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ESTIMATING THE MARGINAL RATE OF SUBSTITUTION BETWEEN WAGE AND EMPLOYMENT PROTECTION

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Estimating the marginal rate of substitution between wage and employment protection[1]

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Abstract

Empirical evidence supports the hypothesis that workers have a strong preference for job security. Building on this, the empirical research focused so far on the analysis of the "port-of-entry hypothesis" – namely on testing whether temporary jobs may act as a springboard towards standard employment relationships – underexploring the issue of what would make workers indifferent between the two options. This is the aim of the present paper. Using a dedicated survey on a random sample of workers from the Italian public employment service, we find that: i) workers actually require a monetary compensation to trade a non-standard job for a standard one; ii) moreover, they display lexicographic preferences over contracts, inasmuch as when they have to compare an open-ended contract to a freelance contract (chosen as the epitome of precariousness in Italy), the compensation they ask for does not depend on contract duration; on the opposite, when they compare open-ended jobs to fixed-term jobs (where only expected duration actually matters) the required compensation does not depend on the type of contract, but only on its planned duration; iii) the estimated MRS between wage and contract duration is 257 more Euros per month to accept a one-year shorter employment relationship.

JEL: D03, J33, J41

Keywords: temporary work, compensation, preferences, marginal rate of substitution

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1. Introduction

Are permanent jobs better than temporary? And, in case, *for whom* and *to what extent?* These questions enliven a huge political and economics debate since years, especially since the share of temporary jobs has started increasing in the last two decades (Neugart and Storrie, 2006 and Kahn, 2010). The liberalization of temporary contracts has indeed represented the key to labor market deregulation in most advanced economies (Berton et al., 2012 and Brandt et al., 2005) and was originally motivated under the macro argument that excess rigidity prevents the efficient (re)allocation of workers on jobs, thus reducing productivity and competitiveness (Bentolila and Bertola, 1990, Hopenhayn and Rogerson, 1993, OECD 1994 and Rogerson, 1987). At the micro level, a more flexible labor market is then suggested to increase the workers' effort (Engellandt and Riphanh, 2005), to reduce the duration of unemployment (de Graaf-Zijl et al., 2011 and Berton and Garibaldi, 2012) and to prevent that the marginal workforce – the youth in particular – bears a disproportionate risk of unemployment (Bertola, 1999 and Lazear 1990). The recent reforms in Spain (2012) and Italy (2015) – the last chapters in the two countries' long-lasting labor market deregulation history – are still understood as necessary steps to recover from the Great Recession, and are motivated under the same arguments.

Labor market deregulation, however, also carries a number of drawbacks at both levels of analysis, macro and micro. Just to mention some, temporary workers receive less training in general (Bassanini et al., 2007 and Berton and Garibaldi, 2012) and accrue a limited amount of specific skills (Acemoglu and Pischke, 1999 and Lazear 2009). In addition, workers with short-lived employment relationships appear less committed and co-operative to their employers' business goals (Fella, 2004). Both effects may balance out the positive expectations on productivity that we have portrayed above, an implication supported by a recent stream of empirical literature (Addessi, 2014, Dolado and Stucchi, 2008 and Lucidi and Kleinknecht, 2010). From the individual worker's perspective, labor market deregulation is eventually associated to more job insecurity (Heyes, 2011), lower satisfaction and quality of life (Clark, 2001), and poorer pays (Dolado et al., 2002, European Commission, 2011, Mertens et al., 2007). Undecidedness about the implications of labor market deregulation goes hence well beyond the largely debated direct effect on the overall level of employment (Bertola, 1990, Boeri, 2010 and Young, 2003).

In this article, we take the individual worker's perspective to study empirically the trade-off between temporary and open-ended jobs. The discussion above entails that for each individual

worker the two types of contract are associated with two different levels of utility (or with the same level in case of indifference) and that which of the two is highest (if any) is a priori undecided, as workers potentially face cost and benefits in either case. The related theoretical literature has proposed some interpretations to such trade-off. Bertola (2004) and Pissarides (2001), for instance, suggest that employers and employees may be willing to trade lower wages for stricter firing rules and severance payments as a way to reduce the risk of unemployment. Berton and Garibaldi (2012), in turn, argue that unemployed workers face a trade-off between the ex-ante higher job-finding rate (hence, shorter unemployment duration) that follows from the availability of temporary positions, and the ex-post lower risk of unemployment under open-ended contracts. Which of the two options is actually preferred by the workers is hence an empirical matter, with – for once – quite a clear-cut answer: workers prefer open-ended jobs. This is not surprising, inasmuch as lower job security associated with temporary contracts is not compensated in terms of pay, satisfaction, training opportunities or quality of life, with possibly some discussion about more educated workers, which may be more willing to take higher risks in order to pursue the type of career they have studied for (Pfeifer, 2008). The huge literature studying temporary jobs as springboards to permanent positions (e.g. Autor and Houseman, 2002, Berton et al., 2011, Booth et al., 2002, Güell and Petrongolo, 2007 and Magnac, 2000) – and not vice versa – further witnesses that the hypothesis that the utility associated to open-ended jobs is higher than that resulting from temporary positions is generally taken for granted.

Casting doubts upon this hypothesis is not among the objectives of the present paper. Instead, we aim at *measuring* the utility gap between temporary and permanent jobs. Under the assumption that we can always express utility in monetary terms[2], if two options provide different utilities, there must exist a monetary compensation to convince a non-constrained individual to choose the option associated to the lowest utility. In particular, we want to estimate 1) the compensation required by a worker to accept temporary jobs of different durations instead of a permanent job, and 2) the marginal rate of substitution between the salary and the duration of a temporary job. In particular, this last measure assesses the marginal disutility (utility) of one year less (more) of security. This is a measure also of the trade-off between the two types of contracts and of the value of job security.

[2] This assumption is consistent with the contingent valuation approach. On its validity see for example Carson et al. (2001) and Egan et al. (2015).

