CrossMark

Dual Labour Market Intermediaries in Italy: How to Lay off "Lemons"—Thereby Creating a Problem of Adverse Selection

Paolo Barbieri[1] · **Giorgio Cutuli**[1]

Abstract Using longitudinal data from the Bank of Italy that cover the period from 2004 to 2014, this paper investigates the wage- and career implications of temporary jobs across the entire wage profile via unconditional quantile regression models and dynamic panel probit models. Building on Autor's contributions, we consider temporary jobs to be a Labour Market Intermediary that deals with job-matching problems, such as information asymmetries, search cost reductions, worker-side adverse selection, and pay-productivity gaps. Assuming that wage is a proxy for workers' productivity, we examine the chances that temporary workers who are located in different quantiles of wage distribution have of making the transition towards a stable employment position in the primary labour market. Results clearly indicate that temporarily employed individuals suffer significant wage- and career penalties. Not only are these individuals overly concentrated in the lowest decile of wage distribution, but the career penalty associated with temporary jobs also remains stable independently of the wage/productivity quantile to which the workers belong. If firms use FTC or TWA at all, they do so to remove less productive workers, whose work contract is not renewed once expired. In light of this evidence, it is clear that the hypothesis—proposed in the economic literature—that temporary employment contracts might serve as a screening tool to identify the most productive workers who would then be offered a stable position in the primary labour market does not hold in the highly dualised labour market of Southern Europe.

Keywords Labor market intermediaries · Precarious employment · Dual labor markets · Adverse selection · Italy

---

✉ Paolo Barbieri
   paolo.barbieri@unitn.it

[1] Universita degli Studi di Trento, Trento, Italy

JEL Classification J21 · J24 · J41 · J42

1 Introduction

Throughout the past decades, most European countries have pursued "selective flexibilisation" (Blossfeld et al. 2012; Bertola 2014) to boost labour market efficiency and the labour supply (Scherer 2004, 2005; Gash and McGinnity 2007; Barbieri 2009; Gebel and Giesecke 2011; Palier and Thelen 2008, 2010; Emmenegger et al. 2012; Bentolila et al. 2012; Hipp et al. 2015). Consequently, labour markets have become more complex and volatile as well as less predictable, yet they have remained dualised and maintain reduced job mobility between the primary and secondary labour market (Saint-Paul 1996). Labour Market Intermediaries (LMIs) have played a prominent role in this process of flexibilisation, shaping the speed and character of labour market adjustments, smoothing labour market transitions, and intervening in the job-matching process, thereby reducing information asymmetries, opportunity costs, and transaction costs (Benner 2003; Osterman 2004; Autor 2009a, b). Following Autor's contributions (2000a, b, 2001, 2004, 2008; Autor and Houseman 2010), when analysing the Italian labour market, some authors have drawn the hypothesis that temporary employment contracts serve as an entry port into stable employment for workers and as a screening device for firms. According to this hypothesis, employers in fact use temporary contracts as part of a long trial-and-test period to address information asymmetries and workers' adverse selection problems as well as to select the most productive workers, who are then offered an open ended position (Ichino et al. 2008; Picchio 2008).[1]

In what follows, we propose an evaluation of the suggestion that temporary employment in highly dualised contexts (e.g. the Italian one) might serve as an LMI to ameliorate the quality of the job match and consequently the relationship between individual productivity and individuals' chances of promotion to the primary segment of the labour market.

With respect to labour market dualisation, Italy represents an ideal–typical case of an institutionally originated insider–outsider scenario (Biegert 2017; Boeri 2010; Palier and Thelen 2010; Rueda 2006), which is mainly based on an age divide—a specific trait of the Mediterranean way of deregulating the labour market. Indeed, Italy has undergone a sweeping process of partial and targeted deregulation (Esping-Andersen and Regini 2000): Since the nineties, protection for permanent employment has remained largely unchanged and been characterised by high firing costs and relatively high EPL, whereas the use of temporary employment (FTC) has been liberalised and selectively directed to young labour market entrants. Such a cohort divide appears to be largely in line with other national contexts that are characterised by pronounced labour market segmentation, especially in the case of the Spanish experience (Polavieja 2003, 2005). The increasing stickiness of the secondary labour market comes with a

---

[1] Despite having very low Ns (just 123 transitions from a temporary to a permanent job; 3.66% of the total sample size), Picchio (2008) compared temporary workers with those unemployed at time t and examined these individuals' chances of having a permanent position at t + 2 years. He found a "true stepping-stone effect" of temporary contracts by about 13.5–16 points compared with unemployment. Ichino et al. (2008) results refer to only one regional non-probabilistic group of TWA workers.

substitution of temporary jobs for permanent ones (Gebel and Giesecke 2016; Jahn and Weber 2016; Barbieri and Cutuli 2016), with an overall reduction over time in job flows from the secondary to the primary labour market (European Commission 2016), and with a weakening of the link between individual labour productivity and the chances of contractual conversions of fixed-term contracts into open ended positions (Barbieri et al. 2016a). These changes cast doubts not only on labour market segregation and the inequality associated with it, but also on the efficiency of the same job-matching process.

In this contribution, we add to the pool of literature that focuses on the role of employment regulation in terms of the speed and quality of the school-to-work transition and the quality of job matching (Barbieri et al. 2016b; Berton et al. 2017). We frame temporary employment as an LMI used by firms to allow for a more accurate selection of individuals into the primary labour market based on previous productivity assessments. We argue that this consideration holds particularly well in countries in which hiring and firing costs have ended up diverging dramatically between distinct segments of the workforce due to the process of straight labour market dualisation. In line with the interplay between employment regulation and institutional characteristics of the educational system (Breen 2005), we expect the information asymmetry issue to be particularly strong in a generalist and standardised educational system (Allmendinger 1989; Shavit and Müller 1997) that does not provide firms with adequately clear pre-hire signals of applicants' qualifications and productivity.

This argument is largely in line with the interpretation of LMIs proposed by Autor as a comprehensive concept that encompasses entities, associations, institutions, employment contracts, and regulation schemes (and even "bandwidth occupational data archives") that are *identified by their function of influencing/ameliorating the process and the quality of the job matching.* LMIs should therefore address job-matching imperfections that are related, for example, to the speed of the process, information asymmetries, costs, adverse selection, or coordination issues, thereby preventing the risk of costly wrongful-discharge litigation and the substantial uncertainty associated with a wrong match.[2] Autor (2000a) recognises the screening function played by temporary employment schemes in a strictly regulated labour market as "*providing a mechanism for employers to audition candidates for direct-hire positions without risking a wrongful-discharge lawsuit*". Moreover, Autor (2000b) has demonstrated that the adoption of wrongful-discharge laws by U.S. state courts has increased the incidence of temporary employment in the US (by up to 20 percent of the growth of temporary-help service employment over the period 1973–1995) as these temporary employment contracts do not conflict with wrongful-discharge laws. Consequently, we examine temporary contracts as an additional form of labour regulation, as long as trade unions, minimum wages, labour laws, affecting the dynamics of labour market clearing.

---

[2] To put it differently, LMIs do not require any specific "organisational form" to operate or to be theoretically recognisable as LMIs because they are (sociologically) defined by their function. Following Autor (2009a, b, Appendix Table 1), such a function should be to address specific kinds of labour market failure that have to do with "Information provision, search cost reductions" in the case of temporary work agreements and with "Worker-side adverse selection, pay-productivity gaps".

