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ABSTRACT

The Cost-Effectiveness of Subsidies to Youth Employment in Italy: Toward a Preliminary Evaluation

The European Commission has for many years advocated fiscal policies in order to improve the employability of young people. This paper aims at providing a preliminary rough estimate of the cost-effectiveness of rebates on social security contributions granted to employers that Italy has utilized since the Nineties in a variety of forms. My conclusion is that cost-effectiveness is still an open question.

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Keywords: policy evaluation

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B. Contini

The cost-effectiveness of subsidies to youth employment: toward a preliminary evaluation[1]

The European Commission has for many years advocated fiscal policies in order to improve the employability of young people. This paper aims at providing a preliminary rough estimate of the cost-effectiveness of rebates on social security contributions granted to employers that Italy has utilized since the Nineties in a variety of forms.

The analysis takes the lead from previous studies of long-term non-employment (LTNE) in Italy (Contini et al, 2017 and 2019). LTNE has been widely neglected in the academic literature: "long-term" refers to up to 15–25 years of absence from the labour market for people in prime age, often followed by full and definitive exit. Many European economies suffer from this dramatic disease: a vast number of people 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. According to our estimate of Italy's LTNE, the jobless average duration is 11 years. In the vast majority of cases LTNE is a prelude to lifelong non-employment, unsheltered from the safety nets offered by welfare institutions.

In 2015 A. B. Krueger tackled the problem in the U.S. His conclusion is dramatic "…once a person leaves the labour force, he or she is extremely unlikely to return *(to work)*." 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:

Unfortunately most of the academic studies on long term unemployment are scarcely relevant to this particular problem. Indeed, there are countless studies investigating important consequences of long-term unemployment, like skill obsolescence and loss of salary upon re-entry. But the official definition of "long-term unemployment" to which they refer indicates unemployment lasting more than 1 year (seldom 2 years) while the length of jobless duration is seldom investigated. Individuals unemployed for longer periods are counted in official statistics as "out" of the labor force (OLF).

Our statistical analysis uses longitudinal administrative records originating from INPS Social Security databases that covers all dependent workers linked to their employers as well as self-employment. The observation period ranges between 1987 and 2012. Survival is estimated by counting each individual since first entry in employment and still present in the database at the end of a given observation period. All forms of dependent work and self-employment are observed in the database (including temporary and apprentice contracts). Non-survivors are the individuals who have dropped out, i.e. who have left regular employment and no longer reappear at work in the administrative data. If an individual is missing from the employment records for a period of time however long (additional schooling periods, sickness leaves, military service, all observable in the INPS archives and then shows up again in the records, he is counted as a survivor.
Analysis was restricted 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 25 years.
Premature and definitive exit is very high: out of 100 male entries in the period 1987-2012, only 78% survived in 2012, 76% the blue-collars and 80% the white-collars.
The following table displays three indicators: the estimated magnitude of uninterrupted long-term non-employment (1,260,000 individuals), the average LTNE duration (11,6 years) and the ratio of the number of LTNE individuals to the male population of working age (6,5%). The latter provides a better assessment of the relative magnitude of LTNE than its ratio to the total workforce which may have margins of ambiguity. Italy's unemployment calculated as a percentage of the same denominator yields 7.2% (while the official 2012 male unemployment rate was 5.7%).

[1] I am most grateful to Ugo Trivellato for his veryl useful comments.