On top of its academic relevance, the marginal rate of substitution between wage and the duration of an employment contract – or, put it differently, the workers' marginal willingness to pay for job security – carries primary policy implications. The fact that a relevant share of the employed workforce – 14% in the European Union (Eurostat Data) – holds a temporary contract despite this kind of employment relationships carry a strictly lower utility to the workers, combined with the evidence that suggests that temporary positions substitute permanent ones that would be created anyway, instead of being responsible for a net employment creation (Kahn, 2010), means that labor demand is rationed. As a consequence, workers do not *choose* the type of contract that maximizes their utility; instead, they are more likely to take the best available option. Alonso-Borrego et al. (2005) and Berton and Garibaldi (2012) suggest that workers with poorer non-employment options are those who sort into the temporary market. Thus, knowing more about the (hidden) subjective price paid by temporary workers represents a necessary step to reduce discrimination. This notwithstanding, the available empirical evidence – as discussed later in the paper – is extremely poor. This is hardly surprising, as the matter is deeply data driven. Estimating how much – in terms of money – workers are willing to trade for more job security, requires to observe the job offers among which workers can choose, as well as the chosen alternative. This cannot be the case with observational data, where only the chosen option is recorded, and is exactly where our contribution improves with respect to the available literature. Our research, indeed, relies on a dedicated survey upon a random sample of over 1,500 workers from a large Italian province. Interviewed people – on top of answering standard LFS-type questions – have been asked to take part into a series of "mental experiments" in which, following a conjoint analysis approach, they had to choose among job offers differing by wage and type of contract. The resulting information has then been merged to register data from the relevant employment offices, granting our results unparalleled internal validity. As far as external validity is concerned, then, Italy represents an ideal setting to study the implications of labor market deregulation through temporary jobs. Indeed, it ranks second after Ireland in terms of compliance to the OECD flexibility agenda (OECD, 1994; 2005) and is the OECD country that deregulated the most during the last two decades (Berton et al., 2012). The chosen province – Torino – is then representative of an old industrial tradition in transition towards a service-based economy, i.e. of an economic environment where labor market rigidity was suggested to stay at roots of growing unemployment and falling competitiveness.

Our results show that workers actually require a monetary compensation to trade a non-standard job for a standard one. Moreover, they display lexicographic preferences over contracts, inasmuch as when they have to compare an open-ended contract to a freelance contract (chosen as the epitome of precariousness in Italy), the compensation they ask for does not depend on contract duration; on the opposite, when they compare open-ended jobs to fixed-term jobs (where only expected duration actually matters) the required compensation does not depend on the type of contract, but only on its planned duration. Eventually, the estimated marginal rate of substitution between wage and contract duration is 257 more Euros per month to accept a one-year shorter employment relationship.

This paper proceeds as follows: next section deals with the existing literature on temporary jobs in order to a) discuss more in details why we expect that temporary jobs reduce workers' individual utility, b) cast our research question into the Italian framework, and c) present the (very limited) available results. The following section presents the data, while section four introduces the empirical strategy and our model specifications. We then present estimation results. The last section draws the main conclusions and set our next research agenda.

2. Related literature

The literature on temporary jobs is immense. We will therefore provide a review of the most relevant contributions, without any pretention of exhaustiveness. In this section we first focus on the main negative aspects of temporary jobs individuated by the literature. Then we present a more detailed review of studies on the Italian case, and we conclude discussing the (few) works that are the most related to ours. The aim is not exhaustiveness, but, rather, to frame and to situate our work in the extant literature. As already mentioned in the previous section, job security, meant as the stability in time of the job contract is one of the factors that affect job satisfaction most (Clark, 2001; Booth et al., 2002; Bender and Heywood, 2006; de Cuyper and de Witte, 2007; Bernhard-Oetten et al., 2013).

People in temporary jobs are associated with higher psychological distress (Bardasi and Francesconi, 2004; Gimeno et al., 2004; Virtanen et al., 2005 and De Cuyper and De Witte, 2006), more depression (Quesnel-Valléé et al., 2010) and higher mortality rates due to abuse of alcohol and use of drugs (Kivimäki et al., 2003) than permanent workers are. In addition, there is evidence

of wage discrimination against temporary workers (D'Addio and Rosholm, 2005 and Comi and Grasseni, 2012), whose presence in the job market also decreases the job security for permanent workers (Koutentakis, 2008). Autor and Houseman (2010) find indeed evidence that, while temporary jobs help job placements, some temporary contracts have a negative impact on subsequent earnings. Scherer (2009) examines a sample of European workers and finds evidence that households with temporary workers are more exposed to problematic "social and family situations"[3] than households with only permanent workers are. This very brief, but dense review of the major differences between temporary and permanent jobs suggests that temporary jobs likely provide the worker with lesser utility than permanent jobs. This leaves the door open to possible economic compensations for the negative aspects of temporary vs permanent jobs.

A relevant aspect of temporary contracts is their duration: using Italian data, Gagliarducci (2005) finds that the probability of moving from a temporary to a permanent job increases with the duration of the former. This suggests that each additional year of a temporary contract gives the worker a benefit in terms of probability of getting a permanent job, adding non-salary value to the "duration component"[4] of the contract itself. In addition, always using Italian data, Barbieri and Sestito (2008) find that experiencing temporary jobs increases the probability of getting a "satisfactory job" afterwards. On this basis we expect to find that the wage prize requested by an individual decreases with the duration of the temporary job, also given the non-salary benefits linked to this characteristic of the contract. Indeed, with specific reference to Italy, previous studies suggest that people seem to prefer permanent than temporary jobs for several reasons.

Samek-Lodovici and Semenza (2008) and Lilla and Staffolani (2009) find that, in Italy, the diffusion of temporary jobs has increased income inequality, and are therefore less desirable than permanent contracts, especially for young workers and for low-wage profiles (Bosio, 2014). Instead, Clementi and Giammatteo (2014) find that atypical jobs in Italy reduce income inequality at nationwide level, and suggest that an increase in the number of atypical contracts will further decrease this inequality. However, what they do not say is whether this reduction corresponds to a downward levelling of salaries or not, and therefore it is not clear if increasing the share of atypical contracts would be socially desirable, beyond considerations on inequality. However, while holding a temporary job facilitates the transition to permanent employment when

[3] Scherer (2009), p. 527.