More specifically, we examine the wage/productivity gradient of contractual conversions from temporary to permanent positions that—in the presence of efficient screening devices—should primarily end up in selecting the most productive workers for permanent positions. Indeed, we focus on the role of temporary employment in boosting the efficiency of the allocation of (the most) productive workers to permanent positions. This is done by proposing a longitudinal evaluation of the informative role played by temporary contracts that enable firms to avoid adverse selection and to strengthen the relation between workers' productivity assessment and their chances of transitioning to the primary labour market.

In the empirical section of this contribution, we make use of a self-constructed person–year dataset from a panel based on six distinct waves of SHIW data (the Italian survey of household income and wealth from the Bank of Italy) from 2004 to 2014 and by selecting dependent workers. SHIW data contain detailed information on household composition, individuals' age and education, their occupational and contractual position, as well as their income (for individuals and households), savings, and consumptions. Our evidence suggests that forms of temporary employment in modern Italy can only be interpreted as LMIs in a very restrictive sense. More specifically, we do not find robust evidence of temporary employment's functioning as a screening device that allows the most productive individuals to enter the primary labour market. If anything, firms are shown to use temporary contracts mainly as an informative, prolonged trial period to identify and select the *less* productive workers, who are then laid off without major parallel advantages in favour of individuals who display higher motivation and abilities.

2 Background and Hypotheses

2.1 Characteristics of the Italian Dual Labour Market

The dualisation of the Italian labour market began to gain ground during the second half of the nineties and is still spreading. As widely documented, this was a case with labour market flexibilisation "at the margins" (Barbieri and Scherer 2009; Bertola 2014; Pastore 2016), in which only temporary work contracts were to be deregulated in order to facilitate labour market entries for younger or otherwise disadvantaged people. The reforms in the labour market were paralleled by a series of welfare reforms mainly aimed at reducing pension expenditures, and the combination of the two processes boosted a dualisation of the national labour market and the connected social assistance system, which (unintendedly) reinforced the dynamics of (institutionally driven) intergenerational inequality. Up to now, the creation of new and flexible forms of employment that are differently regulated in terms of labour laws and social protection rights and that are less guaranteed than the 'standard' permanent, dependent labour contract has become a distinctive trait of the Italian labour market. Due to the characteristics of the national educational system, Italian deregulation has mainly operated according to an age/generational divide and not according to a skill divide, as has been the case elsewhere in Europe (Barbieri 2009). The present debate on the outcomes of "flexible" forms of employment in Italy is consistent with the international debate. In a nutshell, in contrast to the strong expectations that the eradication of labour market

frictions and imperfections would have favoured the creation of additional employment opportunities for (the first) job seekers, the research is consistent regarding the fact that the new forms of flexible employment are increasingly becoming dead-end jobs (Bruno et al. 2012; Shikata 2012; Bazen et al. 2005; Autor and Houseman 2010). This process is not confined to Italy; instead, it appears to be the case in contexts in which labour policies are scarcely supported by the state, such as in Southern Europe (Bertola 2015).[3]

2.2 Labour Market Intermediaries, Individual Labour Productivity, and Research Hypotheses

According to textbook models, in perfectly transparent and competitive labour markets, firms pay workers according to (marginal) productivity. If a firm experiences a negative productivity shock and wages do not adjust, the least productive workers are laid off until the equality of productivity and wages is re-established. If a firm experiences a positive productivity shock and wages do not adjust, new workers are hired until the equality of productivity and wages is reinstated. With the existence of labour market frictions, imperfect and/or asymmetric information, and/or the costly monitoring of productivity, the direct relationship between wages and productivity disappears, and pay-productivity gaps may occur. In such circumstances, labour market intermediaries can intercede to improve the operation of the labour market (and eventually to profit from its imperfections). As Autor (2009a, b) conceives of them, "*LMIs are entities or institutions that interpose themselves between workers and firms to facilitate, inform, or regulate how workers are matched to firms, how work is accomplished, and how conflicts are resolved.*" Following this vein, we argue that temporary employment schemes and FTC regulations might be regarded as specific forms of labour market intermediaries characterised by their function of providing information to the economic actors involved in the matching process. In so doing, these schemes and regulations can (sensibly) reduce the actors' search costs and address the issue of information asymmetries between the parts involved in the search and matching processes. In the presence of information asymmetries regarding the quality of workers or jobs, better-informed actors in fact have an incentive to exploit their informational advantage (Autor 2008), which generates a market equilibrium in which market actors of "lower quality" (workers or firms) exert negative externalities on their higher-quality counterparts, thereby depressing both the quantity and quality of trade (Akerlof 1970). Following this argument, flexible/non-tenured forms of employment are here asserted to be LMIs since they are expected to exert a relevant economic function by mak-

---

[3] The question regarding the effectiveness of flexible employment as a substitute for both off-the-book work and unemployment is more controversial: Any job might still be better than no job (or contract) at all, and evidence suggests that flexible employment comes with better occupational chances than unemployment (Cutuli 2008; Paggiaro et al. 2009; Picchio 2008). However, some reports indicate that in the long run, queuing for a stable job instead of accepting a temporary job offer might constitute the most rational option in the tight Italian labour market, which will likely offer very scarce upward career mobility chances in the future (Barbieri and Scherer 2009; Hotchkiss 1999). Moreover, considering only the trade-off between precarious employment and unemployment ignores the risk that the new forms of atypical employment may substitute stable and fully entitled forms of employment (Bank of Italy 2006). The situation has worsened with the economic crisis, which has taken a particularly hard toll on Italy since 2008.

ing the search process less expensive, reducing information asymmetries, preventing adverse selection, and plausibly raising the allocative efficiency of the labour market (Houseman et al. 2003). If this assertion holds true, as already stated, temporary contracts could be claimed to be operating effectively as screening devices for the best productive workers and as a tool to support the creation of efficient matching in the labour market, even in the Italian dualistic labour market. The international literature provides some evidence in this direction: As Autor (2001, 2009a, b) has asserted and as has been shown by Andersson et al.'s (2009) comparative, longitudinal work, while temporary work contracts generally pay lower wages than permanent work contracts, they nonetheless act as LMIs and assure higher wages once these former FTC workers manage to gain a stable job with another employer. Furthermore, the positive effects seem to mostly occur as the result of a selection process as those previously employed on an FTC basis subsequently work for higher-wage firms much more than do comparable low earners who do not work under an FTC contract. Similar findings have been proposed for the US labour market by Houseman et al. (2003). The screening function was also identified by Baranowska et al. (2011), who argued that FTC serves employers by helping them to identify the best workers, and the function has been confirmed by Hagen (2003), who demonstrated that FTCs raise firms' adjustment speed. In their analysis of Germany, Boockmann and Hagen (2008) suggest that FTCs may be understood to be prolonged probationary periods that accelerate the sorting process. Similar findings have been confirmed by Zijl and van den Berg (2004) in the Netherlands. For the purposes of this paper, in what follows, we first assume that temporary employment contracts[4] might act as conventional LMIs in the Italian labour market, thereby allowing the actors to repair a situation of incomplete information on the counterpart's unknown characteristics, including productivity and motivation. At the same time, we also assume that wages can be taken as a proxy for individual productivity (or, inversely, as a proxy for exposure to the risk of oversupply) and that the subjects' position in the wage distribution can be taken as an index of individuals' belonging either to the firms' core workforce or to their peripheral labour buffer.[5]

    If our assumptions are correct, it follows that:

H1 Net of individuals' and firms' observables, if FTC positions serve mainly as (positive) screening devices, they should not represent a b-series employment reservoir for less productive workers. FTC workers should therefore be somewhat equally distributed among wage deciles (as is the case for permanent workers) and have no specific concentration on a specific tail of the distribution. We test this hypothesis by descriptively examining the dynamics of wage segregation and in multivariate terms by means of panel regression models.