Interestingly, the figures for the OLF's in 2012 (1,421,000 individuals) and the LTNE's (1,260,000) are quite close: a reassuring finding despite some important differences, as many individuals self-reporting as OLF are likely to be found among the LTNE.[2]

Tab. 1 - LTNE = Long-term non-employment: estimated magnitude and duration in the 1987-2012 observation window (in parenthesis the share of LTNE in each age group)

Age group	LTNE duration (yrs)	LTNE (000) (in parenthesis: % on total)
53++	25–32	91 (7)
47-53	21-24	99 (8)
38-46	16-20	260 (21)
32-37	10-15	361 (28)
26-31	5 -9	405 (32)
16-25	0 – 4	45 (3)
All	**Average 11.6**	**1,260 (100)**
LTNE / male working age population (%)		6,5 %
Survival 2012: average all workers at end observation period	78% Blue collars 76% White collars 81%	
Male unempl/ working age population		7,2 %
OLF "out of labour force but willing to take a job"		1,421 (LFS estimate)

LTNE estimation could be replicated year after year using observation windows of equal length. This is not possible at this stage as access to the INPS administrative database is now much more restrictive. The embodiment of the true dynamics of the economy in the LTNE model would be a very important and difficult task, but it is out reach for the time being.
Ceteris paribus, the number of successive LTNE cohorts should be of the same order of magnitude as the one displayed here.The older cohorts retire year after year at similar pace (about 200,000 throughout the late 90's and early 2000's) and the number of new young entrants in the labor market (about 150,000) is not changing dramatically aside from the demographic (negative) trend.

A partial, yet useful picture of how the business cycle may affect the estimation of LTNE, can be obtained from the data at hand: the figure depicts the estimated survival of the cohorts entered in 1992 over the 20-year window 1992-2012, and of those entered in 2000 over the 12-year window 2000-2012, as compared to the full 1987-2012 window (fig.1). The impact of the 1992 crisis is clear ad suggests that survival at the end of a window of comparable length might be at least 5 p.p. lower than our current estimate. Likewise and perhaps even more for the cohorts entering in 2000.

Fig. 1 - Estimated survival of cohorts entering in 1987, 1992 and 2000

[2] The comparison of LFS/OLF and LTNE indicators may be problematic for other reasons. In addition to the broad difference between longitudinal administrative data and (sample) survey data: (i) LTNE individuals are aged 18–30 at the time of their first job and therefore few will reach 60 years of age in 2012, while OLF individuals are aged 15 with no no upper limit; (ii) OLF estimates are restricted to individuals reporting to be "willing to take a job".

