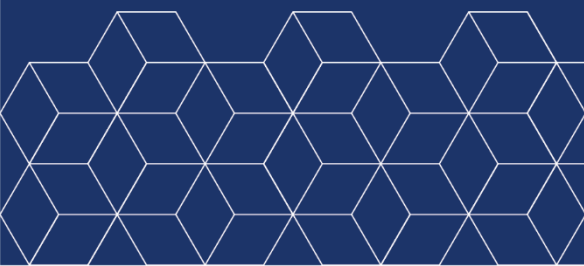


# WORKING PAPER

INAPP WP n. 63

## Evaluating the Youth Guarantee Incentive: Evidence from employer-employees data

*Irene Brunetti*  
*Andrea Ricci*



# Evaluating the Youth Guarantee Incentive: Evidence from employer-employees data

**Irene Brunetti**

*Istituto nazionale per l'analisi delle politiche pubbliche (INAPP), Roma*  
[i.brunetti@inapp.org](mailto:i.brunetti@inapp.org)

**Andrea Ricci**

*Istituto nazionale per l'analisi delle politiche pubbliche (INAPP), Roma*  
[an.ricci@inapp.org](mailto:an.ricci@inapp.org)

APRILE 2021

*Il presente contributo è stato realizzato da INAPP in qualità di Organismo intermedio del PON SPAO nell'ambito del Piano triennale in fase di riprogrammazione 2020-2023. Azione: 8.5.6.3 Ambito di attività 5. In particolare, tale contributo è una parte della ricerca dal titolo "Politiche attive per l'occupazione: analisi e valutazione su dati employer-employees".*

The opinions expressed here reflect only the authors' views. The INAPP (*Istituto nazionale per l'analisi delle politiche pubbliche*) is not responsible for any use that can be made of the present results. Further usual disclaimers apply.

CONTENTS: 1. Introduction. – 2. Background discussion; 2.1 The Youth Guarantee Employment programme. – 3. Data and identification strategy; 3.1 The linked Employer-Employee dataset; 3.2 Descriptive statistics. – 4. Main results; 4.1 OLS estimates; 4.2 *Diff-in-Diff* Fixed Effect estimates; 4.3 Other outcomes: the share of separations. – 5. Conclusions. – Appendix. – References

**INAPP – Istituto nazionale per l'analisi delle politiche pubbliche**

Corso d'Italia 33  
00198 Roma, Italia

Tel. +39 06854471  
Email: [urp@inapp.org](mailto:urp@inapp.org)

[www.inapp.org](http://www.inapp.org)

## ABSTRACT

---

### **Evaluating the Youth Guarantee Incentive: Evidence from employer-employees data**

To contrast the alarming situation faced by young people in the labour market, the European Commission, during the coronavirus pandemic has reinforced the Youth Guarantee (YG) programme that is an active policy launched to give young people all possible opportunities to develop their full potential. On the other hand, there is scarce empirical evidence on the causal effect of YG hiring incentive on various outcomes of Italian labour market. At this aim, we use a unique employer-employee linked dataset that merges information derived from the *Rilevazione Imprese e Lavoro* (RIL), a survey conducted by Inapp on a representative sample of Italian firms, with information on all events related all job position provided by the *Sistema Informativo Statistico delle Comunicazioni Obbligatorie* (SISCO). Applying a policy evaluation framework on the RIL-SISCO dataset, we show that the use of the incentive to hire people enrolled in the Youth Guarantee programme causes – in the short-run – an increase of about 1 percentage point of the share of employee under-30 years, while it has no significant effect on the share of separated among younger cohorts. These estimates vary significantly across geographical areas being driven by Centre-Northern regions. Finally, our findings are robust to an econometric strategy that controls for firm’s unobserved heterogeneity, sample selection and endogeneity issues.

**KEYWORDS:** employment incentives, Youth Guarantee, policy evaluation, firms

**JEL CODES:** D04, J08, J38

## 1. Introduction

Young people are generally an at-risk population: they face a high risk of unemployment, they are more likely to switch between states of joblessness or to enter precarious types of employment or to face skills' mismatches and low levels of wage (Quintini *et al.* 2007). This condition is partly caused by the difficulties that many young individuals face after completing their education and training to get a first permanent job or a job that well match their qualifications and expectations (European Employment Policy Observatory Review 2011). In addition, youth has been one of the groups hardest by the recession of 2008-09 inducing most of OECD countries to adopt many different policy interventions. During the financial and economic crisis, indeed, they have suffered severe consequences: in Italy, for instance, the youth unemployment rate has quickly increased from 20% in 2007 up to 44% in 2014. Most worrying is the phenomenon of young people 15-24 years old who are Not Engaged in any work activity or included in Educational or Training pathway (NEET) that is estimated at about 1.27 million, i.e. 21% of the European population of this age group<sup>1</sup>. The coronavirus pandemic has emphasised this difficult situation: unemployment rose especially among youth: over one in six young people have stopped working, others, working in hard-hit sectors such as accommodation, food, arts, entertainment, lost their job or are now trying to enter the labour market when such sectors are no longer hiring. Consequently, to contrast this alarming situation, the European Commission has decided to reinforce the Youth Guarantee (YG) programme.

The YG programme is an active policy purposing to contrast youth unemployment and foster school-to-work transitions by promoting employment, education, or traineeship for young people between 16 and 25 years of age within a period of four months of becoming unemployed or leaving formal education. It was formally adopted by the EU's Council of Ministers on 22 April 2013 (Council Recommendation of 22 April 2013 (2013/C 120/01)) and the European Council consequently endorsed it on June 2013<sup>2</sup>. The idea of YG style policies originated in the Nordic countries, where such initiatives were first implemented in Sweden in 1984, then elsewhere in the 1990s (see, e.g., Escudero and López Mourelo 2017), and it had become a reality across the EU starting from January 2014 (European Commission 2016). Just as YG entails an entitlement to a job, training or education of a defined group of young people, it also implies an obligation for the Public Employment Service (PES) or another public authority to provide the services and/or implement the programmes within a given period. The YG offers generally fall within the four categories identified in the Recommendation including employment open labour market employment (subsidised or not); self-employment; supported through start-up and dedicated subsidies; continued education; apprenticeships; traineeships. According to the monitoring of Member States' Youth Guarantee schemes, in 2016 about 67.2 % of young people across Europe that took up an offer within four months of registering in an YG programme, took up an employment opportunity (European Commission 2018).

<sup>1</sup> In Italy, is considered NEETs youngsters aged between 15 and 29 that are not engaged in working, training and education activities.

<sup>2</sup> European Council, Brussels, 28 June 2013 (EUCO 104/2/13).

To reduce the high level of unemployment among young people it is necessary to decrease the job fluctuation since the matching process takes some time. A possible instrument useful to increase the efficiency of the matching process and to overcome some of the specific employment barriers young people face, is represented by subsidised employment, one of the most common Active Labour Market Policy (ALMP) included in the YG plans. Employment subsidies aim at reducing part of the wage costs, encouraging private employers to hire new workers, and to allow young workers to build work experience and acquire job-relevant skills (Almeida *et al.* 2012; Centra and Gualtieri 2017)<sup>3</sup>. They can provide temporary incentives for firms to hire unemployed workers and, if sensibly targeted, it is a very cost-effective and efficient means of reducing unemployment. Thanks to their relative easier implementation, almost all European countries have indeed included this kind of measure in their YG plans (Escudero and López Mourelo 2017). Subsidised employment offers may fill a general lack of labour demand for young people creating new job opportunities for them in the private sector.