---

[4] In our analyses, we contrast permanent dependent employment with temporary work agency jobs (TWA) and fixed-term contracts (FTC). These two types work contracts share the same function of rendering the job-matching process more predictable for both employers and job seekers and of preventing the costs associated with a wrong match.

[5] Assuming that wages are a proxy for individual labour productivity—which represents a standard and usually robust assumption in labour economics—does not per se exclude the possibility that other unobservables are involved, such as a firm's or a sector's unobservable characteristics or an interaction between individual- and firm unobservables.

H2 If wages can be assumed to be a proxy for labour productivity, even in the case of a negative correlation between temporary positions and individual productivity, then the wage gap between FTCs and permanent work contracts should diminish from the lowest to the highest quantiles of the wage distribution because the highest quantiles should encompass the most productive workers. In other words, highly productive workers can overcome the economic disadvantage of temporary contracts such that the FTC-permanent wage gap diminishes for high wage quantiles. We test this hypothesis by means of unconditional quantile regressions.

H3 If wages can be correctly assumed to be a proxy for labour productivity and if temporary employment serves as a screening device, the chances of transitioning to permanent employment should be higher for workers in the highest quantiles of FTC workers' wage distribution. In other words, FTC workers in the highest quantiles of the wage distribution/productivity capacity should represent those most likely to be selected after screening by firms due to their higher levels of individual productivity and the lower risk of oversupply (and eventually other unobservable characteristics). We test this hypothesis by means of dynamic specifications of panel probit models.

In the next sections, we introduce data and methods, present and discuss the multivariate results of our analyses, and draw conclusions on the role of temporary employment as a tool to efficiently allocate workers to distinct contractual segments of the dualised Italian labour market once these workers' abilities have been addressed.

3 Data and Methods

3.1 Data and Sample Selection

In order to test our research hypotheses, we make use of the last six biennial cross-sectional datasets of the Survey on Household Income and Wealth (Bank of Italy, SHIW data) as well as of their longitudinal components, which cover the 2004–2014 period.[6]

The dataset used in the analysis was obtained from a rotating panel design and is unbalanced, with a maximum of 6 waves (corresponding to an individual observational window of 12 years) and with an average of 2.4 time points available for each unit (covering a period of more than 4 years).

The model estimations rely on about 8500 individuals belonging to the panel components and represent around 60% of the observations and around 40% of the units of the original dataset. Both men and women are considered in the analytical sample provided that they are between the ages of 16 and 64, thus allowing for the inclusion of young labour market entrants (i.e. those most "at risk" of experiencing repeated temporary employment spells). Yearly spells of inactivity for individuals are kept out

---

[6] Data from the Survey on Household Income and Wealth are distributed in cross-sectional form within appropriately harmonized international datasets. Since 2010, the survey has provided data for Italy for the Household Finance and Consumption Survey (HFCS), which is coordinated by the European Central Bank. Moreover, the Bank of Italy has been participating in the Luxembourg Income Study and in the Luxembourg Wealth Study for several years.

of the sample. Additional sample selection restrictions have included a self-declared dependent working time of between 13 and 70 h per week and the exclusion of workers below the 1st and above 99th percentiles of the hourly wage distribution. The above-mentioned criteria are intended to provide a selection of the core dependent employment in the Italian labour market, thereby limiting the bias associated with the inclusion of marginal part-timers—who are likely also associated with more disadvantaged temporary positions—and the influence exerted by those who lie at the extreme ends of the spectrum of hourly wage distribution.

3.2 Research Approach

The aim of this analysis is to shed light on the economic and occupational consequences of temporary employment in the Italian labour market. More specifically, two main aspects are addressed.

A first point of discussion concerns the economic disadvantage associated with temporary labour market positions. We first deal with this issue descriptively in terms of the dynamics of wage segregation. Therefore, we begin by examining the over-representation of temporary workers within the lowest deciles of wage distribution. Second, we run a set of multivariate panel regressions to analyse the extent of wage penalties for individuals holding temporary contracts. Here, we examine the net negative influence exerted by temporary contracts, and we test for variation in this penalty both over time and along the wage distribution.

At the macro level, this examination occurs by allowing the influence of temporary employment to vary over time by means of an interaction term between the contractual variable and period dummies. In so doing, the magnitude and stability of the wage penalty for temporary workers are also indirectly controlled for the progressive diffusion of temporary jobs and for changes in labour market regulation that have occurred across the observational window. A set of quantile panel regressions is then estimated to account for the variation of the FTC penalty across different quantiles of the wage distribution.

The second point of discussion refers to the possibility that flexible forms of work contracts play the role of LMIs and are used by labour demand as screening devices to increase the quality of job matches and to select primarily the most productive or most motivated individuals for permanent positions. Under the assumption that individual position within the wage distribution can be considered a reliable proxy of expected productivity, in the analysis, we provide a test for heterogeneity in the chances of contractual mobility for temporary workers at different points on the wage/employee productivity distribution. In this second step of the analysis, the longitudinal approach is implemented by focusing explicitly on the chances of transitioning from temporary to permanent employment. The selectivity and the heterogeneity of the process—as well as the relation between chances of promotion and individual productivity—are investigated by comparing the chances of successful contractual mobility among temporary workers who can be found at different points on their (own) reference wage distribution (using the corresponding FTC wage distribution for each worker conditioned on period, geographical area, sex, and educational level).

Fig. 1 Proportion of workers according to hourly wage quantiles, conditioned on year, geo-area, sex, and education. **a** All dependent workers, independent of LM experience, **b** up to 10 years of LM experience (dep. workers)

Fig. 2 Proportion of workers according to hourly wage quantiles, conditioned on five age classes, year, geo-area, sex, and education

3.3 Methods

In the first descriptive part of the analysis, we document the uneven allocation of permanent- and FTC positions over the wage distribution. This procedure is not completed by examining the entire distribution of salaried workers (FTC plus permanent workers); rather, it is completed by considering specific wage distributions according to a set of macro, job-related, and personal characteristics (see Figs. 1a/1b, 2a/2b, 3a/3b for different combinations of the control variables). By conditioning the wage distributions, we suggest that it is not possible to analyse the overrepresentation of FTC workers in the lower wage deciles exclusively in terms of primary and secondary LM segments; instead, the asymmetries and the different allocation of temporary and permanent workers have to be considered indications of an across-the-board "wage segregation" that is orthogonal to sex, age, education, or occupational groups (our control variables).

Fig. 3 Proportion of workers according to hourly wage quantiles. **a** Isco08 1 digit (year 2014), **b** sector and firm size (2004–2014)
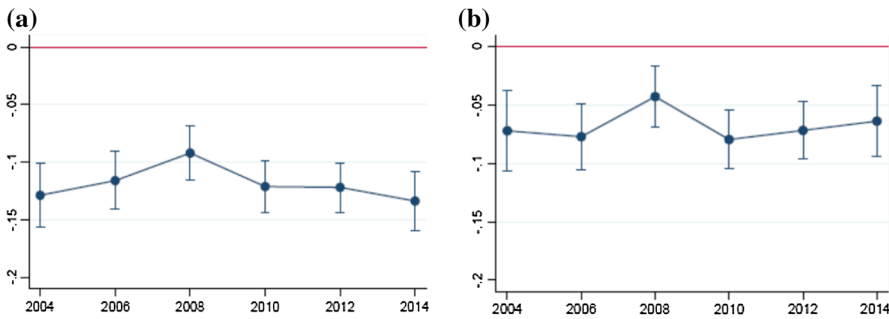

Fig. 4 FTC wage penalty on Ln (hourly wage) along the observation window. Models control for the year of the survey, occupation (5 dummy variables), firm dimension (7 dummy variables), public sector, age classes (4 dummy variables), labour market experience and job tenure (in years), months of employment in the reference year, weekly hours, reference person in the family, sex, education (4 dummy variables), and geographical area (3 dummy variables). **a** Random effects estimates, **b** fixed effects estimates

Moving to the multivariate analysis, we used micro panel data[7] and estimated both random (RE) and fixed effect (FE) models (Model 1 and Model 2) by using the logarithm of net hourly wage as a dependent variable. By estimating both RE and FE models and contrasting their results concerning the magnitude of the FTC coefficient, we were able to examine the reduction of the penalty associated with temporary employment once the correlation between regressors and the individual time-constant-unobserved characteristics was allowed for (with FE). Additionally, as anticipated, both Model 1 (RE) and Model 2 (FE) in Appendix Table 1 include the FTC/period dummy interaction in order to test for the stability of the FTC penalty over time (results shown in Fig. 4a, b).