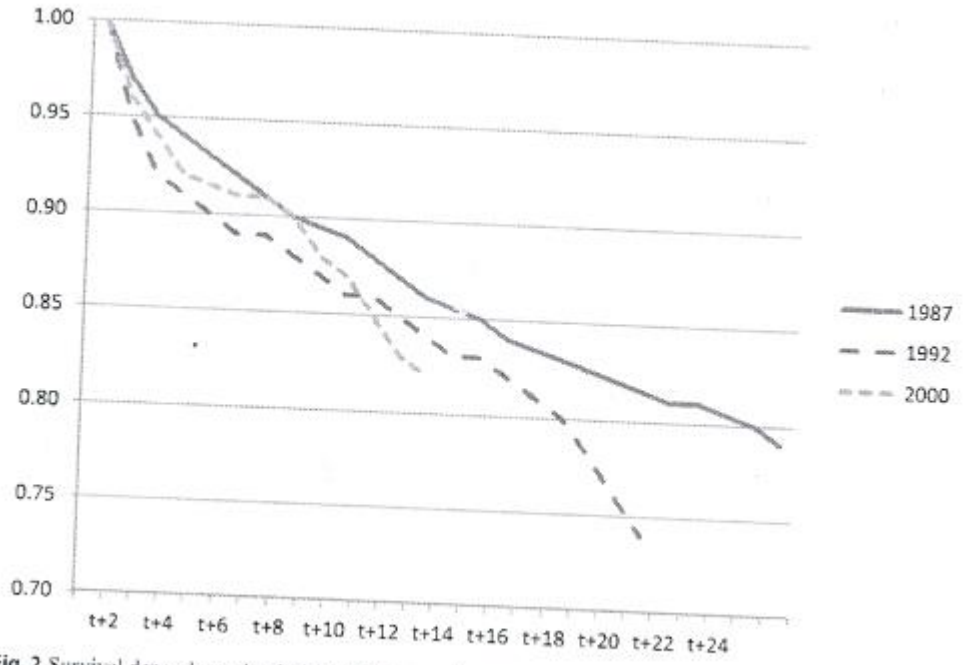

Fig. 2 Survival depends on the timing of labour market entry

A simulation experiment

The simulation model—based on a pseudo-Markovian process with state dependence accounting for long-term joblessness—provides a rough estimate of the long-run impact of policy changes sustained over a period of 10 years.
The *ceteris paribus* assumption implicit in this simulation is, obviously, restrictive. A general equilibrium approach - nowadays out of reach - would improve the reliability of this exploration.

For this simulation we need an estimate of the workers' exit probability from the labor market in presence of 10 years of s.s.c. rebates. The LTNE estimate puts it at 4.7% for the blue-collars and 3.1% for the white-collars.

The model indicates that in absence of subsidies the number of LTNE's over a period of 10 years would be 1,181.000 (compared to 1,260,00 over the complete 25 year window, tab 1). Instead, as a result of 10 years of s.s.c. rebates to firms for all yearly new hired 150,000 individuals, the number of expected LTNE's would be reduced to 721 000 individuals, 460,000 less than the no-subsidies outcome.

Unfortunately no reliable data are available on the number of those who benefited from social security rebates: each year from 1 to 2 million male and female workers between 2010 and 2019 (about 50% each gender), with benefits of varying durations and institutional differences ("temporary and economic benefits", gender and activity related). Even less do we know on the costs involved, about 2,700 eu/ year/head, in 2014 and 2015, here too inclusive of all the destinations.[3]

For this exploration I have made reasonable hypotheses on the figures involved. The simulation results yield orders of magnitude of the cost effectiveness of the rebates (applying only to male workers), where all the *caveat* apply.

Basic statistics

[3] Rapporto INPS 2016, pp. 149-152.

Male dependent employees, aged 15-65 in year 2000: about 10 million (ISTAT)
pplicants for new jobs: average 150,000 / year (aside from demographic decline)
Monthly wage of new entrants (blue and white collars) = 1,000 eu
Monthly wage of a one-year of tenure's workers (blue and white collars) = 1,100 eu
Social security contributions (s.s.c.) paid by employers = 23,81%
Firing costs = 3 month pay + s.s.c. = 3,714 eu
Reduced s.s.c. for each new entry indicated by EU Commission = 50%
Employer cost of subsidized new hire (monthly) = 1,000 + 50% s.s.c. =1,119
Employer cost of subsidized retention at end of first year of employment = 1,100 + 50% s.s.c. 119 = 1,219

Estimated survival rates from LTNE count at the end of of the observation period 1987-2012.
Blue-collars = 76%
White-collars =81%

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Employer cost of subsidized retention at end of first year of employment = 1,100 + 50% s.s.c. 119 = 1,219
Estimated survival rates from LTNE count at the end of observation window 1987-2012:
Blue collars 76% => premature exit probability = (1- 0,76) =0,24
White collars 81% => premature exit probability = (1- 0,81) =0,19

The probability model

In the econometric Cox model discussed in Contini et al. (2019) the main determinant of premature exit is the labor cost of retaining a newly hired worker vs. that of laying him off (COST). This depends: (i) on the timing of the option, i.e. if it occurs a short time after the hire (say, less than one

[4] Rapporto INPS 2016, pp. 149-152.

year) or a much longer time (say, more than 6 years); (ii) on the probability of premature exit if no action is taken; (iii) on the s.s.c. exemptions granted to the employer.

COST(i,j,t) = [new hire's labor cost to the employer (inclusive of s.s.c. rebate) + firing cost of the new hire] / [labor cost of retaining the new hire (inclusive of s.s.c. rebate) + firing cost of the retained hire]

<i>0> refers to the individual, <j> to skill level, and <t> to time.

