Iceland Liechtenstein Norway grants

Youth employment partnerSHIP

Counterfactual impact evaluation of hiring incentives and EPL reduction on youth employment in Italy

MASSIMILIANO DEIDDA, MARCO CENTRA, VALENTINA GUALTIERI, SERGIO SCICCHITANO (INAPP)

CLAUDIA VILLOSIO, FRANCESCO TRENTINI (COLLEGIO CARLO ALBERTO)

Iceland Liechtenstein Norway grants

Youth employment partnerSHIP

Counterfactual impact evaluation of hiring incentives and EPL reduction on youth employment in Italy

ABSTRACT

This study uses a counterfactual approach based on administrative registry data to evaluate the impact on youth employment of two selected demand-side public policies implemented in Italy in 2015: a rebate of social security costs (Law 190/2014, art. 1, c. 118) and a reduction in the costs to employers of firing employees (D. lgs n. 23/2015 under Law 183/2014).

Our findings confirm the results of previous evaluation studies available in the literature and show that the introduction of the two policies had a positive impact on the share of new hires with an open-ended contract over the total employment contracts registered in 2015. Our estimates also reveal that the impact of the regulatory changes on the share of the workforce hired with an open-ended contract was greater for individuals aged 15-34 (an increase of +12%) than for the entire population (+9.9%). Finally, the positive impact is found to be smaller for eligible young women (+7.6%) than for eligible young men (+ 14.5%).

Massimiliano Deidda, Marco Centra, Valentina Gualtieri, Sergio Scicchitano (INAPP)

Claudia Villosio, Francesco Trentini (Collegio Carlo Alberto)

IMPLEMENTED BY:

The „Youth employment partnerSHIP" project is funded by Iceland, Liechtenstein and Norway through the EEA and Norway Grants Fund for Youth Employment.

Index

1. Introduction

The high youth unemployment rate is a structural phenomenon that has characterised the Italian economy since the early 1970s. At that time, highly restrictive employment protection legislation (EPL) and low levels of educational attainment were considered the main drivers of the high unemployment rates in Italy. Demographic change – which has been accompanied by institutional changes in the pension system on the one hand, and longer participation in the educational system and postponed entry into the labour market among young people on the other – provides us with clues that we can use to analyse the question of why young people in Italy have long had lower labour market activity rates than their older counterparts.

Italy lags behind other European countries with respect to many dimensions of human capital investment. Tertiary educational attainment levels in the population aged 25-64 are among the lowest in Europe, even though these levels have been improving over time, generally in favour of young Italian women (see Appendix 3: Tables and figures).

Among young people in Italy, the school-to-work transition process has long been more extended than it is in most other countries (Caroleo and Pastore 2015, Pastore 2016, 2019). This has been the case even during periods of economic recovery, thus preventing the structural problem of long-term youth unemployment from being resolved (Pastore and Zimmermann 2019). Moreover, in Italy, many young people enter the job market with a high school diploma only, and the dropout rate is high (Aina et al., 2013, 2015, 2019). It has been shown that in Italy, there are many "delayed graduations and/or university dropouts, which are two sides of the same coin or two stages of the same decision" (Aina et al. 2019, p.5). The length of time it takes to complete tertiary education may also be a significant determinant of vertical overeducation in Italy (Aina and Pastore, 2012, Caroleo and Pastore, 2018). Compared to their female counterparts, men in Italy spend more time, on average, in education, and specifically in post-graduate university courses (see Appendix 2).

However, since 1997, Italy has undergone a number of labour market reforms aimed at introducing increasing flexibility (Treu Package [Law 196/1997], Biagi's Law [Law 30/2003], Monti-Fornero Law [Law 92/2012] and Jobs Act [Law 183/2014]). The economic cycle and the labour market reforms also affected levels of youth participation in the labour market during the last decades (Deidda M., 2011). In addition to these legislative innovations, policies have been put in place to support employment. Designed as a strategy to help the country emerge from the Great Recession, hiring incentives (in the form of social security cost rebates) were implemented. The aim of this intervention was to help the economy recover and to promote general

employability by supporting labour market participation. In particular, in 2015, a financial incentive for firms to hire workers (both to hire new employees and to convert fixed-term contracts into open-ended contracts) was introduced as part of the Financial Stability Law 2015 (Law 190/2014). A few months later, the Jobs Act (Law 183/2014), via the Legislative Decree n. 23, 4 March 2015, introduced the "graded-security contract" (*contratto a tutele crescenti*). Thus, since March 2015, all newly signed open-ended employment contracts allow for no reinstatement in cases of dismissal declared unlawful by a court, except in cases of discriminatory dismissal.

This study aims to evaluate the impact of economic incentives for hiring young workers in open-ended jobs, both by providing social security costs rebates and by reducing the costs of firing employees with open-ended contracts. A pre-post counterfactual approach using a difference-in-differences model is adopted. The analyses are conducted based on elementary data on hiring collected by the Italian Ministry of Labour and Social Policy: the SISCO registry (Sistema Informativo Statistico delle Comunicazioni Obbligatorie).

The paper is organised as follows. Section 2 provides a description of the institutional context of the reforms, with details concerning the graded-security contract reform and the hiring incentives. Section 3 reviews the literature on the policies under scrutiny. Section 4 describes the administrative data sources and the sample characteristics. Section 5 explains the empirical strategy. Section 6 outlines the descriptive statistics, while Section 7 discusses the main results of the counterfactual evaluation. Section 8 provides concluding remarks and recommendations based on the findings of the study.

2. Legislative and institutional context

In this section, we give a detailed account of the two policies jointly under evaluation in this study: namely, the hiring incentives introduced by the "Financial Stability Law 2015" (Law 190/2014) and the new graded-security contract introduced by the Legislative Decree n23, (according to Law 183/2014 "the Jobs Act").

The former policy, summarised in Table 1, is a universal scheme of hiring incentives. It was implemented by means of a full rebate of social contributions for all open-ended (permanent) employment contracts signed in the time window 1 January 2015 - 31 December 2015. It covered a maximum of €8060 per year per worker[1], for a period of

[1] The maximum amount corresponded to the contribution for a full-time, open-ended employment contract, and was scaled down proportionally for short-time arrangements.

up to three years[2]. To be eligible for the rebate, the employment contract should be awarded to a worker who had not had an open-ended employment contract during the previous six months[3]. The recipients of the incentives are private employers, with public administration and agriculture sector employers being excluded.

Table 1 Characteristics of hiring incentives, Law 190/2014

Type of measure	Normative sources	Final funding (mln €)	Recipient	Target of the policy	Measure	Duration
Hiring incentives 2015 Social security rebates for new hires with graded-security contracts	Law 190/2014 art.1 cc. 118-124 INPS Circ. n. 17/2015 and n. 178/2015; Msg. n. 1144/2015	2015: 2,233.7 2016: 6,359.7 2017: 5,415.8 2018: 2,703.8 Total: 16,703	All employers, including associations and public enterprises, but excluding public administration.	All open-ended employment contracts, (part-time and full-time) issued in the time window 01.01.2015 – 31.12.2015. **Eligibility:** Without open-ended employment contract[4] for at least 6 months.	100% of the social security contribution, for a maximum of €8060 per year per worker with normal hours, scaled proportionally to the actual contract hours.	36 months. During maternity leave, the rebate is suspended.

Sources: (INPS, 2019) (Ministry of Labour, ISTAT, INPS, INAIL, ANPAL , 2019, p. 51-52), with additions by the authors.

[2] It is worth noting that other subsidies were implemented in the 2015 time period, namely, the experimental "Bonus Giovannini" (Law Decree 76/2013) and the "Youth Guarantee" (Directorial Decree of the Ministry of Labour and Social Policies, 8 August 2014). Both subsidies were made available to young people aged 18-29, but they were minor in terms of funding (€37.7 and €17.2 million, respectively) and coverage, as the former intervention affected 16,908 contracts (Ministry of Labour and Social Policies et al. (2019). In 2016, an analogous intervention was put in place (Law 208/2015), with the main differences being that the amount of the rebate was lowered to a maximum of 40% of the total social security costs, and the duration was extended to 24 months.

[3] In order to prevent opportunistic behaviour, a clause that the worker should not have been fired in the time window between the announcement of the policy and the date it went into effect – i.e., the period between 1 October 2014 and 31 December 2014 – was also added.

[4] Non-eligibility applies to apprenticeship, open-ended domestic work contracts, and open-ended agency contracts. Intermittent contracts are eligible, despite being open-ended employment contracts, because they represent an improvement in terms of the stability of the work relationship.

The latter policy reformed open-ended employment contracts and fixed-term contracts[5]. First, it introduced a new type of open-ended employment contract. The policy sought to reduce uncertainty about the costs of unfair dismissals by providing graded dismissal costs for employers in the event of "non-discriminatory" layoffs[6] ruled as illegitimate by the courts, and removed the requirement that the worker be reinstated. Second, the policy revoked the former legal threshold based on the proportions of employees with fixed-term and open-ended contracts for each "firm unit" and limited the maximum duration of a short-term contract to 36 months. The changes were targeted at firms with at least 15 employees, and greatly reduced their firing costs. This reform[7] resulted in the establishment of a graded-security system that aimed at equalising the hiring and firing costs of employees with fixed-term and open-ended employment contracts.

[5] The reform also affected the conditions for using vouchers, which are monetary instruments issued by the Italian Institute for Social Protection that can be used by employers to pay employees, while avoiding the "administrative burden" associated with short-time employment contracts.

6 The "Workers' Statute", is the name given to Law No. 300 of 20 May 20 1970, which provides "rules on the protection of the freedom and dignity of workers and of trade union freedom and union activity in the workplace, and rules on the public employment service". The mechanism for reinstatement after a dismissal was overturned by Article 18, by the Legislative Decree, 4 March, n. 23, issued under Law 183/2014 (the so-called "Jobs Act"), which went into effect on 7 March 2015.

[7] While they constitute a coherent *unicum*, the *Jobs Act* needs to be formally separated from the Decree Law 34/2014, which went into effect in May 2014, and abolished the legal provision on the reasons for issuing temporary employment contracts, which had been strictly limited to cases in which a temporary substitute for a worker was needed (maternity, illnesses), or there was a temporary need to increase production. Indeed, a few changes concerning vouchers (extended to all industries, including the public administration) and fixed-term contracts (extended typologies) had already been introduced by the Law 92/2012.

The most recent amendment to the *Jobs Act* is the Law 96/2018, which limited the number of renewals of short-term contracts to a maximum of 24 months, and required that an economic reason for its issuance be given that was regulated by law. In addition, according to a decision of the Constitutional Court of 26 September 2018, compensation in cases of invalid layoffs for open-ended employment contracts was declared unconstitutional due to the proportionality-to-tenure feature.

3. Related literature

The combined effects of these two policies have been evaluated by several studies in recent years. Sestito and Viviano (2018) analysed the effects of the policies in the Veneto Region (Northern East of Italy). The authors attempted to disentangle the effects of the two interventions by taking into account the differences in the timing of the introduction of the measures (1 January 2015 for the hiring incentives and 7 March 2015 for the new graded-security contract). By means of a diff-in-diffs model based on two cut-offs (pre-post and by firm size), they found that the two policies were successful in reducing the dualism in the Italian labour market between the younger and older generations, and in stimulating the labour demand. According to the results of the analysis, the main driver of the recovery was the hiring incentive scheme, which was responsible for 5/6 of the doubling of the monthly conversion rate of employment contracts from fixed- to open-term, and for 20% of the gross open-ended hires (compared to the 8% attributable to the graded-security reform). The graded-security reform affected firms' willingness to hire individuals with an open-ended employment contract directly, and without screening. A national-level study conducted by Centra and Gualtieri (2017) found that, compared to the counterfactual, the two measures jointly resulted in a 10.5% increase in the number of activations of open-ended contracts. Another study by Cirillo, Fana, and Guarascio (2017) found that monetary incentives were the main drivers of the open-ended employment contract dynamics, which led to conversions of temporary employment contracts into open-ended contracts, with a large share of these contracts being for part-time jobs. The numbers of new open-ended jobs increased in the low-skilled and low-tech service sectors, while the opposite trend was observed in the manufacturing sector, particularly in the Northern regions. However, the diffusion of vouchers and temporary jobs increased among the younger cohorts in the same time period. The abovementioned evaluations covered only the first year after the reform, and thus could not consider the effectiveness of the long-term stabilisation incentives, which was the main focus of the policy.

In particular, it is central to understand the joint effects on the younger cohorts of the introduction of lower-cost stabilisation and flexible contracts, as this group was among those most affected by the Great Recession. A recent study by Ardito, Berton, and Pacelli (2019) provided an analysis for another Northern Italian region (Piedmont), and over a longer time horizon, as it covered the whole period the contracts were in effect; i.e., through the end of 2017. The study found that small firms (i.e., firms with fewer than 15 employees) reacted more to the reduction in social security costs. However, the results also showed that large firms reacted less consistently to the hiring incentives, and generally did so only when the incentives could be combined with lower firing costs.

This was likely because the large firms were still relying on longer probationary periods, usually formalised through temporary employment contracts, and then increased their use of both temporary and open-ended contracts after the reduction in firing costs was introduced. Moreover, the benefits of the policies were unevenly distributed by citizenship, with Italian workers gaining more than foreign workers. This was also found to be the case for workers with different skill levels, with the policies benefiting individuals with low skills more than individuals with general skills. Meanwhile, no gender effects were found. The findings of the paper supported some of the provisional results provided in the first joint report by the Ministry of Labour and Social Policies et al. (2019), which underlined that small firms and younger people have been the main beneficiaries of the hiring incentives. Among the questions that have yet to be answered is whether the younger cohorts have gained more than their older counterparts from the incentives and the reform of the dismissal regime. This question is the focus of our research.