From the firm's point of view, the barriers to hirings may be related to different factors, for example, the reduced level of demand in times of recession, the employers' incomplete information about productivity and skills of young people, especially for those with little, or no, work experience (Bördös *et al.* 2015). Employers would be willing to hire young individuals only if they could pay them a wage lower than the expected marginal labour productivity. In this context, the hiring incentives, reducing *de facto* the wage costs, can compensate employers for the (supposed) lower productivity or no previous work experience of youth. Brown and Koettl (2015) discuss that the resulting higher labor demand can have as a consequence both higher wages and higher employment. At the same time, the increased demand for labor can encourage inactive workers to join the labour force, due to better employment prospects. However, hiring subsidies can have unintended indirect effects such as subsidized workers replacing unsubsidized ones ('substitution' effect) or employers hiring subsidized workers and laying them off once the subsidy period ends (Betcherman *et al.* 2004). In other words, a 'displacement' effect could arise. The last indirect effect is the deadweight loss one, especially among large firms and highly qualified individuals, which lowers the cost-effectiveness of incentives (for a detailed discussion see, European Commission 2018). They are often criticized also because their positive effects are only short-term effects and persist as long as the subsidy is paid. Nevertheless, it is possible to argue two additional longer-term positive effects: firstly, the period of subsidized work can act as a screening device, providing direct information on the young individual's productivity; secondly, the subsidized hiring can promote skill formation through training on the job, leading to increased productivity and subsequent improvement in employment prospects over the longer term. Based on these arguments, this paper examines the impact of hiring incentives relating to the Youth Guarantee programme on different firm's outcomes. In doing so we exploit a unique information included in an employer employee linked dataset obtained by merging the *Rilevazione Imprese e Lavoro* (RIL), a survey drawn by Inapp, and two administrative archives (*Comunicazioni Obbligatorie – SISCO; ASIA-Imprese*). Then applying a policy evaluation framework, we show that the use of the incentive to hire people enrolled in the Youth Guarantee programme caused – in the short-run – an

<sup>3</sup> Hiring subsidies are quite different from wage subsidies. Orszag and Snower (2003) show that hiring subsidies are targeted at the unemployed and provided only for a limited period of time while wage subsidies are granted to all low-wage earners regardless of their employment history and are of limitless duration.

increase of about one percentage point on the share of newly hired under-30 years old, while it did not exert any significant effect on the share of young workers who separated – for whatever reason – from the firms in which they were employed. Then the introduction of the YG programme has had a (weak) positive influence on evolution of the Italian labour market for younger cohorts– at least in the short-run. On the other hand, this result is driven by the firms located in Centre-Northern regions supporting the hypothesis that such a policy is at risk of contributing to widen the well-known geographical disparities of Italian labour market.

On the whole, the contribution of the paper to the literature is twofold. First, to the best of our knowledge, we provide the most update evidence of the effectiveness of the YG programme on firms' behavior in terms of hirings and separations. Second, we adopt a counterfactual empirical approach that – by exploiting a unique information contained in the RIL questionnaire – allows to infer the causal effect of hiring incentives on the Italian labor market taking into account both firms' time-invariant heterogeneity and endogeneity issues.

The paper is structured as follow. Section 2 reviews the main literature and the institutional characteristics of the hiring incentive, focusing on the Youth Guarantee programme. Section 3 introduces the data, descriptive characteristics, and identification strategy. Section 4 outlines the main results. Section 5 concludes.

## 2. Background discussion

The Youth Guarantee plan is subject to continual monitoring and evaluation to document the number and characteristics of the beneficiaries of the scheme as well as the costs-effectiveness of the measures taken in terms of employment of the beneficiaries. Immervoll and Scarpetta (2012) stress, indeed, that a well-designed policy strategy can contribute to better labor market outcomes minimizing the possible interferences on work incentives for beneficiaries.

On the effectiveness of active policies for the youth there is not a general consensus: Kluge *et al.* (2019) provide a meta-analysis on 113 evaluations showing that only slightly more than one on three evaluations found positive effect for youth programs. The analyses usually focus on specific action of YG programme such as the training activities or the services offered by Public Employment Service. Rinne *et al.* (2011) show, for instance, that vocational courses have positive impact on younger employment. Similar results are detected by Hardoy *et al.* (2018): training programs and employment incentives generally positively affect young people employment outcomes than internships. Moreover, also Bratti *et al.* (2018) provide evidence from the implementation of the Youth Guarantee initiative in Latvia. Focusing on vocational training program targeted at unemployed youths aged 15-29 who are not NEETs, they find little to no effect when these measures are not coupled with demand-driven interventions (e.g. tax rebates or firm-provided training). For the Italian case, several papers point to a positive and statistically significant effect of training courses on young people employment prospects (Duranti *et al.* 2018; Pastore and Pompili 2019), while Isfol *et al.* (2016) and Anpal (2019) contribute to this literature with a comprehensive evaluation for the YG implementation in Italy. Isfol *et al.* (2016) highlights a positive impact on the employment prospects of young people participating in active policies, more recently, Anpal (2019) confirms these results and provides evidence of more stable contracts for young people participating in Youth Guarantee measures, especially internship.

Few papers examine the effectiveness of active policies targeted to young people from the demand side. Alfonsi *et al.* (2020), for instance, compare the impact of vocational training for workers to the impact of wage subsidies to train workers on the employment. They suggest that the positive effect measured on the employment rate of treated workers is confirmed also looking at the firm-side and that this result is explained by a better match of these workers to more productive firms.

Our paper is related both to the literature on the evaluation of the impact of YG programme, and to the one analyzing the effectiveness and the impact of incentives on firm's hiring decisions. Blasco and Pertold-Gebicka (2013) argue that a firm's decision to hire is difficult and costly for many reasons. First, the frictions in the labor market make hiring more difficult, leading to a reduction in vacancies opened by firms (Pissarides 2000). Moreover, in presence of ex ante uncertainty about workers' ability and match quality, hiring firms are exposed to the risk of a mismatch, which is more costly when the employment protection legislation is stricter. Therefore, the establishment of incentives that reduce the cost of wages can represent a valid instrument to encourage hirings.

Theoretically, the employment effects of these incentives are well understood (Katz 1998). The empirical evidence, however, differs between programs, countries and time periods and is frequently plagued by data and estimation problems. Some studies, for example, highlight that private sector hiring subsidies can generally be more effective than other programmes such as training measures, or public works programs (Martina and Grubb 2001). Betcherman *et al.* (2004) point out that most evaluations of subsidies do not show positive impacts on post program employment or earnings. Other evaluations have demonstrated a positive employment effect although having little impact of firm's hiring decisions (European Employment Policy Observatory Review 2014). Sianesi (2008) demonstrates that the incentives for private sector firms have generally positive effects on employment of disadvantaged people. Others show that these incentives do better than other ALMPs in terms of post-program employability. In this regards, Neumark (2013) suggests that in US hiring subsidies are at least twice as effective in improving post-program employability as public job creation programs. Finally, focusing on Italy, Ciani and De Blasio (2015) show that only very few firms took advantage of the incentives. Sestito and Viviano (2018) analyse the reaction of firms to two policies introduced in the first part of 2015 by the Italian government, aimed at both reducing labour market dualism and favouring job creation. Their results suggest that both measures are effective.

