denmark, 73% of Spain, 94 of Austria and 100% of Germany (although these rates do not imply the same degree of generosity)¹. In Italy there is little incentive to self-report one's true employment status in the LFS, because the opportunity cost is often close to zero. Where unemployment benefits are generously available, as in Germany (and Austria), the opportunity cost of misreporting is high because the perceived risk of losing the benefits is high as well. If only half of the Italians classified as inactives but willing to work, were (conservatively) counted among the unemployed – as would be the case anywhere else in the EU – Italy's unemployment rate would be around 15-17%, well above the optimistic 13% reported by official sources in 2013. Worker disposal appears to be one of the main feeders of Italy's pool of inactive people and of irregular workers: as will be discussed, the magnitude of our estimates is compatible with this claim.

The non-employed willing to work have been left out of almost any count in much of the academic literature. Until 2014 no contribution had, to my knowledge, faced the issues raised by these numbers. A. B. Krueger is the first academic who tackles the problem with the necessarily deep perspective (2014 and 2015): his conclusion, to which I shall return in what follows, is indeed dramatic "...once a person leaves the labor force, he or she is extremely unlikely to return (*at work*).» Unfortunately, the duration of "long-term unemployment" is reported by Eurostat and OECD as one-year or longer, and only in few instances as lasting more than two-years. This is hardly sufficient to investigate the long-term problems affecting the labour market and society at large.

My own interest on the issues raised by non-employment started several years ago as I developed the notion of workforce disposal (2003). Workforce disposal refers to people who are hired in the official labour market but soon thereafter lose their "regular" job without ever re-entering regular employment. And their jobless condition lasts much longer than any available estimate of long-term unemployment.

Economic theory explains that low productivity is the cause of early job termination: low productivity workers may be expected to re-enter the labour market sometime after job loss, eventually after a period of re-training. In Italy two thirds of all hires aged 19-30 leave their first job within two years since entry, about 40% are back at work within 4 years, and another 40% within 8 years. The problem is the remaining 20% who disappear altogether: these are, according to my terminology, the "disposed" workers, and with high likelihood will never return to a working life.

Workforce disposal was already under way before the cyclical downturn of the 90s. Subsequent reforms advocated by the EU Commission aimed at enhancing youth employment opportunities, but often provided employers with incentives for pursuing the strategy of turnover and replacement on the same jobs.

An overview of Italy's labour market is not complete without mentioning the irregular/ parallel/ hidden economy. Based on a variety of coarse macroeconomic indicators, ISTAT puts the number of irregular workers in 2009 at about 3 million, 2 million of which completely submerged and 1

million double-job holders⁴. The large majority of double-job holders are men, while the fully irregular women are about one half the number of men. In addition, about half of the young school leavers (15-24) searching for their first job may also be active at least part time in the unobserved economy. The irregular economy has negative implications which affect macro-economic objectives as well as the quality and productivity at work and social cohesion. From a macroeconomic perspective, while it may lead to a net addition to GNP, it drastically reduces tax revenues and undermines the financing of social security systems, paving the way for social dumping. From a microeconomic perspective the irregular economy distorts fair competition and seriously hinders productivity growth.

3. A short overview of literature ⁵

Countless academic studies investigate the consequences of long-term unemployment, and more specifically, the issue of deteriorating employability as joblessness persists due to obsolescence of human capital, stigma and signalling of “bad” performance, all of which result in wage loss at the time of re-employment (Blanchard and Summers, 1989; Layard and Nickell, 1987; Machin and Manning, 1999; Arampulam 2000; Guell and Petrongolo 2007). Long-term unemployment is a misleading term here, as it is usually defined as “more than 12 months”, sometimes, less often, “more than 2 years”.⁶

Few studies 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 of 10 years or more. Indirect evidence of the same order of magnitude is provided by P. Gomes (2012) in his study on the UK. Mussida and Sciulli (2015) explore the Italian case and provide interesting estimates of re-employment probabilities after layoff. Instead K. Tatsiramos’ (2010) estimates of unemployment duration for a number of EU countries (including Italy) based on ECHP data, are much more optimistic than findings of this paper suggest.

The negative relation the duration of joblessness and the probability of being rehired persists also when selection issues related to workers’ heterogeneity are included in the analysis (Van den Berg and Van Ours, 1994 and 1996). Torelli and Trivellato (1989) study youth unemployment duration in Italy, confirming state dependence. Their results are replicated few years later by Addison, Centeno and Portugal (2004), and this study delivers additional evidence on the Italian case (sect.5.1).

The recent work of A.L. Krueger (2015) provides an important perspective on the problem: while not denying the well known issues of skill obsolescence and discrimination on the part of the employers, Krueger strongly emphasizes the social problems associated to very long non-employment duration: changes of individual lifestyles, family and childbearing projects, increasing poverty and welfare at large. Studies on the dualization of the labour market are also relevant to the problems raised in this paper, and more affine to Krueger’s recent work. Warnings about the long-run dangers of dualization have been launched (Blanchard and Landier (2001), Blanchard (2006) and G. Saint_Paul (2004): while the *insider* workers with permanent open-end contracts are sheltered by the welfare institutions, the protection afforded to the *outsiders* is almost nil. Persistent dualization may undermine cohesion, lead to social dumping and political unrest. Needless to say, the “disposed” individuals are *outsiders* in every respect.

⁴ E. Battistin and E. Rettore (2008) indicate that people who work in the irregular economy are unlikely to reveal their status in the course of LFS interviews for fear of being disclosed. More generally, according to these authors, the likelihood of misclassification among the unemployed, the inactives and the irregulars is extremely high.

⁵ I will not report here country-studies only loosely related to the rest of the literature, that document a positive, although modest frequency of transformations of temporary contracts into open-end contracts: Berton, F., F.Devicienti, L.Pacelli, (2011); Berton, F., Richiardi, M. and Sacchi, S. (2012); Bonnal, L., Fougere, D. and Serandon, A. (1997); Booth, A., Francesconi, M. and Frank, J. (2002); Bover, O. and Gomez, R. (2004); D’Addio, A.C. and Rosholm, M. (2005); Dolado, J.J., Garcia-Serrano, C. and Jimeno, J.F. (2002); Ichino, A., Mealli, F. and Nannicini, T. (2008); Picchio, M. (2008).

⁶ In the U.S. long-term unemployment is defined as exceeding 27 weeks.

4. The WHIP database and the measurement of workforce disposal and non-employment duration

Estimation of the magnitude of non-employment is performed using the methodology used to calculate “workforce disposal”. LFS type surveys are inappropriate for lack of long longitudinal memory, although rough estimates of yearly transitions in-and-out of employment are sometimes provided. Workforce disposal was already under way in some EU countries long before the dramatic downturn of 2008 (estimates for Spain and Germany in B. Contini et. al, 2015).

Workforce disposal is the first step leading to long-term unemployment and long term non-employment some time thereafter. Disposed workers may join the irregular / unobserved economy, without ever reappearing in the official labour market. The footprints of these transitions are extremely difficult to discover. Coarse estimates of the magnitude and dimensions of such transitions will be presented in sect. 9.1.

The analysis uses the WHIP longitudinal database originating from Social Security records, a large sample (1:90) representative of the universe of employees of the private sector, of the non-tenured employees of the public sector, of the self-employed and the professionals, as well as workers covered by atypical (non-standard) contracts.⁷ While prevalent among youth, disposal takes place at all ages, and young disposed individuals will no longer be young as time elapses. For the time being

WHIP covers individual working careers from entry to retirement at monthly frequency, with data on skill level, wage, industrial sector, firm size and geographical location, including spells of temporary layoff subsidized by Earning Funds (C.I.G., Cassa Integrazione Guadagni). It provides detailed information on workforce dynamics, composition and relative wages, and official unemployment, while it does not identify the unemployed not eligible for benefits (10-15% of the officially unemployed throughout the study period). Moreover, data on educational attainment are unrecorded in the WHIP database.

