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Disease?

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IS LONG-TERM -NON-EMPLOYMENT A LIFETIME DISEASE?

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Abstract

Long-term non-employment has been almost neglected in the academic literature, long term here implying up to 15-25 years of absence from the labour market, let alone full and definitive exit.

This study takes the lead from a previous paper (2017) in which the magnitude of long-term non-employment (LTNE) and its duration are estimated from administrative databases of Italy, Germany and Spain. In all three countries long-term non-employment appears to be a lifetime disease for many workers who drop out of the (official) labour market and never return, left unsheltered from the welfare institutions.

The main task of this work is an analytical exploration of the factors leading to LTNE development in Italy, estimated at almost 1,3 million male individuals (about as many as the officially unemployed), average duration exceeding 12 years.

An econometric exploration indicates that it is often more profitable for employers to hire new unexperienced young workers in place of confirming individuals already on-the-job, leading to excessive turnover, long-term non-employment and waste of human capital. There are strong policy implications of this result as the EU Commission has for many years advocated low wages for new entrants and high contract flexibility as major instruments to promote youth employment.

I. Introduction

Long-term non-employment (LTNE) has been almost neglected in the academic literature: here long term implies up to 15-25 years of absence from the labour market, let alone full and definitive exit for people in prime age.

Many European economies suffer from this dramatic pathology: a vast number of young men 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 the rest of their life. Many may join the ranks of the irregular economy.

LTNE has been the object of preliminary estimation in few countries: Italy in first place (2007 and 2013), and more recently Spain and Germany (IZA, 2017).² A quick assessment of the extent of LTNE is provided by the ratio of the LTNE's to the male population in working age: 6,5% in Italy, 2,9% in Germany and 6,1% in Spain. Average LTNE duration reaches 12 years in Italy, 13 years in Germany and 6 in Spain, and as long as 25-30 years for LTNE individuals in their 50's in all three countries.

In this paper, after a short review of the estimation procedure and the presentation of some significant descriptive statistics for the three countries, we investigate the Italian case with an econometric exploration aimed at explaining the factors behind the development of LTNE between the late 80's and the early 2000's. Ultimately they amount

¹ Contini's research has been in progress for years at the Collegio Carlo Alberto. We are grateful to Elisa Grand for her very able research assistance.

² B. Contini, I. Garcia Perez and T. Pusch, (2017)

to a distorted structure of incentives, which was widely advocated by the EU commission in order to enhance youth employment. More specifically, the main driver behind long-term non-employment is the relative cost of retaining employees already on-the-job vs. that of replacing them with new young unexperienced ones. If the cost of confirming a tenured worker is too high, he/she will be dismissed and a new one hired in his place. The problem is that such dismissals lead to premature exits from the labour market and, much too often, to lifelong non-employment, unsheltered from the coverage offered by the welfare institutions.

The paper is organized as follows: sect. 1 contains an overall view of the script; sect. 2 provides a short survey of the relevant literature; sect. 3 describes the basic methodology used to measure LTNE; sect. 4 presents the estimates of LTNE duration. The pieces of the puzzle are assembled together in sect. 5.1. Sect. 5.2 illustrates the exploratory model and the main results are discussed in sect. 5.3. In sect. 6 we explore the destination of LTNE-workers: do they join the irregular economy? Policy implications and conclusions follow in sect. 7 and 8.

2. A short overview of literature³

The countless academic studies investigating the consequences of long-term unemployment are only modestly relevant to this paper. All make use of official statistics of “long-term unemployment” defined as one-year or longer (seldom reported as more than two-years). This is hardly sufficient to investigate the long-term problems affecting the labour market and society at large. Administrative longitudinal databases allow a more adequate perspective.

The non-employed willing to work have been left out in most of the academic literature. Not until 2015 A. B. Krueger tackled the problem in the U.S. with the necessarily deep perspective: his conclusion, to which we shall return in what follows, is indeed dramatic “...once a person leaves the labour force, he or she is extremely unlikely to return (*at work*).» Our findings are in line with Krueger’s in Italy and Spain and only to a lesser degree in Germany,

The studies on long-term unemployment emphasize 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): all important problems but less dramatic compared to the lifelong impact of very long joblessness.⁴

The negative relation between the duration of joblessness and the probability of being rehired is an important and relevant issue on our study: here too, however, the duration of joblessness is seldom stretched to the level found in our work. Torelli and Trivellato (1989) study youth unemployment duration in Italy,confirming state dependence; their results are replicated by Addison, Centeno and Portugal (2004). Some years before

³ 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).

⁴ For instance, K. Tatsiramos’ estimates unemployment duration for a number of EU countries based on official LFS data (2010) and reports durations of 1-2 years.

Van den Berg and Van Ours (1994 and 1996) had indicated that state dependence persists also when selection issues related to workers' heterogeneity are included in the analysis; according to Machin and Manning (1999), instead, state dependence and workers' heterogeneity cannot be identified separately without untenable assumptions. Very recently K. Abraham, J. Haltiwanger et al. (2016) address the same issue in the analysis of U.S: unemployment during the 2007-2009 recession: they control for heterogeneity using information on individual employment experiences prior to becoming unemployed, but find that unemployment duration is strongly duration dependent and reject the "bad apple" (heterogeneity) explanation

The crucial issue of the effective length of unemployment/non-employment spells is seldom documented. Mroz and Savage (2006) report re-employment probabilities for US youth who experienced unemployment spells of 10 years or more; 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 estimates of re-employment probabilities after layoff which are consistent with our findings.

The work of A.L. Krueger (2015) delivers, instead, an important perspective on the problem of unemployment duration. 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 relevant for this paper, and more affine to Krueger's recent work. Warnings about the long-run dangers of dualization were 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 so-called "disposed" individuals of this paper are *outsiders* in every respect.