Taking into account possible time-constant unobserved heterogeneity among units by means of a purely within estimator, in a second step of the analysis, we additionally address possible heterogeneity in the FTC penalty at different points along the wage distribution. Without changing the vector of covariates used in Models 1–2 (Appendix Table 1), in this second step of the analysis, we estimate ten separate quantile regression

---
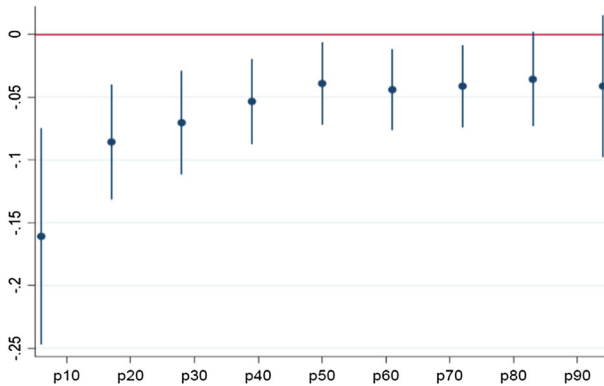
[7] Full models in the "Appendix".

Fig. 5 The FTC/permanent wage differential: quantile fixed effects estimates. Model controls for year, occupation (5 dummy variables), firm dimension (7 dummy variables), public sector, age classes (4 dummy variables), LM experience and tenure (years), months of employment in the reference year, weekly hours, reference person in the family, sex, education (4 dummy variables), and geographical area (3 dummy variables)

FE models that condition the estimation of the FTC penalty to different deciles of the wage distribution. In so doing, we add to a recent strand of economic literature on the variability of the temporary-employment wage gap among distinct segments of the workforce (Bosio 2014; Lass and Wooden 2017). We rely on the unconditional quantile regression approach (UQR) as developed by Firpo et al. (2009).[8] Additionally, we allow for FE in order to keep time-constant unobserved heterogeneity under control (Borgen 2016). By determining the deciles before estimating the regression model, our estimations allow us to interpret the coefficients as measures of the effect of FTC (and of other independent variables) on the unconditional distribution of the outcome variable (Porter 2015). This empirical strategy allows us both to control for time-constant unobserved unit heterogeneity and to "decompose" the average FTC penalty according to the position of the FTC workers in the wage distribution. The full specification of the models is reported in Models 1–9 (Appendix Table 2), and the corresponding variation of the FTC penalty over the wage distribution is shown in Fig. 5.

Finally, a third set of models (Model 1 and Model 2, Appendix Table 3) have been estimated to investigate the selectivity of the transition from temporary to permanent employment in order to shed light on firms' use of FTC as a screening factor for selecting the best job matches and/or most productive workers to be employed on a permanent basis. More specifically, by using RE probit regressions, we model the probability of being employed as an FTC worker (Model 1, Appendix Table 3) and the

---

[8] As reported by Lass and Wooden, the applied method involves regressing the Recentered Influence Function (RIF) of the unconditional quantile of the dependent variable on the explanatory variables.

The RIF is calculated as follows: $(Y; q_\tau, F_y) = q_\tau + [(\tau - \mathbb{1}\{Y \leq q_\tau\})/f_y(q_\tau)]$, where Y is the outcome variable, τ designates the specific quantile under consideration, q_τ is the value of the outcome variable at the given quantile, $f_y(q_\tau)$ is the density at point q_τ (as estimated by kernel methods), and $\mathbb{1}\{Y \leq q_\tau\}$ is a dummy variable that indicates whether the outcome variable is below q_τ.
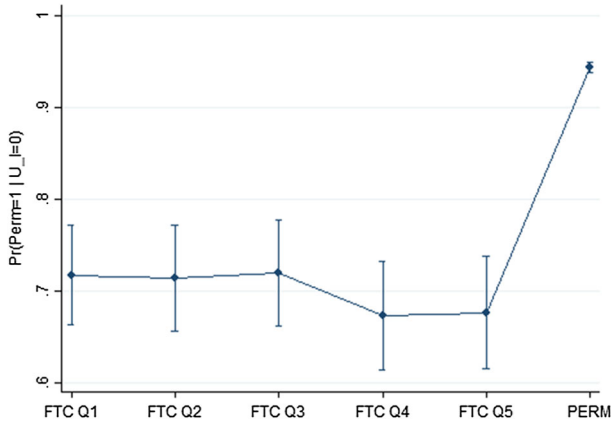
Fig. 6 Transition to stable job according to previous wage position and contract. Probit random effects model (AME). FTC wage quintiles (hourly wages) defined by year, geographical area, sex, education. Models control for year, occupation (5 dummy variables), firm dimension (7 dummy variables), public sector, age classes (4 dummy variables), LM experience and tenure (years), months of employment in the reference year, weekly hours, reference person in the family, sex, education (4 dummy variables), and geographical area (3 dummy variables) (ref.cat: FTC and TWA in 1° quintile at $t-1$)

probability of remaining unemployed/inactive (Model 2, Appendix Table 3). These two binary dependent outcomes are regressed on the individual previous contractual status at $t-1$ (permanent vs. FTC) and—for FTC workers—on the individual position of temporary workers in the wage distribution, conditioned on age group, sex, geographical area, and education. In so doing, we test for variability in the subsequent employment prospects and compare permanent contract holders and their temporary counterparts on the one hand and while allowing for heterogeneity among different profiles of FTC workers on the other hand. Indeed, we focus on the $t+1$ permanent employment chances/the $t+1$ unemployment risks and distinguish between individuals who already hold permanent positions at $t-1$ and different profiles of FTC workers settled at different points along the FTC wage distribution (assumed to be characterised by heterogeneous and unobserved productivity capacities). Therefore, in Fig. 6, we use AME to demonstrate the comparison in subsequent permanent employment chances and subsequent unemployment/inactivity risks between individuals previously in permanent employment and five distinct groups of FTC, which are identified by their quintile in the conditioned wage- (and again, possibly productivity-) distribution.

4 Empirical Results

4.1 Multivariate, Descriptive Results

Figure 1a, b display the concentration of permanent and temporary wageworkers according to the (natural log) hourly wage decile and conditioned on a set of observables, namely year (from 2004 to 2014), geographical area (Northern, Central, and Southern Italy), sex, and education. Despite only representing a multivariate descrip-

tive of the concentration of permanent/temporary salaried workers along the wage distribution of Italian dependent workers from 2004 to 2014, Figs. 1, 2 and 3 clearly illustrate the concentration of temporary workers in the first deciles of the salaried wage distribution. Figure 1 reveals that FTC holders in the Italian labour market have been highly concentrated on the very first deciles of the distribution over the last decade. Such skewness is not present when examining the concentration of permanent workers among the various wage deciles. This picture is reconfirmed (Fig. 1b) when selecting only workers with no more than 10 years of labour market experience. Put differently, the segregation of temporary workers on the low-paid end of the wage distribution is due neither to a compositional effect nor to the fact that FTC workers might have different seniorities and therefore different amounts of labour market experience.