All the studies presented above examined the eligible population, as a comprehensive evaluation of the effects of the measures on the targeted population is still not possible. The Italian National Security Institute (INPS) has provided some descriptive statistics that give us some insight into the actual coverage of the policies (2019, p. 90-97). The total number of work relationships that were the target of the measure was 1,509,126, which represents 60% of the total number of open-ended employment contract activations. The figures collected by the INPS indicate that in terms of composition, 73.6% of the subsidised permanent contracts were new contracts, while 26.4% were conversions from temporary employment contracts. The report also found that the measure was used by 561,974 enterprises, or between 29% and 40% of the total in the 2015-2018 period; and that the total cost of implementing the programme was €16,703 million. According to the INPS report, there is no strong evidence that the rebate made the open-ended employment contracts more stable. However, the findings indicated that the rebate increased the survival rate of the contracts, and, indeed, that the rate was positively related to the amount of the rebate: i.e., the survival rate of the subsidised contracts in 2015 was found to be 54% higher than that of all the other contracts in the same period. In terms of the firm dimension, larger firms were shown to have higher rates of survival for subsidised contracts than smaller firms, with both categories of firms having higher survival rates for subsidised than for non-subsidised contracts. The comparison with the previous year (2014) indicated that even for individuals with the same eligibility as those targeted by the measure, the survival rate was higher in 2015. Overall, the increase was found to be smaller in 2016, the period in which the rebate was lowered to 40% under the new Financial Stability Law, 208/2015. Another finding of the INPS report is that there was a spike in terminations of contracts reaching 36 months of maturity, which seems to suggest that a fraction of the open-ended employment

contracts were, in practice, temporary contracts that were maintained only as long as the incentive was in place.

4. Data

This policy evaluation has been conducted thanks to the availability in Italy of a large statistical registry based on administrative data. The registry, *Sistema Informativo Statistico delle Comunicazioni Obbligatorie* (SISCO) organises the collection of all the notices that firms are compelled to send to the public authority when an activation, extension, conversion, or termination of an employment contract takes place.

The SISCO elementary data, collected in real time, are longitudinal records covering the universe of the employment relationships related to individuals since 2008. SISCO is based on the compulsory notices integrated system (*Comunicazioni obbligatorie*, CO) that started operating in 2008. It is managed by the Ministry of Labour and Social Policies, which coordinates the regional agencies in charge of the local maintenance and deployment of the system. It includes the entire population of Italian workers who flow into and out of formal employment (including the "Contratto a tutele Crescenti, see Introduction), as well as internal mobility.

The elementary data used in this study are a sample of more than 1.9 million records that refer to the total population of employment contracts started in the 2014-2015 period.

5. Empirical strategy/methodology

The identification strategy used to estimate the impact of the two policies (joint) is based on a diff-in-diffs model (Card & Krueger 1994; Wooldrigde 2010), which compares the new employment contracts initiated between 1 January 2015 and 31 of December 2015 with the contracts registered the previous year for two groups of individuals (eligible and non-eligible).

Figure 1 Details of the policies under evaluation

Policy	Jointly evaluated: 1) Lowered firing costs for workers with an open-ended contract (graded- security contract). 2) Incentives for hiring workers with a new, open-ended contract and for converting fixed-term to open-ended positions.
Eligibility criteria	Persons who had not had an open-ended contract in the six months preceding their hiring.
Duration	1) Permanently changes the regulation on dismissals. 2) 36 months of hiring subsidies/incentives.
Type of measure	1) Reform of regulation on dismissals. 2) 36 months of a 100% rebate of non-wage labour costs.
Data	SISCO (statistical system of online mandatory communication). SISCO is a public administrative registry that has elementary information on hires, conversions and terminations.
Sample	Employment contracts registered in 2014-2015.
Identification Strategy	DiD, with age -classes specific effect estimation and parametric correction for sample selection.
Outcome	Share of new hires with an open-ended contract over the total employment contracts registered in 2015.

The two groups are defined by means of one of the eligibility criterion: i.e., the eligible group is composed by employment contracts of individuals hired during the 2014-2015 period, and who had not been employed with an open-ended contract within the previous six months; while the non-eligible group is composed by employment contracts of individuals hired during the 2014-2015 period and who had been employed with an open-ended contract in the previous six months (before the beginning of the new contract).

Although the data collected in the SISCO registry are real-time and longitudinal records covering the universe of the employment relationships related to individuals, in this study, a cross-sectional sample is used to compare the employment contracts of

individuals (eligible and control group), as the outcomes of the two groups follow a steady trend. Our outcome variable is the type of the employment contract by duration: open-ended vs. fixed-term.

Therefore, the outcome variable Y is a dummy, with two possible values: Y=1 for an open-ended employment contract, and Y=0 for a fixed-term employment contract. The average of the outcome variable, E(y), is the share of open-ended employment contracts over the total employment contracts, and it can also be interpreted as "the employers' propensity to hire with open-ended employment contracts".

According to the "Rubin's Model" (Rubin D.B. 1974), the outcome can assume two different values for each group: actual and potential; but since the potential one is not observable, we need to estimate it. The pre-post difference between the two averages for the treated group of after and before the treatment is biased by the outcome variable maturation. If we consider the expected values of the outcome variable (Y) before (t-1) and after (t+1) the treatment for the treated group (T=1) and the control group (T=0), then the first difference, shown in the second part of the following equation, represents the average treatment effect on the treated (ATT), while the second difference describes the outcome maturation.

$$E(Y_{t+1}^{1}|\,T=1) - E(Y_{t-1}^{0}|\,T=1) =$$

$$= [E(Y_{t+1}^{1}|\,T=1) - E(Y_{t+1}^{0}|\,T=1)] + [E(Y_{t+1}^{0}|\,T=1) - E(Y_{t-1}^{0}|\,T=1)]$$

Since the expected value of the outcome of the treated if they were not exposed to the treatment cannot be observed at t+1, we estimate such a value on a group of "similar" individuals not exposed to the treatment (control group) by mean of a diff-in-diffs model. Therefore, under the common trend assumption, we have that:

$$[E(Y_{t+1}^{0}|\,T=1) - E(Y_{t-1}^{0}|\,T=1)] = [E(Y_{t+1}^{0}|\,T=0) - E(Y_{t-1}^{0}|\,T=0)]$$

where the last part of the equation is observable.

We can define the ATT as follows:

$$ATT = [E(Y_{t+1}^{1}|\,T=1) - E(Y_{t+1}^{0}|\,T=1)] =$$

$$= [E(Y_{t+1}^{1}|\,T=1) - E(Y_{t-1}^{0}|\,T=1)] - [E(Y_{t+1}^{0}|\,T=0) - E(Y_{t-1}^{0}|\,T=0)]$$

Consequently, we can estimate the impact of a causal variable as the difference between the average value of the outcome within the treated group, and the average value of the outcome within the control groups who have not received the treatment, before and after the treatment.

The common trend assumption (between the treated and the control group) means that there is no interaction between the control group's units and the group of units under treatment (i.e., stable unit treatment value assumption; SUTVA): namely, the outcomes (actual and potential), measured or estimated on a unit, are independent of the treatment of the other units considered in the model (Cox, DR, 1958, "Planning of experiment").

If this assumption is not true, it is not possible to assume that the dynamics of the outcome variable observed for the control group approximates the maturation that the group of eligible candidates would have had in the absence of treatment.

Essentially, in the Italian case, under the SUTVA, we assume that the outcome of the control group units is not affected by the regulatory changes or by the outcomes of the treated group units. According with this assumption, the hiring of an eligible worker with an open-ended employment contract does not affect the possibility of hiring a non-eligible worker.

We suppose, however, that in our case study, the assumption is not sufficiently robust: actually, it is likely that some employers may have preferred to hire a worker eligible for hiring incentives rather than a non-eligible worker due to the changed cost-opportunity ratio, and that this behaviour may have influenced the value of the outcome variable measured on the control group in the year of treatment. Therefore, we cannot exclude the possibility that the control group was not conditioned by the treatment itself. Thus, the availability of incentives for the hiring of eligible individuals with an open-ended contract may have had an impact in the opposite direction on the control group, generating a crowding-out effect (also referred to as a “displacement effect”) on non-eligible individuals. In this case, an underestimation of the maturation would result in an overestimation of the impact.

Actually, the descriptive statistics highlight a consistent discontinuity in 2015 in the time series of the outcome variable that refer to the control group: namely that there was a reduction in the share of open-ended employment contracts, probably due to the crowding-out effect caused by the regulatory changes (see Chapter 6.1. Descriptive statistics p. 22).

Consequently, in order to reduce the assumed underestimation of the maturation on the control group's outcome due to the violation of the SUTVA, we apply a correction to the outcome variable of the control group in the 2015 data.

Using the data available for 2014 for each unit of the control group, we estimate the value that the outcome variable would have had in 2015 in the absence of the regulatory changes. We apply a logistic model to regress for 2014 the outcome variable on the units of the control group with respect to the characteristics of the individuals and the profile of the employment relationship (the covariates). The parameters resulting from the logistic model are then applied to the 2015 data (on the control group). By doing so, the theoretical value of the outcome variable (i.e., in the absence of regulatory changes) for each unit of the control group in 2015 is obtained. The theoretical values obtained for 2015 on the control group are then used for the estimation of the diff-in-diffs model. It is important to highlight that point because our data source does not report direct information on the subsidies, and allows us to identify only the eligible or non-eligible individuals. Thus, the impact evaluation is on the joint effect of the two policies on the eligible group (Intention To Treat, ITT, effect). The main characteristics of the statistical model used for the analysis are described below.

Outcome variable: Y, 1 = open-ended employment contract, 0 = fixed-term employment contract.

Treatment variable: T=1 employment contracts of individuals hired during the 2014-2015 period, and who had not been employed with an open-ended contract (apprenticeship contracts included) within the previous six months; and T=0 employment contracts of individuals hired during the 2014-2015 period, and who had been employed within six months before the beginning of the new contract (apprenticeship contracts included), and were therefore not eligible for the incentives.

Period: P=0, 2014; P=1, 2015.

Other covariates (X) that were measured at the time of the hiring include: sex; age; highest level of education (ISCED); citizenship; region of residence; occupation; type of contract (part-time or full-time); economic sector of the hiring firm (NACE); and the percentage growth rate of quarterly added value per economic sector (NACE), referring to the quarter following the quarter in which the individual was hired.

The impact of the two policies is estimated using the ordinary least squares estimator, OLS. The OLS model can be defined as:

$$y = \alpha + \beta T + \gamma P + \delta TP + \bar{\lambda}\bar{X} + \bar{\xi}T\bar{X} + \bar{\vartheta}P\bar{X} + \varepsilon \quad (1)$$

Equation (1) is equivalent to the following classic expression:

$$\Delta y = y_1 - y_0 = \gamma + \delta T + \bar{\vartheta}\bar{X} + \epsilon \quad (2)$$

From the (1) we obtain:

$$[if\ P = 0] => y_0 = \alpha + \beta T + \bar{\lambda}\bar{X} + \bar{\xi}T\bar{X} + \varepsilon$$

$$[if\ P = 1] => y_1 = \alpha + \beta T + \gamma + \delta T + \bar{\lambda}\bar{X} + \bar{\xi}T\bar{X} + \bar{\vartheta}\bar{X} + \varepsilon$$

then:

$$\Delta y = y_1 - y_0 = \alpha + \beta T + \gamma + \delta T + \bar{\lambda}\bar{X} + \bar{\xi}T\bar{X} + \bar{\vartheta}\bar{X} - \alpha - \beta T - \bar{\lambda}\bar{X} - \bar{\xi}T\bar{X}$$
$$= \gamma + \delta T + \bar{\vartheta}\bar{X} + \varepsilon$$

In both the expression (1) and expression (2), the parameter $\boldsymbol{\delta}$ is the ITT effect:

$$\boldsymbol{ITT = \delta}$$

The above model is estimated on the entire population of hiring employment contracts. Therefore, in order to assess the impact of the regulatory change on people aged 15-34 in 2015, the model includes an age class covariate (six classes). In other words, to estimate the impact of the regulatory change on the younger generation, we estimate any different effect on the eligible individuals by age class as a component of the effect on the eligible individuals as a whole.

Therefore, the OLS model is specified as follows:

$$y = \alpha + [\beta T + \gamma P + \delta TP] + \left[\bar{\lambda}\bar{X} + \bar{\xi}T\bar{X} + \bar{\vartheta}P\bar{X}\right] + \tau TPX_{age} + \varepsilon \quad (2)$$

where: $\tau TPX_{age} = \sum_{k=1}^{6} \tau_k TPX_{age,k}$

Given the (2), as shown above, for each of the six age classes:

$$\boldsymbol{ITT_k = (\delta + \tau_k),\quad k=1, \ldots, 6}$$

The added share of open-ended employment contracts among eligible people aged 15-34 in 2015 is obtained as the sum of two coefficients estimated by the model. In other words, the impact of the *change in the* regulation on the eligible young people in 2015 is estimated by adding to $\boldsymbol{\delta}$ the parameter $\boldsymbol{\tau}$, which refers to the 15-34 age class.