[4] Ideally, we can claim that a job contract has different components: wage, duration, type of job, (non-monetary) benefits, etc.

compared to unemployment (Ichino et al., 2005; Picchio, 2008 and Berton et al., 2011), temporary workers seem to have a worse careers than permanent workers (Barbieri and Scherer, 2009). Again, this suggests that temporary contracts are less desirable than permanent, but opens the door to a possible assessment of an economic compensation to induce workers to "buy" a temporary instead of a permanent contract. In addition, Ponzo (2012) finds that the probability of engaging on job-search activity is significantly higher (by 12.3 percentage points) when the target is a permanent rather than a temporary contract. Modena et al. (2013) highlight the effect of temporary jobs on fertility decisions of the Italian women. They find that temporary female workers tend to postpone their first pregnancy, when compared with permanent female workers.

Several works have chosen Italy to test whether temporary jobs are better or worse than permeant. The choice of this country rests on some reasons that we wish to summarise here. Italy is a relatively large country, where the labour policy absorbs a large part of the social and political debate. Moreover, the job markets of countries like Italy, with historically high levels of employment protection and with a Mediterranean welfare state[5], share several common features. Clark and Postel-Vinay (2009) point out that job security is perceived lower in countries with stricter employment protection as Italy. In addition, Barbieri (2009) concludes that "atypical jobs in Mediterranean labour markets are largely work-insecure positions."[6] Kahn (2007) had already highlighted that high levels of employment protection (as those present in countries like Italy) penalise low-skilled workers with temporary contracts in terms of salary. However, all these features are not peculiar of Italy, but are present in several countries with similar welfare systems.

To our knowledge only Pouliakis and Theodossiou (2010) have already tried to evaluate the relative preference for a permanent vs a temporary job in monetary terms. The authors use a sample of low-skilled workers from seven European countries to estimate the *ex-ante* wage premium required by them in order to move from a permanent to a temporary job. They base the survey used in their paper on questions and vignettes and administered it via the Internet (with the exclusion of Greece). The authors estimate that, to accept a transition from a permanent to a temporary job, the interviewees require a wage premium of about 15% over their current (permanent) wage. Temporary workers evaluate the change less: they require a 5% premium to

[5] On the effects of the institutions on job satisfaction for temporary and permanent workers, see also Pouliakis and Theodossiou (2005).
[6] Barbieri (2009), p. 625.

"equalize the value of permanent employment with a temporary job."[7] Our work, however, is different from Pouliakis and Theodossiou (2010) under several crucial aspects. First, instead of conducting Internet "interviews", our subjects were randomly drawn from the reference population, and data was collected through CAT interviews by a specialised centre. This prevents self-selections biases with respect to the procedure via the Internet (Bethlehem, 2010). Second, while our sample has a more limited geographical reach, it is much more homogeneous, what reduces the room for unobserved heterogeneity. Third, the choice set we present to our interviewees is smaller and simpler than in Pouliakis and Theodossiou (2010): alternatives are described in terms of contract, wage, sector and firm size, but vary only with respect to contract and wage, as next section further discusses. While this approach entails a smaller menu of potential results than in Pouliakis and Theodossiou (2010), it helps the interviewees to understand and disentangle the different options better than when they face more complex choices (Charness et al., 2013). Again, this goes in the direction of improving reliability of empirical results.

3. Data and descriptive statistics

In this paper we use a random sample of the flow of workers who enrolled into a public employment service (PES) office of the Italian province of Torino during 2004 at an age between 15 (the minimum age to get a regular job in Italy) and 29 (the highest age at which a worker can sign an apprenticeship contract).[8] Sampled workers were interviewed in June and July 2006. Denials and missing interviewees were replaced in order to preserve sample randomness. At the end of the interview process, 1637 valid and complete interviews were collected; after removing interviews with missing or inconsistent information, we are left with 1511 observations. Most of sampled workers (64%) are women, and the average age at enrolment is 23 – with roughly a third of the distribution until the age of 20, and another third from 21 to 25. In terms of educational attainment, 40% of our sample has completed compulsory education (lower-secondary education), 46% holds a high-school or a vocational diploma, and 13% a tertiary degree.

An extremely wide and reliable set of observables identifies our data. Indeed, observables include personal information (age, gender and nationality), place of residence (at both enrolment

[7] Pouliakis and Theodossiou (2010), p. 700.

[8] This data was originally collected as a deliverable of the project "Le nuove forme di lavoro in Italia e in Piemonte: nuove opportunità o discriminazione?", funded by CRT Bank Foundation and the Province of Torino, which we thank for financial support; a report of the project is available in Berton and Contini (2007).

and interview), education, skills (training experiences since enrolment at PES, known foreign languages, and computer skills), family background (cohabiting status, number of children, outside economic support), employment status (at both enrolment and interview, and including labor market participation in pre-enrolment years), availability to take non-standard or inconvenient work opportunities (rationalized along eighteen dimensions of analysis), occupation at enrolment (ISCO branch, either actual for employed workers or ascribed for unemployed ones), number and type of work episodes since enrolment in PES, work satisfaction since enrolment in PES (overall and specific for occupation, employment continuity, pay, time schedule, career opportunities, skills, capability to combine work and family and social protection) and expectations (same dimensions as for satisfaction). What makes our data particularly reliable with respect to other survey-based datasets, is that information from interviews was merged with public employment service registry files at the individual level. Variables that are common to both sources could be cross-checked, and interviews revealing an excess of inconsistencies were disregarded. This, as mentioned above, implied disregarding some 8% interviews. In order to prevent the potential for attrition bias, stratification weights have been built in order to recover with the main distributions, and used in the estimation process.