Figure 2 controls for five age classes, the year of the survey, geographical area, sex, and education, and the concentration of temporary workers in the left queue of the wage distribution is reconfirmed again. Finally, Fig. 3 provides the same descriptive for Isco 1 digit (only for the year 2014, for which the information is disposable), for the industrial branch, and for the firm size (2004–2014). Once again, the segregation of temporary workers in the very first deciles of the wage distribution is reconfirmed. Considering the fact that we are dealing with quite a long observation window, the concentration of temporary workers in the left-hand deciles of the distribution can be regarded as an accurate representation of wage segregation that affects individuals with a secondary labour market position, a segregation that is largely independent of the most common, observable, individual, and productive characteristics.

4.2 Temporary Employment in the Wage Distribution

Figure 4 points out the mean wage differentials between permanent and temporary employment along the observation window, which is estimated by applying both RE (Fig. 4a) and FE (Fig. 4b) panel models to the natural logarithm of hourly wages (see full models in Appendix Table 1). We note a stable over time that is statistically significant and a durable wage penalty that affects the secondary labour force in the Italian labour market, which is also reconfirmed when using FE estimations (Fig. 4b), which control for stable individual-level factors of unobserved heterogeneity. While these results reconfirm previous findings on the wage penalty that affects the Italian peripheral workforce (Bosio 2014; Barbieri and Cutuli 2010), they also reveal how the wage gap between the two segments of the labour market has become a stable characteristic of the Italian occupational system and of course an additional, stable, and structural source of inequality in Italian society. However, the persistence of a wage penalty needs to be complemented by its distribution among FTC workers in order to assess the wage-productivity assumption.

In order to do this, we apply a UQR FE (full models available in Appendix Table 2) to the Ln of the hourly wage. Figure 5 displays the wage penalty for individuals with FTC- and TWA positions for the different deciles of the wage distribution, calculated for the entire observation period (2004–2014). The wage differential is particularly concentrated in the first two to three deciles, where it may exceed 15%—which is

remarkable given that we are using FE models[9]—and diminishes towards the right end of the distribution, as expected based on previous results in the literature and according to productivity/oversupply arguments. For the last two deciles, the wage differential with stable employment is no longer statistically significant. We interpret this pattern as being consistent with our hypothesis on a vanishing penalty on the right-hand side of the wage curve, where the most productive workers are most likely concentrated (H2).

4.3 Temporary Employment as a Screening Device?

Given the results shown in the previous paragraph, the FTC workers in the right-hand decile(s) of the wage distribution might also be expected to make the transition towards the primary labour market, which means towards stable employment. In other words, if FTC and TWA have to work as LMIs and thereby reduce informational deficits and ameliorate the screening process for the most productive temporary workers, individuals in the highest decile(s) of the wage distribution should show the highest chances of being permanently hired after an episode of temporary employment.

Figure 6 shows individuals' chances (Average Marginal Effects, full model in "Appendix") of transitioning to a stable job at t+1 (which, due to the biennial SHIW waves, means 2 years later) after having been temporarily employed at previous time t. On average, the penalty for a previous temporary position in terms of the possibility of getting a permanent job at t+1 is − 24% (Fig. 6). The relevant point, however, is that this penalty is almost identical across (previous) FTC wage quintiles, with no premium at all for individuals who have formerly been temporarily employed with higher wages (i.e. higher productivity). This finding raises serious doubts about whether temporary employment—especially for highly productive workers—actually works as LMI allowing firms to select the most productive workers.

If FTC cannot be regarded as a form of screening device for the most productive workers, should we than abandon our consideration of them as possible LMIs and screening tools? Figure 7 seems to tell a slightly different story: FTC workers who have the highest risk of being fired by firms are in the lowest quintiles of the wage distribution, are possibly the least productive, and are the most at risk of being in oversupply. In other words, FTC in the dual Italian labour market seems to serve firms more as a prolonged trial-and-test period to identify the least productive workers and to subsequently abandon them as their contracts expire. The picture presented in Fig. 7 is clear enough, the relatively high confidence intervals notwithstanding. Taken together, the evidence produced in Figs. 6 and 7 reveals how contracts of limited duration in the Italian dual labour market do not act as "positive" forms of LMIs that allow firms to select the best workers, who then get a secure position either within the same firm or in a new one. If anything, these contracts serve to identify and remove the problematic cases.

---

[9] We do not assume that quantile fixed-effect regression models fully control for employees' productivity; in other words, we do not consider productivity to be an unobservable, stable time invariant characteristic of the individuals, especially as SHIW data do not provide us with enough time-varying correlates of individual productivity.
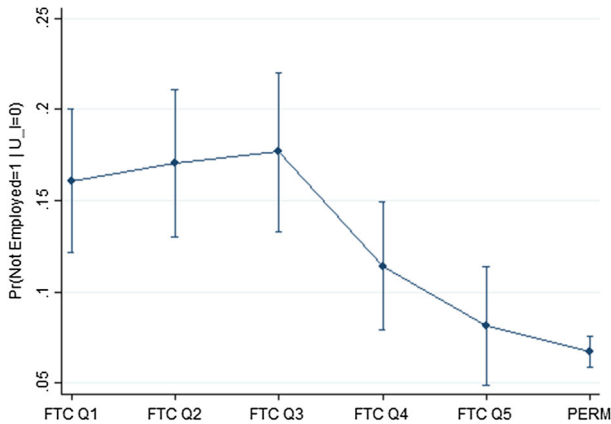
Fig. 7 Transition to non-employment, according to previous wage position and contract. Probit random effects model (AME)

5 Discussion and Conclusions

In this paper, we aimed to test whether temporary employment might work as a form of LMI by raising firms' adjustment capacity and allowing entrepreneurs to screen at least the most productive workers via a prolonged period of trial-and-test, as suggested in the literature (Autor and Houseman 2010; Ichino et al. 2008). In a strongly dualised labour market, such as the Italian one, where the primary labour market still enjoys high levels of employment protections while the secondary one allows firms to fill any information gap with regard to employees' productivity, FTCs might have become attractive to firms that are willing to accurately select the most productive or motivated workers before (eventually) offering them permanent access to their core workforce.

Our research strategy follows the assumption that individuals' position within the wage distribution can be taken as a proxy of productivity. In line with our expectations, we found evidence of a phenomenon of persistent and diffused wage segregation for temporarily employed individuals in the lowest deciles of the wage distribution after controlling for individuals as well as for observable and unobservable occupational characteristics. By applying RE, FE, and UQR-FE regression models, we evaluated the wage penalty attached to temporary employment and showed its stability over the observed time window (2004–2014) and its concentration in the lowest deciles of the FTC's wage distribution. Finally, when combining individuals' contractual and wage positions, we focused on the chances of making the transition out of the secondary segment of the labour market (towards either stable employment or out of work) for workers located in different quantiles of wage/productivity distribution, thereby conditioning the reference distribution to the observable characteristics of those holding temporary jobs.

In so doing, we demonstrated that temporary employment in Italy serves more as a screening tool to dismiss the least productive workers than as a device to select the most productive ones into the primary labour market. To put it differently, temporary contracts in the dualistic Italian labour market can hardly be interpreted as positive

forms of LMIs. If anything, the results suggest that they act as a screening device to dismiss the least productive employees. There is scarce evidence supporting the idea that these flexible forms of employment work as stepping stones or as springboards for the most rewarded/productive workers of the secondary labour market.