A similar model has been adopted for estimating any different effects on the eligible individuals, by age class and sex, as a specific component of the effect on the eligible individuals as a whole:

$$y = \alpha + [\beta T + \gamma P + \delta TP] + \left[\bar{\lambda}\bar{X} + \bar{\xi}T\bar{X} + \bar{\vartheta}P\bar{X}\right] + \tau TPX_{age\_sex} + \varepsilon \quad (3)$$

where:

$$\tau TPX_{age\_sex} = \sum_{z=1}^{12} \tau_z TPX_{age\_sex,z}$$

Given the (3), as shown above, for each of the 12 categories (age classes nested by sex):

$$\boldsymbol{ITT_z = (\delta + \tau_z),} \quad \text{z=}\mathbf{1}\text{, ..., }\mathbf{12}$$

6. Descriptive results

As reported in the literature, the main statistical labour market indicators display a stylized pattern in which the employment levels of young people deteriorate more quickly during economic recessions and grow at a pace similar to that of the general population during economic recoveries. As it is shown in the Figure 2, this was not the case during 2015, the time period when the policies were producing their effects on the Italian labour market. However, for both groups (younger and older), the number of newly signed employment contracts increased sharply during 2015 and the rate of growth of hires with a new open-ended contract was faster among young people aged 15-34 than among older people. The main findings from the analysis of the time series from 2012 to 2018 for the trends in the rate of growth of hires with a new open-ended employment contract – seasonally adjusted and processed by INAPP – were quite similar for the population over age 35 and for the population aged 15-34.

Figure 2 Growth rate of new hires with open-ended employment contract: aged 15-34 vs over age 35

Source: Ministry of Labour and Social Policies (SISCO), data seasonally adjusted and processed by INAPP.

In line with one of the eligibility criteria of the two policies under evaluation, the eligible individuals were those who had not been employed with an open-end contract in the six months before the new contract began.

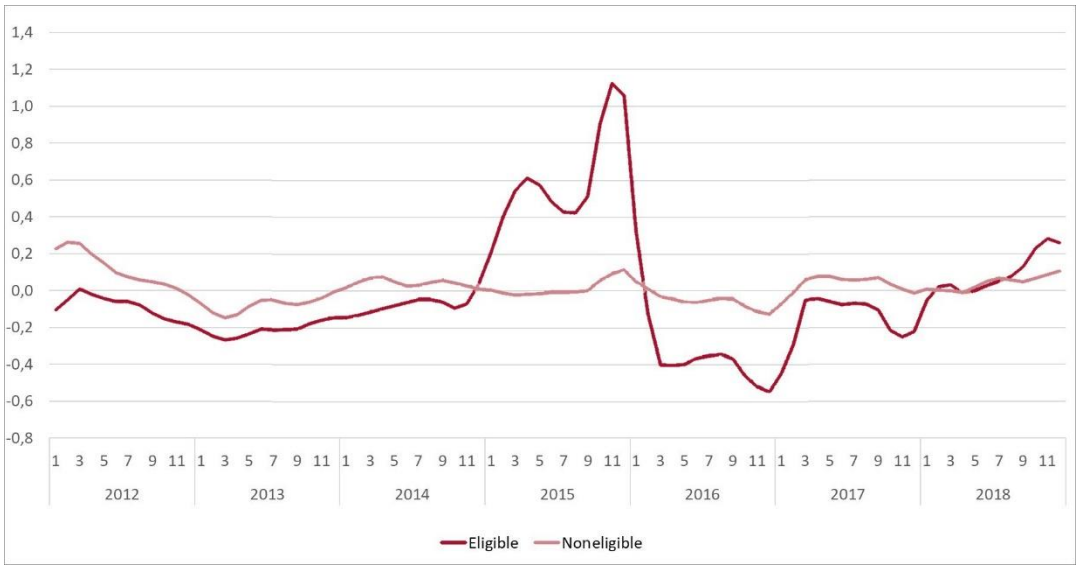
The time series from 2012 to 2018 of the growth rates among eligible and non-eligible young people aged 15-34 (Figure 3) show that the trends in the two groups differed: among those who were eligible, there was a sharp increase in 2015 in the number of hires with a newly signed open-ended employment contract; while, among those who

were not eligible, the number of hires with a newly signed open-ended employment contract did not differ from that in the other periods.

As we reported above, the availability of incentives for hiring eligible individuals with an open-ended contract may have had an impact in 2015, generating a crowding-out effect on the non-eligible individuals. The descriptive statistics actually highlight a discontinuity in 2015 in the time series of the outcome variable that refers to the control group, showing a reduction in the share of non-eligible individuals with an open-ended employment contract.

Figure 3 also shows a "double peaked" trend, in which the second peak is adjacent to the last part of the year 2015. Further studies might be able to disentangle the "announcement effect" in late December 2015. At that time, it was announced that new incentives that would be less generous and shorter in duration than the previous incentives were being introduced: i.e., that rebates of 40% of social contributions would be available for 24 months (law 28th of December 2015, n. 208, "Legge di Stabilità 2016").

Figure 3 Growth rate of new hires with open-ended employment contract: eligible vs. non-eligible (aged 15-34)



Source: Ministry of Labour and Social Policies (SISCO), data seasonally adjusted and processed by INAPP.

The share of open-ended contracts over the total eligible hires (the outcome variable) increased by 9% between 2014 and 2015. The growth rate was low among the

population over age 45, low-educated workers, and the foreign population. The growth rate was highest for part-time workers (see Table 2).

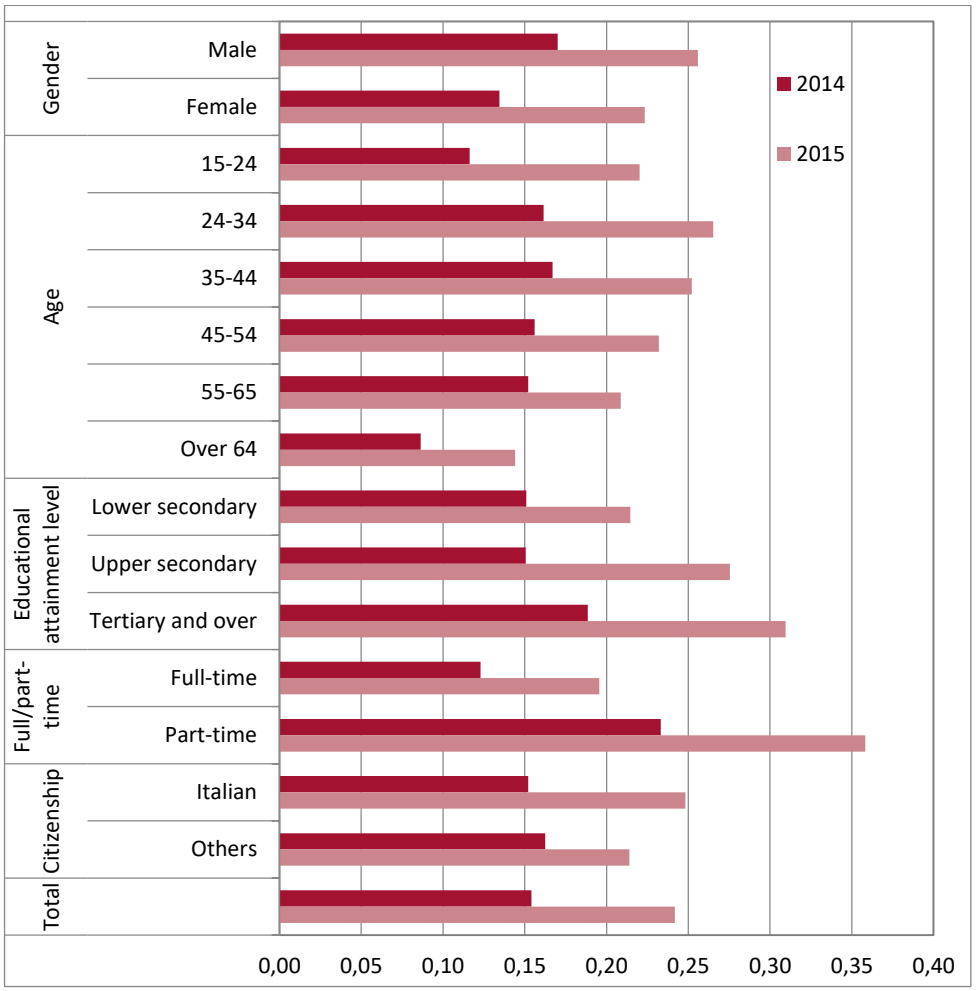
The outcome variable growth rates for the non-eligible individuals systematically decreased during 2015. We can assume that reduction of the share of open-ended employment contracts among non-eligible individuals was probably due to the crowding-out effect caused by eligible individuals benefiting from the incentives introduced in 2015.

Table 2 Details of the outcome distribution by sex, education, work schedule, and nationality (Italy)

		2014				2015				Differences 2015-2014			
		E(y)			Total hires	E(y)			Total hires	E(y)			Total hires
		Non eligible	Eligible	Total		Non eligible	Eligible	Total		Non eligible	Eligible	Total	
sex	male	0.57	0.17	0.21	3,520,142	0.50	0.26	0.28	4,096,251	-0.07	0.09	0.07	576,109
	female	0.55	0.13	0.17	2,761,215	0.50	0.22	0.25	3,057,808	-0.05	0.09	0.08	296,593
age	15-24	0.39	0.12	0.14	826,009	0.35	0.22	0.23	949,290	-0.04	0.10	0.09	123,281
	25-34	0.50	0.16	0.20	1,766,009	0.46	0.27	0.29	1,990,014	-0.04	0.10	0.09	224,005
	35-44	0.61	0.17	0.21	1,735,327	0.53	0.25	0.28	1,953,101	-0.08	0.09	0.07	217,774
	45-54	0.63	0.16	0.20	1,337,731	0.55	0.23	0.26	1,529,576	-0.09	0.08	0.06	191,845
	55-64	0.69	0.15	0.20	544,293	0.60	0.21	0.24	646,378	-0.10	0.06	0.04	102,085
	Over 64	0.72	0.09	0.11	71,988	0.59	0.14	0.17	85,700	-0.13	0.06	0.05	13,712
Educational attainment	Lower secondary	0.60	0.15	0.20	4,012,028	0.53	0.21	0.25	4,388,595	-0.07	0.06	0.05	376,567
	Upper secondary	0.45	0.15	0.17	1,743,047	0.38	0.28	0.28	2,105,461	-0.06	0.12	0.11	362,414
	Tertiary and over	0.58	0.19	0.22	526,281	0.58	0.31	0.33	660,002	-0.01	0.12	0.11	133,721
Part /full time	Full-time	0.53	0.12	0.16	4,429,986	0.46	0.20	0.22	5,045,568	-0.07	0.07	0.06	615,582
	Part-time	0.62	0.23	0.28	1,851,371	0.56	0.36	0.39	2,108,490	-0.06	0.13	0.10	257,119
Nationality	Italian	0.53	0.15	0.19	4,975,392	0.46	0.25	0.27	5,718,280	-0.07	0.10	0.08	742,889
	others	0.64	0.16	0.23	1,305,965	0.61	0.21	0.27	1,435,778	-0.03	0.05	0.04	129,813
Total		0.56	0.15	0.19	6,281,357	0,50	0.24	0.27	7,154,058	-0,06	0.09	0.07	872,701

Source: Ministry of Labour and Social Policies (SISCO), data seasonally adjusted and processed by INAPP.

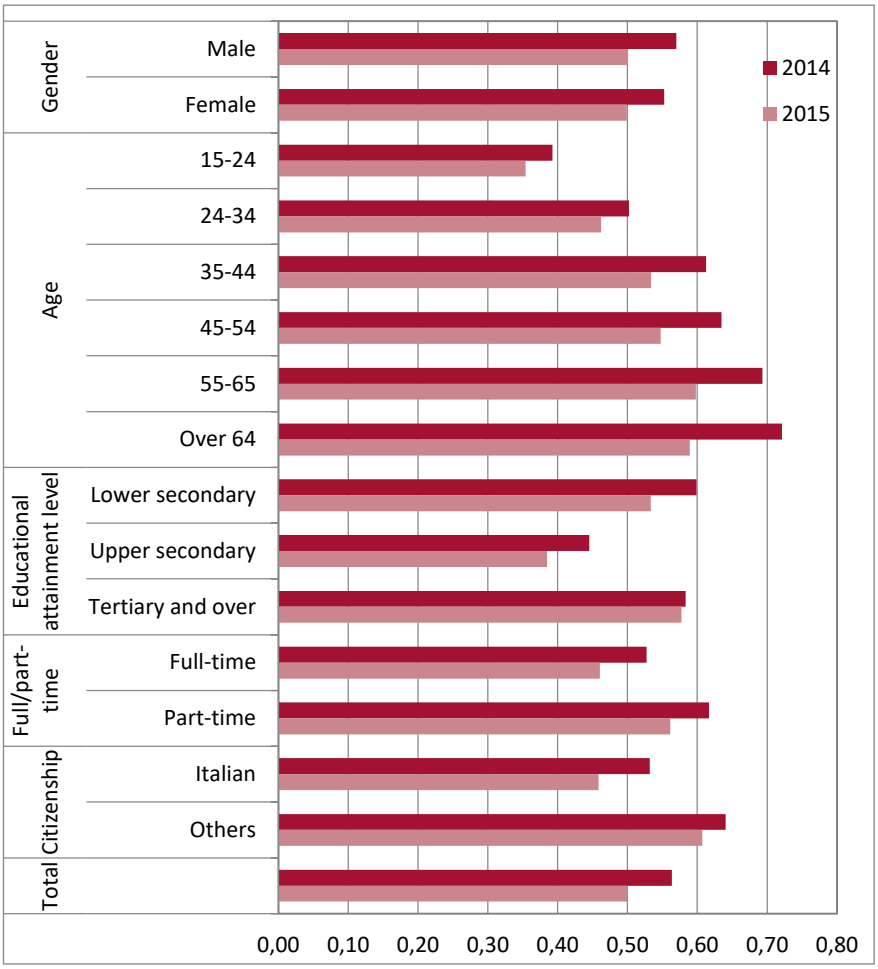
Figure 4 Eligible for a new employment contract: average outcome variable, 2014 and 2015



Source: Ministry of Labour and Social Policies (SISCO), data seasonally adjusted and processed by INAPP.