Interviewed workers were randomly split into two subsamples. Each worker went through a mental experiment in which she was asked to choose between two alternative job offers. Workers sorted in subsample S1 (747 observations), could choose between two full-time options from the same employer:[9] a) an open-ended contract with a net wage randomly drawn from a uniform distribution with support from 800 to 1,300 EUR per month, and b) a fixed-term direct-hire contract with (random) duration of one, two or three years and a net wage randomly drawn from a uniform distribution with support from 700 to 2,300 EUR per month. The rationale for comparing full-time open-ended contracts and full-time fixed-term direct hires is that the two work arrangements are statutory equivalent but for their planned duration. In other words, fixed-term direct hires are in a sense the most protected among temporary work arrangements (Berton et al., 2011; 2012). On the other hand, workers sorted in subsample S2 (764 observations) could choose between the following full-time options from the same employer: a) an open-ended contract with a net wage randomly drawn from a uniform distribution with support from 800 to 1,300 EUR per month (as for subsample S1), and b) a wage and salary independent contract with

[9] For both subsamples S1 and S2, employer's type varies across workers but not across alternatives, and includes the public sector, a small (5 employees), medium (20 employees) and large (200 employees) firm in the private sector.

(random) duration of one, two or three years and a net wage randomly drawn from a uniform distribution with support from 700 to 2,600 EUR per month. The rationale for comparing standard contracts with independent contracts is instead that this last work arrangement is in Italy commonly perceived as the epitome of labor market deregulation. This structure of our mental experiment – in which standard contracts are compared to two extremely different non-standard alternatives – also allows us to exploit the full sample size of 1,511 observations in a comparison of standard contracts with an "average" non-standard one, an opportunity we take advantage of in our empirical analysis.[10] Descriptive statistics suggest that 82% of workers in subsample S1 chose the open-ended option – characterized by a mean net wage of EUR 1,051 per month – over the fixed-term alternative with a mean net wage of EUR 1,425 and mean duration of two years. Analogously, 85% of workers in subsample S2 chose the open-ended option – characterized by an average net wage of EUR 1,044 – over the independent contract alternative that displays an average wage of EUR 1,530 and a mean duration of about two years. These descriptive results are consistent with our initial hypotheses. On the one hand, a clear preference for job security emerges; on the other, there exist a monetary price at which workers are available to take the non-standard alternative into due consideration.

4. Empirical model and specification issues

We assume that interviewed workers i get utility U_{ij} from alternative job offers j, and that individual utility can be expressed as the sum of some representative utility V_{ij} which is observed by the researcher plus an unobserved component ε_{ij}, so that:

$$U_{ij} = V_{ij} + \varepsilon_{ij}$$

Under very general terms, we also assume that workers choose the most preferred option, i.e. the one that gives her the highest utility. The probability of choosing alternative k is therefore

$$P_{ik} = \Pr\left(U_{ik} > U_{ij}\ \forall k \neq j\right)$$

$$= \Pr\left(V_{ik} + \varepsilon_{ik} > V_{ij} + \varepsilon_{ij}\ \forall k \neq j\right)$$

$$= \Pr\left(\varepsilon_{ij} - \varepsilon_{ik} < V_{ik} - V_{ij}\ \forall k \neq j\right)$$

[10] The questionnaire – in Italian – is available upon request to the authors.

which, further assuming that ε_{ij} is iid extreme value distributed, gives rise to the logit model.[11] In this paper, we model the representative utility V_{ij} as follows:

$$V_{ij} = f(X_{ij}, Z_i, Per_i, Fam_i, Car_i, Out_i, Ski_i, Ava_i, Sat_i, Exp_i)$$

where f is linear in the parameters, X_{ij} includes option- and individual-specific features – namely the type of contract, its duration and the wage offered within the mental experiment – and Z_i represents characteristics of the job offers that do not vary across alternatives but only among individuals, what in our case boils down to employer's type (public or private) and its size (small, medium and large in case the job is offered in the private sector). The remaining matrices are individual-specific controls:

- Per_i includes personal information like gender, age, nationality and whether the interviewee moved between enrolment in PES and interview.
- Fam_i describes the family background at interview through marital status (single or coupled), cohabiting status (alone, with parents, with others) and the number of children.
- Car_i describes individual working careers with information on whether the interviewee had work experiences before enrolling in PES, employment status at enrolment, the time elapsed from enrolment until interview, the share of time spent in unemployment during this time frame, the number and type of work episodes.
- Out_i tries to measure the outside option of the interviewee with respect to the proposed choice set within our mental experiment using information on whether she is currently (i.e. at the time of interview) receiving economic support from anyone, on whether she has a driving license – which captures the size of the labor market actually available to the interviewee[12] – and on an "extended" employment status (employed, unemployed, inactive, at school).
- Ski_i measures skills in terms of occupation (ISCO branch) at enrolment, of training courses attended since then, and of the number of software packages, of foreign languages known and of educational attainment at interview.

[11] The hypothesis of utility maximization is inconsequential on our empirical analysis, as it is sufficient but not necessary to get the logit model, which can be used for "*simply describing the relation of explanatory variables to the outcome of a choice, without reference to exactly how the choice is made*" (Train, 2003, p. 18). Analogously, also the hypothesis that the unobserved component of individual utility ε_{ij} is identically and independently distributed across individuals does not superimpose any unreasonable structure to the data, as a) the implication of independence of irrelevant alternatives (IIA) is consistent with the imaginary nature of the choice set that workers can choose from, and b) given the huge amount of observables, the room for omitted variable bias is extremely limited.

[12] We had to give up on information on whether the interviewee had a car due to excessive number of missing answers.