The reasons behind this outcome and its consequences remain an open question. Theoretically, flexible forms of employment might function as "positive" LMIs specifically because of the situation of diverging firing costs in different segments of the workforce and because of asymmetric, imperfect information, the power imbalance, and the consequent risks of adverse selection that are typical of the matching process. In a dual labour market, such a function should turn to be an even more relevant tool for firms; however, firms resort to contractual LMIs to reduce adverse selection and in an effort to identify and kick "the lemons" out.[10]

However, this finding re-introduces a problem of adverse selection to our schema (Greenwald 1986) at a higher level: Commitment-adverse and less productive workers in temporary contracts are more easily fired (or rather, their contracts are not renewed when they expire). A plausible mid-term outcome of such a situation is a concentration of scarcely motivated and/or low-productive workers in the secondary labour market, a situation that may produce negative externalities on labour market dualization (Silva et al. 2018) as it reinforces entrepreneurs' mistrust and lack of confidence in former temporary workers and—more generally—in the secondary labour market workforce, which underpins both labour market segregation and segmentation. While this conclusion leaves room for additional research, the labour policy indications of our results suggest that it would be better to reduce the overall degree of labour market dualism than to reinforce deregulation at the margins of the labour market. This suggestion would not only reduce an already-high level of labour market inequality and dualisation, but it would also ameliorate the same allocative efficiency of the intermediaries of the matching process.

Appendix

Period: 2004–2014.

Age selection: 16–64.

Working time: 13–70 h per week (dependent workers).

Exclusion of those below the 1st and above the 99th percentiles of hourly wage distribution.

See Tables 1, 2 and 3.

---

[10] It is worth noting that Autor himself found that temporary-help job placements do not improve and may diminish subsequent earnings and employment outcomes among participants (Autor and Houseman 2010).

Table 1 Models on FTC wage penalty. RE and FE models

Log (hourly wage)	M1 RE	M2 FE
Occupational position		
Blue collar		
White collar (low level)	0.113***	0.032***
School teacher	0.244***	0.067***
White collar (high level)	0.244***	0.090***
Managerial posit.	0.422***	0.145***
Firm size		
1–4 empl.		
5–15 empl.	0.083***	0.037***
16–19 empl.	0.123***	0.068***
20–49 empl.	0.122***	0.062***
50–99 empl.	0.166***	0.088***
100–499 empl.	0.165***	0.075***
>500 empl.	0.189***	0.087***
Public sector	0.154***	0.068***
Head of the family	0.036***	0.007
Double job	− 0.060***	− 0.069***
Year		
2004		
2006	0.063***	0.085***
2008	0.088***	0.130***
2010	0.105***	0.165***
2012	0.111***	0.183***
2014	0.131***	0.214***
FTC	− 0.134***	− 0.077***
2006#FTC	0.016	− 0.001
2008#FTC	0.037**	0.030
2010#FTC	0.009	− 0.007
2012#FTC	0.009	0.003
2014#FTC	0.001	0.015
Age classes		
16–24		
25–34	0.091***	0.072***
35–44	0.163***	0.077***
45–54	0.191***	0.081***
55–64	0.184***	0.064***
Years of LM experience	0.003***	− 0.000

Table 1 continued

Log (hourly wage)	M1 RE	M2 FE
Years of job tenure	0.003***	0.001**
Women	− 0.186***	
Education		
Compulsory		
Secondary 3 years	0.040***	− 0.012
Secondary 5 years	0.090***	− 0.004
Tertiary	0.241***	0.059**
Months worked	− 0.007***	− 0.007***
Hours per week	− 0.015***	− 0.018***
Observations	20,085	20,085
Number of individuals	8478	8478

Robust standard errors in parentheses ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 2 Models on FTC wage penalty. FE unconditional quantile regressions

Log (hourly wage)	(M1) p_10	(M2) p_20	(M3) p_30	(M4) p_40	(M5) p_50	(M6) p_60	(M7) p_70	(M8) p_80	(M9) p_90
Occupational position									
White collar (low level)	0.026	0.028	0.053**	0.049***	0.066***	0.067***	0.033	0.017	−0.009
School teacher	0.043	0.041	0.069*	0.059*	0.077**	0.080*	0.057	0.090	0.085
White collar (high level)	0.027	0.028	0.068***	0.076***	0.095***	0.120***	0.110***	0.126***	0.138**
Managerial posit.	0.053	0.037	0.065**	0.081***	0.113***	0.132***	0.139***	0.239***	0.282**
Firm size									
5–15 empl.	0.133***	0.043*	0.018	0.022	0.021	0.003	0.008	−0.002	0.022
16–19 empl.	0.178***	0.071**	0.057**	0.066***	0.079***	0.033	0.027	0.013	0.027
20–49 empl.	0.192***	0.070**	0.059**	0.035	0.056**	0.028	0.036	0.002	0.029
50–99 empl.	0.211***	0.073**	0.105***	0.083***	0.089***	0.058***	0.061**	0.037	0.029
100–499 empl.	0.171***	0.082***	0.097***	0.074***	0.086***	0.044*	0.057**	0.048	0.005
>500 empl.	0.174***	0.066**	0.073***	0.082***	0.089***	0.061**	0.085***	0.080**	0.041
Public sector	0.191***	0.078***	0.070***	0.066***	0.051**	0.021	0.026	0.023	0.006
Head of the family	0.047	0.009	0.007	0.011	−0.001	0.002	−0.010	−0.026	0.030
Double job	0.077	−0.013	−0.084	−0.068	−0.102**	−0.104**	−0.104**	−0.113*	−0.085
Year									
2004									
2006	0.104***	0.093***	0.091***	0.077***	0.073***	0.068***	0.070***	0.069***	0.068***
2008	0.187***	0.146***	0.146***	0.132***	0.124***	0.113***	0.103***	0.095***	0.079***

Table 2 continued

Log (hourly wage)	(M1) p_10	(M2) p_20	(M3) p_30	(M4) p_40	(M5) p_50	(M6) p_60	(M7) p_70	(M8) p_80	(M9) p_90
2010	0.241***	0.180***	0.179***	0.159***	0.148***	0.136***	0.128***	0.128***	0.089**
2012	0.266***	0.174***	0.191***	0.166***	0.159***	0.155***	0.161***	0.171***	0.099**
2014	0.302***	0.221***	0.232***	0.217***	0.199***	0.195***	0.191***	0.194***	0.086*
FTC	−0.160***	−0.090***	−0.070***	−0.054***	−0.039**	−0.042***	−0.039**	−0.033*	−0.038
Age classes									
16–24									
25–34	0.301***	0.179***	0.118***	0.052*	−0.009	−0.026	−0.052**	−0.075***	−0.069**
35–44	0.358***	0.237***	0.185***	0.093**	0.009	−0.017	−0.065*	−0.118***	−0.121**
45–54	0.292***	0.216***	0.174***	0.098**	0.038	0.005	−0.044	−0.080	−0.044
55–64	0.208*	0.174***	0.129**	0.078*	0.032	0.016	−0.034	−0.057	−0.006
Years of LM experience	−0.003	−0.002	−0.001	−0.001	0.001	0.001	0.000	−0.001	0.004
Years of job tenure	0.001	0.000	0.001	0.000	0.000	0.001	0.001*	0.002**	−0.000
Education									
Compulsory									
Sec. 3 years	−0.036	−0.030	−0.009	−0.010	−0.025	0.013	0.029	−0.014	−0.008
Sec. 5 years	−0.040	0.011	0.022	0.010	0.009	0.028	0.024	0.009	−0.040
Tertiary	0.027	−0.030	0.016	0.006	0.044	0.080	0.088	0.133	0.273