## 2.1 The Youth Guarantee Employment programme

The Youth Guarantee programme is implemented through supportive measures at national, regional and local level, taking into account the following guidelines: i) **mapping** that is identifying target groups, available services, skills needs and young people at risk of becoming a NEET; ii) **outreach** through targeted information campaigns among young people and reaching out to NEETs; iii) **preparation** for better profiling to match needs and responses, counselling and guidance, and improving digital skills; iv) **offer** employment incentives, quality and equity, and post-placement support.

In Italy, the Youth Guarantee has been carried out since April 2014 and its implementation is managed by Regions through the Public Employment Service (PES) network. The participation consists of different steps. First, each young people must register online to show their interest in the program. Second, he/she receives an appointment at the PES office where he/she is interviewed and can

formally sign the Service Agreement, effectively becoming participants. Finally, some participants access active labour policies, e.g., specialized counselling, internships or vocational training. The *Decreto Direttoriale* n. 394 of 2 December 2016 establishes an employment incentive for young people enrolled in the Youth Guarantee programme. All employers, operating in the private sector, regardless of whether they are entrepreneurs or not, hiring new employees without being required, represent the target population of the incentive. A job-specific application must be submitted by firms to the National Social Security Institution (*Istituto Nazionale della Previdenza Sociale* - Inps). Therefore, the program, in addition to being targeted, it is also selective because each incentive must be approved by Inps.

The incentive concerns the hiring of young people aged between 16 and 29<sup>4</sup> registered to the Youth Guarantee that is young people who are: unemployed, or do not seek actively for a job, or are not available to start work; or both, not enrolled in education and training (NEET). If the youth is a minor, she/he must have fulfilled her/his right and duty to education and training. The incentive is paid as a social contribution break (*sgravio contributivo*) and it is due for all hires made from 1 January 2017 up to 31 December 2017 with permanent contract; apprenticeship contract (also seasonal if provided by the collective agreement), and fixed-term contract whose initial duration is equal to or greater than six months. The benefit is enjoyed by adjusting the social security contributions paid by the employer within the maximum limit of € 8.060 (€ 4.030 if the worker is hired under a fixed-term contract) to be used over 12 months starting from the hiring date. This kind of incentive cannot be cumulated with other incentives. In the case of a professionalizing apprenticeship, the benefit concerns the reduced contribution paid by the employer. In more details, for the years following the first, the employer will be able to take advantage of the contribution rates already provided for these types of relationships.

### 3. Data and identification strategy

#### 3.1 The linked Employer-Employee dataset

The empirical analysis uses an original dataset built linking three datasets deriving from different sources: *Comunicazioni Obbligatorie* (COB-SISCO), an administrative dataset provided by the Ministry of Labor and Social Policies (*Ministero del Lavoro e delle Politiche Sociali*), *Archivio Statistico delle Imprese Attive* (ASIA-Imprese), the archives of Italian firms provided by National Institute of Statistic (*Istituto Nazionale di Statistica* - Istat), and the sample survey *Rilevazione Imprese e Lavoro* (RIL) supplied by the National Institute for Public Policy Analysis (*Istituto nazionale per l'analisi delle politiche pubbliche* - Inapp).

The *Comunicazioni Obbligatorie* dataset tracks from 2009 all events related to a job position (hiring, contractual transformation – e.g. from a fixed-term to an open-ended arrangement –, firing, dismissal) for all individuals working in Italy as an employee or through apprenticeship, temporary agency work

<sup>4</sup> Through the YG, countries were committed to assisting young people under the age of 25 within four months of becoming unemployed or leaving education. Relative to this commitment, 11 countries, among which Italy, followed the EC's recommendation and targeted the under-25s, 15 countries extended the eligible group and implemented YG aimed at people under 30 years of age (Escudero and López Mourelo 2017).



arrangements, and para-subordinate collaborations<sup>5</sup>. Crucial to our objective, for each job relationship, the COB dataset records the fiscal code of the firm, allowing to merge a firm's features with the characteristics of each worker who had a job relationship with a firm in a given year. For each job relationship experienced by the individuals from 2009, the COB dataset records, in addition to several individual characteristics, the contractual arrangement (i.e. open-ended employment, fixed-term employment, apprenticeship, temporary agency work, para-subordinate collaboration), the part-time versus full-time dichotomy and the date of activation and termination of the relationship. This two last information allowing to compute the total number of workers hired and fired for each firm and year, distinguishing for age, gender, educational attainment and citizenship.

*Rilevazione Imprese e Lavoro* (RIL), a survey conducted periodically by Inapp on a large representative sample of partnerships and limited liability firms operating in the non-agricultural private sector. A subsample of the included firms followed over time, making the RIL dataset partially panel over the period under study<sup>6</sup>. The RIL dataset collects a rich set of information on management and the corporate governance, firms' productive characteristics and competitive behaviour, the internal labor market organization and the asset of industrial relations at workplace as well as workforce composition in terms of gender, age, education, contractual type, the amount of hiring and separations, and other dimensions of personnel policies. In spite the rich set of information resulting from RIL, the information about total amount of workforce employed in each firm derives from ASIA-*Imprese* the archive recording longitudinal information on firm's characteristics.

The database used in our analysis has been constructed starting from the fiscal codes (VAT number) of firms: the RIL 2010, 2015 and 2018 waves has been used to select a representative sample of firms to which we add information from COB and ASIA-*Imprese* archives. Once we developed this employer-employee linked database, we collapsed individual records by firms and year to compute for each firm and for each year (2010, 2015 and 2018) the total number of hirings distinguishing by age and selecting the group of younger than 30 years old, and the total amount of employment<sup>7</sup>. Moreover, what is worth to our scope the RIL survey contains two important questions that allow us to identify the hypothetical behavior of the firms that have hired in 2017 using at least one of a set of fiscal incentives (among these the Youth Guarantee scheme) if these incentives (the Youth Guarantee one) had not been implemented.

In particular, the first question is as follows: "In 2017 did you hire new employees using public incentives? 1. Yes; 2. No". To recover the counterfactual situation, the wording of the second one is the following: "In the absence of hiring incentives, your firm: 1. would have hired the same amount of people; 2. would have hired less people; 3. would not have hired".

The complex matching procedure of the various sources described allowed us to create an employer-employee longitudinal dataset that, once collapsed at the firm level, records information of hiring behaviour, the use of YG incentives as well as several firms, managerial and workplace characteristics. In particular, the main outcome variable of our study is the share of newly hired workers (with less

<sup>5</sup> In Italy, all occurrences concerning a job position must be electronically transmitted to the Regional agencies in charge of active labour market policies (and made accessible to the Italian social security institute, Inps).

<sup>6</sup> The RIL Survey sample is stratified by size, sector, geographical area and the legal form of firms. For more details on RIL questionnaire, sample design and methodological issues see: <http://www.inapp.org/it/ril>.

<sup>7</sup> We thank the *Servizio Statistico* Inapp and Michelangelo Filippi for having contributed to create the dataset.

than 30 years) over the total employment. This measure is an administrative measure because both the numerator and the denominator are collected from the two archives, respectively from COB and ASIA. As for control variables, we add information about i) management and the corporate governance of companies (manager education, information on family or non-family ownership and management of the firm), ii) workforce characteristics (occupation, gender, age, education and training) and iii) other firm characteristics (size, product and process innovation, exports).