The share of open-ended employment contracts among eligible individuals, observed in 2014 and 2015, distributed by sex, age, educational attainment, work schedule, and nationality, is shown in Figure 4. The growth rate of the share of the open-ended employment contracts was higher among men than women, among younger than older people, and among the more educated than the less educated.

Figure 5 Non-eligible for a new employment contract: average outcome variable, 2014 and



2015

Source: Ministry of Labour and Social Policies (SISCO), data seasonally adjusted and processed by INAPP.

The share of open-ended employment contracts among non-eligible individuals, observed in 2014 and 2015, distributed by sex, age, educational attainment, work schedule, and nationality, is shown in Figure 5. The structure of the growth rate pattern of the average outcome highlighted by figures appears to be quite different between eligible and non-eligible individuals.

7. Impact evaluation results

This study estimates the joint impact of both a universal programme that introduced the reform of graded-security employment contracts (Legislative Decree 23/2015 under Law 183/2014) and the hiring incentives scheme enacted under the Financial Stability Law (Law 190/2014).

First, we investigate which groups were hired more frequently before and after the regulatory changes. Second, we consider how we should interpret the negative correlation found among the individuals of the control group between the number of hires with an open-ended contract and the incentives. Finally, our empirical question is as follows: "What impact did the regulatory changes have on the increase in the share of open-ended employment contracts among people 15-34 years old in the 2015 period?"

As we noted in Section 5, our first step was carried out in order to estimate the theoretical value of the outcome variable of non-eligible individuals in the absence of regulatory changes (*ceteris paribus*). This correction in the outcome variable observed for the control group in 2015 is needed to respect the SUTVA requirement.

Given our findings, it appears that the independence of the outcomes (actual and potential), measured or estimated on a unit, from the treatment of the other units considered in the model in 2015, is a weak assumption.

The reduction in the share of open-ended employment contracts among non-eligible individuals is likely due to the *crowding-out effect* caused by the eligible individuals benefiting from the incentives introduced in 2015. Employers may have preferred to hire a worker who was eligible for hiring incentives rather than a non-eligible worker due to the changed cost-opportunity ratio. This behaviour may have influenced the value of the outcome variable measured on the control group in the year of treatment.

Assuming this is the case, we tackle the underestimation of the maturation of the control group's outcome due to the violation of the SUTVA. This leads to an overestimation of the counterfactual value of the outcome estimated on the eligible group.

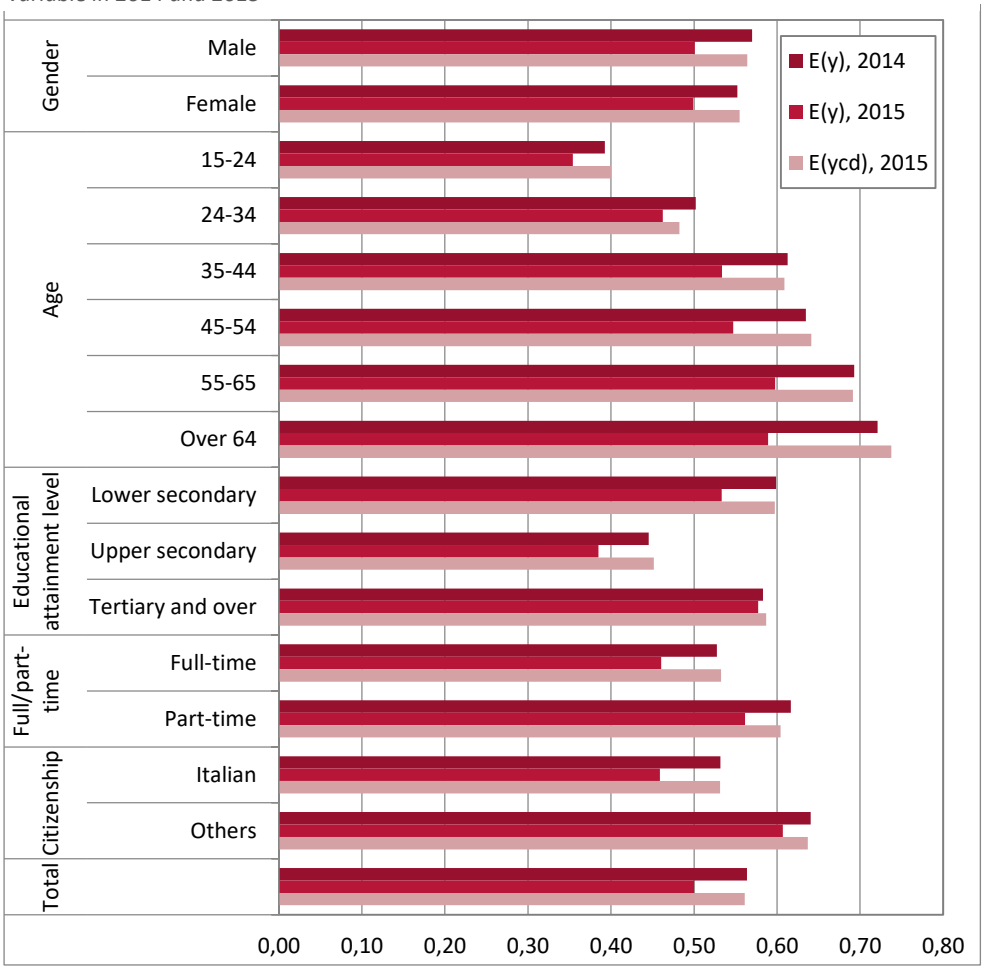
In order to reduce this difference between the two groups, the average outcome of the control group (non-eligible) in 2015 has been corrected by

estimating the theoretical value that it would have had in the absence of the treatment (namely, the incentives)[8].

The estimated theoretical value confirms the assumption of the risk of an underestimation of the average outcome variable for the individuals in the control group in 2015. The corrected value of the average outcome in 2015 is in line with the value observed in 2014. Therefore, we are able to confirm the assumption that there was a *crowding-out effect,* with eligible contracts displacing non-eligible contracts.

Figure 6 and Table 3 show the average values of the outcome variable after correction E(ycd), and those of the observed outcome E(y) in 2014 and 2015, distributed by demographic and labour characteristics.

Figure 6 Average observed - E(y) - and theoretical - E(ycd) - value of the Control group's outcome variable in 2014 and 2015



[8] See Appendix 2 for methodological details.

Source: Ministry of Labour and Social Policies (SISCO), data seasonally adjusted and processed by INAPP.

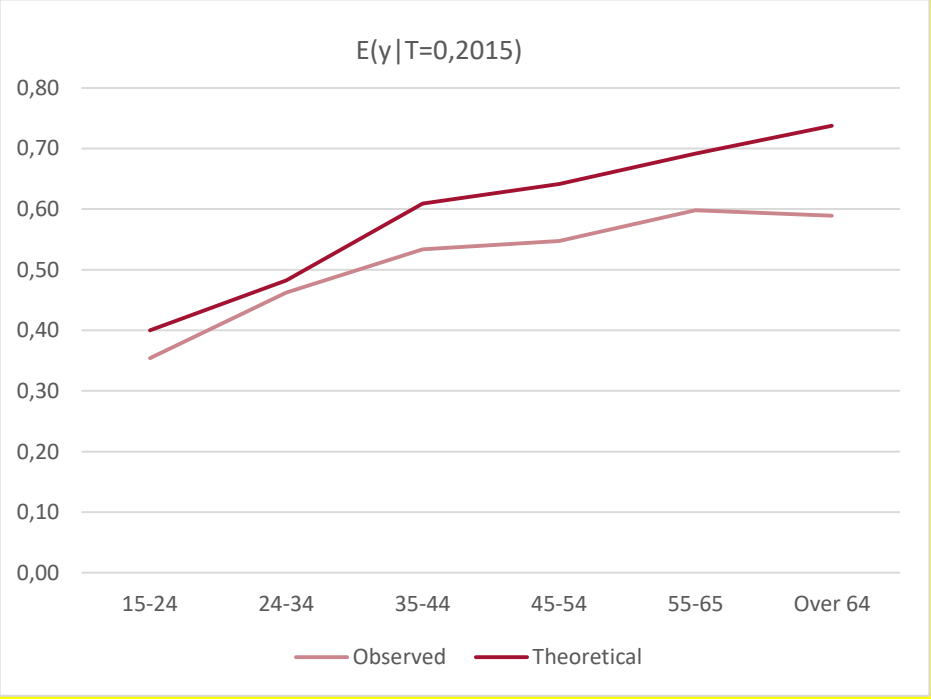
Table 3 Average observed - E(y) - and theoretical - E(ycd) - value of the control group's outcome variable in 2014 and 2015

		2014		2015		
		E(y)	Total hires	E(y)	E(ycd)	Total hires
sex	male	0.57	394,006	0.50	0,56	461,533
	female	0.55	219,310	0.50	0,56	254,588
age	15-24	0.39	68,658	0.35	0,40	76,566
	25-34	0.50	195,244	0.46	0,48	223,300
	35-44	0.61	177,996	0.53	0,61	208,505
	45-54	0.63	123,011	0.55	0,64	149,506
	55-64	0.69	45,192	0.60	0,69	54,155
	Over 64	0.72	3,216	0.59	0,74	4,088
Educational attainment	Lower secondary	0.60	437,075	0.53	0,60	486,982
	Secondary	0.45	136,294	0.38	0,45	174,914
	Tertiary and over	0.58	39,948	0.58	0,59	54,225
Part-/Full-Time	Full time	0.53	364,254	0.46	0,53	433,755
	Part-time	0.62	249,063	0.56	0,60	282,366
Nationality	Italian	0.53	433,085	0.46	0,53	515,420
	Other	0.64	180,231	0.61	0,64	200,701
Total		0.56	613.316	0.50	0.56	716,121

Source: Ministry of Labour and Social Policies (SISCO), data seasonally adjusted and processed by INAPP.

Focusing on the control group, as shown in Figure 7, the results of the correction process reveal that the *crowding-out* effect is heterogeneous among individuals by age class: the correction of the outcome was greater among the older than the younger people, suggesting that the *crowding-out effect* was less pronounced for young people.

Figure 7 Control group: average of the outcome in 2015 (with vs. without correction)

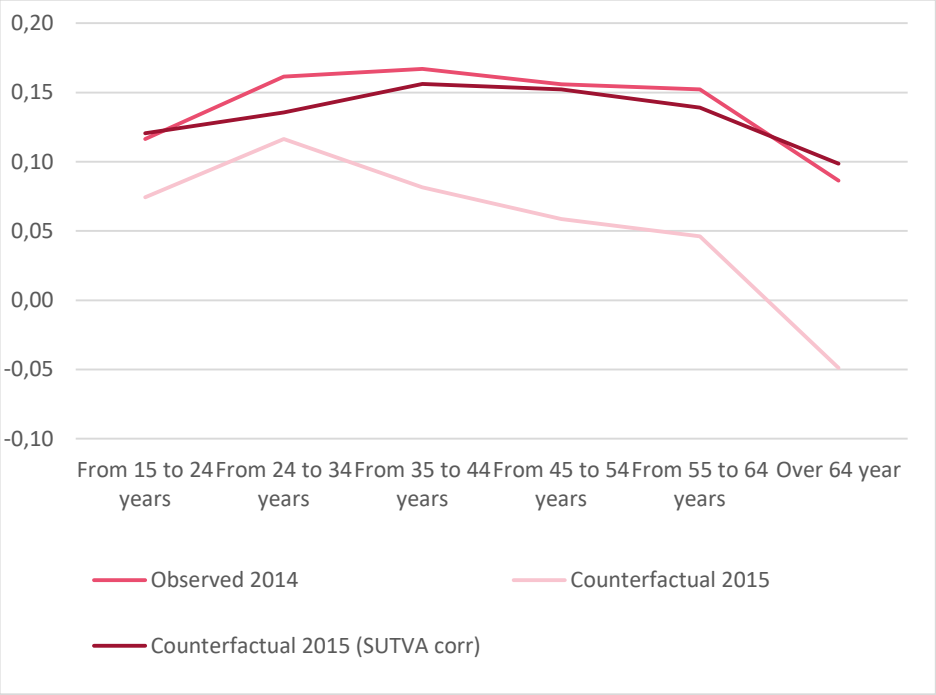


Source: Ministry of Labour and Social Policies (SISCO), data processed by INAPP.

In order to validate the robustness of the SUTVA violation correction for the control group's outcomes, we estimate a non-parametric *diff-in-diffs* model by using the theoretical values of the outcome obtained for 2015 on the control group and the observed values in 2014 to obtain the corresponding counterfactual values for the eligible contracts in 2015.

Figure 8 shows the outcome variable in 2014 for the eligible group by age class, as well as the counterfactual values (with and without correction) in 2015 by age class. We find that the values of the counterfactual without correction are far from the values of the outcome variable observed among the eligible contracts in 2014, with the counterfactual values after the correction being much closer to the corresponding observed values in 2014.

Figure 8 Treatment group: average outcome in 2014 and estimated counterfactual values in 2015 (with vs. without correction)



Source: Ministry of Labour and Social Policies (SISCO), data processed by INAPP.

In the following pages, we show the results achieved by estimating a parametric *diff-in-diffs* model. The outcome variable used to estimate the impact of the regulatory changes is the variable obtained after the correction.