COST(i,j,t) yields very significant estimates of the probability of premature exit under different policy scenarios (s.s.c. rebates). For the purpose of this simulation the average values of COST may be used. Namely COST = 1,05 corresponding to a hiring rebate at entry equal to one month of s.s.c. (eu 238 per head), and COST= 1,12 corresponding to a rebate of eu 476 per head (hiring rebate and retention at the end of the contract).

The probability of premature exit delayed by the subsidies is estimated as follows:

PROB DELAYED EXIT = PREMATURE EXIT PROB - (COST * delayed exit probability)

thus
Blue-collars => 0,24 – (1,05 X 0,047) = 0,24 – 0,0493 = **0,187** as against 0,24 w/o subsidies
White-collars => 0,19 – (1,05 x 0,03) = 0,19 – 0,0315 = **0,158** as against 0,19 w/o subsidies

PROB DELAYED EXIT delivers an estimate of the number of workers "saved" each year from premature exit, due to the application of s.s.c. rebates (Tab.2).

The policy recommended for many years by the EC to enhance youth work consisted of subsidizing the employers with 50% of the monthly social security contribution, which amounts to 23,8% of basic pay for both blue and white-collars for three consecutive years. The number of newly hired dependent workers to whom the incentives apply is assumed here to be 150,000, independently of the business cycle. One year of s.s.c. for all costs the public budget eu 1,428/head, for a total of 214 million eu per year, and will deliver about 46,000 new hires each year. But it has also a secondary, indirect joint effect, by "saving" a number of workers already on the job from premature exit. The cost of the policy is eu 4,708 per head (either new hires or "saved" workers), about 19% of their yearly labor cost.

In order to evaluate the long run impact of rebates on employment I assume that, once the policy is implemented, it will be pursued for a relatively long number of successive three-year periods, each costing the budget 214 million x 3 = eu 642 million, amounting to eu 1,926 million a year from period 3 onward.

	Total budget outlay (million eu)
Year 1 ***	642
Year 2 ***	1,284
Year 3 ***	1,926
Year 4 ***	1,926
Year 5 ***	1,926
…. and so on	

The policy would affect 46,000 individuals a year, either new hires or workers "saved" from premature exit. In either case, from year 3 onward of repeated rebates the number of LTNE's decreases by 138,000 individuals annually (46,000 x 3 = 138,000), which amounts to 1,38% of total male dependent employment (about 10 million individuals), a significant improvement. After 10 years of rebates the ratio of LTNE's to male employment would stabilize at 5,1% compared to

6,5% in absence of the subsidies. The annual cost of such a policy is eu 1,926 million, i.e. eu 13,956 per worker hired or "saved", more than 50% of the yearly individual labor cost.[5]

Tab.2 - Simulation results: how the s.s.c. rebates affect the LTNE's

	Dependent workers at start of observation period: ISTAT estimates	LTNE survival rate without subsidies	LTNE survival rate with subsidies	LTNE workers prematurally laid off during observation period in absence of subsidies	new jobs created and/or workers "saved" from premature exit in presence of subsidies at entry
BLUE	4 million	0.76	0.813	658,000	**27,300**
WHITE	3 million	0.81	0.842	602,000	**18,700**
ALL	7 million	0,79		1,260,000	**46,000**

The cost-effectiveness of the s.s.c. rebates is still an open question, in the face of its high public cost. A new young man at work is obviously an important plus. But also the prolonged duration of one person's job, otherwise truncated before contract termination (which would put him at risk of almost never getting back at work) is highly "socially valuable": its impact runs from effects on personal mental and physical health and perhaps on human capital accumulation of future generations. This is also important but eludes any attempt to quantify it.

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[5] If the incentives include those aimed at extending the contract beyond one-year termination (eu 476/monthly per head), the number of workers saved from premature exit is only marginally higher (45,730 individuals) at a gigantic public cost amounting to 18,700 eu/ per head.