Therefore, we estimate the following linear relationship:

$$Y_{i,t} = \beta_0 + \beta_1 \cdot YG_i + \beta_2 \cdot \text{year 2018} + \beta_3 \cdot YG_i \cdot \text{year 2018} + \gamma \cdot M_{i,t} + \delta \cdot W_{i,t} + \lambda \cdot F_{i,t} + \alpha_i + \varepsilon_{i,t} \quad [1]$$

where  $Y_{i,t}$  indicates alternatively i) - the share of newly hired under 30 years old and ii) - the share of separated under 30 for each  $i$  firm at year  $t$  [2010, 2015, 2018]. Our key explanatory variable,  $YG_i$  is a dummy indicator equal to 1 whether the firm hired used  $YG_i$  is a dummy equal to 1 whether the firm hired by using the incentive in 2017, 0 otherwise. As for other controls, the vector  $M_{i,t}$  includes managerial and corporate governance characteristics,  $W_{i,t}$  represents the workforce composition,  $F_{i,t}$  formalizes a rich set of firms' productive characteristics, geographical location and sectorial specialization. The complete set of the explanatory variables included in the analysis is reported in table A.1 (see the appendix), where a short description is also provided. The parameter  $\alpha_i$  represents firm time invariant unobserved heterogeneity while  $\varepsilon_{i,t}$  is the idiosyncratic error term.

As first step, we estimate the cross-sectional specification of equation [1] by imposing:  $t=2018$  and  $\beta_2 = \beta_3 = \alpha_i = 0$ . The standard OLS estimates of the effect of YG on young newly hired, measured by coefficient  $\beta_1$ , may be biased due to confounding factors related to firm's time invariant unobserved heterogeneity, self-selection into the policy intervention and/or other endogeneity issues. To minimize/overcome these problems we exploit the RIL information on the counterfactual scenario that allow us to develop the hypothetical prediction of what would have happened in the absence of the fiscal incentives and thus permits to control for potential OLS biases. Notice that, in this specification, we do not need to rely on sophisticated econometric analysis as we assume to know how firms would have behaved in the relevant counterfactual scenario. In more detail, we replace the YG dummy variable with the counterfactual one equals to one if firm is treated and 0 if it is a control. Thanks to the RIL question, indeed, we are able to distinguish two groups of firms according to their hypothetical behavior in the absence of the incentives. The treated firms are those whose behavior was affected by the presence of incentives: they would have hired less, or not hired at all, in their absence (answers (2) or (3) of the survey question). Following Leuven and Oosterbeek (2008), as control group we use two different definitions: the *control group I* is composed by firms that chose not to hire despite the availability of the incentives, by firms that have hired but without using the incentive, and by firms whose behavior was not affected by the incentive (answering (1) to the survey question). *Control group II* identifies only other hiring firms: those that did not used incentive and those whose behavior was not affected by the incentive. Notice that control group II is a subsample of control group I, thus is arguably a more suitable control group than the first one as it singles out all firms who were motivated to hire. Hence, it is more like the group of treated in terms of observed individual characteristics.

Since one may argue that this cross-sectional strategy is based on the truthfulness of the firms' answers to the questionnaire, as a second step, we perform a *Difference-in-Difference approach* to estimate the equation [1]. We rely on the three-period setting of the COB-ASIA-RIL longitudinal data

(2010, 2015, 2018) and on the circumstance that the policy change occurred in this interval (2017), that is an econometric specification for which  $t=2010, 2015, 2018$  and *a priori*  $\beta_2 \neq 0, \beta_3 \neq 0, \alpha_i \neq 0$ . In this framework the treated group consists in all firms declaring to have used YG incentives in 2017 (YG=1) while the control units are all firms that did not use incentive (YG=0) in 2017. Further, for both treated and control group we exploit (i) the existence of data for the pre- and post-policy change periods and (ii) the availability of a rich set of covariates that control for observable characteristics of the firms. Formally, the identification of the parameter  $\beta_3$  relies on subtracting the difference of means in control group between 2015 and 2018 from difference of means in treated group in the same period:

$$\beta_3 = (\bar{Y}_{i,2018,YG=1} - \bar{Y}_{i,2015,YG=1}) - (\bar{Y}_{i,2018,YG=0} - \bar{Y}_{i,2015,YG=0}) \quad [2]$$

with the only difference that in the *within estimator* case each term in equation [2] is the average of the deviations from firm-level means calculated over the three years ( $Y_{i,t} - \bar{Y}_i$ ). Hence we may use a *fixed effects model* where there are firms that get involved in the treatment (the YG incentive) at some point in time and others that do not. In this case, the *Diff-in-Diff* principle still holds, provided that the selection into the YG programme is only determined by the fixed effect  $\alpha_i$  and covariates ( $M_{i,t}, W_{i,t}$  and  $F_{i,t}$ ). Of course, the crucial assumption for the *Diff-in-Diff* estimate of  $\beta_3$  to be unbiased is the so-called Common Trend Assumption (CTA), which means that we should observe parallel trends in the outcome of treated and controls firms in absence of treatment. If CTA holds, the *Diff-in-Diff* estimator has the advantage, compared to the fixed effects estimator, of removing any common period effects that could influence the treated and control group in identical ways. A second crucial assumption underlying *Diff-in-Diff* strategy is that potential biases rely on selection on observables, in the sense that we assume that the set of covariates in equation [1] is rich enough to include all factors determining the self-selection of firms in using incentives. Indeed, adding proxies of managerial attitudes and capabilities to standard controls for firm's productive characteristics and workforce composition should make the selection on observables hypothesis less difficult to accept because, in recent literature, both management and corporate governance features are important sources of firms unobserved heterogeneity (Damiani *et al.* 2019; Bloom and Van Reenen 2007, 2011).

Given the specifications above, the common trend assumption is simply tested by augmenting equation [1] with a second interaction term (YG*i*-year\_2015). An estimated coefficient for this term resulting not significantly different from zero tells us that nothing was altering the difference between treated firms and control firms in the pre-treatment period.

As for sample selection, we consider firms with at least one employee. After imposing this selection criterion, deleting observations with missing values for variables used in the analysis and firms that in 2015 have used hiring incentives, our final sample is given by cross-sectional data (for 2018) of about 16,000 firms and a balanced panel of over 7,000 firms over the period 2010-2015-2018.

### 3.2 Descriptive statistics

Table 1 reports the descriptive statistics for the outcome variables (share of newly hired and the share of separated under 30) as well as the average incidence of firms using YG incentives – both for whole cross-sectional data and different subgroups.

The first column shows that the average share of hired under 30 years old is equals to 8.4%, this percentage is higher in the treated group – that is those firms declaring their hiring behavior was

affected by the YG incentive – and lower (7.4%) if we look at the control group. As for the share of separated under 30, it varies between 6.6% in the treated firms that used the YG incentives to 5% and 7% for control group I and II, respectively. Moreover, table 1 highlights that 21% of firms of our sample use at least a fiscal incentive to hire (apprenticeship, dual system, female employment etc.) while about of 8% is involved in the YG programme.