The *diff-in-diffs* model estimates a positive impact of the regulatory change on the share of open-ended employment contracts over the total employment contracts registered in 2015. The impact of the regulatory changes is found to decrease by age: the estimates show that the simultaneous impact of both the hiring incentives and the new employment regulations was greater on young people aged 15-34 than on the population as a whole, on average[9].

Table 4 refers to the treatment group, and shows the values (the share and the absolute value) of the employment contracts by age classes and types of contract by comparing the values observed in 2014 and 2015 and the ITT values estimated through the *diff-in-diffs* model.

[9] The full results of the model are shown in Appendix 4.

The estimated impact of the two policies on the outcome variable in the age class 15-34 is 12.0%. Among young people in the treatment group, 25.0% of hires with a new employment contract were open-ended contracts. Thus, in this age class, 47.8% of hires with a new, open-ended contract are attributable to the policy measures.

Referring to the total population, the estimated impact of the two policies on the outcome variable is 9.9%. The share of hires with a new open-ended employment contract over the total is 24.2%. Thus, in this age class, 41.0% of hires with a new open-ended contracts are due to the two policy measures.

The ITT is the increased incidence of hiring of young workers with an open-ended employment contract caused by the presence of both the hiring incentives (Law 190/2014, art. 1, c. 118) and employers' expectations of reduced firing costs following the implementation of the new contractual arrangements (D. lgs n. 23/2015).

Table 4 Outcome variable distribution on treatment group by periods

			Type of employment contract (y)					
			Fixed-term		Open-ended		Total	
			%	contract	% (outcome)	contract	%	contract
Observed	2015	15-34	75.0	1,978,472	25.0	660,966	100.0	2,639,438
		Total	75.8	4,881,842	24.2	1,556,095	100.0	6,437,937
	2014	15-34	85.3	1,986,124	14.7	341,993	100.0	2,328,117
		Total	84.6	4,794,472	15.4	873,569	100.0	5,668,041
	diff 2015-2014	15-34	-	-7,652	-	318,973	-	311,321
		Total	-	87,371	-	682,526	-	769,897
ITT	2015	15-34	88.0	2,323,174	12.0	316,264	100.0	2,639,438
		Total	90.1	5,799,817	9.9	638,120	100.0	6,437,937

Source: Ministry of Labour and Social Policies (SISCO), data processed by INAPP.

In terms of absolute values, the estimated ITT effect is 316,264 units over a global number of 2,639,438 new hires of eligible young people between 15 and 34 years old. That is the estimate of the increased number of hires of eligible young workers with an open-ended employment contract caused by

both the hiring incentives and the reduction in the costs of firing employees with an open-ended contract during 2015.

Given that the number of observed individuals with an open-ended contract increased by 318,973 units between 2014 and 2015, the ITT is nearly equal to the total difference observed in 2015.

Compared to elsewhere in Europe, the structure of the Italian labour market is more affected by the presence of an employment *gender gap.* Thus, we also estimated the impact by sex of the regulatory changes on the men and women eligible for the hiring incentives. The results clearly reveal that among the eligible young people (aged 15-34) females (ITT=7.6%) were less affected than males (ITT=14.5%). Of the number of the new open-ended contract signed as an effect of the policies, nearly 217,000 were signed by men and just 87,000 were signed by women.

Table 5 Outcome variable distribution on treatment group by gender and periods

			Type of employment contract (y)					
			Fixed-term		Open-ended		Total	
15-34			%	contract	% (outcome)	contract	%	contract
Observed	**2015**	**M**	74.2	1,112,978	25.8	386,301	100	1,499,279
		F	75.9	865,494	24.1	274,665	100	1,140,159
		Total	75.0	1,978,472	25.0	660,966	100	2,639,438
	2014	**M**	84.1	1,080,741	15.9	204,320	100	1,285,061
		F	86.8	905,383	13.2	137,673	100	1,043,056
		Total	85.3	1,986,124	14.7	341,993	100	2,328,117
	diff 2015-2014	**M**	-	32,237	-	181,981	-	214,218
		F	-	-39,889	-	136,992	-	97,103
		Total	-	-7,652	-	318,973	-	311,321
ITT	**2015**	**M**	85.5	1,282,067	14.5	217,212	100	1,499,279
		F	92.4	1,053,158	7.6	87,001	100	1,140,159
		Total	88.5	2,335,225	11.5	304,213	100	2,639,438

Source: Ministry of Labour and Social Policies (SISCO), data processed by INAPP.

The *gender gap* in the ITT estimated on the whole population (ITT: 9.5% for women and 10.3% for men) is smaller than that estimated on the age class 15-34.

While the impact of the regulatory changes on young eligible women's hires is close to that of the effect for the entire female population, the impact on young eligible men's hires is much bigger than the effect for the entire male population.

If we analyse the age class 15-34, we find that there is a slight difference between the estimated values of the ITT among the eligible women in the 15-24 and 25-34 age classes; whereas among the eligible men aged 25-34, the ITT value (16.4%) is quite far from that among the men aged 15-24 (11.0%).

This can be taken as evidence that we need specific policies to fill the gender employment *gap* in the Italian labour market, as reported in the literature.

8. Conclusions and recommendations

"The goal of increasing the number of open-ended contracts can be pursued in different ways, acting on the supply side or on the demand side—that is, either on workers or on employers" (Battiloro V., Mo Costabella L., 2011).

The aim of this study was to evaluate the impact on youth employment of two selected *demand-side* public policies by applying a counterfactual approach using administrative data from the registries.

Our estimates show that **the presence of both hiring incentives** (Law 190/2014, art. 1, c. 118) and **employers' expectations of reduced costs for firing** employees (Legislative Decree 23/2015 under Law 183/2014) in Italy **led to an increase of 12% in the incidence of newly signed open-ended contracts** among eligible individuals aged 15-34 during 2015.

According to the estimates, there were an additional 316,264 new hires with an open-ended employment contract caused by the two policies over a global number of 2,639,438 new hires, of eligible young people between 15 and 34 years old. We found that the presence of the two policies in Italy during 2015 had a positive impact on the workforce. Thus, our findings confirm previous evaluation studies available in the literature. Moreover, our estimates go further by showing that the impact of the regulatory changes on the eligible individuals by age class as a component of the effects on the eligible individuals as a whole was greater for the younger individuals aged 15-34 (an increase of 12%) than for the entire population (9.9%).

Our findings also indicate that the impact on the female eligible individuals aged 15-34 (ITT=7.6%) was smaller than the impact on their male counterparts (ITT=14.5%). Of the number of the new open-ended employment contracts signed in 2015 that can be considered as an effect of the policies, nearly 217,000 were signed by men and just 87,000 were signed by women.

Although it is hard to generalise the results emerging from this counterfactual evaluation exercise, it is worth noting that the policies under scrutiny were introduced at a time when the Italian economy was recovering from a long period of deep recession (the "Great Recession" of 2007-2014). The results of this study could be of particular interest in the current context, given that the Italian labour market is about to face a new, unprecedented

shock in the wake of the pandemic crisis, which has been hitting the world economy in 2020.

References

Aina Carmen, Baici Eliana, Casalone Giorgia, Francesco Pastore (2019). "Delayed Graduation and University Dropout: A Review of Theoretical Approaches," IZA Discussion Papers 12601, Institute of Labor Economics (IZA).

Aina Carmen, Baici Eliana, Casalone Giorgia, Francesco Pastore (2013). "Il fuoricorsismo tra falsi miti e realtà," Economia & lavoro, Carocci editore, issue 1, pages 147-154.

Aina C., (2015). Il ritardo alla laurea: cause, conseguenze e rimedi, "Scuola democratica", 4, 2, pp. 273-94

Aina, C., Pastore F. (2019). Delayed Graduation and Overeducation: A Test of the Human Capital Model versus the Screening Hypothesis, IZA discussion paper, No. 6413, March

Anastasia B., Emireni G., Gambuzza M., Maschio S., Rasera M. (2016). Grammatica Delle Comunicazioni Obbligatorie /3, Veneto Lavoro, Osservatorio & Ricerca https://www.venetolavoro.it/documents/10180/3823842/WP4_Fonti.pdf

Angrist J.D., Pischke J.S. (2015). Mastering Metrics: The Path from Cause to Effect, Princeton University Press, Princeton.

Ardito, C., Berton, F., & Pacelli, L. (2019). Combined and Distributional Effects of EPL Reduction and Hiring Incentives: An Assessment Using Non-Linear DiD. IZA Discussion Papers 12748.

Baronio G. (Ed.), (2012). "Il contesto internazionale e i nuovi indirizzi della politica europea", par. 1.1 e 1.2, pp. 11-24, in Rapporto di monitoraggio del mercato del lavoro 2012, ISFOL, Roma, 2012. http://sbnlo2.cilea.it/bw5ne2/opac.aspx?WEB=ISFL&IDS=19491

Battiloro V., Mo Costabella L. (2011). "Hiring subsidies vs activation. The effectiveness of two programs to favour stable jobs," Politica economica, Società editrice il Mulino, issue 2, pages 197-218.

Becker G. (1964). Human Capital, Columbia University Press, New York.

Bini M., Centra M., Cutillo A., Gualtieri V. (2012). I rendimenti dell'Education e della formazione. Intervento alla XLIX Riunione Scientifica della SIEDS, San Benedetto del Tronto (AP), 24-26 maggio 2012.

Bloom H.S. (2006). The Core Analytics of Randomized Experiments for Social Research, MDRC Working Papers on Research Methodology, MDRC https://bit.ly/2T6BihE

Card D., Krueger A.B. (1994), Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania, American Economic Review, 84, n. 4, pp. 772–793. http://davidcard.berkeley.edu/papers/njmin-aer.pdf

Pastore, F. (2015). "The Youth Experience Gap. Explaining National Differences in the School-to-Work Transition". Heidelberg: Physica Verlag.

Pastore, F., (2019). “Why so slow? The school-to-work transition in Italy”, Studies in Higher Education, 44:8, 1358-1371.

Caroleo, F.E., Francesco Pastore, (2018). Overeducation at a Glance. Determinants and Wage Effects of the Educational Mismatch Based on AlmaLaurea Data, Social Indicators Research, vol. 137(3), pages 999-1032, June.

Centra M., Gualtieri V. (2018). Incentivi al lavoro a tempo indeterminato e contratto a tutele crescenti. Una stima dell’impatto sulle nuove assunzioni nel 2015 e nel 2016, Sinappsi, VIII, n.2, pp.35-63 https://oa.inapp.org/bitstream/handle/123456789/342/Gualtieri_Centra_Sinappsi_2_2018.pdf?sequence=3

Centra M., Gualtieri V. (2017). Incentivi al lavoro permanente e contratto a tutele crescenti. Una stima dell’impatto sulle nuove assunzioni nel 2015, Sinappsi, 7, n. 1, pp. 71-93. https://oa.inapp.org/bitstream/handle/123456789/76/INAPP_SINAPPSI_Centra_Gualtieri_2017.pdf?sequence=5

Cirillo, V., Fana, M., & Guarascio, D. (2017). Labour market reforms in Italy: evaluating the effects of the Jobs Act. Economia Politica 34(3), 1-22.

Decreto Legislativo n. 23 del 4 marzo 2015, Disposizioni in materia di contratto di lavoro a tempo indeterminato a tutele crescenti, in attuazione della legge 10 dicembre 2014, n. 183, G.U.R.I. n. 554, del 6 marzo 2015, artt. 1 e 9.

Deidda M., ed., (2011), “2000-2010, the decade that led to the employment decline in Europe”, Crisis, Institutions and Labour Market Performance: comparing evidence and policies, International workshop University of

Perugia (Italy), Thursday 10 November 2011 http://www.ec.unipg.it/DEFS/uploads/qd_102web.pdf

Esposito P., Scicchitano S. (2020). Cambiamento tecnologico e skill mismatch: evidenze dai dati INAPP-PLUS 2018, in Ricci (2020 eds.) Imprese lavoro e politiche pubbliche: analisi ed evidenze empiriche, Rubbettino, INAPP, forthcoming.

Esposito, P. and Scicchitano, S. (2020b). Educational mismatches, routine biased technological change and unemployment: evidence from Italy,INAPP WP 48.

Guarascio, D., Fana, M., & Cirillo, V. (2017). La crisi e le riforme del mercato del lavoro in Italia: un'analisi regionale del Jobs Act. Argomenti 5, 29-56.

Holland, P. (1986). Statistics and Causal Inference, in «Journal of the American Statistical Association », n. 81, pp. 945-960.

Isfol, Canal T. (a cura di). (2016), L'Italia fra Jobs act ed Europa 2020: Rapporto di monitoraggio del mercato del lavoro 2015, Roma, Isfol, I libri del Fondo sociale europeo, n. 216.

INPS (2015a). Circolare n. 17/2015.

INPS (2015b). Circolare n. 178/2015.

INPS (2016). Circolare n. 57/2016.

INPS. (2019). XVIII Annual report [XVIII Rapporto Annuale].

Legge 23 dicembre 2014, n. 190, Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato (legge di stabilità 2015), 29 dicembre 2014. G.U.R.I. n. 300, S.O.

Legge 10 dicembre 2014, n. 183, Deleghe al Governo in materia di riforma degli ammortizzatori sociali, dei servizi per il lavoro e delle politiche attive, nonché in materia di riordino della disciplina dei rapporti di lavoro e dell'attività ispettiva e di tutela e conciliazione delle esigenze di cura, di vita e di lavoro. G.U.R.I., Serie generale - n. 290, del 15 dicembre 2014.