The WHIP database is an (almost) ideal instrument for the study of job matching and employment mobility. It provides much richer detail than LFS-type data, as it captures all employment and non-employment spells at monthly frequency, regardless of their duration. Young people are observed upon entering the “official” labour market and their entire careers are tracked. School leavers in search of first job are instead unobservable as they enter the Social Security records only upon being officially hired. Many of the “disposed” people may have become inactive by discouragement after a long time in joblessness; some are unemployed, but not eligible for unemployment benefits; and a few may have reached retirement age at the time of observation. Many have joined the irregular economy. Some may have left the country⁸ and there may be a few who are of independent means.

The basic statistic used in this exploration is labour market survival. Survival is estimated by counting the number of individuals employed since a given starting year and who are still present in the database at the end of a given observation period, whether or not they have had unemployment and/or non-employment spells in the course of their career. The non-survivors are the individuals who have been disposed, i.e. who left regular employment and no longer reappeared in the administrative data. If anyone is unobservable for a period of time and then shows up again in the records, he is counted as a survivor and the missing period considered a spell of unemployment or non-employment (for instance, additional schooling periods)

I restrict analysis to male workers aged 19-30 at the time of their first job and track their careers in the regular” labor market for up to twenty years or more. Workforce disposal is dramatic:

⁷ The Social Security Administration has kindly provided an independent database (drawn from the Casellario degli Archivi) which integrates the original WHIP sample with the working careers of those who move to tenured positions in the public sector after initial jobs in sectors observed in WHIP.

⁸ Foreign workers have been deleted from the database: those who return to their home-country after leaving a position in Italy would be mistakenly counted as non-survivors. We miss instead, at least for the time being, Italian citizens, mostly University graduates, who find a job abroad and leave the country. Their number is rapidly increasing in recent years, but it was relatively small throughout the period of this investigation.

out of 100 new male entries - aged 19-30 at the start of their careers – only 86% “survive” in regular employment after 10 years, and 83% after 16 years in 2003.

5 Estimation of survival and non-employment duration

5.1 Truncation bias and state dependence

Truncation at the end of the observation period leads to upward or downward bias of survival (and the opposite result on worker disposal). Preliminary explorations indicate that a big number of new hires last only a few months or years: over 60% of job spells initiated in year t are terminated in t or $t+1$, and another 20% in $t+2$ or $t+3$. Survival schedules decline steeply in the first two years since initial hire, and then taper off slowly. As widely documented in the literature, re-entry at work after a non-employment spell is robustly state-dependent (fig. 4): in Italy between 45% and 60% of the people are back on a job within the first 3 years since layoff, about 10% re-enter within 7 years, and less than 5% within 10 years.

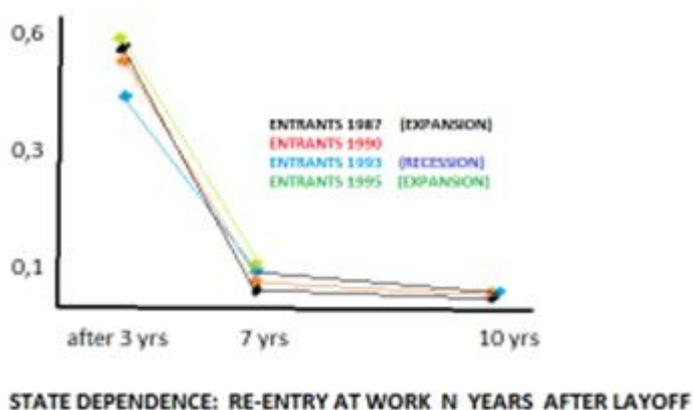
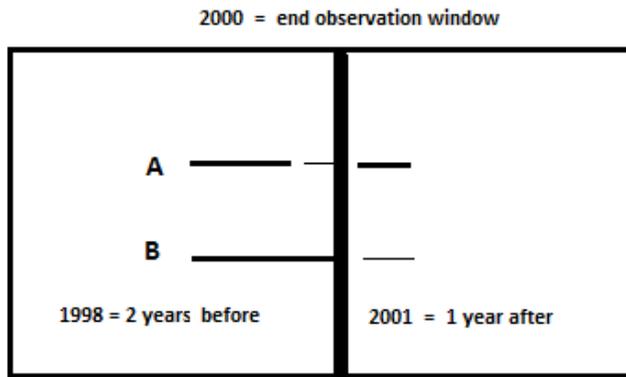


Fig. 4

As a matter of fact, hires taking place 1, 2 or even 3 years before the end of the observation window are followed by a disproportionately large number of jobless spells lasting through the end of the window. At first sight they appear as disposed positions. But many of the workers involved in such spells are back at work a short time (few months or up to 2 years) thereafter and are the cause of a downward biased estimate of survival. The WHIP database allows the observation of such individuals. Hence bias can be eliminated simply by not counting them as disposed.

Truncation may bias estimation also in the opposite direction: a number of job spells initiated few years before the observation window and appearing as having survived, will be terminated shortly following its end. This will upward bias survival: as in the previous case, the distortion can be eliminated by counting as disposed all such occurrences.

The proposed unbiasing procedure is somewhat arbitrary to the extent that the length of the period taken into consideration before and after the end of the observation window is selected on the basis of empirical evidence.



A begins to work in 1998 and disappears 6 months before 2000. He starts a new job spell in 2001, few months after 2000. Counting A as disposed would **underestimate** survival

B begins to work in 1988 and is still working in 2000, appearing as survived. But he is laid off in 2001, few months after 2000. Counting B as survived would **overestimate** survival

Fig. 5 - Two examples of truncation bias

5.2 Empirical estimation of survival

Analysis of survival is performed on cells defined by cohorts of young male employees observed at one-year intervals between 1986 and 2003, along several dimensions, and after adjustment for bias as explained above. A few selected survival curves are displayed in the figures 6-8 below, calculated on the basis of the WHIP database, adjusted for employment in the public sector after integration with a different INPS database (Casellario degli Archivi) through 2009. The additional information available in the linked WHIP-Casellario database is age at entry, year of entry and employers' geographical location. A preliminary estimate of survival through 2009 is obtained by extrapolation of the 1986-2003 schedules. The exploration on all the relevant dimensions is, therefore, limited to the 1987-2003 observation window.

The magnitude of workforce disposal is dramatic: out of 100 new young entrants in 1987 - aged 19-30 at the start of their working career - between 90 and 92 % are still at regular work ("survive") 2 years after entry, 86% after 10 years, 83% in 2003 after 16 years, and about 80-82% by 2009, after 22 years, depending on the timing of their initial employment. The data do not allow the elaboration of developments related to the post-2008 recession, therefore our 2009 estimate is a simple extrapolation from the trend 1999-2003, and therefore quite optimistic.