**Table 1.** Descriptive statistics. Mean values for outcomes and treatment variables

	Whole sample*	YG=1	YG=0	Treated group I=1	Control group I=0	Control group II=0
Share of hired<30	0.084	0.081	0.084	0.096	0.082	0.074
Share of separated	0.068	0.053	0.070	0.066	0.070	0.050
Ln (sales per empl)	11.85	11.93	11.84	11.74	11.84	12.01
Hire Incentives	0.210					
Youth Guarantee	0.073					
Youth Guarantee1	0.039					

Note: sampling weights applied. N of treat1=14139 N of treat2=1446 on the whole sample. N of obs associated with separation share is 14486.

Source: our elaborations on RIL-ASIA-COB data 2018

Turning to the explanatory variables, table A.2 in appendix highlights that the treated and no-treated firms differ along a number of characteristics, such as management and governance traits, workforce composition, industrial relations, and other distinctive firm characteristics and strategies (size, internalization, innovation, capital intensity, localization).

## 4. Main results

### 4.1. OLS estimates

Table 2 reports the OLS estimates for different cross-sectional specifications of the equation [1]. To begin with, column [1] of table 2 shows a positive association between the use of YG subsidy and the share of newly hired workers with less than 30 years old: + 1.4 percentage points. On the other hand, correlation does not imply causality and result in column [1] may be biased in the case – for instance – high performance firms select themselves into the policy intervention. Then we turn the attention to the counterfactual indicators that allow to distinguish different groups of firms according to their hypothetical behaviour in the absence of the incentives. In more details, the Counterfactual I is a dummy variable equals to 1 if firm claims that it used the incentive to hire and that, in the absence of it, it either would not have hired or would have done so but for a lower amount, while is equal to 0 if the firm has not hired, or it has hired but without using an incentive, or the hiring firm declares that its behaviour is not affected by the presence of incentive programme. In other words, the OLS estimate of the coefficient associated with Counterfactual I is supposed to be ‘cleaned’ by the increase in employment in firms that would have hired also in absence of the incentives. As for the variable Counterfactual II, it formalises a dichotomous indicator which is equal to 1 if firm claims that it used the YG hiring incentive to hire and that, in the absence of such a subsidy, it either would not have

hired or would have done so but for a lower amount, while assumes value 0 if the firm have hired but without incentives. The OLS estimates reported in column [2] suggests that the introduction of YG incentive has induced an increase of the share of newly hired under-30 years old by 1.6 percentage points – for that group of firms that declare that in absence of YG programme would not have hired (or hired less workers) – with respect to all other firms. Similar results are obtained if we restrict further the control groups: estimates associated with the variable Counterfactual II in column [3] indicates that YG incentive leads to an increase of the share of young hired by about 1.1 percentage points. Overall the estimates are quietly stable in magnitude and statistical significance for all the specifications of equation [1], suggesting that use of YG hiring incentive programme has a weak positive impact on the employment perspective of younger cohorts – in the short-run.

**Table 2.** OLS estimates. Dep var: share of newly hired under 30

	[1]	[2]	[3]
YG	0.014*** [0.004]		
Counterfactual I		0.016** [0.006]	
Counterfactual II			0.011* [0.007]
ln (n of employees)	-0.021*** [0.001]	-0.021*** [0.002]	-0.020*** [0.004]
Managment characteristics	Yes	Yes	Yes
Workforce characteristics	Yes	Yes	Yes
Firm's characteristics	Yes	Yes	Yes
Constant	0.056 [0.038]	0.057 [0.039]	0.088 [0.063]
N of Obs	16066	14140	1446
R2	0.247	0.245	0.242

Note: managerial characteristics include level of education, age and gender of entrepreneurs, family ownership, external management; workforce characteristics controls for the composition of occupation by education, age, professional status, gender, contractual arrangements, citizenship; firms' characteristics include ln (sales per employee), industry 4.0, R&D, firms' age, foreign markets, foreign trade agreement. All regressions controls for 2-digit sectors of activity and nuts 3 province fixed effects. Clustered standard errors in parentheses: \*statistical significance at 10%, \*\* at 5%, \*\*\* at 1%.

Source: our elaborations on RIL-ASIA-COB data 2018

To investigate the potential heterogeneous effects of YG programme across the Italian private sector, table 3 shows the cross sectional OLS estimates derived form a set of separate regressions for the subsample of firm operating in the Centre-Northern regions and of those in the Southern regions. As expected, results from column [1] to column [6] of table 3 make it clear that the positive effect of the YG incentives on the share of young newly hired is concentrated in the Centre-North: the OLS estimates range from 1.7 to 1 percentage points according to the econometric specification used. On the other hand, no significant evidence emerges for the Southern regions. This empirical picture suggests that YG scheme is at the risk of increasing both the geographical dualism and the inequality employment outcomes of younger.

**Tab 3.** OLS estimates. Dep var: share of newly hired under 30

	Centre-North			South		
	[1]	[2]	[3]	[4]	[5]	[6]
YG	0.014*** [0.004]			0.006 [0.013]		
Counterfactual I		0.017*** [0.006]			0.016 [0.013]	
Counterfactual II			0.009* [0.007]			0.013 [0.025]
ln (n of employees)	-0.020*** [0.002]	-0.021*** [0.002]	-0.019*** [0.004]	-0.026*** [0.003]	-0.024*** [0.004]	-0.020* [0.011]
Managment charact	Yes	Yes	Yes	Yes	Yes	Yes
Workforce charact	Yes	Yes	Yes	Yes	Yes	Yes
Firm's charact	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.070** [0.032]	0.077** [0.031]	0.052 [0.060]	0.026 [0.039]	0.000 [0.043]	0.344** [0.167]
N of Obs	11945	10595	1113	4121	3545	333
R2	0.252	0.248	0.254	0.248	0.251	0.279

Note: managerial characteristics include level of education, age and gender of entrepreneurs, family ownership, external management; workforce characteristics controls for the composition of occupation by education, age, professional status, gender, contractual arrangements, citizenship; firms' characteristics include ln (sales per employee), industry 4.0, R&D, firms' age, foreign markets, foreign trade agreement. All regressions controls for 2-digit sectors of activity and nuts 3 province fixed effects. Clustered standard errors in parentheses: \*statistical significance at 10%, \*\* at 5%, \*\*\* at 1%.

Source: our elaborations on RIL-ASIA-COB data 2018

In sum, tables 2 and 3 confirms that better job opportunities are concentrated in the Centre-Northern regions rather than in the South, where though there is the higher percentage of NEETs, and that the YG programme is most used by firms operating in the service sector (Isfol *et al.* 2016; Istat 2017).

#### 4.2 *Diff-in-Diff Fixed Effect estimates*

As already discussed, the cross-sectional estimates of the equation [1] did not rely on sophisticated econometric techniques, as we assume that we know how firms would have behaved in the relevant counterfactual scenario. In this case, one need to be strongly confident on the truthfulness of the firms' answers to the questionnaire. To deal this issue, we perform a *Diff-in-Diff* with fixed effect models of the equation [1], exploiting the three-period longitudinal component of the RIL-COB dataset<sup>8</sup>.