3. Measuring non-employment and its duration

Estimation of the magnitude of non-employment in all Italy, Spain and Germany is performed using the methodology used to calculate "workforce disposal" (Contini, 2008). Our analysis (restricted to male workers) uses longitudinal employer-employee databases originating from administrative records.⁵

The basic statistic used in this exploration is a particular notion of labour market survival. Survival is estimated by counting each individual since first entry in the labour market and still present in the database at the end of a given observation period. The non-survivors are the individuals who have dropped out, i.e. who left regular employment and no longer reappear at work in the administrative data. If anyone is unobservable for a period of time however long 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). Neither transitions from work into registered/official unemployment, nor transitions into retirement are counted as periods of absence from the labour market. In addition, foreign workers are left out of the count as

⁵ WHIP (Work Histories Italian Panel) is a large random sample (1:90) representative of the universe of employees of the private sector, the non-tenured employees of the public sector, the self-employed as well as all workers covered by atypical (non-standard) contracts, and has been integrated with all the transitions from the private sector into the tenured public sector. The German data originate from the SIAB database supplied by the IAB. The Spanish ones from the administrative MCVL, Muestra Continua de Vitas Laborales .

they may leave the host country without leaving traces in the administrative archives Our concern refers to individuals who are still a long way from retirement age and drop out from the labour market after a regular job spell.

We restrict detailed analysis to male workers aged 18-30 at the time of their first job and track their careers in the regular” labour market for up to thirty years.

Definitive exit is very high in Italy, less so in Spain and Germany. In Italy, out of 100 new male entries at age 18-30 at the start of their careers in 1987, 68% survive in 2012, 25 years after their initial career. In Spain survival is 91%⁶ and 89% in Germany over the same observation window (fig.1).

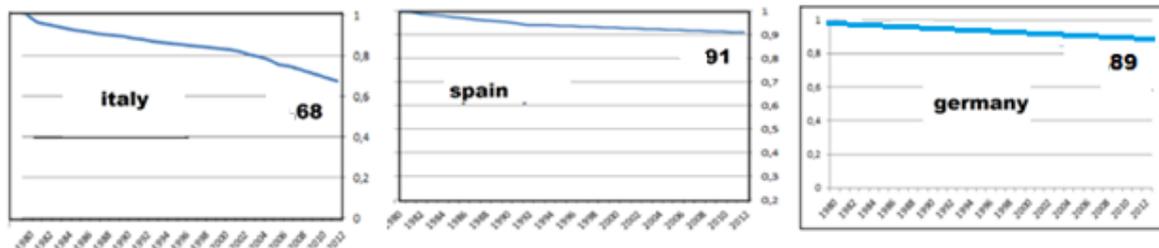


Fig. 1. Survival (all male workers) 1987 – 2012

Analysis of survival is performed on cells defined by cohorts of young male employees observed at one-year intervals between 1987 and 2012 and after adjustment for censoring bias⁷. Cells combine the following dimensions at the time of first entry in the labour market:

calendar year, age, initial wage, skill level, contract typology, geographical area, education, firm size

and others observable in the course of one’s career (mobility, duration of the first employment spell).

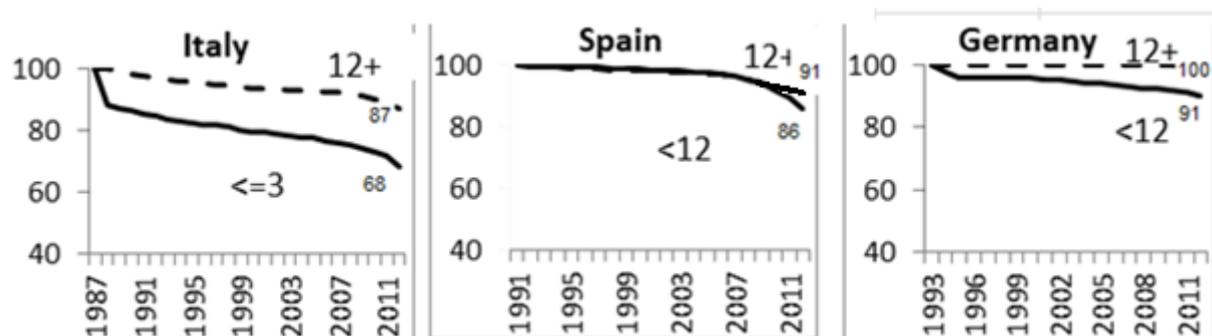


Fig. 2 - Duration of first employment spell (in months)

⁶ In Spain survival was almost as low as Italy until 2010, when a re-employment program was introduced that brought back to temporary work almost 1 million people who had been LTNE for many previous years

⁷ The unbiasing procedure is described in Contini et al. (2017)

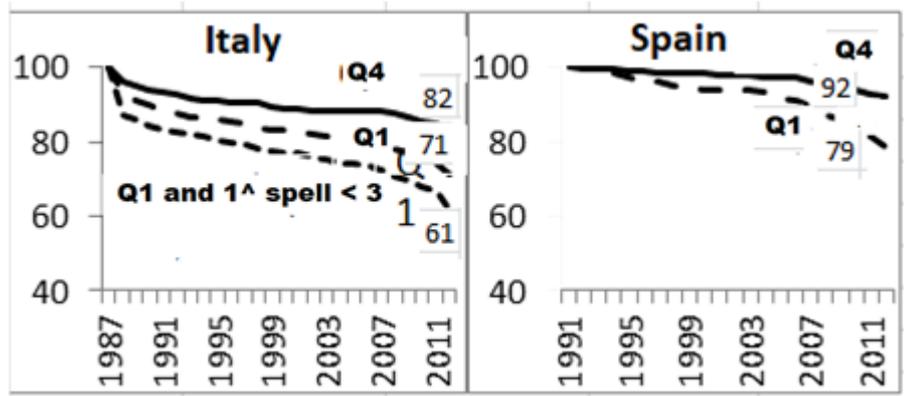


Fig. 3 - Initial wage quartiles

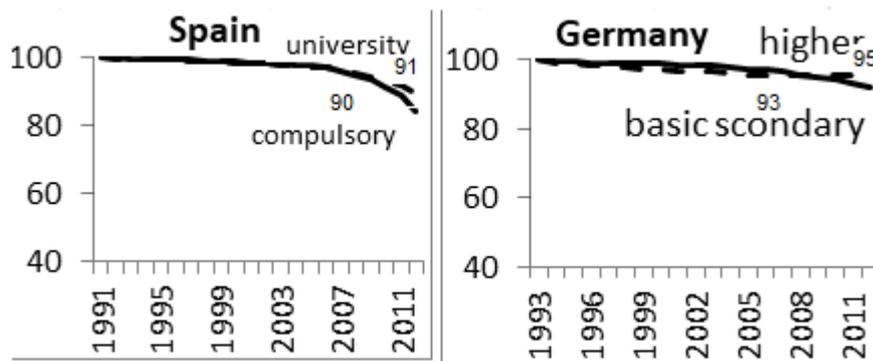


Fig. 4 - Education level (not available for Italy)