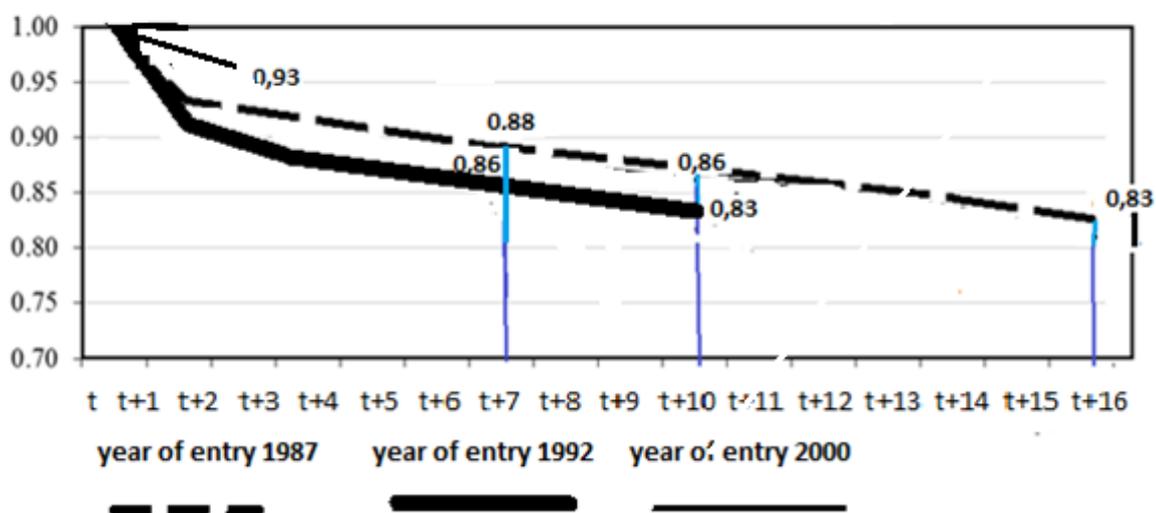


Fig. 6. Survival curves by three years of entry (1987, the peak of expansion, 1992, the beginning of recession; and 2000).

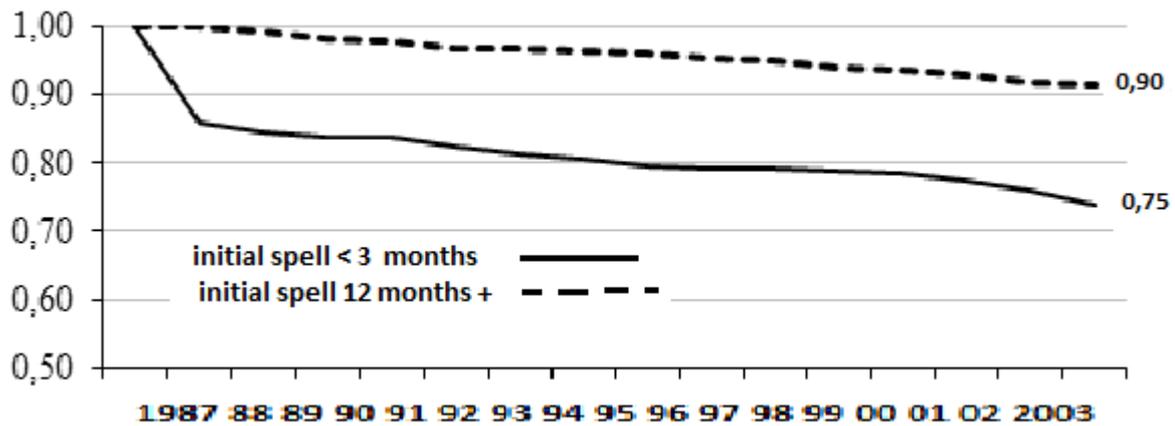


Fig. 7-. Survival curves by duration of first spell.

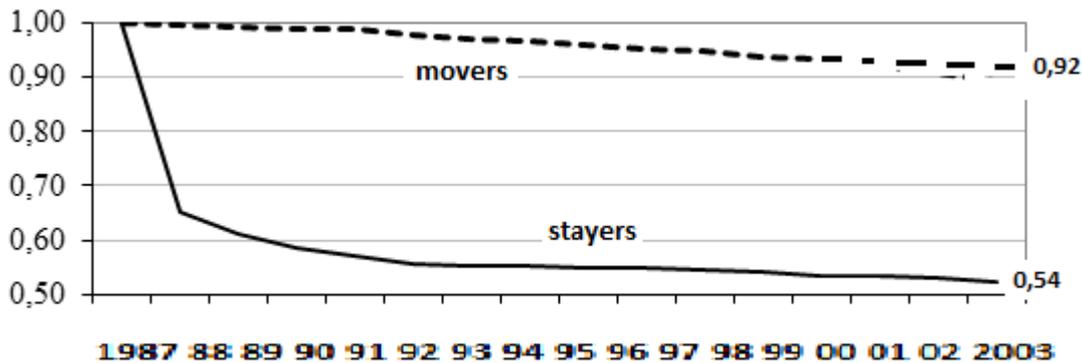


Fig. 8 . Survival curves by mobility following the initial job

The timing of labour market entry reflects the impact of the business cycle (fig. 5): if one's first hire occurs in expansionary years (1987), survival is higher than if the working career commences during recession times (1992 is the beginning of a three-year downturn of the economy). At (t+7) survival of the cohort entering in 1987 is 88%; 86% of the 1992-cohort. At (t+10) survival of the 1987-cohort is 86% and 83% for the 1992-cohort. In 2003, at (t+16), survival of the 1987-cohort is 83%. As mentioned above, survival in 2009 of the 1987 cohort, 22 years after entry, is about 80% depending on the timing of initial employment.

Fig. 4 shows the impact of the duration of the first employment spell. Survival of workers with a long initial spell of employment (12 months +) after 16 years is about 90%, whereas it drops to 75% for those whose first employment spell - three times as numerous - lasted less than 3 months. The latter are characterized by an abrupt drop of survival in (t+1) and (t+2), followed by a steady decline thereafter. About 80% of all entrants leave their job or are dismissed within two years of initial hire; the majority will re-enter after one or more spells of unemployment.

Mobility (job-to-job and geographical) has a large impact on survival (fig. 8): not surprisingly survival of the movers is much higher (0,92) than the stayers' (0,54). Workers who perceive that their job is at risk – as is in the first few years after initial hire – soon start searching for more solid positions, and, apparently, many are successful. Therefore, the difference between the two schedules is large at the very beginning of one's career, while two years later the decline of survival is about the same.

Other findings are as follows: (i) very young entrants (19-22) do better than the less young (25-30); workers in Northern Italy survive longer than their colleagues in the South; (iii) 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. Overall, bad starts have a strong and

persistent effect on future labour market outcomes, even when the future lies 15-20 years ahead. This finding is in line with the literature on long-term unemployment.

5.3 Non-employment duration

The distribution of long-term non-employment durations (LTNE) is obtained directly from the survival schedules of each entering cohort⁹. Tab. 2 displays the average non-employment duration of more than half million people in their late 40's and 50's¹⁰. The observation window is extended to 2009, assuming a very slow decline from 2003 and 2009. The average duration of almost one million in their late 30's and early 40's is 6-9 years; the average LTNE for all disposed individuals in 2009 is 9.6 years. The magnitude of average LTNE is confirmed by the ISTAT-LFS (2012) estimate of the annual transition probability from unemployment/non-employment to employment in 2008, equal to 0.12. Under reasonable statistical hypotheses the expected duration of non-employment is given by $1/0.12 = 8.5$ years, which is close to our expected LTNE of 9.6 years, and of the same order of magnitude as that reported by P. Gomes for the UK(2012).

Tab. 3. Long-term non-employment durations by age groups in 2009

Age groups	"Disposed" workers (000)	Average LTNE (years)
52-60	137	18
43-52	572	14
38-43	517	9
31-38	427	6
24-31	224	3
19-24	54	1
	1931	9.6

6 Explaining the puzzle

Labour costs and workforce flexibility are the main explanations of hiring and firing decisions: ultimately of worker turnover and disposal itself.