- Ava_i captures the current availability of workers to accept specific types of employment arrangements, and namely night work, shift work, vocational training, fixed-term contracts, part-time, seasonal work, causal work, agency contracts, weekend work, independent contracts, work from home, self-employment and entrepreneurship; in this perspective, Ava_i completes and extends Out_i. Moreover, this group of variables further check whether at interview the respondent is available to start a new job, is actually looking for a work, and whether was available to work in the years before enrolling at PES (December 2002, 2003 and 2004).
- Sat_i captures satisfaction for one's working career since enrolment into PES; more specifically, questions under this section ask interviewees to rate overall and specific aspects of satisfaction – including occupation, employment continuity, pay, time schedule, career perspectives, skill development, ability to combine work and family life, and social protection – on a 0-10 scale.
- Exp_i mimics Sat_i, for expectations towards career perspectives after the interview date, but answers are recorded as "descending", "stable" and "ascending". Unfortunately, elements in Exp_i display about 160 missing values, corresponding to interviewees that refused to answer about their future expectations. However, since expectations revealed to be a powerful explanatory factor of the chosen alternative in our mental experiment, we preferred to further reduce the overall sample size and include a measure of expectations in our specifications.

Given the limited amount of observations with respect to available control variables, we had in a sense to save on specifications in order to prevent inefficient and unstable parameter estimates. We thus opted for a most preferred specification – our *baseline* one – and then tried a number of different alternatives by changing the specific content of matrices $\{Per_i, \dots, Exp_i\}$. The actual alternative specifications we have tried are described in Table 1. What is relevant to our purposes, is that all the estimation results presented in next section revealed robust to the whole set of alternative specifications. For this reason, in the remaining of the paper we will comment only upon our baseline model.[13]

The main specification issues, however, concern X_{ij}. The marginal rate of substitution (MRS) between two any generic variables $x_{1,ij}$ and $x_{2,ij}$ belonging to X_{ij} is $MRS_{x_1,x_2} = \frac{\Delta x_1}{\Delta x_2} = -\beta_2/\beta_1$, where β_1 and β_2 are the estimated parameters for $x_{1,ij}$ and $x_{2,ij}$ respectively. The interpretation is straightforward when $x_{1,ij}$ and $x_{2,ij}$ are continuous. However, for the sake of

[13] Alternative estimates remain available upon request to the authors.

realism, while $wage_{ij}$ was obviously continuous in our hypothetical job offers, duration could not. The reason is that setting a pre-determined duration for an open-ended contract does not make sense. The support for the proposed duration of contract is hence discrete with mass points at values $\{undetermined, one\ year, two\ years, three\ years\}$. Our empirical strategy proceeds hence in three steps.

First, we specify X_{ij} as follows:

$$X_{ij} = \alpha \times wage_{ij} + \beta \times d_{ij} \qquad (1)$$

where d_{ij} is a dummy taking the value of one if the proposed job offer is under a non-standard contract of any duration. With this specification, the ratio $-\hat{\beta}/\hat{\alpha}$ is informative on the extra wage that our interviewees require to give up on an open-ended job and accept a generic non-standard contract.

Second, we specify X_{ij} as follows:

$$X_{ij} = \alpha \times wage_{ij} + \beta_1 \times d_{1,ij} + \beta_2 \times d_{2,ij} + \beta_3 \times d_{3,ij} \qquad (2)$$

where $d_{T,ij}$ are dummies taking the value of one if the proposed job offer is under a non-standard contract with duration T where $T \in \{1, 2, 3\}$. With this specification, the ratio $-\widehat{\beta_T}/\hat{\alpha}$ is informative on the extra wage that our interviewees require to give up on an open-ended job and accept a non-standard contract of duration T.

Third, and last, we further work on the specification of X_{ij} to exploit the variability in the proposed duration of non-standard contracts in order to get a proper estimation of the MRS between wage and contract duration. We do this by estimating the following specification for X_{ij}:

$$X_{ij} = \alpha \times wage_{ij} + \beta_1 \times d_{ij} + \beta_2 \times d_{2-3,ij} + \beta_3 \times d_{3,ij} \qquad (3)$$

where – as before – d_{ij} takes the value of one if the proposed alternative is a non-standard contract of any duration, $d_{3,ij}$ takes the value of one if the proposed alternative is a non-standard contract lasting three years, and – here is the difference with respect to (1) and (2) – $d_{2-3,ij}$ is a dummy signaling non-standard contracts whose duration is two or three years. With model (3), the ratio $-\widehat{\beta_1}/\hat{\alpha}$ is informative on the extra wage that our interviewees require to give up on an open-ended job and accept a non-standard contract of any duration. Then, the ratio $-\widehat{\beta_2}/\hat{\alpha}$ measures the price that a worker is willing to pay to extend the duration of a non-standard

contract from one to two years, hence is a true measure of the MRS; analogously, $-\widehat{\beta_3}/\hat{\alpha}$ is an estimate of the monthly wage a worker is willing to give up to extend the duration of her contract from two to three years. Specifications (3) will be always estimated twice: with unconstrained parameters, and forcing $\beta_2 = \beta_3$. A likelihood-ratio test accepting the constrained model against the unconstrained one would provide evidence in favor of the linearity of MRS between wage and duration. This issue is not trivial, as it would make us more confident to extend our results beyond the sample space. While this is not really relevant for non-standard contracts with duration longer than three years – almost non-existent in Italy and in many countries that took temporary work as the main road to labor market deregulation – it turns out to be below the threshold of one year.

Eventually, it is worth anticipating that each of the three steps described above will be applied to the full sample in order to describe the choice between and open-ended job and an "average" non-standard contract, by pooling answers by interviews whom were proposed a direct-hire fixed-term contract as an alternative to an open-ended job, and those who had to compare it with an independent contract, possibly the most insecure situation in the reference institutional scenario. Then, they will be applied separately to subsamples S_1 and S_2.