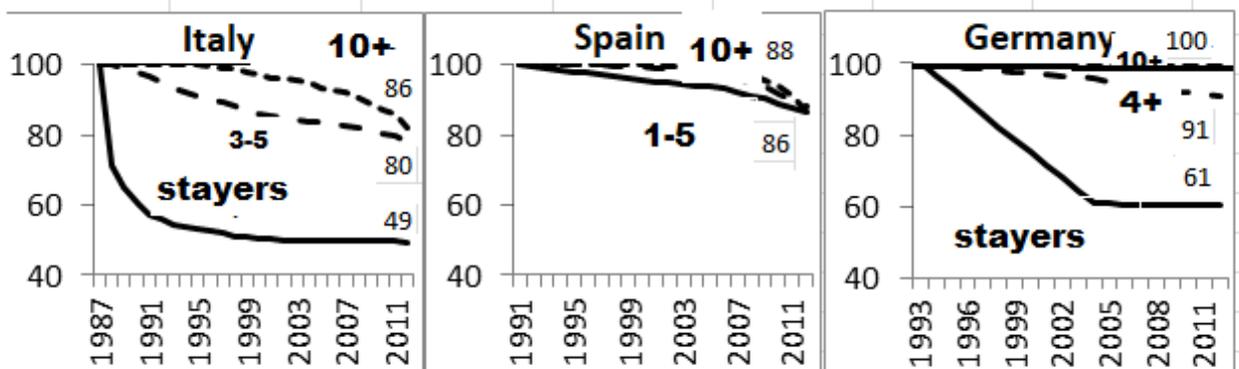


Fig. 5 - Mobility (number of moves in one's career)

The figures (2-5) depict some of the interesting features of survival:

- (i) The length of the first employment spell is a reasonable proxy of unobserved ability (fig.2): it indicates how employers evaluate the ability of the prospective recruit: a promising young person will be offered a relatively longer starting contract than a less interesting candidate. In all three countries the longer the first job spell the higher is survival.
- (ii) An additional indicator of individual unobserved ability is his starting salary (fig.3): a promising worker will presumably be offered a higher wage than a less promising one and his survival is likely to be higher. The differential survival between workers (here, the blue collars) with starting salary in the upper quartile (Q4) of the

distribution and those in the lowest quartile (Q1) is remarkable (no data available for Germany). Italy's schedule displays also the survival of those who are likely to be the very least endowed, namely with starting wages in Q1 *cum* initial job spell < 3 months. Overall, bad starts have a strong and persistent effect on future labour market outcomes, even when the future lies 15-20 years ahead..

- (iii) The education level is observable in Spain and Germany (fig.4. In Italy schooling is not recorded in the administrative databases). It has a predictable positive impact on survival, but differences are small: survival of the less educated reaches 90 and 91% respectively in Spain and Germany against 93 and 95% for the university graduates. Evidence from the ECHP database indicates that educational differences have a similar impact also in Italy.
- (iv) The impact of mobility on survival (fig.5) is remarkable (geographical, as well as job-to-job, often with intervening unemployment spells between job switches). Workers who perceive their job to be at risk start searching for more solid positions, and many appear to be successful. In Germany and Italy the stayers (no moves) are shown separately and display a much lower survival than their moving colleagues. Individuals who have moved up to 3 or 5 times in their career survive much longer and very frequent movers (10+ times) survive even longer.

4 The duration of long-term non-employment (LTNE)

The duration of long-term non-employment is easily estimated from the survival schedules. Tab. 1 displays the estimated magnitude of uninterrupted long-term non-employment for the three countries under observation, the average LTNE duration and the ratio of LTNE individuals to the male population of working age (MPWA). The latter provides a good assessment of the relative magnitude of LTNE rather than its ratio to total workforce that may have margins of ambiguity.⁸ Not surprisingly, in Germany this ratio is 2.9%, much lower than 6.5% in Italy and 6.1% in Spain. If unemployment were calculated as percent of the same denominator, the comparison becomes even more transparent: 3.4% in Germany, 7.2% in Italy and 19.9% in Spain (while the official 2012 male unemployment rates were 5.7%, 10.0% and 24.7% respectively). It is also noticeable the much lower average LTNE duration in Spain (6.2 years), a consequence of the larger share of young LTNE's in Spain compared to Italy and Germany.

Tab. 1: Long-term non-employment magnitude and duration in 2012 (000)
(in parenthesis the share of LTNE in each age group)

Age	LTNE Duration (y)	ITALY	GERMANY	SPAIN
53 ++	25-32y	91 (0.07)	87 (0.12)	0 (0)
47-53	21-24y	99 (0.08)	58 (0.08)	5 (0.005)

38-46	16-20y	260 (0.21)	127 (0.17)	128 (0.13)
32-37	10-15y	361 (0.28)	155 (0.20)	205 (0.21)
26-31	5-9y	405 (0.32)	176 (0.23)	250 (0.26)
16-25	0-4y	45 (0.03)	153 (0.20)	384 (0.40)
Total		1,260	756	973
average LTNE duration (years)		11.6	12.8	6.2
LTNE/ male working age pop (%)		6.5	2.9	6.1
male UN / male working pop. (%)		7.2	3.4	19.9

Tab. 2: LTNE magnitude, average duration and share in male working age population 2012

	OLF	LTNE	avg. LTNE (years)	LTNE/ MPWA	UN/ MPWA	Official UN rate
Italy	1421	1260	11.6	6.5%	7.2%	10.0%
Germany	589	756	12.8	2.9%	3.4%	5.7%
Spain	499	973	6.2	6.1%	19.9%	24.7%

Source: Eurostat based on LFS, own calculations (LTNE, see section 6)

Notes: MPWA = Male Population of Working Age (15-64), UN = unemployment, OLF and UN for age group 15-64

Italy, Spain and Germany provide an interesting example of how institutional arrangements impact on the magnitude of unemployment and inactivity (tab.3). The generous unemployment insurance programmes of Spain and Germany lead dismissed workers to promptly register as unemployed (not counted as LTNE's), while in Italy the eligibility is (was) so restrictive that self-reporting as unemployed becomes much less frequent and LTNE's more numerous. The number of OLF (estimated from Labour Force Surveys) and LTNE are quite close in Italy and Germany, while the OLF's of Spain are about one half the LTNE's.