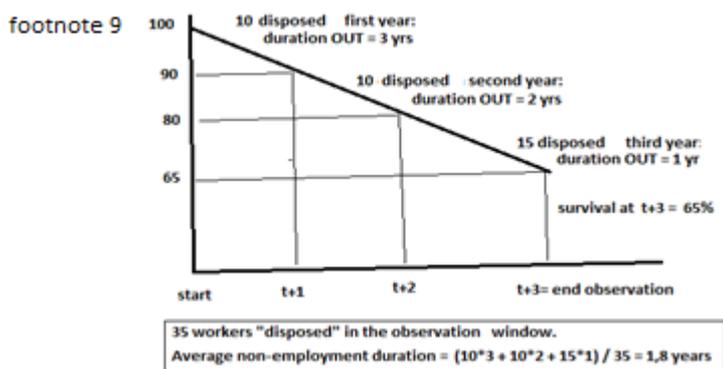


Fig. 9 - The calculation of long-term non-employment duration (LTNE). In this example the survival schedule is linear, but the method is applicable to any survival profile.

¹⁰ Workers aged 55+ (but not yet in retirement age) are unobserved in our data as their labor market entry is prior to 1987: their LTNE is estimated at 16 years under the assumption that worker disposal between the mid Seventies and Eighties may have been less intense than in years that followed.

The long run development of worker disposal is (also) a result of the prolonged stagnation of the Italian economy. Unfortunately there is no valid benchmark dating to the early Seventies that allows a valid statistical comparison. Only a few relevant aggregate indicators are depicted in sect. 2.1

The short and medium run economics of worker disposal is relatively simple: labor costs affect the quantity as well as the quality and mix of the new recruits. The main impact comes about through a substitution effect: retaining a young worker at the end of a one-year employment spell is often more expensive than replacing him with a new unexperienced candidate. The replacing option has a direct impact on disposal. The retaining option implies the employer's positive evaluation of the know-how acquired by the employee in the course of his one-year experience on the job. As will be seen, relatively few employers – the evidence suggests that it is mainly small-sized firms - appear to value the investment in human capital provided to their workers.

Flexibility is an indirect component of labour cost via strict or loose hiring and firing rules, contract typologies regulating working hours, overtime, holidays and night shifts. Its impact on workforce disposal may pull in opposite directions: on the one hand, high flexibility increases the employers' incentive to make use of turnover, accelerating disposal and leading to a reduction of survival. On the other hand a high degree of contract flexibility with costless dismissal – *de facto* a reduction of labour cost - could have a positive impact on the hiring rate and reduce worker disposal. A sound empirical test of flexibility cannot be performed as the mere number of contract typologies defies measurement (in the early 2000's ISTAT counted 42 different typologies). A rough aggregate indicator based on the observed frequency of short term contracts on all new hires is used here as a proxy of flexibility.

The third major factor affecting survival is mobility (as depicted in fig. 8). Empirical evidence suggests that it is pro-cyclical: with tight markets and high worker turnover the frequency of successful matches between labour demand and supply is high, and opportunities for successful job search arise, reducing the risk of disposal and increasing survival. Under slack markets the risk of prolonged joblessness is larger, and survival will be lower. Prolonged joblessness and low survival prelude, however, also to a path of reverse causation: individuals observing their peers dismissed and remaining jobless for a long time may decide to undertake job search in order to pre-empt a similar occurrence. Therefore mobility has to be treated as a lagged endogenous variable in the specification of survival, the lag depending on how mobility is measured.

Individual ability plays an important role in the explanation of survival. Ability and skills are unobservable in the WHIP database beyond the white-collar / blue-collar distinction, but additional factors may be used to indirectly reveal its impact on career development. In first place, pay and its development over time can be used as a proxy for ability, conditional on skill level. The duration of a new entrant's first job spell may also reflect individual characteristics as perceived by the employers.

Geographical differences and firm size deliver additional insight. The industrial structure of Southern Italy is more fragmented and based on small firms than in the rest of the country, providing a fertile ground for tax evasion and illegal labour practices. Sanctions are difficult to impose and the irregular economy is more pervasive. Therefore additional "legally recognized" flexibility of the labour market is likely to be less valued in the South than in the rest of the country, and by small firms compared to larger ones: labour costs lose importance due to the availability of illegal or semi-illegal practices (pay-under-the-table, tax evasion, free layoffs). The differential impact is tested via interaction dummies between labour cost, the white-collars, the South and small-firm size.

Last but not least, reforms and change in employment policies have an important impact on worker disposal: tax rebates and flexibility clauses have a direct influence on wages and labour costs, and on hiring/firing practices.

A reduced form equation of survival is appropriate to measure the factors influencing the *i*-th individual's survival in short-medium term, with lagged mobility as one of its main regressors

$$SURV(i,t) = k_1 + \alpha_1 ME(i,t) + \alpha_2 LCOST(i,t) + \beta FLEX(t) + \eta DUR(i) + \theta_1 COHORT-YR(i) + \lambda_1 MOB(i,t) + \gamma_1 MFG(i) + \mu_1 TIGHT(t) + \delta_1 GEO(i) + \zeta_1 AGE(i,t) + z_1 SKILL(i) + \varphi_1 [INITIAL-WAGE](i) + \omega_1 GNP(t) + ME-interactions + u(i,t)$$

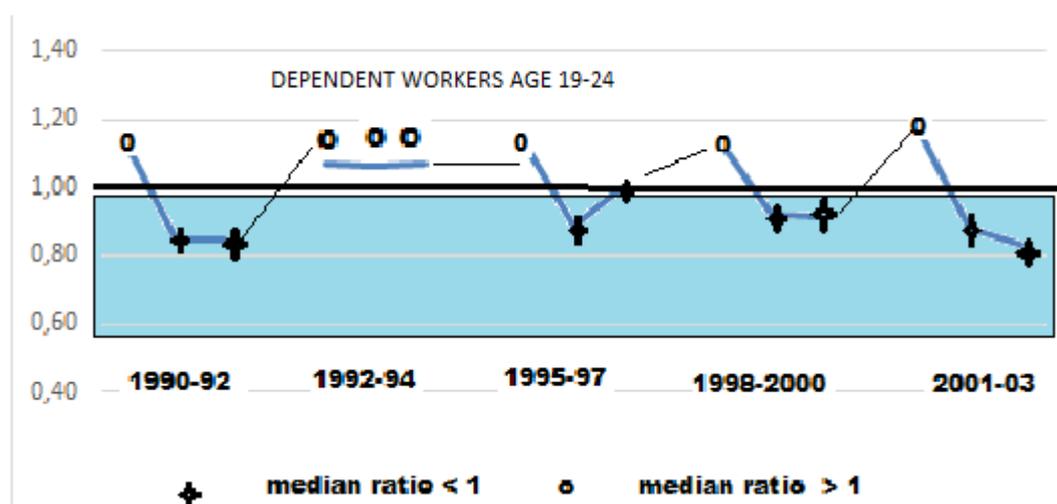
Hiring and firing decisions are driven by the employers' *ex-ante* expectations of the cost of a new hire against the retention cost of workers already on the job. A reasonable proxy of the perspective cost in year (t) is the median of the distribution of labour costs of all the new initial hires of given age, skill group, industry, geographical location and firm size (18 cells).¹¹ I calculate the group medians of the real labour costs distributions (wage and social security contributions) for each year in the 1990-2004 window. Then, for each of the 18 groups, I compute the following median ratio $ME(i,t) = \text{median labour cost of a new entrant at } (t) / \text{labour cost of retaining the } i\text{-th worker previously hired at } (t)$. $ME(i,t)$ could be > 1 or < 1 . If $ME(i,t) < 1$ it means that the labour cost of a new hire is likely to be smaller than the cost of retention, an event that may induce the employer to layoff a previously hired individual and rehire a new one.¹²

The SURV specification accounts for the entrants' cohorts (COHORT_YR). It includes the covariates that describe the the individual workers' characteristics [AGE, SKILL, DUR, INITIAL-WAGE], those of their employers' (MFG, SIZE, GEO), as well as macro variables (FLEX, GNP, TIGHT). The impact of the business cycle is captured by regional GNP-growth (GNP) and is also embodied by macro-type covariates: flexibility (FLEX) and labour market tightness (TIGHT)¹³.