Legge 20 maggio 1970, n. 300. Norme sulla tutela della liberta' e dignita' dei lavoratori, della liberta' sindacale e dell'attivita' sindacale, nei luoghi di lavoro e norme sul collocamento. GU Serie Generale n.131 del 27-05-1970.

Martini A., Sisti M., Mo Costabella L. (2006). Valutare gli effetti delle politiche pubbliche metodi e applicazioni al caso italiano, Formez, Ufficio stampa ed editoria, Roma. http://costopa.formez.it/sites/all/files/Valutare%20gli%20effetti%20dellle%20politiche%20pubbliche.pdf

Ministry of Labour, ISTAT, INPS, INAIL, ANPAL (2019). Labour market 2018 [Il mercato del lavoro 2018. Verso una lettura integrata].

OECD (2017). "Skills Strategy Diagnostic Report Italy", OECD Publishing, Paris.

Redding, S. (1996). Low-skill, low-quality trap: strategic complementarities between human capital and R&D. Econ J 106(March):458–470.

Rubin D.B. (1974). Estimating Causal Effects of Treatments in Randomized and Non-randomized Studies, in «Journal of Educational Psycology», n. 66, pp. 688-701.

Scicchitano, S. (2007). On the complementarity between on-the-job training and R&D: a brief overview, in Economics Bullettin, Vol. 15 no. 2 pp. 1-11.

Scicchitano, S. (2010). Complementarity between heterogeneous human capital and R&D: can job-training avoid low development traps?, Empirica, vol. 37, pp. 361-380.

Sacchi, S. , Magara H., Ed., (2013), The Politics of Structural Reforms, Social and Industrial Policy, Change in Italy and Japan, Cheltenham (UK): Edward Elgar Publishing, Inc., pp. 194-195.

Sestito, P., & Viviano, E. (2018). Firing costs and firm hiring: evidence from an Italian reform. Economic Policy, Volume 33, Issue 93, 101-130.

Sestito P., Viviano E. (2016), Hiring incentives and/or firing cost reduction? Evaluating the impact of the 2015 policies on the Italian labour market, No. 325 – QEF, BdI. https://www.bancaditalia.it/pubblicazioni/qef/2016-0325/index.html?com.dotmarketing.htmlpage.language=1

Wooldridge, Jeffrey M. (2010), Econometric Analysis of Cross Section and Panel Data. MIT Press.

Index of figures

Index of tables

List of acronyms

ATECO, Classification of Economic Activity, based on Nace Rev. 2. https://www.istat.it/en/archivio/17959

ATE, ATT, average treatment effect and average treatment effect on the treated: A treatment effect is the causal effect of the treatment (a treatment binary, 0–1 variable) on an outcome variable of scientific or policy interest. It captures the difference between the potential outcome of a population unit with and without the treatment (exposure to the policy, taking part in a specific programme, etc.) There are two major concepts of the average treatment effect. The ATE shows the population expectation of the average treatment difference in the pair of potential outcomes averaged over the entire population of interest. This is the relevant measure if the entire population can be exposed to the policy under consideration.

ATE=E(Y_i (1)-Y_i (0))

where Y_i (1) is the outcome of the unit i when she receives the treatment, and Y_i (0) is the outcome of the unit i when she does not receive the treatment.

The ATT, average treatment effect on the treated, shows the average of the treatment effect over the subpopulation of the treated:

ATE=E(Y_i (1)-Y_i (0)|D_i=1)

CP2011, Italian Classification of Professions (Nomenclatura e classificazione delle Unità Professionali. https://www.istat.it/it/archivio/18132

CO, COB: These are notices that firms are compelled to send to the public authorities when an activation, extension, conversion, or termination of an employment contract takes place. Comunicazioni Obbligatorie on-line, managed by the Ministry of Labour and Social Affairs (Law n. 296, 27 December 2006 (Financial Law 2007).

D. lgs, Decreto Legislativo, legislative decree.

DID, diff-in-diffs, difference-in-differences.

EPL, employment protection legislation.

ISCED, International Standard Classification of Education. https://ec.europa.eu/education/international-standard-classification-of-education-isced_it

INAPP, Istituto Nazionale per l'Analisi delle Politiche Pubbliche, National Institute for Public Policies Analysis.

INPS, the Italian "National Institute of Social Security", "Istituto Nazionale di Previdenza Sociale".

ITT, intention to treat: This indicator shows the effect of the policy on the eligible population. In other words, it shows us the causal effect of the offer of treatment. If not all members of the eligible population receive it, as many of them will decline it, the ITT will differ from the average treatment effect.

L., Legge, law.

OLS, ordinary least squares.

MLPS, Ministero del lavoro e delle politiche sociali, Ministry of Labour and Social Policies.

NACE, Nomenclature statistique des activités économiques dans la communauté européenne - Statistical classification of economic activities in the European Community, Rev. 2 (17 NACE Rev. 2, groups of economic activities).
https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_REV2&StrLanguageCode=IT&IntPcKey=&StrLayoutCode=HIERARCHIC

OLS, ordinary least squares.

PES, public employment services.

RDD, regression discontinuity design.

S.E.S., system of employment services (both public and private).

SISCO, Statistical system of the Italian registry "Sistema Statistico delle Comunicazioni Obbligatorie" on-line del Ministero del lavoro e delle politiche sociali (MLPS), Ministry of Labour and Social Policies (MLPS).

T.D., fixed-term employment contract, Tempo Determinato, riferito ai contratti di lavoro dipendente.

T.I., open-ended employment contract, Tempo Indeterminato.

V.A., added value, valore aggiunto.

Appendix 1: A note on the Italian institutional framework

Italy is a democratic republic, and one of the six countries that founded the European Economic Community in 1948, together with Belgium, France, Luxembourg, the Netherlands, and Germany. According with the Italian constitution, the roles and competencies that belong respectively to the central government and to the regional and local administrations (20 regions, 107 provinces, and 8100 local authorities) are different.

The state has exclusive legislative powers over most of the main governance issues, including the general rules regarding education and the setting of minimum service levels (Article 117 of the Constitution). Five regions (Trentino-Alto Adige, Friuli-Venezia Giulia, Valle d'Aosta, Sicily, and Sardinia) have special status, and are given greater autonomy under the constitution in various areas, including education. Moreover, the Trentino-Alto Adige region has two autonomous provinces (Trento and Bolzano) that in turn have considerable autonomy over education and vocational training.

The regions have “exclusive” legislative powers over vocational education and training, apart from the tasks connected with the European Union; and parallel legislative powers over general education, although the state is responsible for establishing the basic principles. Law no. 3 of 2001 reformed Title V of the constitution. In particular, art. 117 makes a distinction between: a) general education, which falls under the exclusive competence of the state, which establishes the general rules, the essential levels of performance, and the fundamental principles of legislation at the regional level; b) vocational education and training, which falls under the responsibility of the regions, although the essential levels of performance remain under the responsibility of the state provinces. Moreover, the local authorities provide the school buildings and infrastructure, and carry out tasks in the area of adult education and guidance, including the management of employment services. According to Eurostat, the Italian population in 2019 was over 60 million, with the population increasing mainly due to the flows of migrants into the country during the last decades. Thus, in Italy, migration has helped to offset the decline in births and the ageing of the population.

Appendix 2: Correction of SUTVA violation

In order to reduce the difference between the two groups, the average outcome of the control group (non-eligible) for 2015, $y_{C,2015}$, has been corrected by estimating the theoretical value that it would have had in the absence of the treatment.

Since the outcome is a dummy variable, the estimate was obtained using a logit regression model. The model has been estimated on the control group for 2014, when the treatment did not spread its effects, through a regression of the y variable by a set of covariates:

$$\hat{y}_{C,2014} = Prob(y = 1|year = 2014, T = 0) = \frac{e^{\hat{\beta}X_{2014}}}{1+e^{\hat{\beta}X_{2014}}}$$

Using the data available for 2014, for each unit of the control group, we estimate the value that the outcome variable would have had in 2015 in the absence of the regulatory changes. Using a logistic model, we estimate in 2014 the outcome variable on the units of the control group, controlling for the characteristics of the individuals and the profile of the employment relationship (the covariates)[10].

The parameters $\hat{\beta}$ obtained with the logistic model are then applied to the same covariates matrix observed in 2015. Thus, the theoretical value of the outcome variable y (i.e., in the absence of treatment) for each unit of the control group in 2015 is obtained as follows:

$$\hat{y}_{C,2015} = \frac{e^{\hat{\beta}X_{2015}}}{1+e^{\hat{\beta}X_{2015}}}$$

This new estimated continuous variable, y, whose values are included in the open interval (0,1), suggests that the new contract was probably an open-ended one.

The continuous variable y was then forced to take discrete values (0, 1) through a specific selected method based on the distribution of the employment contracts in 2015 by duration (open-ended; fixed-term).

First, any non-eligible contracts were assigned to the centile h (h = 1, 100) of the distribution of the $\hat{y}_{C,2015}$. Then, any contract in the control group was

[10] The full results of the logistic model are shown in the Appendix 4.

assigned one of the values of 0 or 1 for a given assigned threshold G_h ranging between 0 and 1, defined for each centile.

The threshold has been defined under the constraint that the average of the outcome, the dummy variable $\hat{y}_{Cd,2015}$, equals the average of the continuous variable $\hat{y}_{C,2015}$, for any centile h.

Thus, for any control group unit in 2015, the new corrected outcome of the dummy variable results from:

$\hat{y}_{Cd,2015} = 1$, if: $r_h(\hat{y}_{C,2015}) \geq 1 - E(\hat{y}_{C,2015}|h)$; $\hat{y}_{i,h} = 0$, otherwise where r_h is the ranking of the variable $\hat{y}_{C,2015}$ within the centile h.

The theoretical estimated values confirm the assumption of a *crowding-out effect,* with the eligible individuals displacing the non-eligible individuals. The corrected value of the average outcome in 2015 is also close to the value observed in 2014, as shown below:

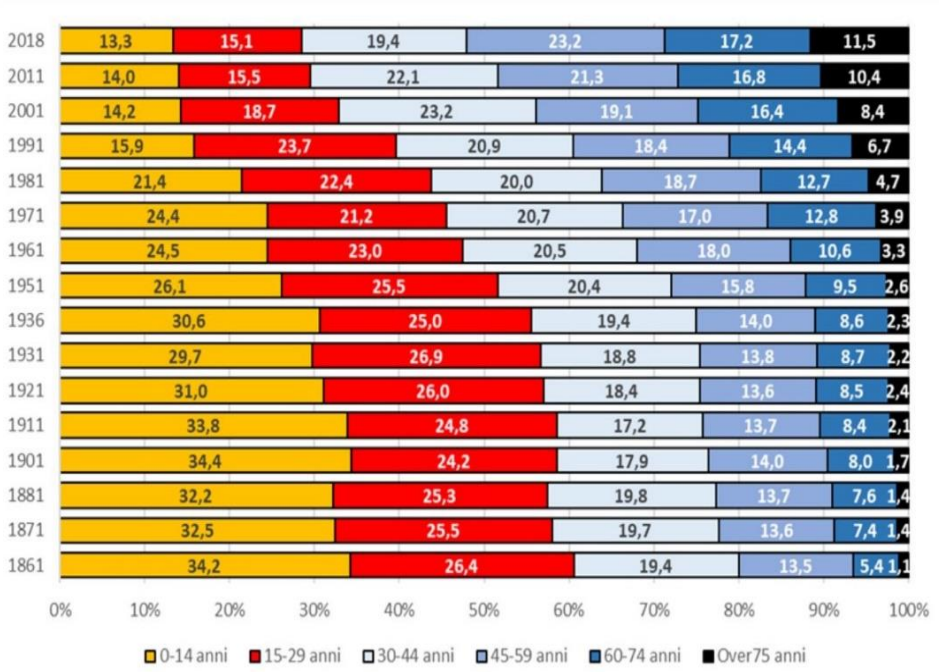
$$E(y_{C,2014}) = 0.56$$

$$E(y_{C,2015}) = 0.50$$

$$E(\hat{y}_{Cd,2015}) = 0.56$$

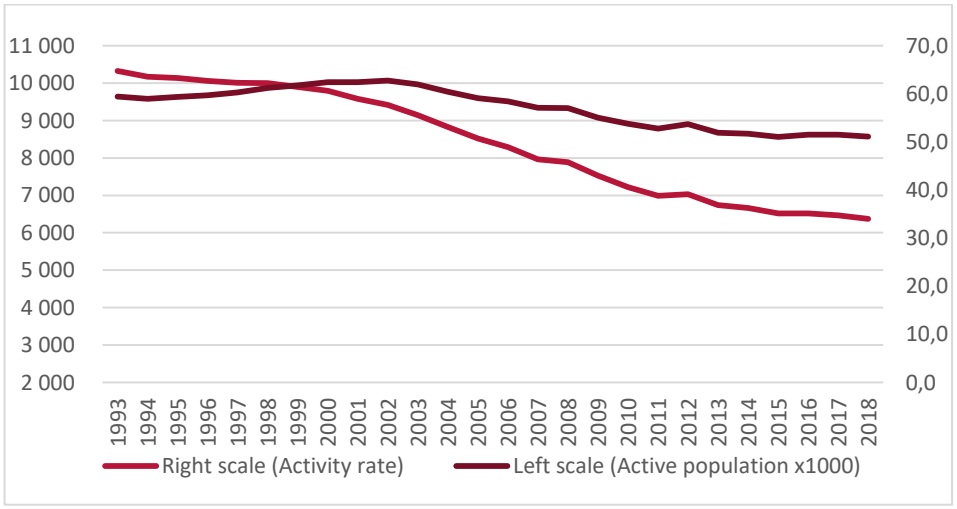
Appendix 3: Tables and figures

Figure 9 The structure of the Italian population from 1861 to 2018 by age groups (%)