The average duration of LTNE is to some extent *built-in* the survival definition, as the length of our observation window is 32 years. It is not, therefore, surprising to find LTNE durations as long as 25-32 years among the older cohorts. The age group (57-66) is relatively small as many individuals have retired before the end of the observation period. The 32-46 age groups are very numerous, with average LTNE durations of 10-20 years. The dramatic aspect of the duration is due to the fact that all these people are prime-age adults who have spent most of their life outside the labour market.

Noticeable country differences are found in the shares of each age group. In Germany the large proportion of older individuals (53++) is attributable to the large inflow of East German workers during the years of reunification. In Spain, instead, the

employment increase that took place between 2000 and 2007 explains the larger presence of the younger cohorts.

5- Explaining the Italian puzzle

5.1 The Italian labour market

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 were in employment.⁹ The youth participation rate steadily dropped from 45% of the Eighties to 27% in 2013.

Measures aimed at increasing youth employment opportunities were implemented since the end of the 70s: the CFL-contract (the "work and training contract") was introduced in 1985 and provided employers with generous tax rebates and a full exemption from firing costs. The CFL contract was progressively phased out as new instruments were implemented: a proliferation of different tax rebates and exemption schemes for the employers and the introduction of increasingly flexible labour contracts and agency work that rendered contract termination almost costless. Many workers were left unsheltered from any form of welfare coverage. In 2000 the implementation of two EU directives on part-time work and on fixed-term contracts added new elements of flexibility to the system. The share of hires via non-standard (open-end) contracts, relatively stable around 50% til the mid 90's, picked up thereafter reaching 65% of all initial hires in 2000, and 80% by 2015. The new legislation merely sanctioned and legalized practices that were already widely used.

An overview of Italy's labour market is not complete without mentioning the irregular/ parallel/ unobserved 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 holders¹⁰. 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.

In 2011 the EU-LFS (Labour Force Survey) reported the following comparative data (tab.3): Italy's share of "inactives but willing to work" 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.¹¹ Many of the inactives are presumably discouraged

⁹ The decline in male and, more generally, youth participation is a long run phenomenon dating to the mid Seventies and common to all the EU countries, a consequence of increased schooling age and women's participation. It was the object of investigation in B. Contini (2012).

¹⁰ Reliable micro-data are inexistent. E. Battistin and E. Rettore (2008) indicate that people who work in the irregular economy are unlikely to reveal their status in the 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 always extremely high.

¹¹ A plausible, yet untested, explanation for the Italian OLF-exception is that only a small proportion of Italy's working population is eligible for unemployment benefits: Italy's reciprocity rate is 32%, against 50% in the UK, 60% in France, 65% in Denmark, 73% in Spain, 94% in Austria and 100% in Germany (OECD figures, although these rates do not imply the same degree of generosity). In Italy there is little incentive to self-report one's true employment status because the opportunity cost is often close to zero. Where unemployment benefits are generously available, as in Germany, the

unemployed who have had regular working activities in the past. Many may be working part or full time in the irregular economy.

Tab.3. Unemployment and out-of-labour force (2010).

	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, *Rapporto sulla coesione sociale 2013* and OECD Statistics.

5.2 The determinants of LTNE

The overall state of the Italian **economy**, in prolonged stagnation since the early 90's, is the natural long-run factor behind all labour market developments, including survival.

Our focus here is on the short-medium run determinants of ultimate dropout, measured by the definitive exit probability from the labour market. The observation period is reduced to 1987-2003 as a number of variables are not available through 2012. The role of relative labor costs is the main object of investigation. Costs affect the quantity as well as the quality and mix of labour market entrants. The impact comes about through a substitution effect: retaining a worker at the end of a one-year employment spell is often more expensive than replacing him with a new unexperienced person, even considering the (modest) layoff costs associated with the latter. The replacing option increases premature exit. The retaining option implies the employer's positive evaluation of the know-how acquired by the employee in the course of his experience on the job, and reduces the exit probability.

Flexibility is an indirect component of labour cost via a variety of composite factors: strict or loose hiring and firing rules, contract typologies regulating pay, working hours, overtime, holidays and night shifts. Its impact on ultimate exit pulls in opposite directions: on the one hand, high flexibility increases the employers' incentive to make use of turnover, accelerating premature exit and leading to shorter 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 early exit. 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.

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 inactive 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 well above the optimistic 13% reported by official sources in 2013. This question will be the object of a separate forthcoming script.

Additional factors affecting survival are mobility and labour market tightness. Mobility (as depicted in fig.5) reflects geographical mobility across jobs and regions, but in most cases it catches local or quasi-local switches. Empirical evidence suggests that mobility 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 exit and increasing survival. Under slack markets the risk of prolonged joblessness is larger, and survival is lower. About two thirds of the workers engage in job changing once or more than once in the course of their careers. In this exploration mobility is measured by a 0-1 dummy activated once, at the time of the first job change.¹²

Labour market tightness is measured by worker turnover. Gross and net measures of worker turnover may be equally appropriate: our choice goes to the pro-cyclical net worker turnover rate (NWT= [associations – separations] / employment stock) as it matches quite closely the ups-and-downs of the business cycle.

Individual characteristics: while skills are unobservable in WHIP beyond the white-collar/blue-collar distinction, initial pay and the duration of a new entrant's first job reflect individual characteristics as perceived by their employers.

Geographical differences and firm size may 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.

Cohort dummies corresponding to the year of one's first job are also introduced, aimed at catching the impact of the timing of labour market entry.

5.3 econometric explorations

A simple reduced form is estimated by a Cox proportional hazard model. The hazard ratios are computed according to the formula $HR = \exp[\sum b^i(x-x^*)]$ where b^i are the maximum-likelihood estimates of

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

$h(t)$ is the (usually unknown) benchmark probability¹³, and x^* are the predicted values of the covariates for which the (relative) exit probabilities are estimated.