Mobility [MOB(i,t)] is measured by a (0,1) dummy activated only once at the time of the i-th individual's first job change after initial entry.¹⁴ MOB reflects geographical mobility across jobs and regions, but in most cases it catches local or quasi-local job-to-job switches. Mobility (MOB) enters the SURV equation as a lagged endogenous variable. As explained above, inverse causality cannot be excluded: individuals observing their peers dismissed and reimaning jobless for a long time may decide to undertake job search in order to pre-empt a similar occurrence, thereby affecting survival if search is successful. Mobility is, therefore, instrumented by the residuals of a linear probit regression: its r.h.s. exclude the worker's individual characteristics present in the SURV equation (namely AGE), but include the worker's wage before the job change and relative contract typology (where it is recognizable), in addition to year dummies reflecting the business cycle.

¹¹ As usual, medians are preferable to means in order to avoid the influence of outliers

¹²



¹³ TIGHT is measured by the ratio between net and gross worker turnover, as in B. Contini, R. Revelli (1996). The (inverse) tightness indicator is also denominated "churning rate" in S. Burgess (2000).

¹⁴ Multiple spell analysis would complicate the econometrics without any substantial gain: simple empirical explorations (as those yielding fig. 8) indicate that the differential impact on survival of a "one-time-for-all" measure of mobility as performed here and one including multiple in-and-outs is almost negligible.

7 Econometric explorations and discussion

The 2SRI method is the extension to nonlinear models of the popular linear two-stage least squares (2SLS) estimator. The 2SRI estimator (two-stage residual inclusion), introduced by J. Hausman (1978) as a means for testing regressor endogeneity in non-linear models, is similar to 2SLS except that in the second stage regression, the endogenous variables are not replaced by first-stage predictors. Instead, first-stage residuals are included as additional regressors. In a generic parametric framework, including duration models and hazard regression models, Terza et al. (2008) show that 2SRI is consistent and 2SLS is not.

The hazard ratios are computed according to the formula $\langle HR = \exp[\sum b^{\wedge}(x-x^*)] \rangle$ where b^{\wedge} are the maximum-likelihood estimates of the Cox proportional hazard model

$$h(t|X) = h(t) \exp(X_1 b_1 + \dots + X_p b_p)$$

$h(t)$ is the (usually unknown) benchmark probability¹⁵, and x^* are the predicted values of the covariates for which the (relative) exit probabilities are estimated.

Tab.3 - Variable denomination

SURV(i,t)	Survival
LCOST(i, t)	labour cost (growth rate)
WAGE(i, t)	Wage
FLEX(t)	labour market flexibility
DUR(i)	duration of first job spell (one dummy for each of three spell length)
MOB(i, t)	mobility (a dummy 0,1 activated at the first job switch)
MFG(i)	manufacturing vs. services (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)
ME-RATIO (i,t)	median labour cost of new entrants at (t) / labour cost of retaining the i-th worker previously hired
CFL (i, t)	dummy for CFL-contract (CFL = training and work contract)
W_INITIAL(i)	initial wage
COH-EN-YR(i)	year of each worker's first entry in labor market (dummy)
TIGHT(t)	labour market tightness (macro variable for each of three regions)
GNP(t)	GNP growth rate (macro variable for each of three regions)

¹⁵ Recall that, unless the complete parametrization of the survival function is known (and estimable), Cox regression methods do not provide estimates of the benchmark exit probability, but only hazard ratios indicating the distance from the benchmark.

Tab. 4 **SURVIVAL** Hazard rate P > z

WHITE COLLARS	1,274	n.s.
MANUFACTURING	0,984	0
NORTH	0,594	0
CENTRE	0,667	0
DUR 3-12	0,818	0
DUR 12 +	0,206	0
AGE	1,085	0
FLEX	1,887	n.s.
WAGE_INITIAL	1	n.s.
MOB RESID **	0,018	0
MOB ^	0,877	0,03
COH-EN-88	0,736	n.s.
COH-EN-89	0,632	n.s.
COH-EN-90	0,550	n.s.
COH-EN-91	0,663	n.s.
COH-EN-92	0,939	n.s.
COH-EN-93	1,091	0,05
COH-EN-94	0,853	n.s.
COH-EN-95	0,677	n.s.
COH-EN-96	0,752	n.s.
COH-EN-97	0,774	n.s.
COH-EN-98	0,78	n.s.
COH-EN-99	0,609	0
COH-EN-2000	0,572	0
COH-EN-2001	0,687	0
GNP NORTH	16,419	n.s.
GNP CENTRE	44,572	n.s.
GNP SOUTH	0,894	n.s.
TIGHT NORTH	6,27	n.s.
TIGHT CENTRE	4,032	n.s.
TIGHT SOUTH	5,372	n.s.
L-COST	1,002	0,01
ME-RATIO	0,669	0,10
ME-RATIO*WHITE	0,572	0,08

ME-RATIO*SMALL	1,313	0
No. observations (^^) IV-instrumented (**) probit residuals	134443	

Tab. 5

MOBILITY	linear probit	
	Coef.	Z
White-collars	-0.183	-17.07
Mfg	-0.091	-9.91
North	0.245	1.91
Centre	0.108	<i>n.s.</i>
Age	-0.015	-11.03
Dummies 1989-92		<i>n.s.</i>
1993	-0.219	-4.96
1994	-0.159	-3.62
1995	-0.098	-2.23
1996	-0.124	-2.85
1997	-0.094	-2.19
Dummies 1998-02		<i>n.s.</i>
Flex	0.102	<i>n.s.</i>
Wage(t-1)	-	-19.82
	0.00057	
Cfl	0.057	6.46
Constant	-0.524	-4.15
No. observations	134443	

SURV is estimated via a Cox proportional hazard model, accounting for the endogeneity of *MOB* via the 2SRI method (tab.4). Mobility is instrumented by the residuals from a linear probit of mobility (tb.5).

The ME-ratio variables yield interesting results: ME(i,t) is negative (and sufficiently significant), providing empirical support to the replacing/retaining option. Its interaction with small-size firms is very significant and positive: as suggested by the theory¹⁶, small firms often put a high value on human capital and are more incline to retain young experienced workers than larger businesses. LCOST is highly significant: but its very tight confidence interval around 1 suggests that it has practically no impact on survival. *MOB* (instrumented) is also highly significant and has a large impact on survival, confirming that mobile workers are much less at risk of being disposed. The cohort-entry variables are below significance except the last three.

¹⁶ The so-called nutshell model (B. Contini, 2012) yields several testable hypotheses. One indicates that small firms will often profit from putting a higher value on human capital than the large ones.

The FLEX hazard rate indicates a negative impact on survival, but is not significant. The same holds for the macro-variables GNP and TIGHT. The impact of the business cycle on survival shows up only indirectly via the pro-cyclical individual mobility.