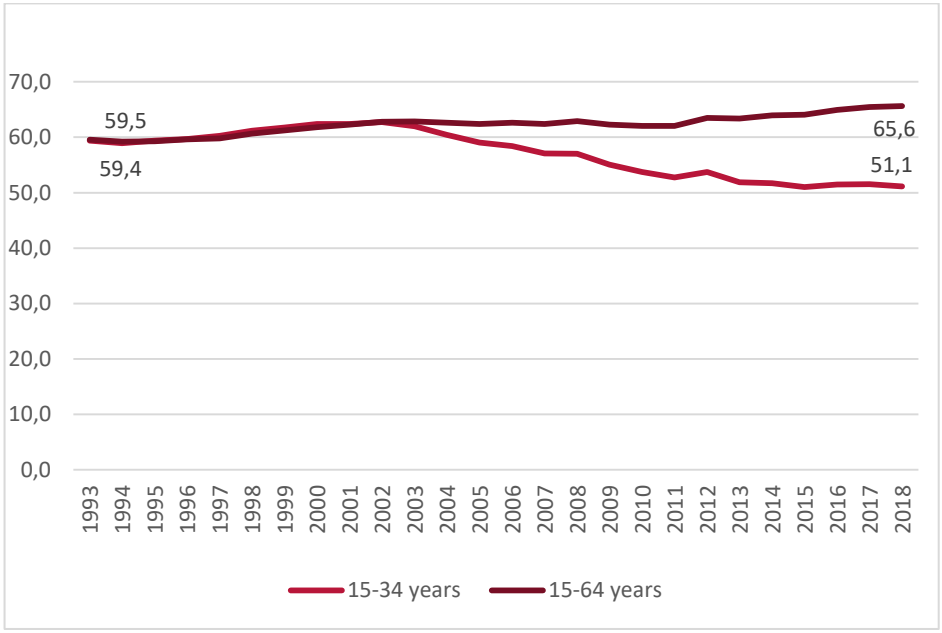
Source: Istat, data reported by Istituto Cattaneo.

Figure 10 Active population and activity rate, 15-34 years. Italy



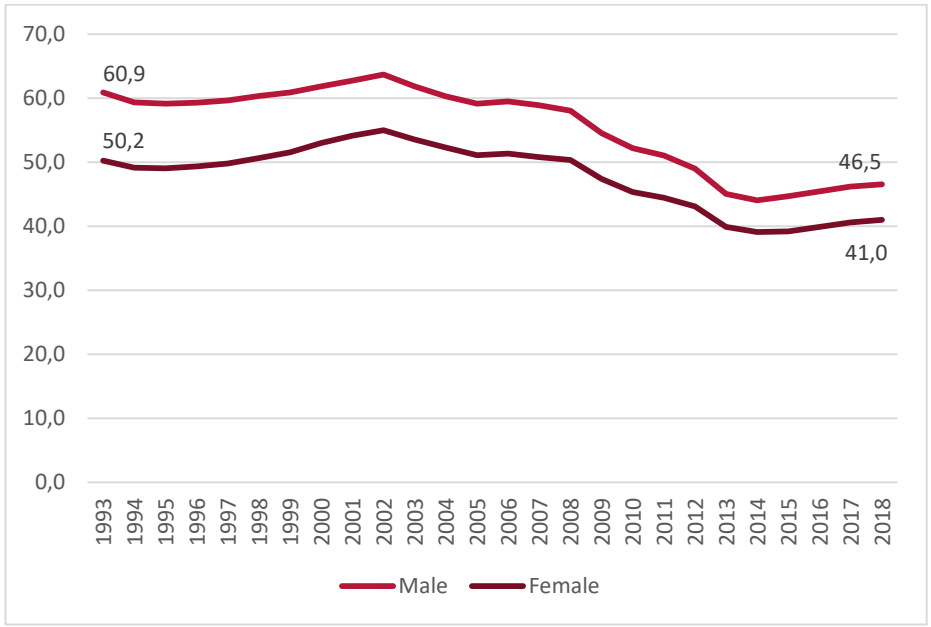
Source: LFS (Istat), data processed by INAPP.

Figure 11 Activity rate by age. Italy.



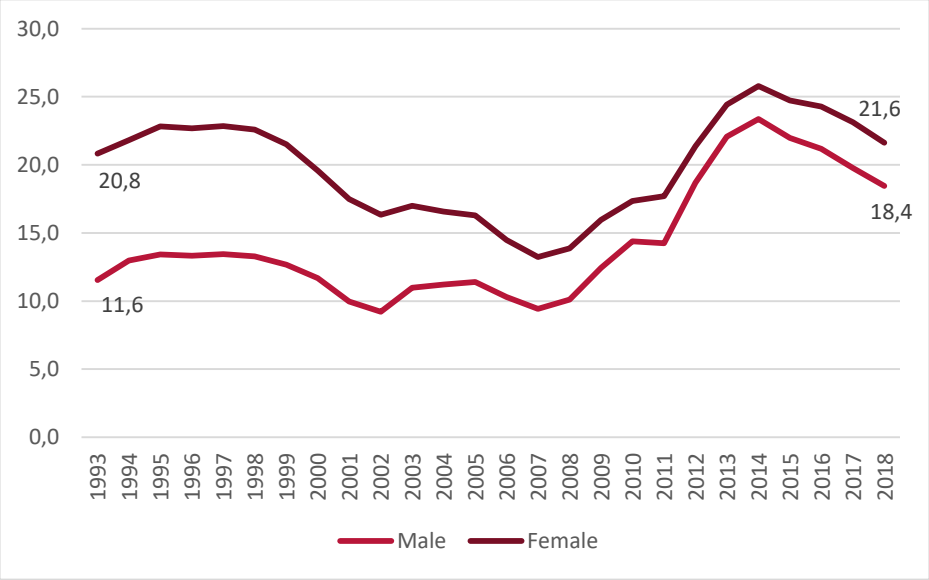
Source: LFS (Istat), data processed by INAPP.

Figure 12 Employment rate by gender, 15-34 years. Italy



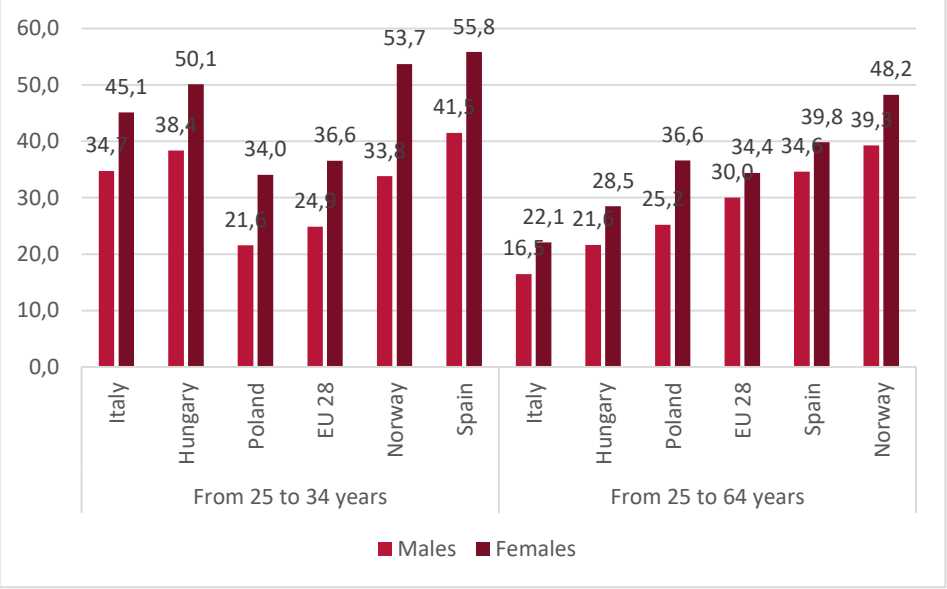
Source: LFS (Istat), data processed by INAPP.

Figure 13 Unemployment rate by gender, 15-34 years. Italy



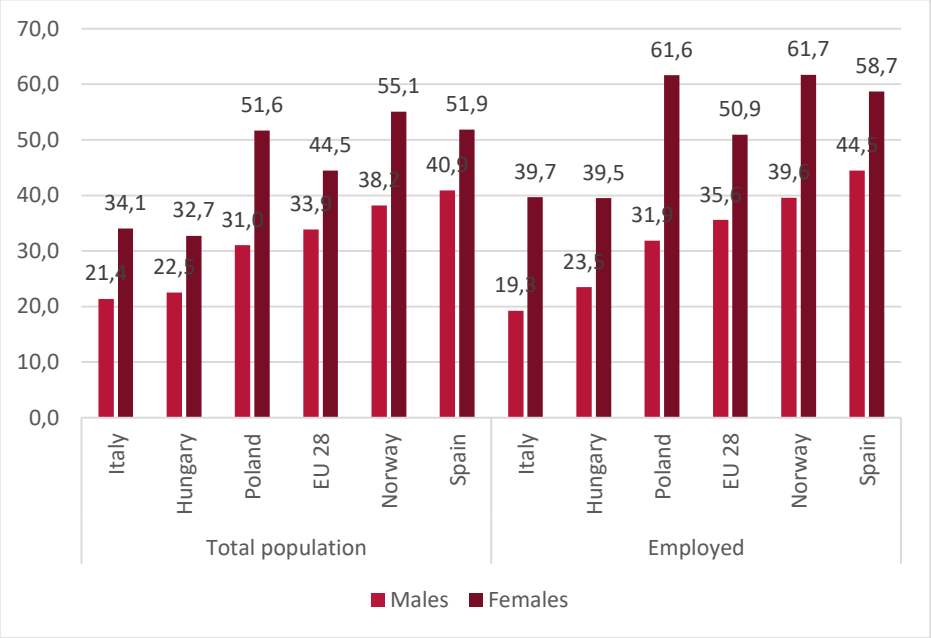
Source: LFS (Istat), data processed by INAPP.

Figure 14 Tertiary education by gender, age class, and country, 2018 (%)



Source: LFS (Eurostat), data processed by INAPP.

Figure 15 Employed: tertiary education by gender and country, 2018 (%)



Source: LFS (Eurostat), data processed by INAPP.

Appendix 4: Model estimates

Model 1: Correction for SUTVA violation

Table 6 Model designed to correct the SUTVA violation

		B	std. err.	Wald	df	Sig.	Exp(B)
Citizenship (omitted category=Italian)	Foreign	0.422	0.020	444.75	1	0.000	1.524
Region (nuts2)	Valle D'Aosta	-0.245	0.183	1.79	1	0.181	0.782
Omitted cat.: Piemonte	Lombardia	0.125	0.038	11.05	1	0.001	1.134
	Trentino A.A.	-0.650	0.069	89.58	1	0.000	0.522
	Veneto	-0.262	0.044	35.88	1	0.000	0.769
	Friuli V.G.	-0.395	0.077	26.27	1	0.000	0.674
	Liguria	-0.241	0.063	14.67	1	0.000	0.786
	Emilia Romagna	-0.332	0.045	55.67	1	0.000	0.717
	Toscana	-0.207	0.046	20.53	1	0.000	0.813
	Umbria	-0.529	0.083	41.06	1	0.000	0.589
	Marche	-0.606	0.064	90.57	1	0.000	0.545
	Lazio	-0.015	0.040	0.13	1	0.715	0.985
	Abruzzo	-0.243	0.058	17.83	1	0.000	0.784
	Molise	0.026	0.106	0.06	1	0.807	1.026
	Campania	0.189	0.041	21.35	1	0.000	1.208
	Puglia	-0.259	0.043	36.22	1	0.000	0.772
	Basilicata	-0.208	0.079	6.95	1	0.008	0.812
	Calabria	-0.158	0.059	7.27	1	0.007	0.854
	Sicilia	0.134	0.043	9.68	1	0.002	1.143
	Sardegna	-0.350	0.063	31.27	1	0.000	0.704
Gender (Omitted category=Male)	Female	-0.029	0.018	2.54	1	0.111	0.971
Age	From 24 to 34 years	0.304	0.026	136.58	1	0.000	1.355
Omitted cat.: From 15 to 24 years	From 35 to 44 years	0.727	0.027	738.52	1	0.000	2.069
	From 45 to 54 years	0.891	0.029	960.39	1	0.000	2.438
	From 55 to 64 years	1.159	0.037	967.11	1	0.000	3.188
	Over 64 year	1.211	0.113	115.47	1	0.000	3.356
Educational attainment level	Upper secondary	-0.300	0.021	209.49	1	0.000	0.741
Omitted cat.: Lower secondary	Tertiary and over	0.406	0.039	110.34	1	0.000	1.501
Full-/part-time (Omitted cat.: Full-time)	Part-time	0.374	0.018	437.17	1	0.000	1.453
Occupation	Professionals	-1.338	0.125	113.78	1	0.000	0.262
Omitted cat.: Managers	Technicians and associate professionals	-1.232	0.123	99.83	1	0.000	0.292
	Clerical support workers	-1.046	0.122	73.00	1	0.000	0.351
	Service and sales workers	-1.359	0.121	125.39	1	0.000	0.257