We estimate the following reduced form equation of the hazard function, complement of survival (survival= 1 – hazard):

$$\begin{aligned} [1] \quad \text{HAZ-SURV}(i,j,t) = & k + \alpha_1 \text{MED-RATIO-1}(i,j,t) + \alpha_2 \text{MED-RATIO-2}(i,j,t) + \\ & + \alpha_3 \text{MED-RATIO-3}(i,j,t) + \beta_1 \text{LCOST}(i,j,t) + \beta_2 \text{FLEX}(t) + \eta \text{DUR}(i,j) + \lambda \text{MOB}(i,j,t) + \\ & \theta \text{COHORT}(i,j) + \mu \text{NWT}(t) + \delta \text{GEO}(i) + \zeta \text{AGE}(i,j) + z \text{SKILL}(i,j) + \\ & + \varphi [\text{W_INITIAL}](i,j,t) + \omega \text{GNP}(t) + u(i,j,t) \end{aligned}$$

¹² Multiple spell analysis would be appropriate if the focus of the study were the in-and-outs across jobs. In this exploration the focus is final survival. Aside from the fact that additional covariates are necessary (in first place the vacancies which are not available), multiple spell analysis would complicate the econometrics without any substantial gain regardless of "disposal". Simple empirical explorations (as those yielding fig. 5) 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 would be almost negligible.

¹³ 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 Variable denomination

HAZARD-SURV	hazard function (= exit probability, complement of survival)
LCOST	labour cost (growth rate)
FLEX	labour market flexibility
DUR	duration of first job spell (one dummy for each of three spell length)
MOB	mobility (a dummy 0,1 activated at the first job switch)
MFG	manufacturing vs. services at entry (dummy)
AGE	age at entry (one dummy for each of three age groups)
GEO	geography at entry (one dummy for each of three regional groups)
SIZE	firm size (one dummy for each of three size groups)
SKILL	skill level at entrance: white vs. blue collars (dummy)
MED-RATIO	[median labour cost of new entrants at (t)] + [firing cost of i- th worker already on-the-job, candidate for dismissal] / [labour cost of retaining the i- th worker already on-the-job]
W_INITIAL	initial wage at labour market entry
COHORT	year of each cohort's entry in labour market (dummy)
NWT	labour market TIGHTNESS: NWT= net worker turnover rate (macro variable, region-specific)
GNP	GNP growth rate (macro variable for each of three regions)

The estimated hazard model estimates the impact of various covariates on the exit probability of ultimate dropout.

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. The retention cost of the i-th employee with one additional year of tenure is known by the employer ($\langle \text{lcost}(i, t+1) \rangle$). Instead the cost of a new hire is not known a priori. The new hire will be the result of the employer's selection within a group of perspective candidates, whose initial pay exhibit some variability.

A reasonable proxy of the perspective hiring cost in year (t) is the median of the distribution of labour costs of all the new initial hires in year (t) of given age, skill group, industry, geographical location and firm size (18 cells: $j= 1,2,\dots,18$).¹⁴ Firstly, we calculate the group medians of the real labour costs distributions (inclusive of social security contributions) for each year in the 1990-2003 window, denominated $\langle \text{lcost_median}(i,j,t) \rangle$ where each individual $\langle i \rangle$ belongs to one of the 18 j-cells. In addition, the cost of a new hire must include the firing cost, roughly equal to two months of pay for each year of the employee's tenure $\langle \text{layoff_c}(i,t) \rangle$.

The relevant median ratio is:

$$\begin{aligned} \text{MED-RATIO}(i,j,t) &= (\text{median labour cost of a new entrant at } (t) + \text{firing cost of } i\text{-th} \\ &\text{worker already on-the-job}) / (\text{labour cost at } (t+1) \text{ of retaining the } i\text{-th worker}) = \\ &= [\text{lcost_median}(i,j,t) + \text{layoff_c}(i,t)] / \text{lcost}(i, t+1) \end{aligned}$$

The employers' option usually depends on the time elapsed since the employee's first hire: generally speaking it is likely to be a more difficult decision the longer the employee has

¹⁴ As usual, medians are preferable to means in order to avoid the influence of outlier

been on the job, in addition to the higher cost associated to the job termination. These differences are caught by three versions of MED-RATIO:

- MED-RATIO-1 if the hire occurred less than 3 years before the decision to replace or retain;
- MED-RATIO-2 if the hire occurred between 3 and 6 years before the decision;
- MED-RATIO-3 if the hire occurred more than 6 years before the decision.

Finally, each MED-RATIO(*i,j,t*) is interacted with dummies of skill qualification (blue vs white collars) and firm size (small vs. non-small).

The smaller the coefficient of MED-RATIO(*i,j,t*) – estimated hazard < 1 - the higher the incentive to layoff the *i*-th previously hired individual and replace him with a new one. Hence hazard <1 implies a higher probability of exit (and lower survival).

The HAZARD (= 1 – SURV) specification includes all the covariates that describe the individual characteristics [AGE, SKILL, DUR, INITIAL-WAGE], those of their employers' (MFG, SIZE, GEO), as well potentially informative macro variables (FLEX, NWT, area-GNP, cohort dummies), aimed at capturing the impact of the business cycle.

Tab. 5 The (1 – SURV) equation = hazard function (+)

	<i>hazard ratios</i>	
<i>White-collar</i>	0,74	*
<i>North</i>	0,85	*
<i>Centre</i>	0,74	*
<i>First job duration. 3-12 months</i>	0.80	***
<i>First job duration. 12 + months</i>	0.07	***
<i>Age</i>	1.04	***
<i>MOB</i>	0,05	****
<i>FLEX</i>	2,15	*
<i>Wage_initial</i>	0,99	*
<i>MDR-blue*SM-1</i>	0,22	****
<i>MDR-blue*ML-1</i>	0,20	****
<i>MDR-white*SM-1</i>	0,24	****
<i>MDR-white*ML-1</i>	0,18	****
<i>MDR-blue*SM-2</i>	0,35	****
<i>MDR-blue*ML-2</i>	0,22	****
<i>MDR-white*SM-2</i>	0,28	****
<i>MDR-white*ML-2</i>	0,18	****
<i>MDR-blue*SM-3</i>	0,93	<i>n.s.</i>
<i>MDR-blue*ML-3</i>	0,79	*
<i>MDR-white*SM-3</i>	1.01	<i>n.s.</i>
<i>MDR-white*ML-3</i>	0,59	*

<i>Likelihood ratio</i>	- 37840
<i>LR chi2 (42)</i>	8011

(+) *The following non significant covariates are excluded from this table: MFG; GNP-rate of change North & Centre; NWT, cohort-dummies.*

- (****) $p\text{-value} > 10$
- (***) $5 < p\text{-value} < 10$
- (**) $2.5 < p\text{-value} < 5$
- (*) $1.8 < p\text{-value} < 2.5$

The main results are illustrated as follows:

- (i) Job changing in the course of one's career is the crucial factor preserving survival: people willing to engage in job shopping and job switching when their position is perceived at risk survive much longer than those who do not. The MOB hazard indicates a reduction of the exit_prob to 5% - i.e. one twentieth ! – relative to the one expected for the benchmark (STAYER).
- (ii) The MED-RATIO's hazards yield the most interesting results, confirming that the comparative cost of retaining vs. replacing young workers plays a very important role in determining the status of LTNE.