Individual characteristics are robustly representative. The length of one's first job spell DUR, a proxy of recognized ability, has a noticeable positive impact on survival. AGE does too (younger entrants survive longer than older peers). Industry and geography play a minor but not secondary role.

MOB (i,t) is estimated as a linear probit regression (tab. 5). Its covariates are past individual wage, business cycle dummies, industry and geographical location and CFL contract. Low past wages induce people to search for better opportunities. The predicted probability of a job switch given a past wage of 1000 eu/month is 15 p.p. higher than given a past wage of 1300 eu/month. Young age favours mobility: the probability of a job switch by a 20-year old is 29 p.p. higher than that by a 40-year old worker. White-collars are less likely to move than blue-collars, an expected consequence of their higher skills. Job switches in manufacturing are less frequent than in the services, where turnover is higher especially among the least skilled. A worker holding a CFL contract is more likely to move (by 6 p.p.) than a colleague hired with a standard contract: this is a consequence of the statutory CFL contract termination clause. The business cycle carries a substantial weight in the move-stay decision, in line with the assumption that it is a reasonable proxy of job offers: in the course of recession (1993-94) the probability of mobility is between 16 and 22 p.p. lower than during the expansion years (1987 being the benchmark). In the next three years of slow upturn (1995-97) the probability of mobility increases but is still 9-10 pp. Lower than 1987. As in the SURV equation, the macro-variable FLEX is, instead, not significant.

Tab. 6 displays the predicted impact of deviations from the benchmark of the main explanatory variables on one's exit probability:

- (i) A reduction of $\frac{1}{4}$ standard deviation of the ME-ratio (replacement / retention labor cost) induces a 4,81% increase of a worker's exit probability (row A);
- (ii) An identical reduction of the ME-ratio interacted with a white-collars dummy leads to a modest 1,58% increase of the latter's exit probability (B);
- (iii) An identical reduction of the ME-ratio interacted with a small-firm dummy delivers instead a 0,76% reduction of the exit probability of a worker employed by a small-sized employer. The magnitude of the reduction is small, but the reverse direction of the impact is indicative of the different reaction of small-size employers (C);
- (iv) A 5% increase (or decrease) of the labor cost above (below) its average has no impact on the exit probability (D);
- (v) A $\frac{1}{3}$ reduction of mobility below its average (which is about 0,7: recall that mobility is a 0-1 dummy) leads to a very large 232% increase in the exit probability (E);
- (vi) There is a very small differential impact between the manufacturing and service industries (F);
- (vii) The exit probability of a worker employed in the North is 46% lower than a benchmark colleague of the South (G);
- (viii) The same differential impact between Centre and South is 33% (H);
- (ix) The exit probability of a 30-year old worker is over twice as high (127% higher) than that of the benchmark 20-year old peer (I);
- (x) The exit probability of a worker whose initial hire lasted 12+ months is 80% lower than that of a benchmark colleague initially hired for < 3 months (J);
- (xi) The same differential is reduced to 21% between workers initially hired for 3-12 months and < 3 months (K);
- (xii) The exit probability of workers hired in the recessionary 1993 is 8% higher than of workers hired in the expansionary benchmark year 1987 (L);

tab.6 $HR = \exp [\sum b^i(x-x^*)] = \text{impact on exit probability} = (1 - \text{survival probability})$
proportional hazard rates (ITALY)
impact on exit probability SIGNIFICANCE

			SIGNIFICANCE
A	replacing vs. retaining labor cost ratio: reduced by 1/4 st. dev.	+ 4,81%	MODERATE
B	replacing vs. retaining labor cost ratio reduced by 1/4 st. dev. <u>white-collars</u>	+ 1,58%	MODERATE
C	replacing vs. retaining labor cost ratio reduced by 1/4 st. dev. in <u>small firms</u>	- 0,76%	HIGH
D	labor cost increase + 5% above average	0	HIGH
E	mobility (reduced 1/3 below average)	+ 232%	VERY HIGH
F	manufacturing vs. services	- 2%	HIGH
G	north vs. south	- 46%	HIGH
H	centre vs. south	- 33%	HIGH
I	age (10 yrs above benchmark: 30 vs 20)	+ 127%	HIGH
J	first job duration (12 months + vs. < 3 months)	- 80 %	HIGH
K	first job duration (3-12 months vs. < 3 months)	- 21%	HIGH
L	year 1993 vs. benchmark 1987 (recession)	+ 8%	MODERATE
M	year 1999 vs. benchmark 1987 (expansion)	- 0,38%	MODERATE

8 Policy implications

Despite the absence of an appropriate counterfactual dating back to the Seventies when the Italian economy was strongly expansionary, there are indirect signs that prolonged stagnation plays an important role in explaining worker disposal. The elements depicted in fig. 2-3-4 provide three hints: the GDP growth steadily below 1% since the 80's with labor productivity growth becoming negative in the early 2000's, the increasing turnover due to the wider utilization of short-term contracts, and the downturn of transition probabilities from unemployment and/or non-employment to employment.

Despite the fact that this exploration ends with 2003, in my opinion some of the policy implications are still valid today. Measures aimed at reducing labour costs across the board are not

promising, in addition to being very expensive. Instead, increasing the relative cost of replacement vs. retention would lead in the appropriate direction: recent measures (Legge Fornero 2013 and Jobs Act 2015) suggest that policy makers are aware of this problem, but the magnitude of the proposed differential is much too small to generate the desired effects.

Contract flexibility, as measured by the share of short-term contracts (fig. 2-3) has a modest impact on disposal in spite of its increasing trend. The result is weakened by the fact that our aggregate measure of flexibility is unfit to capture the multiple facets of different contract typologies (as previously mentioned up to a few years ago in Italy co-existed 42 different varieties of contract typologies!). A drastic reduction of the number of contract typologies would dissipate the legislative confusion and reduce the number of ensuing litigations as well as their associated transaction costs. Here too, some improvements may be forthcoming with the Jobs Act 2015.

This exploration suggests that movers have a much higher chance of avoiding disposal than stayers. The macroeconomic implication is obvious: a strong upturn of the economy would have a beneficial impact on survival. The policy implication is also clear, but not easy to implement under tight budget constraints: increasing the efficiency of placement agencies would improve the likelihood of successful matching between supply and demand, reduce the risk of dropping out of the labour market and the consequent dramatic length of non-employment spells. The personnel of the Italian public placement agencies is one tenth that of Germany, with France and the UK not far behind: a doubling of these facilities should increase workers' survival by as much as 3-4 p.p.

9. Comparative explorations with other sources

9.1 “Where do the disposed workers end up ?”

The crucial question “where do all the long-time jobless individuals end up after being “disposed?” stands waiting for an answer. Discovering their end destination is a difficult task as no specific micro-data are available to help.

Only a minority of disposed workers would be retired as all entrants considered here are too young to have reached retirement age. Small numbers expatriated before the 2008 crisis (it is only in its aftermath that the numbers of young high-skilled expatriates has dramatically increased, from a few thousands yearly until 2007 to over 100 thousand in 2014). The following comparative exploration between our estimates of worker disposal with ISTAT and LFS aggregates indicates that many of the disposed ones are active full time or part-time in the irregular sectors of the economy.¹⁷

Indirect evidence from a variety of sources is the only instrument that allows coarse estimation of its magnitude. ISTAT National Accounts put the number of irregular workers in 2009 at about 3 million, 2 million of which completely submerged and 1 million double-job holders, the latter regularly employed and working extra-time in the black.¹⁸ No breakdown by sex is provided, but some fragile evidence (Lucifora, 2004) suggests that the large majority of double-job holders are men, while the fully irregular women are about one half the number of men. In addition, about half of the young school leavers (15-24) searching for their first job may also be active in the unobserved economy. Altogether the number of men working full-time in the irregular economy according to ISTAT is in the order of 2.0 million individuals – 12.2% of total employment - 200 thousand of whom are young school leavers unobservable in the WHIP database. ISTAT also provides estimates of the age distribution and of the regional presence of irregular workers. Two independent comparisons between WHIP-based worker disposal and ISTAT statistics can be performed at this stage, both crucial to establish a plausible result.