5. Results

Table 2 presents the estimation results for model (1). Estimates on the full sample appear in the upper panel, while those for subsamples S_1 and S_2 are displayed in the central and lower panels respectively.[14] Estimates display the expected signs: a higher wage increases the probability that the option is taken, while whether the contract is non-standard reduces it. This implies that workers require a compensation in order to give up on an open-ended contract and accept a temporary one, as expected. When we average over the two types of non-standard contracts – namely direct-hire fixed-term (the most protected non-standard option) and independent contracts (the least) – this compensation amounts to EUR 1,274 per month, significant (upper panel). While at first glance this compensation may appear excessively high – interviewees are basically asking to double their wage in order to make them accept a non-standard job – one has to consider two aspects. First, according to Berton et al. (2009, Table 5.5) while young workers with an open-ended contract spend an average of 15.6 months non-

[14] For the sake of readability, we omit to display the parameter estimates for the control variables, i.e. all those variables that do not pertain to X_{ij}. They remain available upon request to the authors.

employed over a period of seven years (hence about 22% of time over the medium run), those with non-standard contracts remain non-employed for a cumulative number of months from 22.5 to 42.0 months (so from 31% to 58% of time). Second, non-standard contracts in Italy are associated to poorer social security provisions. For instance, for a given duration of the employment relationship, an independent contractor should get an extra pay from 33% to 40% in order for her monthly net wage to have the same "economic value" of a standard contract (*Ibidem*, Table 6.2). These two things together explain that a monthly compensation of about EUR 1,200 is far from being irrational. The lower panels in Table 2 further specify this result. Indeed, while workers apparently do not require any compensation to trade an open-ended job for a direct-hire fixed-term one (the estimated compensation is indeed positive and equal to EUR 186 per month, but not statistically different from zero), they ask a very large one to be independent contractors (EUR 2,696 per month). Results from model (3) in particular will help us to propose a tentative interpretation for this result.

In addition, all types of contract contain elements of risk and uncertainty. The financial stability of the employer, the potential reforms of both the job and the welfare legislations during the entire working life, etc. are factors of risk that affect any job. In our specific case, workers are able to assess at least two of these risks with some precision: the prospective longer unemployment and the lower welfare provisions are evident not only to scholars but also to workers and candidates. Assuming that the average individual is risk averse, our estimated compensations likely include not only mere equivalent compensations for the expected months of unemployment and for the lower welfare provisions, but also some risk premium. This risk component is likely to grow as the share of non-standard contracts decreases and vice-versa. The reason is that, comparatively with the average social conditions, those of the non-standard workers are (and will be) better as their share in the population increases. On the one hand, this entails that, if the current diffusion of non-standard contracts spreads, the compensations estimated in this paper are likely to decrease. On the other hand, the presence of a risk premium renders our estimates even more realistic.

Table 3 displays estimates of model (2) and distinguishes the non-standard alternatives of our mental experiment according to their proposed duration. Results are consistent with expectations and with those in Table 2. When fixed-term and independent contracts are pooled together (upper panel), the required compensations decreases from EUR 1,409 (1,386) per month

to give up on an open-ended job for a one-(two-)year non-standard contract, to a non-significant EUR 908 per month when the non-standard alternative lasts three years. The downward sloping profile appears reasonable – the longer the non-standard contract, the more similar it gets to a standard one – as well as a zero compensation to accept a three-year contract; indeed, during those years for young workers in Italy the average ex-post duration of an open-ended employment relationship did not exceed two years. Again, all these results are driven by the choice between open-ended contracts and independent contracts, as the required compensation for fixed-term proposals is not different from zero (mid and lower panels).

Tables 4 and 5 present results from estimation of model (3), with unconstrained and constrained parameters respectively. As for all specifications in Table 1 and for all samples (full, S_1 and S_2) the constrained model is never rejected against the unconstrained one, we focus our attention on Table 5.[15] On average (upper panel) interviewed workers require a compensation of EUR 1,395 per month in order to trade an open-ended contract for a non-standard one. *Moreover, they are willing to pay EUR 292 per month to extend their contract by one year. This is our estimate of the marginal rate of substitution between wage and contract duration*. Both estimates are statistically significant and display the expected signs. The ratio between these two last estimates is 4.77; this figure suggests that a non-standard contract with a duration of four years and nine months is on average equivalent to an open-ended contract. Data on job tenure in Italy (Venturini and Villosio, 2008) show that the average job tenure with the same employer is equal to four years and four months. Therefore, our estimated time equivalence of four years and nine months is perfectly consistent with the average duration of a tenure. The difference of five months may represent the compensation requested by risk averse people.

Lower panels help us to propose an explanation for puzzling result from models (1) and (2), namely that apparently interviewed workers are not worried about trading a standard contract for a fixed-term one, and that all the effects are driven by independent contracts. The story is not exactly this one. When we focus on fixed-term contracts (mid panel), indeed, results show that interviewed workers do not require a compensation for the *type* of contract (EUR 27 per month, not significant) but they do for its *duration*: namely, they ask for a compensation of EUR 237 per month in order to accept one year of reduction in the contract duration. The exact opposite

[15] Notice that in order to perform consistent LR tests we had to give up on robust standard errors. Nonetheless, once we have ascertained that the constrained version of model (3) is never rejected, we re-estimated constrained model (3) using robust standard errors and weighted observations. Results are qualitatively comparable to those displayed in Table 5 and remain available upon request to the authors.

happens for independent contracts. Interviewed workers want a compensation for the type of contract (almost EUR 3,000 per month), no matter its duration (EUR 220, not significant). It seems then that the story may go as follows. Workers may have a lexicographic ordering of employment contracts, according to which they first compare the general statutory framework (entitlement to social security provisions, enforceability of collective agreements, obligations and rights towards the employer and the like), and only once they deem it sufficiently similar, they take other aspects – such as the duration of contract – into account. In this perspective, standard and direct-hire fixed-term contracts are statutory equivalent, but for the fact that the latter entails a predetermined duration of the employment relationship. It is hence perfectly reasonable that workers do not require any compensation for the type of contract, but only for its potentially lower duration. On the contrary, open-ended and independent contracts pertain to two extremely different institutional realms. Dependent work, with full eligibility to social protection schemes (unemployment, sickness and maternity allowances just to mention some) and full coverage of collective agreements for the former; independent work, with almost no access to social protection and no coverage from collective agreements for the latter (see Berton et al., 2012 for a detailed comparison). In this situation, workers simply do not go beyond the "first-order" difference between the two contracts, and ask for a compensation simply to give up on the most protective institutional framework. The actual contract duration appears as a second-order problem. We are now in a position to draw some concluding remarks.