Table 2 continued

Log (hourly wage)	(M1)	(M2)	(M3)	(M4)	(M5)	(M6)	(M7)	(M8)	(M9)
	p_10	p_20	p_30	p_40	p_50	p_60	p_70	p_80	p_90
Months worked	0.004	0.003	− 0.004	− 0.002	− 0.003	− 0.006	− 0.008**	− 0.015***	− 0.025***
Hours per week	− 0.021***	− 0.013***	− 0.012***	− 0.013***	− 0.013***	− 0.014***	− 0.015***	− 0.019***	− 0.027***
Observations	20,085	20,085	20,085	20,085	20,085	20,085	20,085	20,085	20,085
Number of individuals	8478	8478	8478	8478	8478	8478	8478	8478	8478

Robust standard errors in parentheses ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 3 Models on LM prospects. Random effects probit models

	(M1) FTC at t	(M2) Unemp./Inact. at t
FTC at t − 1 in Q1 of conditional wage distribution	−	−
FTC at t − 1 in Q2 of conditional wage distribution	− 0.083	0.109
FTC at t − 1 in Q3 of conditional wage distribution	− 0.066	0.110
FTC at t − 1 in Q4 of conditional wage distribution	0.111	− 0.251*
FTC at t − 1 in Q5 of conditional wage distribution	0.099	− 0.460***
Permanent t t − 1	− 1.297***	− 0.572***
Occupational position		
Blue collar	−	−
White collar (low level)	− 0.344***	
School teacher	− 0.067	
White collar (high level)	− 0.403***	
Managerial posit.	− 0.133	
Firm size		
1–4 empl.	−	−
5–15 empl.	− 0.169**	
16–19 empl.	− 0.140	
20–49 empl.	− 0.322***	
50–99 empl.	− 0.192*	
100–499 empl.	− 0.279***	
>500 empl.	− 0.488***	
Public sector	− 0.269***	− 0.089**
Head of the family	− 0.023	
Double job	0.152	
Year		
2006	−	−
2008	0.087	− 0.055
2010	0.272***	− 0.057
2012	0.296***	0.053
2014	*0.287***	*− 0.066*
Age classes		
16–24	−	−
25–34	− 0.118	− 0.126
35–44	− 0.293**	− 0.544***
45–54	− 0.255*	− 0.709***
55–64	− 0.326*	0.247
Years of LM experience	0.006	

Table 3 continued

	(M1) FTC at t	(M2) Unemp./Inact. at t
Years of job tenure	− 0.032***	
Women	0.155***	0.104**
Education		
Compulsory	–	–
Secondary 3 years	− 0.004	− 0.063
Secondary 5 years	− 0.041	− 0.102*
Tertiary	0.084	− 0.273***
Months of work	− 0.230***	
Hours per week	− 0.008***	
Double job at $t-1$		− 1.145***
Years of LM exp. at $t-1$		0.013***
Years of job tenure at $t-1$		0.005**
Months of work at $t-1$		− 0.090***
Hours per week at $t-1$		− 0.005*
Firm size		
1–4 empl.		–
5–15 empl.		− 0.176***
16–19 empl.		− 0.302***
20–49 empl.		− 0.324***
50–99 empl.		− 0.407***
100–499 empl.		− 0.185**
>500 empl.		− 0.276***
Public sector		− 0.475***
Occupational position at $t-1$		
Blue collar		–
White collar (low level) at $t-1$		− 0.139**
School teacher at $t-1$		− 0.160
White collar (high level) at $t-1$		− 0.169
Managerial posit. at $t-1$		− 0.094
Observations	11,417	12,960
Number of individuals	5875	6736

Robust standard errors in parentheses ***$p<0.01$; **$p<0.05$; *$p<0.1$

References

Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics, 84*(3), 488–500.

Allmendinger, J. (1989). Educational systems and labor market outcomes. *European Sociological Review, 5*(3), 231–250.

Andersson, F., Holzer, H. J., & Lane, J. (2009). Temporary help agencies and the advancement prospects of low earners. In Author, D.H. (ed.) *Studies of Labor Market Intermediation*. NBER-University of Chicago Press

Autor, D. H. (2000a). *Why do temporary help firms provide free general skills training?* NBER working paper no. 7637, April 2000. Published in Quarterly Journal of Economics (Vol. 116, No. 4, pp. 1409–1448, November 2001).

Autor, D. H. (2000b). *Outsourcing at will: Unjust dismissal doctrine and the growth of temporary help employment*. NBER working paper no. 7959, February 2000. Published in Journal of Labor Economics (Vol. 21, No. 1, pp. 1–42, January 2003).

Autor, D. H. (2001). Wiring the labor market. *The Journal of Economic Perspectives, 15*(1), 25–40.

Autor D. H. (2004). *Labor market intermediation: What it is, why it is growing, and where it is going*. NBER reporter: Research summary Fall 2004 http://www.nber.org/reporter/fall04/autor.html.

Autor D. H. (2008). *The economics of labor market intermediation: An analytic framework*. NBER working paper, 14348.

Autor, D. H. (Ed.). (2009a). *Studies of labor market intermediation*. Chicago: NBER-University of Chicago Press.

Autor, D. H. (Ed.). (2009b). *Introduction to "studies of labor market intermediation"*. Chicago: NBER-University of Chicago Press.

Autor, D. H., & Houseman, S. N. (2010). Do temporary-help jobs improve labor market outcomes for low-skilled workers? Evidence from "work first". *American Economic Journal: Applied Economics, 2*(3), 96–128.

Bank of Italy. (2006). *Economic Bulletin* 46: March 2006.

Baranowska, A., Gebel, M., & Kotowska, I. (2011). The role of fixed-term contracts at labour market entry in Poland: Stepping stones, screening devices, traps or search subsidies? *Work, Employment & Society, 25*(4), 777–793.

Barbieri, P. (2009). Flexible employment and inequality in Europe. *European Sociological Review*, *25*, 621–628.

Barbieri, P., & Scherer, S. (2009). Labour market flexibilization and its consequences in Italy. *European Sociological Review*, *25*, 677–692.

Barbieri, P., & Cutuli, G. (2010). A uguale lavoro, paghe diverse. Differenziali salariali e lavoro a termine nel mercato del lavoro italiano, in Stato e Mercato, n. 3 Dicembre (2010), p. 471–504.

Barbieri, P., & Cutuli, G. (2016). Employment protection legislation, labour market dualism, and inequality in Europe. *European Sociological Review*, *32*(4), 501–516.

Barbieri, P., Cutuli, G., Luijkx, R., Mari, G., & Scherer, S. (2016a). Substitution, entrapment, and inefficiency? Cohort inequalities in a two-tier labour market. *Socio-Economic Review*. https://doi.org/10.1093/ser/mww035.

Barbieri, P., Cutuli, G., & Passaretta, G. (2016b). Institutions and the school-to-work transition: Disentangling the role of the macro-institutional context. *Socio-Economic Review*, *16*(1), 161–183.

Bazen, S., Lucifora, C., & Salverda, W. (Eds.). (2005). *Job quality and employer behaviour*. Basingstoke: Palgrave Macmillan.

Benner, C. (2003). Labour flexibility and regional development: The role of labour market intermediaries. *Regional Studies, 37,* 621–633.

Bentolila, S., Cahuc, P., Dolado, J. J., & Le Barbanchon, T. (2012). Two-tier labour markets in the great recession: France versus Spain. *the Economic Journal, 122*(562), F155–F187.