Consider the age distribution of worker disposal against that of the LFS-ISTAT “out-of-the-labour-force” plus the unemployed (tab. 2). The latter amount to about 1.2 million male individuals defined “inactive but willing to work”, the former to 1.1 million (half of them aged 15-24), for a total of

¹⁷ E. Battistin and E. Rettore (2008) indicate that people who work full time in the irregular economy are unlikely to reveal their status in the course of LFS interviews for fear of being disclosed. More generally, the likelihood of misclassification among the unemployed, the inactives and the irregulars is very high.

¹⁸ The relative weight of the black/irregular economy on GNP is estimated at 24% by ISTAT National Accounts. See also M. Piacenza et al. 2013 for an alternative method of estimation: these authors indicate 16.5% of GNP attributable to irregular work in legitimate activities and 27.4% inclusive of all criminal activities.

2.3 million individuals.¹⁹ Overall estimates as well as the age distribution are almost identical to our count of worker disposal in the age group 25-54, somewhat less so among the oldest and, as expected, among the youngest with no previous work experience who account for most of the difference of 500 thousand.²⁰

Tab. 7 Age distribution in WHIP and LFS indicators (in 000).

Age	"disposed" M- workers 2009 (our estimates)	LFS survey 2010: unemployed + OLF available to take a job (M)	Average joblessness duration of WHIP "disposed" workers (years)
55+	420 (*)	320	17
35-54	787	750	10
25-34	600	625	5
15-24	124	625 (**)	2
All	1931	2320	9.6

(*) The WHIP count includes "disposed" individuals below retirement age (62 in 2009) who might report to be unavailable to work.

(**) Inclusive of 500 thousand young male individuals in search of first job (ISTAT estimate), unobservable in the WHIP database.

A quick glance at the geographical distribution (tab. 8) is also very reassuring: our counts of disposed individuals and the ISTAT estimates of irregular workers are very similar, certainly not a result of coincidence.

Tab. 8. Geographical disaggregation of three key indicators (male individuals, 000).

		North	Centre	South	Italy
Disposed	(*)	580	370	980	1930
Irregular	(**)	650	350	800	1800
Inactive	(***)	250	170	780	1200

(*) WHIP, our calculations

(**) ISTAT estimates

(***) ISTAT- LFS: excluding 200 thousand young school leavers unobservable in the WHIP database.

At this stage we may formulate a reasoned hypothesis on the destination of the 1.9 million disposed individuals (fig.10). The close match between the age and geographical distributions suggests that a large majority is active in the irregular economy, with the remaining ones self-reporting as out-of-the-labour force to the LFS interviewers. The vast majority of disposed individuals are either irregular workers or self-report as inactive (available to work) or both, but only a few could be officially unemployed. It may also be assumed that the large majority of the irregular workers are among the disposed or self-report as inactive (or both). Some of the individuals placed in the intersection "irregulars & disposed" may report as regularly employed in the LFS. Finally, around 500 thousand workers could fall in the intersection of all three sets. No elements are available to perform statistical tests of these hypotheses.

This count suggests that at least 80-90% of the irregular workers have had an initial spell of activity in the official economy and joined the ranks of the irregulars after dismissal. The collective layoffs from the industrial sectors in the 80s and 90s involved mainly the less qualified blue-collar workers who could easily find niches in the irregular sectors.

¹⁹ The same comparison among the women yields 1.7 million disposed persons from the WHIP data vs. 1.7 million OLF but willing to work + 0.6 million unemployed women.

²⁰ The LFS estimate of 625 thousand male youth includes 500 thousand individuals in search of first job, unobservable in the WHIP database that covers individuals who have already had some regular work experience. The latter are by construction excluded from the count of "disposed" individuals.

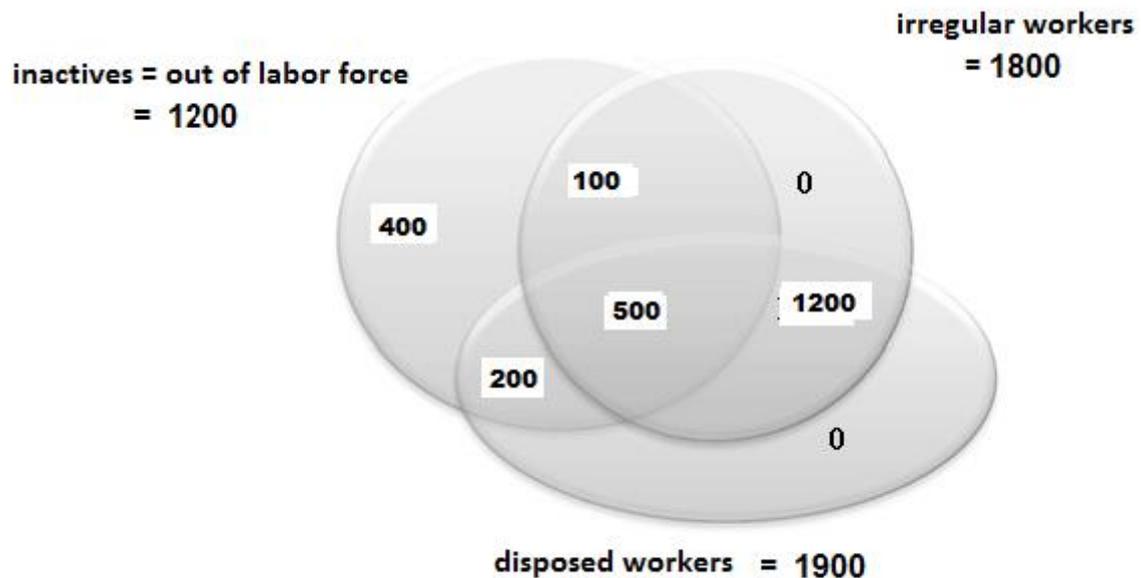


Fig. 10 – A plausible hypothesis on the distribution of the inactives, the irregulars and the disposed (circa 2009).

9.2 Benchmarking worker disposal with the EHCP

A useful benchmark for the estimates of survival is provided by the European Household Community Panel (EHCP), as it helps to reveal the workers' personal characteristics which are unavailable in the administrative data. The EHCP data are observed between 1994 and 2003 (the final wave of EHCP, thereafter replaced by EU SILK).

The first benchmark is the survival schedule itself, estimated on the 1994-2001 EHCP window with the same methodology followed in this paper. I consider all male individuals (age less than 35 at labor market entry) observed in the EHCP sample through the end of the observation period, whether they work or not, and select those who self report as working til year t , and no longer at work thereafter. Once "disposed" (in the course of 2001), these people may report as either working (before disposal), or unemployed or inactive. In the EHCP survey the "disposed" individuals report their status after the last job termination, as well as some of the circumstances that led to joblessness. As expected, only few hints are provided on black economy options, although it is an obvious one for all. Attritioners are excluded from all these counts.²¹

There is almost no difference between the 87% survival rate estimated from the EHCP and the 86% delivered by the administrative database. As a matter of fact I expected the difference to be larger as the WHIP entrants are selected as those beginning their career under a regular work contract, while no such selection applies to the EHCP participants.