6. Concluding remarks and research agenda

In this paper we took advantage of a dedicated survey on a random sample of workers from the registry of the public employment service of a large northern Italian province in order to study the subjective monetary value that workers give to employment protection. More in particular, we aimed at estimating the marginal rate of substitution between wage and the (expected) duration of an employment relationship. Our analysis drives us to three main conclusions.

First, while the average price required by workers to give up on an open-ended job and accept a temporary arrangement of any duration – around EUR 1,300 per month, which is tantamount doubling one's wage – may appear at first glance too much, it sounds more reasonable once one considers that non-standard jobs in Italy imply staying unemployed longer in

the medium run – even three times as much – with a poorer (if not neglected) access to social protection schemes. This in turn implies that a) even if workers probably do not know precisely about the local labor market dynamics and the institutional details of the job offers they receive (the rate of social security contribution to pay, the eligibility conditions to the unemployment benefit, and the like), they have roughly a correct idea of the monetary implications; moreover, b) this is also a signal that interviewees took the conjoint analysis this paper is based on sufficiently seriously.

Second, interviewed workers trade a one-year shorter employment relationship for an extra wage of about EUR 300 per month. This marginal rate of substitution between wage and the expected duration of an employment relationship – or, put it differently, the marginal willingness to pay to enjoy a more stable career – is linear in the space of durations which are most relevant for young workers (1-3 years).

Third, the estimated effect on the trade-off among the types of contract (standard vs. non-standard, irrespective of duration of the latter) is driven by the choice between open-ended and independent contracts, the epitome of precarious employment in the Italian institutional setting. On the contrary, the estimated effect on the trade-off between duration and wage, is driven by direct-hire fixed-term contracts, which are institutionally equivalent to standard contracts but for the fact that they have a predetermined duration. This is consistent with workers having a lexicographic preference among employment contracts. In other words, it seems that workers rank contracts according to their general institutional set-up, and only once the set-up is deemed sufficiently similar, they take "second-order" aspects, like duration, into account.

These results are particularly relevant for at least two reasons. On the one hand, we have estimated a value for the disutility associated to atypical and fixed-term contracts. On the other hand, we have shown that workers are potentially willing to accept these contracts, if they are compensated for the different levels of social protection and security. This entails that governments and employers can achieve the transition towards a more flexible labour market at a cost (whose magnitude is estimated in our paper). Whether they are willing to pay this cost depends on the balance between it and the benefits, what requires a general-equilibrium analysis which is beyond the scope of our work.

An additional comment relates to what the economics literature calls "endowment effect". In fact, Italian workers have enjoyed high levels of social security for decades; workers (and new

entrants in the labour market) may consider these levels of social security as intrinsic parts of the labour contract, as a sort of psychological contract (Guest, 1998 and Willems et al., 2006). Now, in such a case, as the literature shows (Kahneman et al, 1991; Franciosi et al., 1996 and Morewedge et al., 2009), the compensation requested by a person for something which belongs to his/her endowment is larger than the amount of money required for something that is not in the person's possession. According with this reading, the compensations required by the interviewees may be larger than the amount requested by future workers, once people will no longer perceive the current levels of social protection as parts of the labour contract. In such a case, the additional costs related by the compensations could decrease with time.

Our next research aims at starting from these results to study what is the role of risk aversion within this story. In order to do this, we aim at merging our data to registry information from the social security archives. This puts us in a condition to know what the actual career of our interviewees' pairs looked like during the years under scrutiny, and hence to build a monetary measure of the actual loss of being a non-standard rather than a standard worker. We will interpret the difference between required compensation and actual loss in terms of risk price, a further reason why workers may require a compensation for less job protection.

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Tables

Table 1: baseline and alternative specifications

	BL	Robustness checks														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Per$_i$																
Female	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Age at interview	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Age at interview, squared		X														
Foreigner			X													
Mover				X												
Fam$_i$																
Single at interview						X										
Living with parents at interview																
Living with others at interview																
Living alone at interview	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Number of children at interview					X											
Has children at interview	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Car$_i$																
Months since enrolment in PES							X									
Had work experience at enrol.							X									
Employed at enrolment							X									
Unemployed at enrolment							X									
Not in labor force at enrolment							X									
% time in unemployment							X									
Work episodes since enrolment								X								
Had no work episodes									X							
Had 1 work episode									X							
Had 2 or more work episodes									X							
Long work episodes (> 1 month)								X								
Had no long work episodes									X							
Had 1 long work episode									X							
Had 2 long work episodes									X							
Had 3 or more long work epis.									X							
Only dependent work episodes	X	X	X	X	X	X				X	X	X	X	X	X	X
From dependent work to other	X	X	X	X	X	X				X	X	X	X	X	X	X
From other to dependent work	X	X	X	X	X	X				X	X	X	X	X	X	X
Work episodes without contract	X	X	X	X	X	X				X	X	X	X	X	X	X
Only independent contracts	X	X	X	X	X	X				X	X	X	X	X	X	X
Other types of work episodes	X	X	X	X	X	X				X	X	X	X	X	X	X
No work episodes	X	X	X	X	X	X				X	X	X	X	X	X	X
Out$_i$																
Receiving economic support	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
At school / studying at interv.										X						
Unemployed at interview										X						
Employed at interview										X						
Inactive at interview										X						
Has driving license at interview	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Ski$_i$																
Compulsory education at int.	X	X	X	X	X	X	X	X	X	X			X	X	X	X
Vocational education at int.	X	X	X	X	X	X	X	X	X	X			X	X	X	X
Upper secondary school at int.	X	X	X	X	X	X	X	X	X	X			X	X	X	X
Tertiary education at int.	X	X	X	X	X	X	X	X	X	X			X	X	X	X
Took part in training since enrol.											X					