As for the whole economy, the estimates of the interaction term between the YG indicator and post treatment period 2018 (YG\*2018) reported in the first column of table 4 are coherent with previous

<sup>8</sup> It is worth to note that pooled OLS results may be misleading when the introduction of a set of explanatory variables is not sufficient to minimize potential omitted variable biases due to the time-invariant unobserved characteristics. One might address this issue with fixed effect estimates of equation [1]. However, using a within estimator for only three years does not guarantee sufficient variability in the data and consistent estimations. Instead, given that the descriptive statistics (see tables in appendix) suggest that firms adopting an incentive to hire after 2015 are different with respect to those that did not, a *Diff-in-Diff* with FE specification seems better suited than a simple FE model.

findings: the involvement in the Youth Guarantee programme entails an increase of the share of new hires by about 1.6 percentage points. Note that the validity of common trend assumption is confirmed by the non-significance of the estimated coefficient associated with the interaction between YG and the pre-treatment period 2015 (YG\*2015). In other words, controlling for confounding factors related to firms-time invariant unobserved heterogeneity and endogeneity issue, we observe that the positive impact associated with the incentive for young people enrolled on YG programme still holds (Rosholm 2008; Blasco and Pertold-Gebicka 2013; Gautier *et al.* 2018). Moreover, table 4 displays the *Diff-in-Diff* fixed effect estimates distinguished by macro-region, as done in the cross-sectional analysis. In line with previous cross-sectional findings, the positive employment impact of YG incentives is concentrated in the regions of Centre-North while no significant effect is found in Southern regions. In particular, the second column indicates that the YG incentives lead to an increase of the share of newly hired under 30 years old by 0.018 percentage points. Again, the common trend assumption for the Centre-North is verified by observing that the estimates associated with the interaction term YG\*2014 is not statistically significant.

**Table 4.** *Diff-in-Diff* fixed effect estimates. Dep var: share of newly hired under 30

	Whole sample	Centre-North regions	Southern regions
YG*2018	0.016* [0.009]	0.018** [0.008]	-0.032 [0.082]
YG*2015	0.008 [0.010]	0.013 [0.010]	-0.092 [0.067]
Year 2018	-0.017** [0.007]	-0.018*** [0.007]	-0.013 [0.018]
Year 2015	-0.022*** [0.005]	-0.022*** [0.005]	-0.035** [0.017]
Managment characteristics	Yes	Yes	Yes
Workforce characteristics	Yes	Yes	Yes
Firm's characteristics	Yes	Yes	Yes
Constant	0.142*** [0.049]	0.156*** [0.054]	0.543*** [0.132]
N of Obs	6091	4977	1114
R2	0.079	0.059	0.213

Note: managerial characteristics include level of education, age and gender of entrepreneurs, family ownership, external management; workforce characteristics controls for the composition of occupation by education, age, professional status, gender, contractual arrangements, citizenship; firms' characteristics include ln (sales per employee), industry 4.0, R&D, firms' age, foreign markets, foreign trade agreement. All regressions controls for 2-digit sectors of activity and 110 province fixed effects. Clustered standard errors in parentheses: \* statistical significance at 10%, \*\* at 5%, \*\*\* at 1%.

Source: our elaborations on RIL-ASIA-COB data 2018-2015-2010

### 4.3. Other outcomes: the share of separations

At this point we investigate whether the positive effect of the YG hiring incentive observed for newly hired under 30 was offset by a similar increase of the share of young workers that separate from the firms in which were employed for any reason: quits, lay-offs, expiration of the temporary contracts etc.).

This may happen for instance if YG subsidised positions replace no subsidised jobs. To analyse this concern, table 5 reports the OLS cross-sectional, and *Diff-in-Diff* fixed effect estimates of the equation [1] when the dependent variable is defined by the ratio between the number of young workers under 30 years old who leave the firm and the total number of employees in that firm. Note then that all the estimates displayed from column [1] to column [4] suggests that the YG incentive leads to an increase of the share of young workers that leave their workplace, even though these results are not statistically significant. Remembering the picture of the tables 2 and 3, one may argue then that the introduction of the YG incentive has had a positive (and weak) influence on evolution of the Italian labour market for younger cohorts.

**Table 5.** OLS and *Diff-in-Diff* estimates. Dep var: share of separations under 30

	[1]	[2]	[3]	[4]
YG programme	0.003 [0.003]			
Treatment I		0.006 [0.007]		
Treatment II			0.005 [0.007]	
YG* year 2018				0.011 [0.007]
YG* year 2015				0.009 [0.011]
Year 2018				-0.005 [0.008]
Year 2015				-0.016** [0.006]
ln(n of employee)	-0.026*** [0.002]	-0.027*** [0.002]	-0.012*** [0.004]	-0.026* [0.014]
Other controls	Yes	Yes	Yes	Yes
Constant	0.128** [0.061]	0.136** [0.063]	0.093 [0.063]	0.229*** [0.072]
Obs	16290	14463	1357	6210
R2	0.218	0.213	0.235	0.033

Note: managerial characteristics include level of education, age and gender of entrepreneurs, family ownership, external management; workforce characteristics controls for the composition of occupation by education, age, professional status, gender, contractual arrangements, citizenship; firms' characteristics include ln (sales per employee), industry 4.0, R&D, firms' age, foreign markets, foreign trade agreement. All regressions controls for 2-digit sectors of activity and nuts 3 province fixed effects. Clustered standard errors in parentheses: \* statistical significance at 10%, \*\* at 5%, \*\*\* at 1%.

Source: our elaborations on RIL-ASIA-COB data 2018-2015-2010

## 5. Conclusions

In this paper, we analyse the impact of firms' involvement in YG hiring incentive programme on the employment opportunities of young cohorts in Italian labour market. To begin with we have discussed the institutional context behind the introduction in December 2016 of an employment incentive concerning the hiring of young people aged between 16 and 29 enrolled in the Youth Guarantee programme. The incentive is paid as a social contribution break and it is due for all hires made from 1



January 2017 up to 31 December 2017 with permanent contract, apprenticeship contract (also seasonal if provided by the collective agreement) and fixed-term contract whose initial duration is equal to or greater than six months. Then, taking advantage of a unique employer-employee linked and applying a policy evaluation framework, we show that the use of the incentive to hire young people causes an increase of little more than one percentage point in the share of newly hired under-30 in the short run, and that this estimated impact is driven by firms operating in the Centre-Northern regions. As we also find that the YG incentive did not cause a significant increase of the share of under 30 who separated from the firms, one may argue that the programme have reached its main objective of promoting the employment opportunities of younger cohorts.

On the other hand, reading more in deep our empirical results allows us to note that the overall impact of YG has been relatively weak in magnitude and this circumstance induces some doubts on its efficiency from the point of view of public finance (Brunetti and Ricci 2020). Further the fact that the positive relationship between the use of YG incentive and firms' hirings is really driven by Centre-North regions supports the hypothesis that such an active policy may lead to widen geographical imbalance in Italian labor market. To put it differently, our paper defines a short run empirical picture that confirms the opportunity to design the active labor market policies in such a way to be complementary rather than substitutive to those industrial and structural policies aimed to favour the quality of the labor demand, the investment in new technologies and the productivity growth (Brunetti and Ricci 2021). In this perspective our analysis may also contribute to the current political and institutional debate on Recovery Plan.

Of course previous our findings should be interpreted with caution having been obtained in a short run framework – which did not allow to infer any robust results about the long run impact of the hiring incentives – and in a firm-level analytical perspective. They then encourage further research that will be useful to provide information for programming future phases of the Youth Guarantee – especially in a period characterized by a serious crisis due to the coronavirus pandemic that has negatively affect the employment prospects of younger cohorts. On this ground, we will devote future research.