Tab. 9 - The 7-year survival 1994-2001 computed from EHCP vs. survival from administrative databases

²¹ Attrition is high in all EHCP surveys, ranging from 25 to 35% of cases. Attrition is not a random event but the causes are, by enlarge, unrelated to those that explain worker disposal: the subjects' absence at the time of interview, change of residence and/or migration, refusal to be interviewed. The latter could be related to movements into the black economy, but there are no elements to assess their statistical relevance. Migration of skilled young individuals has become of some relevance only in very recent years. I have, therefore, discarded pure attrition as a source of information.

1994	100
1995	99
1996	99
1997	98
1998	97
1999	95
2000	93
2001	87
WHIP 7- yr.survival 1994-2001	86

Tab. 10 compares several attributes of all sample respondents vis-à-vis: (1) all the non-survivors “disposed” individuals, and (2) the “disposed” and reporting to have worked with “no contract”. The main differences are as follows:

- (i) Permanent contracts (row A) as well as no-work-contracts (row C) are more frequent among disposed individuals than survivors. The frequency of “missing answers” to the contract typology is high in both columns and difficult to interpret (row D);
- (ii) The frequency of job searchers is twice as high among the disposed ones (row E); likewise for the difficulty to make ends meet (row F). The same frequencies are even higher among the disposed having worked w/o contract;
- (iii) Previous unemployment experience, as well as long-time unemployment are somewhat more frequent among the disposed individuals (rows G and H);
- (iv) The elementary occupations are reported more frequently among the disposed individuals, and even more so among the disposed w/contract (row M);
- (v) Two thirds of the disposed people report to be unemployed after disposal (row O), while only about one fourth report to be inactive (row P). The same frequencies are much lower among the survivors.

All in all, the profiles that emerge from the EHCP are in line with reasonable *a priori* expectations, namely that the survivors are often better off than the non-survivors. More specifically: (i) almost all find it difficult in “making ends meet”; (iii) they have low educational levels; (iii) many report to have terminated their last job spell as unemployed and fewer as inactive; (iv) 12% report to have worked in absence of any contract, a strong hint of their participation in irregular (black or grey) activities. Among the latter the differences are even more marked, relative to previous long-term unemployment experience, job search activity, lower education, elementary occupations, family income and difficulty of “making ends meet”.

To conclude, the explorations reported in sect.9.1 strongly suggest that the number of individuals involved in irregular activities is much higher than the 4% responding “working without contract” (row C).²²

²² In principle, also the missing answer to the contract typology could be attributed to people who work in the irregular economy and might not wish to reveal their status. Tab.W displays a comparative response that might help to clarify the issue. But they do not: on the contrary, the missing answer respondents seem to be better off than the rest of the sample on almost all counts, with the remarkable exception of the item reporting the difficulty of make ends meet (55% - row F). It seems unlikely that such a large fraction of sample respondents (27% - row A) might belong to the richer segments of the irregular economy. In any case people working in the irregular economy may be unwilling to reveal their status either directly (reporting to be working without contract), or via different items that might disclose their position.

Tab. 11 Share of response of individuals who report “no work contract” and of those who do not answer the contract question

	% shares	NO-WORK CONTRACT	MISSING ANSWER
A	ON ALL CONTRACTS	4	27

Tab. 10 - Personal characteristics of the EHCP respondents

	share of responses among all entrants and the disposed ones	ALL ENTRANTS	DISPOSED	DISPOSED & NO-CONTRACT ANSWER
	NO.RESPONDENTS	1025	133	57
		%	%	%
A	PERMANENT CONTRACT	17	31	n.d.
B	TEMP.CONTRACT	15	13	n.d.
C	NO CONTRACT	4	12	26
D	MISSING ANSWER ON CONTRACT TYPOLOGY	46	35	n.d.
E	SEARCHING JOB	17	35	52
F	DIFFICULT TO MAKE ENDS MEET	56	78	84
G	UNEMPLOYMENT EXP.	45	72	70
H	LONG UNEMPL. 12 ++	18	24	35
I	LOW EDU	32	55	75
J	UNIVERSITY EDU.	8	5	8
K	Q1 FAMILY INCOME	25	33	43
L	Q1 PERSONAL INCOME	52	34	22
M	ELEMENTARY OCCUP.	11	21	26
N	HIGH-SKILL OCCUPATIONS	12	28	8
O	UNEMPLOYED AT EXIT	12	68	n.d.
P	INACTIVE AT EXIT	7	26	n.d.

10 Conclusion

B	DISPOSED	35	17
C	UNEMPL. at exit	68	11
D	INACT at exit	26	2
E	SEARCHING JOB	52	16
F	DIFFICULT TO MAKE ENDS MEET	84	55
G	UNEMPLOYMENT EXP.	70	49
H	LOW EDU	78	31
I	LONG UNEMPL. 12 ++	35	21
J	ELEMENTARY OCC.	26	9
K	Q1 FAMILY INCOME	43	24
L	Q1 PERSONAL INCOME	22	17

In Italy a vast number of individuals who lose their jobs enter the ranks of the unemployed, never to regain regular employment. Many join the black/irregular economy; many remain long-term unemployed and/or leave the workforce altogether. And many of the long-term non-participants are at risk of never reentering the labor market in whatever form. These developments have dramatic consequences for the long run and welfare at large, impacting on people's lifestyles, mental health, expectations and, ultimately, delaying family formation and fertility.

Workforce disposal was already under way in the expansionary Eighties. The reforms of the mid Nineties provided additional instruments to the employers for adopting the option of high turnover, thus consolidating "worker disposal". Nor did the business cycle allow the disposed ones to find alternative jobs.

The magnitude of "workforce disposal" is dramatic: about 20% of all workers entered at young age in the official economy are "disposed" by the time they reach their 40s and early 50s. Non-employment duration of almost 2 million disposed workers is a frightful 9,6 years, with peaks of 15-16 years for people in their early fifties, and 8-12 years for mature but still very healthy individuals in their forties.

Workforce disposal is present also in Spain and Germany.²³ Informed media report that similar developments are taking place also in countries of Eastern Europe, although no evidence is yet available. And it would be surprising if other economies of Southern Europe were immune from the disease.

To conclude, this exploration suggests that, at least for comparative purposes, a number of official estimates on the Italian labour market should be the object of important review. More specifically:

- (i) a realistic estimate of Italy's unemployment rate is higher than the official estimate – in the order of 4-5 p.p. - a consequence of the fact that a large number of individuals self-reporting as "inactive but available to work" are discouraged unemployed. Their share is three times as high as the EU average;
- (ii) Italy's employment/population rate is higher than the official one based on LFS estimates (55,5% in 2013, against 64% in France and above 70% in Germany and UK). A vast number of workers, "irregular" by Italian standards, would be legal in many EU countries where regulation is less invasive and/or are exempt from social security contributions. This is the case for many low-pay, often part-time or temporary jobs in the service sectors held mainly (but not exclusively) by young people, such as waiters, janitors, salespeople, domestic helpers and caretakers. A vast number of these positions may be held by individuals belonging to the pool of "disposed workforce";
- (iii) as a consequence, there may be problems with the measurement of labour productivity growth. In Italy's national accounts GDP includes the irregular economy. But it is unclear whether overall employment, the denominator of the ratio that defines aggregate labour productivity, includes the irregular workforce. If it does not, labour productivity may be overestimated. The extent to which such bias may affect also the growth rate of labour productivity is unknown.

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²³ See B. Contini, I. Garcia Perez and T. Pusch (2015)

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