Number of foreign languages											X					
	BL	**Robustness checks**														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of training since enrol.											X					
Number of software since enrol.											X					
ISCO Branch 1 at enrolment												X				
ISCO Branch 2 at enrolment												X				
ISCO Branch 3 at enrolment												X				
ISCO Branch 4 at enrolment												X				
ISCO Branch 5 at enrolment												X				
ISCO Branch 6 at enrolment												X				
ISCO Branch 7 at enrolment												X				
ISCO Branch 8 at enrolment												X				
***Ava**$_i$* (dummy variables)																
Looking for a job at interview	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Available for a job at interview	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Available at December 2002													X			
Available at December 2003													X			
Available at December 2004													X			
Night work														Sum of all dummies as overall measure		
Shift work																
Vocational training contracts																
Open-ended contracts																
Fixed-term contracts																
Full-time work																
Part-time work																
Seasonal work																
Occasional work																
Agency work																
Weekend work																
Independent contracts																
Work from home																
Stage / internship																
Self-employment																
Entrepreneurial activity																
Training (without working)																
***Sat**$_i$* (rated 0-10)																
Overall satisfaction since enrol.	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
For occupation															Mean rating	
For employment continuity																
For pay																
For time schedule																
For career perspectives																
For skill development																
For family/work combination																
For social protection																
***Exp**$_i$* (rated -1 = descending, 0 = stable, +1 = ascending)																
For occupation	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	Sum of values	
For employment continuity																X
For pay																X
For time schedule																
For career perspectives																
For skill development																
For family/work combination																

Table 2: parameter estimates, specification (1)

Variable	Coefficient			Interviewees	$-\widehat{\beta}/\widehat{\alpha}$	
	Estimate	Robust SE	P-value		Estimate	P-value
Full sample						
d_{ij}	-1.5062*	0.80446	0.061	1,349	1274*	0.079
$Wage_{ij}$	0.0012***	0.00026	0.000			
Subsample S_1: open-ended vs. direct-hire fixed-term						
d_{ij}	-0.2270	1.07244	0.832	738	186	0.830
$Wage_{ij}$	0.0012***	0.00043	0.004			
Subsample S_2: open-ended vs. independent contracts						
d_{ij}	-3.5666***	1.13739	0.002	691	2696**	0.022
$Wage_{ij}$	0.0013***	0.00037	0.000			

Source: own estimations on PES data.

Table 3: parameter estimates, specification (2)

Variable	Coefficient			Interviewees	$-\widehat{\beta}/\widehat{\alpha}$	
	Estimate	Robust SE	P-value		Estimate	P-value
Full sample						
$d_{1,ij}$	-1.6835**	0.82211	0.041	1,349	1409*	0.055
$d_{2,ij}$	-1.6562**	0.81392	0.042		1386*	0.057
$d_{3,ij}$	-1.0847	0.77586	0.162		908	0.176
$Wage_{ij}$	0.0012***	0.00026	0.000		-	
Subsample S_1: open-ended vs. direct-hire fixed-term						
$d_{1,ij}$	0.2879	1.17947	0.807	658	-197	0.8094
$d_{2,ij}$	0.5334	1.13873	0.639		-366	0.6510
$d_{3,ij}$	1.2309	1.13450	0.278		-844	0.3262
$Wage_{ij}$	0.0015***	0.00048	0.003		-	
Subsample S_2: open-ended vs. independent contracts						
$d_{1,ij}$	-3.6903***	1.16350	0.002	691	2759**	0.017
$d_{2,ij}$	-3.8525***	1.18061	0.001		2880**	0.017
$d_{3,ij}$	-3.2738***	1.06139	0.002		2448**	0.020
$Wage_{ij}$	0.0013***	0.00036	0.000		-	

Source: own estimations on PES data.

Table 4: parameter estimates, specification (3), unconstrained

Variable	Coefficient			Interviewees	$-\hat{\beta}/\hat{\alpha}$	
	Estimate	SE	P-value		Estimate	P-value
Full sample						
$d_{1,ij}$	-1.4477**	0.70537	0.040	1349	1272**	0.048
$d_{2\text{-}3,ij}$	0.1271	0.19688	0.519		-112	0.525
$d_{3,ij}$	0.4946**	0.17484	0.005		-435**	0.014
$Wage_{ij}$	0.0011***	0.00025	0.000		-	
Subsample S_1: open-ended vs. direct-hire fixed-term						
$d_{1,ij}$	0.2016	1.01536	0.843	658	-131	0.844
$d_{2\text{-}3,ij}$	0.1784	0.28763	0.535		-116	0.542
$d_{3,ij}$	0.5662**	0.24709	0.022		-367*	0.053
$Wage_{ij}$	0.0015***	0.00045	0.001		-	
Subsample S_2: open-ended vs. independent contracts						
$d_{1,ij}$	-3.6424***	1.06604	0.001	691	2893***	0.006
$d_{2\text{-}3,ij}$	0.1147	0.28331	0.685		-91	0.690
$d_{3,ij}$	0.4135	0.26356	0.117		-328	0.136
$Wage_{ij}$	0.0013***	0.00034	0.000		-	

Source: own estimations on PES data.

Table 5: parameter estimates, specification (3), constrained

Variable	Coefficient			Interviewees	$-\hat{\beta}/\hat{\alpha}$	
	Estimate	SE	P-value		Estimate	P-value
Full sample						
$d_{1,ij}$	-1.5669**	0.69915	0.025	1349	1395**	0.032
$d_{2\text{-}3,ij} = d_{3,ij}$	0.3282***	0.10766	0.002		-292**	0.011
$Wage_{ij}$	0.0011***	0.00025	0.000		-	
Subsample S_1: open-ended vs. direct-hire fixed-term						
$d_{1,ij}$	0.0415	0.99988	0.967	658	-27	0.967
$d_{2\text{-}3,ij} = d_{3,ij}$	0.3955***	0.15328	0.010		-257**	0.037
$Wage_{ij}$	0.0015***	0.00045	0.001		-	
Subsample S_2: open-ended vs. independent contracts						
$d_{1,ij}$	-3.6871***	1.06430	0.001	691	2976**	0.005
$d_{2\text{-}3,ij} = d_{3,ij}$	0.2726*	0.15784	0.084		-220	0.117
$Wage_{ij}$	0.0012***	0.00033	0.000		-	

Source: own estimations on PES data.