## Appendix

**Table A.1** Explanatory variables definition and description

Variables	Description
<b>Management and corporate governance</b>	
Educational	three dummy variables that equals to 1 whether the educational level of the employers /managers who run the firm is, respectively: i) tertiary; ii) upper secondary; iii) lower secondary or no education (0 otherwise).
Age	three dummy variables that equals to 1 whether the age coorth to which the employer/managers who run the firm belong to is respectively: i) <35 years; ii) 34< years<55; iii) >54 years.
Female	dummy variable that equals to 1 if the manager/employer who run the firm is female, 0 otherwise.
Family owner	dummy variable that equals to 1 if the ownership of the firm is held by a family, 0 otherwise.
External managment	dummy variable that equals to 1 if firm is run by an external manager which has been recruited on the labor market, i.e outside dynastic ties of firms ownership, 0 otherwise.
<b>Workforce characteristics</b>	
Educational composition	three variables indicating the share of employees (on the firms' total number of employees) with: i) tertiary education; ii) upper secondary education; iii) lower secondary, primary or no education.
Age composition	three variables indicating the share of employees (on the firms' total number of employees) with: i) less than 35 years old; ii) between 34 and 50 years old; iii) more than 49 years old.
Professional composition	three variables indicating the share of employees (on the firms' total number of employees) who are: i) executives; ii) white collars; iii) blue collars.
Sh temporary	share of employees with fixed term contract (on the firms total number of employees).
Sh female	share of female employees (on the firms' total number of employees).
<b>Firms characteristics</b>	
Productivity	(log of) the total sales per employees. The amount of sales is derived from RIL and is deflated relying on sectoral (2-digit NACE) deflators of production prices.
Firms' size	(log of) the total number of employees.
Foreign trade	dummy variable that equals to 1 if firm operates (selling or buying products/services) on international trade markets, 0 otherwise.
Foreign trade agreement	dummy variable that equals to 1 if firm has signed a foreign trade agreement with other firms, 0 otherwise.
Multinational	dummy variable that equals to 1 if firm is a multinational, 0 otherwise.
R&D	dummy variable that equals to 1 if the firm has invested R&D activities, 0 otherwise.
Industry 4.0	dummy variable that equals to 1 if the firm has invested in alt last Industry 4.0 technologies over the period 2015-2017, 0 otherwise.
Firms' age	number of years since the firm' entry in the market, 0 otherwise.
Geographical localization	110 dummies indicators for each of the 110 nuts3 Italian provinces.
Sector of activity	14 dummies variables derived from 2 digit NACE classification: electricity, gas water distribution, food, textile, tobacco; chemistry, metallurgy mechanics and other manufacturing goods; construction; retail and wholesale, tourism, hotels and restaurants transportation; insurance and financial intermediation, information and communication; other business services; healthcare, educational and social services, others.

Source: RIL data

**Table A.2** Descriptive statistics for control variables

	Whole*		YG=1		YG=0		Treated=1		Control group I=0		Control group II=0	
	Mean	st dev	Mean	st dev	Mean	st dev	Mean	st dev	Mean	St dev	Mean	st dev
<b>Management char</b>												
Tertiary ed	0.32	0.47	0.38	0.48	0.32	0.47	0.31	0.46	0.32	0.47	0.38	0.48
Upper secondary ed	0.49	0.50	0.48	0.50	0.49	0.50	0.52	0.50	0.49	0.50	0.47	0.50
Lower secondary ed	0.19	0.39	0.15	0.35	0.19	0.39	0.17	0.37	0.19	0.39	0.15	0.36
Female	0.14	0.35	0.13	0.34	0.15	0.35	0.15	0.35	0.15	0.36	0.12	0.33
Age<54	0.35	0.48	0.35	0.48	0.35	0.48	0.34	0.47	0.35	0.48	0.36	0.48
34<age<55	0.22	0.42	0.24	0.43	0.22	0.41	0.26	0.44	0.22	0.41	0.23	0.42
Age<35	0.07	0.25	0.07	0.25	0.07	0.25	0.08	0.27	0.07	0.25	0.07	0.25
Dynastic manag	0.83	0.38	0.82	0.39	0.83	0.38	0.87	0.34	0.83	0.37	0.80	0.40
External manag	0.06	0.23	0.07	0.26	0.06	0.23	0.05	0.23	0.06	0.23	0.08	0.27
<b>Workforce char</b>												
Share of tertiary	0.15	0.23	0.18	0.23	0.15	0.23	0.16	0.23	0.15	0.22	0.19	0.23
Share of upper sec	0.48	0.30	0.50	0.26	0.48	0.30	0.48	0.29	0.48	0.30	0.50	0.26
Share of lower sec	0.37	0.32	0.32	0.29	0.37	0.32	0.36	0.32	0.37	0.33	0.31	0.28
Share of temporary	0.16	0.22	0.18	0.18	0.16	0.22	0.18	0.19	0.16	0.22	0.17	0.18
Share of immigr	0.05	0.12	0.05	0.11	0.05	0.12	0.05	0.12	0.05	0.12	0.05	0.10
Share of female	0.34	0.28	0.33	0.25	0.34	0.28	0.35	0.28	0.33	0.28	0.33	0.24
Share of older	0.27	0.22	0.24	0.17	0.28	0.22	0.25	0.20	0.27	0.22	0.24	0.17
Share of blue collar	0.60	0.33	0.57	0.32	0.60	0.34	0.63	0.32	0.60	0.34	0.54	0.32
<b>Firms char</b>												
Ln (n of employees)	3.29	1.44	4.09	1.39	3.22	1.43	3.62	1.49	3.19	1.41	4.10	1.40
N of vacancies	1.36	8.99	3.64	14.20	1.18	8.42	1.82	7.05	1.19	8.09	4.20	16.25
Foreign trade	0.34	0.48	0.50	0.50	0.33	0.47	0.36	0.48	0.33	0.47	0.53	0.50
Foreign trade agr.	0.18	0.38	0.28	0.45	0.17	0.38	0.19	0.39	0.17	0.38	0.30	0.46
Multinationals	0.05	0.22	0.06	0.25	0.05	0.22	0.03	0.18	0.05	0.22	0.07	0.26
Pension reform 2011	0.09	0.28	0.13	0.34	0.08	0.28	0.16	0.37	0.08	0.27	0.11	0.31
Irap tax break	0.05	0.22	0.09	0.28	0.05	0.21	0.10	0.30	0.04	0.21	0.08	0.27
Industry 4.0	0.45	0.50	0.61	0.49	0.44	0.50	0.49	0.50	0.44	0.50	0.63	0.48
R&D	0.16	0.37	0.28	0.45	0.15	0.36	0.20	0.40	0.15	0.35	0.30	0.46
Firms'age	27.10	17.01	28.07	18.25	27.02	16.91	25.60	17.11	27.21	17.01	28.72	18.31
N of obs	16,065		1,178		14,887		649		13,490		797	

Note: sampling weights applied. N of treat1=14139 N of treat2=1446 on the whole sample. N of obs associated with separation share is 14486.