MED-RATIO 1 - hire occurred less than 3 years after entry

<i>Timing of hire</i>	<i>Skill level interaction</i>	<i>Firm size interaction</i>	<i>predicted % reduction of exit probability due to a 1 st. dev increase of the MED-RATIO benchmark</i>
<i>M-RATIO = 1</i>	<i>Blue</i>	<i>Small</i>	3.0
<i>M-RATIO = 1</i>	<i>Blue</i>	<i>Medium-Large</i>	3.1
<i>M-RATIO = 1</i>	<i>White</i>	<i>Small</i>	2.5
<i>M-RATIO = 1</i>	<i>White</i>	<i>Medium-Large</i>	3.0

MED-RATIO 2 - hire occurred between 3 and 6 years after entry

<i>M-RATIO = 2</i>	<i>Blue</i>	<i>Small</i>	4.7
<i>M-RATIO = 2</i>	<i>Blue</i>	<i>Medium-Large</i>	3.8
<i>M-RATIO = 2</i>	<i>White</i>	<i>Small</i>	3.9
<i>M-RATIO = 2</i>	<i>White</i>	<i>Medium-Large</i>	3.0

MED-RATIO 3 - hire occurred more than 6 years after entry

<i>M-RATIO = 3</i>	<i>Blue</i>	<i>Small</i>	<i>n.s.</i>
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<i>M-RATIO = 3</i>	<i>Blue</i>	<i>Medium-Large</i>	<i>17.8</i>
<i>M-RATIO = 3</i>	<i>White</i>	<i>Small</i>	<i>n.s.</i>
<i>M-RATIO = 3</i>	<i>White</i>	<i>Medium-Large</i>	<i>9.0</i>

The impact of a 1 st.dev. increase of MED-RATIO-1 leads to 3-4% reduction of the exit probability, about the same among blue and white-collars and also among firms of different size. If the time elapsed since the hire is longer (between 3 and 6 years, impact caught by MED-RATIO-2), the reduction is larger among the blue-collars and among small-size firms (4.7 > 3.0 and 3.9 > 2.5). The latter is not surprising and is confirmed in a recent model of labour demand with permanent and temporary contracts¹⁵: small firms exercise the retaining option more frequently than larger ones as the investment spent for the enhancement of their dependents' specific human capital and loyalty is usually high. The hazard coefficients of MED-RATIO-3 are only marginally significant, and their evaluation must be cautious. They are much larger than the previous ones – 17,8 and 9% for blue and white collars respectively -, but, surprisingly, only relating to firms of medium-large size.

Other results of interest are those indirectly reflecting the employer's evaluation of each worker at the time of first entry (duration of first job spell, and entry wage)

- (iii) A first job duration exceeding 12 months (DUR 12+) reduces the exit probability to 7% that expected for the benchmark duration of less than 3 months. A long initial spell is a reasonable proxy of recognized ability and indicates a quasi-guarantee of survival. It deserves to be emphasized that throughout the observation period, and especially towards its end, the number of very short initial hires is about three time as large as those lasting more than 12 months;
- (iv) A first job duration between 3 and 12 months (DUR 3-12) reduces the exit probability to 80% that expected for the benchmark duration of less than 3 months;
- (v) The entry-wage is significant but has no impact on the exit probability, defeating our expectation that it might perform as an additional indicator of individual ability upon entry;

Other findings of interest:

- (vi) Age at entry matters: entering at age 20 increases the exit probability by 18% relative to entering at 35;

¹⁵ B.Contini (2011)

- (vii) The exit probability of white-collar workers is 74% that of same age blue-collar workers. Taking into account the fact that white-collar workers enter the labour market around age 25, five years later than the blue-collar workers, the difference is reduced to 95%;
- (viii) A 10% increase of the flexibility indicator above its mean (FLEX) increases the exit probability by 11%. The a-priori uncertainty expressed about the sign of the impact of flexibility finds the answer here: higher flexibility leads to higher turnover;
- (ix) The exit probabilities of workers operating in the North and in the Centre are lower than in the South (85% and 74% respectively). The difference reflects a composition effect due to the much higher presence of micro-firms in Southern Italy;
- (x) Cohort dummies are below significance except for the recessionary years 1991-93, with slightly higher exit probability. Likewise, the pro-cyclical macro-variable NWT (net worker turnover) is marginally significant in the expected direction, weakly confirming the positive impact of the business cycle on survival.

6 - 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.¹⁶ Reasonable comparisons between our LTNE estimates and aggregate indicators is the only available second best.

A few relevant observations are in order: (i) only a minority of the LTNE's are retired as almost all entrants are too young to have reached retirement age; (ii) few workers expatriated before the 2008 crisis, although in its aftermath the number of young high-skilled expatriates has rapidly increased; (iii) foreign workers are excluded from our sample as their return to their homecountry is unobservable and may bias our survival estimates.

The irregular economy is the natural candidate as end destination for many workers in working age who become long-term non-employed.

Indirect evidence from a variety of sources allows coarse estimation of the magnitude of irregular work. ISTAT puts 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.¹⁷ No breakdown by sex is

¹⁶ The European Household Community Panel (EHCP) provides some information on the workers' personal characteristics, unavailable in the administrative data (Contini et al. 2017). The EHCP indicates that the survivors are often better off than the non-survivors on all the items related to one's wellbeing, education and past unemployment experience. In addition, there are strong hints of a relatively high participation (not necessarily full-time) to the irregular economy, both among those who report to have worked in absence of any contract, and also among those who do not indicate any contract typology.