Bertola, G. (2014). Labor market policies and European crises. *IZA Journal of Labor Policy, 3,* 5.

Bertola, G. (2015). Labor and social policy. In H. Badinger & V. Nitsch (Eds.), *Routledge handbook of the economics of European integration* (pp. 284–294). Abingdon: Routledge.

Berton, F., Devicienti, F., & Grubanov-Boskovic, S. (2017). *Employment protection legislation and mismatch: Evidence from a reform*. IZA DP No. 10904, July.

Biegert, T. (2017). Labor market institutions, the insider/outsider divide and social inequalities in employment in affluent countries. *Socio-Economic Review*. https://doi.org/10.1093/ser/mwx025.

Blossfeld, H.-P., Buchholz, S., Hofäcker, D., & Bertolini, S. (2012). Selective flexibilization and deregulation of the labor market. The answer of Continental and Southern Europe. *Stato e Mercato, 32*(3), 363–390.

Boeri, T. (2010). Institutional reforms and dualism in European labor markets. In O. Ashenfelter & D. Card (Eds.), *Handbook of labor economics* (Vol. 4b, pp. 1173–1236). North Holland: Elsevier.

Boockmann, B., & Hagen, T. (2008). Fixed-term contracts as sorting mechanisms: Evidence from job durations in West Germany. *Labour Economics, 15*(5), 984–1005.

Borgen, N. (2016). Fixed effects in unconditional quantile regression. *The Stata Journal, 16*(2), 403–415.

Bosio, G. (2014). The implications of temporary jobs on the distribution of wages in Italy: An unconditional IVQTE approach. *Labour, 28*(1), 64–86.

Breen, R. (2005). Explaining cross-national variation in youth unemployment: Market and institutional factors. *European Sociological Review, 21*(2), 125–134.

Bruno G., Caroleo F. E., & Dessy O. (2012). *Stepping stones versus dead end jobs: Exits from temporary contracts in Italy after the 2003 reform*. IZA DP No. 6746.

Cutuli, G. (2008). Lavoro atipico e salari: una discriminazione nascosta nel mercato del lavoro italiano. *Polis, 3,* 403–422.

Emmenegger, P., Hausermann, S., Palier, B., & Seeleib-Kaiser, M. (Eds.). (2012). *The age of dualization: The changing face of inequality in deindustrializing societies*. Oxford: Oxford University Press.

Esping-Andersen, G., & Regini, M. (2000). *Why deregulate labour markets?*. Oxford: Oxford University Press.

European Commission. (2016). *Labour market transitions*. Analytical Web Note 1/2016, Employment, Social Affairs & Inclusion.

Firpo, S., Fortin, N., & Lemieux, T. (2009). Unconditional quantile regressions. *Econometrica, 77*(3), 953–973.

Gash, V., & McGinnity, F. (2007). Fixed-term contracts: The new European inequality? Comparing men and women in West Germany and France. *Socio-Economic Review, 5,* 467–496.

Gebel, M., & Giesecke, J. (2011). Labor market flexibility and inequality: The changing skill-based temporary employment and unemployment risks in Europe. *Social Forces, 90,* 17–39.

Gebel, M., & Giesecke, J. (2016). Does deregulation help? The impact of employment protection reforms on youths' unemployment and temporary employment risks in Europe. *European Sociological Review, 32*(4), 486–500.

Greenwald, B. C. (1986). Adverse selection in the labour market. *The Review of Economic Studies, 53*(3), 325–347.

Hagen, T. (2003). Does fixed-term contract employment raise firms' adjustment speed? Evidence from an establishment panel for West Germany. *Journal of Economics and Statistics, 223*(4), 403–421.

Hipp, L., Bernhardt, J., & Allmendinger, J. (2015). Institutions and the prevalence of nonstandard employment. *Socio-Economic Review, 13*(2), 351–377.

Hotchkiss, J. L. (1999). The effect of transitional employment on search duration: A selectivity approach. *Atlantic Economic Journal, 27*(1), 38–52.

Houseman, S. N., Kalleberg, A. L., & Erickcek, G. A. (2003). The role of temporary agency employment in tight labor markets. *Industrial and Labor Relations Review, 57*(1), 105–127.

Ichino, A., Mealli, F., & Nannicini, T. (2008). From temporary help jobs to permanent employment: What can we learn from matching estimators and their sensitivity? *Journal of Applied Econometrics, 23*(3), 305–327.

Jahn, E., & Weber, E. (2016). Identifying the substitution effect of temporary agency employment. *Macroeconomic Dynamics, 20*(5), 1264–1281.

Lass, I., & Wooden, M. (2017). *The structure of the wage gap for temporary workers: Evidence from Australian panel data*. IZA discussion paper no. 10670.

Osterman, P. (2004). Labor market intermediaries in the modern labor market. In R. Giloth (Ed.), *Workforce intermediaries: For the 21st century* (pp. 155–169). Philadelphia: Temple University Press.

Paggiaro, A., Rettore, E., & Trivellato, U. (2009). The effect of a longer eligibility to a labour market programme for dismissed workers. *Labour, 23,* 37–66.

Palier, B., & Thelen, K. A. (2008). Dualizing CMEs: Flexibility and change in coordinated market economies. In *Sixteenth international conference of the council for European studies* (Chicago, 2008).

Palier, B., & Thelen, K. (2010). Institutionalizing dualism: Complementarities and change in France and Germany. *Politics & Society, 38,* 119–148.

Pastore, F. (2016). *Fuori dal Tunnel. La difficile transizione dalla scuola al lavoro in Italia e nel mondo*. Torino: Giappichelli Editore.

Picchio, M. (2008). Temporary contracts and transitions to stable jobs in Italy. *Labour, 22,* 147–174.

Polavieja, J. G. (2003). Temporary contracts and labour market segmentation in Spain: An employment-rent approach. *European Sociological Review, 19,* 501–517.

Polavieja, J. G. (2005). Flexibility or polarization? Temporary employment and job tasks in Spain. *Socio-Economic Review, 3,* 233–258.

Porter, S. R. (2015). Quantile regression: analyzing changes in distributions instead of means. In M. B. Paulsen (Ed.), *Higher education: Handbook of theory and research*. Berlin: Springer. https://doi.org/10.1007/978-3-319-12835-1_8.

Rueda, D. (2006). Social democracy and active labour market policies: Insiders, outsiders, and the politics of employment promotion. *British Journal of Political Science, 36,* 385–406.

Saint-Paul, G. (1996). *Dual labor markets. A macroeconomic perspective*. Cambridge: MIT Press.

Scherer, S. (2004). Stepping-stones or traps? The consequences of labour market entry positions on future careers in West Germany, Great Britain and Italy. *Work, Employment & Society, 18,* 369–394.

Scherer, S. (2005). Patterns of labour market entry—long wait or career instability? An empirical comparison of Italy, Great Britain and West Germany. *European Sociological Review, 21,* 427–440.

Shavit, Y., & Müller, W. (Eds.). (1997). *From school to work. A comparative study of educational qualifications and occupational destinations*. Wotton-under-Edge: Clarendon Press.

Shikata, M. (2012). Is temporary work "dead end" in Japan? LM regulation and transition to regular employment. *Japan Labor Review, 9*(3), 59–79.

Silva, M., Martins, l, & Lopes, H. (2018). Asymmetric labor market reforms: Effects on wage growth and conversion probability of fixed-term contracts. *ILR Review, 71*(3), 760–788.

Zijl, M., van den Berg, G. J., & Heyma A. (2004). *Stepping stones for the unemployed: The effect of temporary jobs on the duration until regular work*. IZA DP No. 1241.