Source: our elaborations on RIL-COB data 2018

## References

- Alfonsi L., Bandiera O., Bassi V., Burgess R., Rasul I., Sulaiman M., Vitali A. (2020), Tackling Youth Unemployment. Evidence from a Labour Market Experiment in Uganda, *Econometrica*, 88, n.6, pp.2369-2414
- Almeida R., Behrman J., Robalino D. (2012), *The right skills for the job? Rethinking training policies for workers*, Washington DC, World Bank <<https://bit.ly/3ghrD6j>>
- Anpal (2019), *Secondo Rapporto di valutazione della Garanzia Giovani e del programma operativo nazionale Iniziativa occupazione giovani*, Roma, Anpal <<https://bit.ly/3uW7APc>>
- Betcherman G., Olivas K., Dar A. (2004), *Impacts of active labor market programs. New evidence from evaluations with particular attention to developing and transition countries*, Social Protection discussion paper series n.0402, Washington DC, World Bank
- Blasco S., Pertold-Gebicka B. (2013), Employment policies, hiring practices and firm performance, *Labour Economics*, 25, special issue, pp.12-24
- Bloom N., Van Reenen J. (2011), Human Resource Management and Productivity, in Card D., Ashenfelter O. (eds.), *Handbook of Labor Economics Vol. 4B*, Amsterdam, Elsevier, pp.1697-1767
- Bloom N., Van Reenen J. (2007), Measuring and explaining management practices across firms and countries, *The Quarterly Journal of Economics*, 122, n.4, pp.1351-1408
- Bördös K., Csillag M., Scharle A. (2015), *What works in wage subsidies for young people. A review of issues, theory, policies and evidence*, EMPLOYMENT Working Paper n.199, Geneva, ILO <<https://bit.ly/3ghK4YD>>
- Bratti M., Ghirelli C., Havari E., Santangelo G. (2018), *Vocational training and labour market outcomes. Evidence from Youth Guarantee in Latvia*, IZA Discussion Paper n.11870, Bonn, IZA <<https://bit.ly/2QDtWpx>>
- Brown A.J.G., Koettl J. (2015), Active labor market programs. Employment gain or fiscal drain?, *IZA Journal of Labor Economics*, 4, n.12, pp.1-36 <<https://bit.ly/3dqGfhV>>
- Brunetti I., Ricci A. (2021), *Incentivi, imprese e lavoratori. La necessità di una prospettiva*, Menabò di Etica ed Economia n.145 <<https://bit.ly/3vo7d04>>
- Brunetti I., Ricci A. (2020), *Le Politiche per le imprese e il lavoro. Il ruolo degli incentivi*, Menabò di Etica ed Economia n.139 <<https://bit.ly/2R2Sf0k>>
- Centra M., Gualtieri V. (2017), Incentivi al lavoro permanente e contratto a tutele crescenti. Una stima dell'impatto sulle nuove assunzioni nel 2015, *Sinapsi*, VII, n.1, pp.71-93
- Ciani E., De Blasio G. (2015), Getting Stable. An Evaluation of the Incentives for Permanent Contracts in Italy, *IZA Journal of European Labor Studies*, 4, n.6, pp.1-29
- Damiani M., Pompei F., Ricci A. (2019), Opting out, collective contracts and labour flexibility. Firm' level evidence for the Italian case, *British Journal of Industrial Relations*, 58, n.3, pp.558-586
- Duranti S., Maitino M.L., Patacchini V., Rampichini C., Sciclone N. (2018), What Training for the Unemployed? An Impact Evaluation for Targeting Training Courses, *Politica economica - Journal of Economic Policy*, n.3, pp.241-272
- Escudero V., López Moureló E. (2017), *The European Youth Guarantee. A systematic review of its implementation across countries*, Research Department Working Paper n.21, Geneva, ILO <<https://bit.ly/3mVFeS8>>

- European Commission (2018), *Employment and entrepreneurship under the Youth Guarantee. Experience from the ground*, Brussels, European Commission
- European Commission (2016), *The Youth Guarantee and Youth Employment Initiative three years on. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions*, Strasbourg, COM(2016) 646 final <<https://bit.ly/3tvWH6a>>
- European Employment Policy Observatory Review (2014), *Stimulating job demand. The design of effective hiring subsidies in Europe 2014*, Luxembourg, Publications Office of the European Union
- European Employment Policy Observatory Review (2011), *Youth employment measures 2010*, Luxembourg, Publications Office of the European Union
- Gautier E., Tsybakov A., Rose C. (2018), *High-dimensional instrumental variables regression and confidence sets*, Ithaca NY, Cornell University <<https://bit.ly/3dul4KT>>
- Hardoy I., Røed K., von Simson K., Zhang T. (2018), Initiatives to combat the labour market exclusion of youth in northern Europe. A meta-analysis, in Malo M.A., Mínguez A.M. (eds.), *European Youth Labour Markets. Problems and Policies*, Cham, Springer, pp.235-251
- Immervoll H., Scarpetta S. (2012), Activation and employment support policies in OECD countries. An overview of current approaches, *IZA Journal of Labor Policy*, 1, article n.9, pp.1-20 <<https://bit.ly/3v6MzBt>>
- Isfol, Ciampi S., Lion C., Stocco P. (a cura di) (2016), *Primo rapporto di valutazione del programma operativo nazionale Iniziativa occupazione giovani al 31 dicembre 2015. Previsto dal Regolamento (Ue) n. 1304, art. 19, comma 6*, Roma, Isfol
- Istat (2017), *Il mercato del lavoro. Verso una lettura integrata*, Roma, Istat <<https://bit.ly/3ghfpea>>
- Kluge J., Puerto S., Robalino D., Romero J.M., Rother F., Stöterau J., Weidenkaff F., Witte M. (2019), Do Youth Employment programs Improve Labor Market Outcomes? A Systematic Review, *World Development*, 114, pp.237-253
- Leuven E., Oosterbeek H. (2008), An Alternative Approach to Estimate the Wage Returns to Private-Sector Training, *Journal of Applied Econometrics*, 23, n.4, pp.423-434
- Martin J.P., Grubb D. (2001), What works and for whom. A review of OECD countries' experiences with active labour market policies, *Swedish Economic Policy Review*, 8, n.2, pp.9-56
- Neumark D. (2013), Spurring job creation in response to severe recessions. Reconsidering hiring credits, *Journal of Policy Analysis and Management*, 32, n.1, pp.142-171
- Orszag J.M., Snower D.J. (2003), Designing employment subsidies, *Labor Economics*, 10, n.5, pp.557-572
- Pastore F., Pompili M. (2019), *Assessing the Impact of Off- and On-The-Job Training on Employment Outcomes. A Counterfactual Evaluation of the PIPOL Program*, IZA Discussion Paper n.12074, Bonn, IZA <<https://bit.ly/3txb3U1>>
- Pissarides C. (2000), *Equilibrium unemployment theory*, Cambridge, MIT Press
- Quintini G., Martin J.P., Martin S. (2007), *The Changing Nature of the School-to-Work Transition Process in OECD Countries*, IZA Discussion Papers n.2582, Bonn, IZA <<https://bit.ly/3drFHsi>>
- Rinne U., Schneider M., Uhlendorff A. (2011), Do the Skilled and Prime-Aged Unemployed Benefit More from Training? Effect Heterogeneity of Public Training Programmes in Germany, *Applied Economics*, 43, n.25, pp.3465-3494

- Rosholm M. (2008), *Experimental Evidence on the Nature of the Danish Employment Miracle*, IZA Discussion Paper n.3620, Bonn, IZA <<https://bit.ly/3dvrgTZ>>
- Sestito P., Viviano E. (2018), Firing costs and firm hiring. Evidence from an Italian reform, *Economic Policy*, 33, n.93, pp.101-130
- Sianesi B. (2008), Differential effects of active labour market programs for the unemployed, *Labour Economics*, 15, n.3, pp.370-399