¹⁷ The relative weight of the black/irregular economy on Italy's GNP is estimated at 24% by ISTAT National Accounts. Alternative methods of estimation make use of different macroeconomic hypotheses. E. Schneider (2011) estimates the share of irregular activities on GNP for several OECD countries: Italy ranks among the highest at 21.5% and Germany,

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, 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 in the irregular economy according to ISTAT is in the order of 2.0 million individuals – 12.2% of total employment (including 250 thousand students or school leavers unobservable in the WHIP database). ISTAT provides estimates of the age distribution and of the regional presence of irregular workers.

The comparisons of our estimates of premature exit with ISTAT/LFS aggregates indicate that many of the dropouts are active full time or part-time in the irregular sectors of the economy.¹⁸

Firstly consider the age distributions (tab. 6). The LFS-2010 indicates about 2,3 million male individuals “inactive but willing to work”, of all ages. The age distributions of the two aggregates are close in the age group 25-54; less so among the oldest 55+. and, not surprisingly, especially among the young. The reason for the first difference is that the LFS covers individuals without any age limit while in the WHIP count maximum age is 62. Among the young ones (15-24) the LFS includes all individuals aged 15+ who have never been in regular employment – about 0,5 million youth in search of first job unobserved in WHIP - but also all the students who report some availability without being officially in search of a job.

Tab. 6 Age distribution in WHIP and LFS indicators 2010 (male only, in 000)

Age	LTNE's 2009 (000-our estimates)	LFS-2010: Unemployed+ OLF available to take a job	Average joblessness duration of LTNE's (years)
55+	140 (*)	320 (*)	17
35-54	575	690	10
25-34	500	585	5
15-24	45 (**)	725 (**)	2
All	1260	2320	9.7

(*) No age upper limit in LFS; (**) at least 500 thousand school leavers in search of first job, unobservable in WHIP.

A quick glance at the geographical distribution (tab. 7) is also fairly reassuring, considering the basic differences indicated above.

among the low ones, at 13.5%. The share of irregular employment on overall employment in Italy is estimated around 16%. M. Piacenza et al. (2013) indicate 16.5% of Italy's GNP attributable to irregular work in legitimate activities and 21.6% inclusive of all criminal activities. The same authors estimate the share of irregular activities in GNP at 19,2% in Spain, 13,5% in Germany and 11% in France.

¹⁸ 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 often very high.

Tab. 7. Geographical disaggregation in 2010 (male only, in 000).

	North	Centre	South	Italy
LTNE (*)	380	240	640	1260
Irregulars (**)	600	350	800	1750

(*) WHIP, our calculations

(**) ISTAT estimates: no age upper limit among the irregulars.

The match between the age and geographical distributions does not look like a result of mere coincidence and suggests that a vast majority of the LTNE's individuals may have joined the irregular economy, many self-reporting in the LFS as inactive but available to work. Here too, part of the difference is due to age (irregular workers may be older than 62¹⁹).

No elements are available to perform statistical tests of these hypotheses.

7 -Policy implications

Prolonged stagnation played an important role in explaining premature and definitive exit from the labour market. Needless to say, a sound recovery of the economy would have beneficial effects on employment and on labour market survival.

Our econometric exploration provides various short-medium run explanations of “worker disposal”. While it does not extend beyond 2003 for lack of adequate data, specific policy implications are still valid today as the incentive structure is still basically unchanged.

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. A generalized 3 p.p. decrease of MED-RATIO (requiring also a higher cost of early layoff) would reduce the distortion of the incentive structure and prevent ultimate exit from the labour market of about 100 thousand individuals over a 10 year-horizon.

Movers have much higher chances of avoiding premature exit than stayers. The macroeconomic implication is straightforward: a strong upturn of the economy would have a positive impact on employment and, indirectly, a beneficial impact on survival. The immediate policy implication is also clear, but not easy to implement under tight budget constraints: increasing the efficiency of placement agencies (hiring new trained personnel²⁰ but also increasing training-on-the-job opportunities) 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. We estimate that a 5% increase of the frequency of successful mobility would lead to 5000 less individuals becoming LTNE each year.

¹⁹ The collective layoffs from the industrial sectors in the 80s and 90s involved mainly the blue-collars in their 60's by 2012, who could easily find niches in the irregular sectors (construction, maintenance, small trades and public services).

²⁰ The quest for new personnel is well founded: the employment of Italy's public placement agencies is one tenth that of Germany, with France and the UK not far behind.

Furthermore, this exploration strongly suggests the need to increase the cost of early layoff in order to mitigate ultimate exit from the labour market and many of its negative consequences.

Many workers, “irregular” by Italian standards, would be legal in most EU countries where regulation is less invasive and/or may be exempt from social security contributions. This is the case for low-pay, often part-time or temporary jobs in the service sectors held mainly (but not exclusively) by young people: waiters, janitors, salespeople, domestic helpers and caretakers. A less restrictive legislation would reduce the incentive to join the irregular economy, while it might have also a mitigating impact on early exit. And a drastic reduction of the excessive number of contract typologies would dissipate the legislative confusion and reduce the number of ensuing litigations as well as their associated transaction costs.

At least two official estimates on the Italian labour market should be the object of important review:

- (i) Italy’s real employment/population rate is substantially higher than the official one based on LFS estimates (55.5% in 2013, against 64% in France and above 70% in Germany and UK).
- (ii) A realistic estimate of Italy’s unemployment rate is much higher than the official 12% – in the order of at least 4-5 p.p. - as a large number of individuals self-reporting as “inactive but available to work” are either LTNE’s or reporting to be inactive (or both).

8 - Conclusive remarks

In Italy a vast number of individuals who lose their jobs enter the ranks of the non-employed, never to regain regular employment. The magnitude of LTNE is dramatic: more than 20% of all workers entered at young age in the official economy dropout from regular employment by the time they reach their 40s and early 50s. Average non-employment duration of almost 1.3 million workers is a frightful 11.6 years, with peaks of 20-30 years for people in their early fifties, and 9-20 years for mature but still very healthy individuals in their forties.

Premature and definitive labour market exit was already under way in the Eighties. The reforms of the mid Nineties, strongly advocated by the EU Commission – low entry wages and high flexibility – added strength to its development. And the prolonged, negative state of the economy worsened the job crisis.

Many LTNE’s workers join the black/irregular economy; many remain long-term unemployed and/or leave the workforce altogether, unsheltered from the welfare institutions. And many are at risk of never re-entering the labour market in whatever form. This entails dramatic consequences on their lifestyles and expectations, and ultimately on family formation and delayed fertility.

Bibliography

Abraham, K., Haltiwanger, J, Sanduski, K. and Spetzler, J. (2016), “The consequences of long term unemployment: evidence from matched employer-employee data”, *NBER W.P.* 22766

Aralampulam, W., Booth, A.L. and Taylor, M. (2000), "Unemployment persistence", *Oxford Economic Papers*, n. 52., pp.24-50.

Ardizzi, G., C. Petraglia, M. Piacenza, G. Turati (2013), "Measuring the underground economy with the currency demand approach: a reinterpretation of the methodology, with an application to Italy", *Journal of Income and Wealth*, pp. 747-772.

Battistin, E. and E. Rettore (2008), "Ineligibles and eligible non-participants as a double comparison group in regression-discontinuity designs", *Journal of Econometrics*, n. 14, pp. 715-730..

Berton, F., F. Devicienti, L. Pacelli, (2011) "Are temporary jobs a port of entry into permanent employment?: Evidence from matched employer-employee", *International Journal of Manpower*, Vol. 32 Iss: 8, pp.879 - 899

Berton, F., M Richiardi, S Sacchi (2012), The political economy of work security and flexibility: Italy in comparative perspective, Policy Press.

Bentolila, S., P. Cahuc, J. Dolado and T. Le Barbanchon (2010), "Two-tier labour markets in the great recession: France vs. Spain", CEMFI, W.P. 1009.

Blanchard, O. and P. Landier (2002), "The perverse effect of partial labour market reforms: fixed duration contracts in France", *The Economic Journal*, pp. F214-F244.

Blanchard, O. (2006), "European unemployment", *Economic Policy*, n. 45.

Bonnal, L., Fougere, D. and Serandon, A. (1997), "Evaluating the impact of French employment policies on individual labour market histories", *Review of Economic Studies*, Vol. 64 No. 4, pp. 683-713.

Booth, A., Francesconi, M. and Frank, J. (2002), "Temporary jobs: stepping stones or dead ends?", *Economic Journal*, Vol. 112 No. 480, pp. F189-F213.

Bover, O. and Gomez, R. (2004), "Another look at unemployment duration: exit to an open-ended vs a temporary job", *Investigaciones Económicas*, Vol. 28 No. 2, pp. 285-314.

Contini, B., F. Cornaglia, C. Malpede and E. Rettore (2003), "Measuring the impact of the Italian CFL programme on job opportunities for young people", in O. Castellino and E. Fornero (eds.), *Pension policy in an integrating Europe*, E. Elgar Publ.

Contini, B. and U. Trivellato (eds.) (2005), Eppur si muove: mobilità e dinamiche del mercato del lavoro, Il Mulino.

Contini, B. and C. Villosio (2005), "Worker mobility, displacement, redeployment and wage dynamics in Italy", in B. Contini and U. Trivellato (2005).

Contini, B. (2011), "A nutshell model of labour demand with permanent and short-term contracts", *unpublished manuscript*

Contini, B. and A. Poggi (2012), "Employability of young Italian males after a jobless period 1989-98", *Labour and Industrial Relations Review*, vol. 26 (1), pp. 148-163..

Contini, B. and E. Grand (2012), "Lavoro "usa e getta", disoccupazione e inoccupazione: novità importanti dai dati WHIP", *Rivista di Politica Economica*, vol. 28, no.2, pp. 312-329.

Contini, B., Garcia Perez, J.I., Pusch, T. and Quaranta, R. (2017), "New approaches to the study of long-term non-employment duration in Italy, Germany and Spain", *IZA Discussion Papers* no.11167.

D'Addio, A.C. and Rosholm, M. (2005), "Exits from temporary jobs in Europe: a competing risk analysis", *Labour Economics*, Vol. 12 No. 4, pp. 449-68.

Dolado, J.J., Garcia-Serrano, C. and Jimeno, J.F. (2002), "Drawing lessons from the boom of temporary jobs in Spain", *The Economic Journal*, Vol. 112 No. 480, pp. F270-95.

Farber, H. S. (1993) "The incidence and cost of job loss: 1982-1991" *Brooking Papers on Economic Activity: Microeconomics* no. 1, pp. 73-132.

Feige E.L. (1979), «How Big is the Irregular Economy?», *Challenge*, no.12, pp.5-13.

Gomes, P. (2012), "Labour market flows: facts from the United Kingdom", *Labour Economics*, pp. 165-175.

Grand, E. and R. Quaranta (2013), "La ricostruzione delle informazioni sugli oneri sociali obbligatori e sul costo del lavoro a partire dai dati individuali e di impresa di fonte Inps", *ISTAT Working Papers n. 7/2013*.

Güell, M. and Petrongolo, B. (2007), "How binding are legal limits? Transitions from temporary to permanent work in Spain", *Labour Economics*, Vol. 14 No. 2, pp. 153-83.

Krueger A.L., (2015), "How tight is the labour market?", *NBER Report 2015*, no.3.

Krueger A.L., Cramer, J., Cho, D. (2014), "Are the long-term unemployed at the margin of the labor market?", *Brookings Papers on Economic Activity*, Spring 2014.

Ichino, A., Mealli, F. and Nannicini, T. (2008), "From temporary help jobs to permanent employment: what can we learn from matching estimators and their sensitivity?", *Journal of Applied Econometrics*, Vol. 23 No. 3, pp. 305-327.

Mroz, P. and Savage (2006), "The Long-Term Effects of Youth Unemployment", *J. Human Resources*; XLI: 259-293

Mussida, C. and Sciulli, D. (2015), "Flexibility policies and re-employment probabilities in Italy", *BE. J. Econ. Anal. Policy*, 15(2): pp. 621-651

Peichl, A. and S. Siegloch (2010), "Accounting for labour demand effects in structural labour supply models", IZA DP. 5350.

Picchio, M. (2008), "Temporary jobs and transition to stable jobs in Italy", *Labour*, Vol. 22 No. 1, pp.147-74.

Saint-Paul, G. (2004), Dual labour markets, MIT Press.

Schneider, F. (2011), The Shadow Economy, Theoretical Approaches, Empirical Studies and Political Implications, Cambridge University Press.

Stewart, M.B. and Swaffield, J.K. (1999). "Low Pay Dynamics and Transition Probabilities," *Economica*, vol. 66 (261), pages 23-42.