	Skilled agricultural, forestry, and fishery workers, Craft and related trades workers	-1.287	0.122	111.39	1	0.000	0.276
	Plant and machine operators and assemblers	-1.694	0.124	188.00	1	0.000	0.184
	Elementary occupations	-1.293	0.121	113.32	1	0.000	0.274
Economic activity	Mining and quarrying	2.603	0.249	108.82	1	0.000	13.498
Omitted cat.: Agriculture	Manufacture of food, beverages, tobacco	2.403	0.086	785.26	1	0.000	11.059
	Textiles, wearing apparel, leather	4.221	0.083	2.581.65	1	0.000	68.086
	Manufacture of wood, paper, and paper products	2.515	0.117	460.64	1	0.000	12.372
	Chemicals, pharmaceutical, rubber, and plastic products	2.946	0.119	615.10	1	0.000	19.026
	Basic metals and fabricated metal products	2.417	0.084	834.95	1	0.000	11.207
	Electrical equipment, electronic, and optical products	2.822	0.098	830.26	1	0.000	16.810
	Manufacture of machinery, motor vehicles, transport equipment	2.896	0.098	867.64	1	0.000	18.102
	Other manufacturing	2.769	0.102	736.25	1	0.000	15.947
	Electricity, gas, steam, and air conditioning supply	3.133	0.108	842.04	1	0.000	22.944
	Construction	2.975	0.071	1.751.53	1	0.000	19.598
	Wholesale and retail trade; repair of motor vehicles and motorcycles	2.754	0.074	1.374.23	1	0.000	15.712
	Transporting and storage	3.109	0.073	1.805.65	1	0.000	22.389
	Accommodation and food service activities	2.056	0.074	774.86	1	0.000	7.813
	Information and communication	2.591	0.086	899.18	1	0.000	13.339
	Financial and insurance activities	3.356	0.132	649.86	1	0.000	28.684
	Professional, scientific, and technical activities	3.068	0.090	1.159.19	1	0.000	21.509
	Education	1.348	0.087	240.82	1	0.000	3.850
	Human health and social work activities	2.721	0.083	1.071.49	1	0.000	15.197
	Other services activities	2.994	0.072	1.751.32	1	0.000	19.975
Constant		-1.842	0.145	161.78	1	0.000	0.158

n	-2 log likelihood	Cox e Snell R-square	Nagelkerke R-square
88,958	104,536,247	0.155	0.208

Model 2: ITT estimates by age

Table 7 Estimation results by age groups

		Coefficients		t	Sign.
		B	Std err		
Constant		0.1277	0.0153	8.3461	0.0000
Treatment (T)		0.1528	0.0154	9.9122	0.0000
Period (P)		-0.0996	0.0115	-8.6579	0.0000
Treatment*Period (T*P)		0.0996	0.0054	18.3687	0.0000
Gender (Omitted cat.: Male)	Female	0.0103	0.0022	4.7081	0.0000
Gender*P	Female	-0.0058	0.0012	-4.7204	0.0000
Gender *T	Female	-0.0327	0.0022	-14.9755	0.0000
Citizenship (Omitted cat.: Italian)	Foreign	0.0913	0.0024	37.5377	0.0000
Citizenship*P	Foreign	-0.0162	0.0015	-10.6646	0.0000
Citizenship*T	Foreign	-0.0298	0.0024	-12.2838	0.0000
Educational attainment level	Upper secondary	-0.0801	0.0025	-31.6081	0.0000
Omitted cat.: Lower secondary	Tertiary and over	0.0724	0.0045	15.9441	0.0000
Educational attainment level*P	Upper secondary	0.0293	0.0014	20.2870	0.0000
	Tertiary and over	0.0396	0.0025	15.8296	0.0000
Educational attainment level*T	Upper secondary	0.0626	0.0025	24.8498	0.0000
	Tertiary and over	-0.0326	0.0045	-7.2322	0.0000
Region (nuts2)	Piemonte	0.1069	0.0080	13.3073	0.0000
Omitted cat.: Trentino A.A.	Valle D'Aosta	0.0748	0.0215	3.4792	0.0005
	Lombardia	0.1168	0.0072	16.1658	0.0000
	Veneto	0.0365	0.0077	4.7468	0.0000
	Friuli V.G.	-0.0076	0.0109	-0.6986	0.4848
	Liguria	0.0472	0.0095	4.9469	0.0000
	Emilia Romagna	0.0197	0.0077	2.5440	0.0110
	Toscana	0.0497	0.0078	6.3701	0.0000
	Umbria	-0.0242	0.0113	-2.1329	0.0329
	Marche	-0.0741	0.0094	-7.8922	0.0000
	Lazio	0.0921	0.0074	12.4158	0.0000
	Abruzzo	0.0865	0.0090	9.6275	0.0000
	Molise	0.1026	0.0143	7.1976	0.0000
	Campania	0.1522	0.0075	20.3622	0.0000
	Puglia	0.0784	0.0076	10.3065	0.0000
	Basilicata	-0.0110	0.0110	-0.9922	0.3211
	Calabria	0.0890	0.0091	9.8353	0.0000
	Sicilia	0.1456	0.0077	19.0376	0.0000
	Sardegna	0.0207	0.0095	2.1863	0.0288
Region*P	Piemonte	0.0536	0.0040	13.3870	0.0000
	Valle D'Aosta	0.0211	0.0110	1.9209	0.0547
	Lombardia	0.0279	0.0035	8.0730	0.0000
	Veneto	0.0280	0.0037	7.4890	0.0000
	Friuli V.G.	0.0510	0.0055	9.2438	0.0000
	Liguria	0.0393	0.0050	7.8018	0.0000
	Emilia Romagna	0.0255	0.0037	6.9561	0.0000

	Toscana	0.0261	0.0038	6.8148	0.0000
	Umbria	0.0392	0.0059	6.6588	0.0000
	Marche	0.0343	0.0049	7.0137	0.0000
	Lazio	0.0380	0.0035	10.8340	0.0000
	Abruzzo	0.0127	0.0048	2.6204	0.0088
	Molise	0.0089	0.0085	1.0450	0.2960
	Campania	0.0091	0.0036	2.5212	0.0117
	Puglia	0.0002	0.0035	0.0626	0.9501
	Basilicata	0.0013	0.0054	0.2466	0.8052
	Calabria	0.0055	0.0042	1.3262	0.1848
	Sicilia	-0.0132	0.0036	-3.6247	0.0003
	Sardegna	0.0012	0.0046	0.2735	0.7845
Region*T	Piemonte	-0.0519	0.0080	-6.4833	0.0000
	Valle D'Aosta	-0.0898	0.0212	-4.2312	0.0000
	Lombardia	-0.0389	0.0072	-5.4059	0.0000
	Veneto	-0.0025	0.0077	-0.3316	0.7402
	Friuli V.G.	0.0236	0.0108	2.1803	0.0292
	Liguria	-0.0161	0.0095	-1.7012	0.0889
	Emilia Romagna	0.0072	0.0077	0.9312	0.3517
	Toscana	-0.0065	0.0078	-0.8416	0.4000
	Umbria	0.0661	0.0113	5.8490	0.0000
	Marche	0.0734	0.0094	7.8339	0.0000
	Lazio	-0.0437	0.0074	-5.9182	0.0000
	Abruzzo	-0.0056	0.0090	-0.6264	0.5311
	Molise	0.0204	0.0143	1.4331	0.1518
	Campania	0.0020	0.0075	0.2628	0.7927
	Puglia	-0.0002	0.0076	-0.0254	0.9797
	Basilicata	0.0900	0.0110	8.1817	0.0000
	Calabria	0.0205	0.0090	2.2676	0.0234
	Sicilia	-0.0286	0.0076	-3.7481	0.0002
	Sardegna	0.0263	0.0095	2.7797	0.0054
Full/part-time (Omitted category=Full-time)	Part-time	0.0541	0.0022	24.8647	0.0000
Full/part-time*P	Part-time	0.0261	0.0013	19.3882	0.0000
Full/part-time*T	Part-time	0.0194	0.0022	8.9330	0.0000
Occupation	Professionals	-0.2552	0.0129	-19.8516	0.0000
Omitted cat.: Managers	Technicians and associate professionals	-0.2397	0.0126	-18.9686	0.0000
	Clerical support workers	-0.2212	0.0125	-17.6541	0.0000
	Service and sales workers	-0.2615	0.0125	-21.0011	0.0000
	Skilled agricultural, forestry, and fishery workers, Craft and related trades workers	-0.2439	0.0125	-19.5608	0.0000
	Plant and machine operators and assemblers	-0.3204	0.0127	-25.2422	0.0000
	Elementary occupations	-0.2224	0.0124	-17.9240	0.0000
Occupation*P	Professionals	0.0059	0.0098	0.6052	0.5450
	Technicians and associate professionals	0.0494	0.0098	5.0368	0.0000

	Clerical support workers	0.0706	0.0098	7.2346	0.0000
	Service and sales workers	0.0168	0.0097	1.7375	0.0823
	Skilled agricultural, forestry, and fishery workers, Craft and related trades workers	0.0206	0.0097	2.1199	0.0340
	Plant and machine operators and assemblers	0.0445	0.0099	4.4978	0.0000
	Elementary occupations	0.0035	0.0097	0.3572	0.7209
Occupation*T	Professionals	-0.1515	0.0130	-11.6994	0.0000
	Technicians and associate professionals	-0.1025	0.0127	-8.0471	0.0000
	Clerical support workers	-0.0247	0.0126	-1.9563	0.0504
	Service and sales workers	-0.0928	0.0126	-7.3873	0.0000
	Skilled agricultural, forestry, and fishery workers, Craft and related trades workers	-0.1338	0.0126	-10.6315	0.0000
	Plant and machine operators and assemblers	-0.0685	0.0128	-5.3453	0.0000
	Elementary occupations	-0.1874	0.0125	-14.9652	0.0000
Age Omitted cat.: From 15 to 24 years	From 24 to 34 years	0.0650	0.0044	14.7293	0.0000
	From 35 to 44 years	0.1515	0.0045	33.6763	0.0000
	From 45 to 54 years	0.1841	0.0048	38.4246	0.0000
	From 55 to 64 years	0.2402	0.0061	39.4431	0.0000
	Over 64 year	0.2525	0.0178	14.1575	0.0000
Age*P	From 24 to 34 years	-0.0325	0.0060	-5.3868	0.0000
	From 35 to 44 years	-0.0048	0.0061	-0.7886	0.4304
	From 45 to 54 years	0.0074	0.0065	1.1400	0.2543
	From 55 to 64 years	0.0038	0.0082	0.4665	0.6409
	Over 64 year	0.0288	0.0238	1.2081	0.2270
Age*T	From 24 to 34 years	-0.0360	0.0046	-7.7874	0.0000
	From 35 to 44 years	-0.1037	0.0047	-22.0421	0.0000
	From 45 to 54 years	-0.1335	0.0050	-26.6751	0.0000
	From 55 to 64 years	-0.1787	0.0063	-28.1555	0.0000
	Over 64 year	-0.2133	0.0183	-11.6782	0.0000
Economic activity Omitted cat.: Agriculture	Mining and Quarrying	0.3705	0.0320	11.5729	0.0000
	Manufacture of food, beverages, tobacco	0.3621	0.0081	44.9734	0.0000
	Textiles, wearing apparel, leather	0.7326	0.0069	106.7803	0.0000
	Manufacture of wood, paper, and paper products	0.3454	0.0131	26.4138	0.0000
	Manufacture of chemicals, pharmaceutical, rubber, and plastic products	0.4288	0.0124	34.5458	0.0000
	Manufacture of basic metals and fabricated metal products	0.3385	0.0077	43.7913	0.0000
	Manufacture of electrical equipment, electronic, and	0.4442	0.0100	44.3185	0.0000

	optical products				
	Manufacture of machinery, motor vehicles, transport equipment	0.4283	0.0099	43.3116	0.0000
	Other manufacturing	0.4307	0.0107	40.2825	0.0000
	Electricity, gas, steam, and air conditioning supply	0.5090	0.0112	45.4378	0.0000
	Construction	0.4791	0.0054	88.9167	0.0000
	Wholesale and retail trade; repair of motor vehicles and motorcycles	0.4241	0.0060	71.0965	0.0000
	Transporting and storage	0.5417	0.0058	93.3558	0.0000
	Accommodation and food service activities	0.2948	0.0058	50.4978	0.0000
	Information and communication	0.4512	0.0078	57.8343	0.0000
	Financial and insurance activities	0.5787	0.0138	41.8039	0.0000
	Professional, scientific, and technical activities	0.4891	0.0085	57.3510	0.0000
	Education	0.1667	0.0077	21.7491	0.0000
	Human health and social work activities	0.4301	0.0075	57.2165	0.0000
	Other services activities	0.5165	0.0054	94.9733	0.0000
Economic activity*P	Mining and Quarrying	0.0725	0.0228	3.1734	0.0015
	Manufacture of food, beverages, tobacco	0.0627	0.0038	16.6075	0.0000
	Textiles, wearing apparel, leather	0.0662	0.0044	14.8733	0.0000
	Manufacture of wood, paper and paper products	0.1207	0.0078	15.3742	0.0000
	Manufacture of chemicals, pharmaceutical, rubber, and plastic products	0.1321	0.0072	18.2682	0.0000
	Manufacture of basic metals and fabricated metal products	0.1145	0.0043	26.8084	0.0000
	Manufacture of electrical equipment, electronic and optical products	0.1066	0.0062	17.2698	0.0000
	Manufacture of machinery, motor vehicles, transport equipment	0.1214	0.0059	20.5040	0.0000
	Other manufacturing	0.1173	0.0066	17.6901	0.0000
	Electricity, gas, steam, and air conditioning supply	0.0721	0.0074	9.7426	0.0000
	Construction	0.0824	0.0026	32.0075	0.0000
	Wholesale and retail trade; repair of motor vehicles and motorcycles	0.1042	0.0026	39.3359	0.0000
	Transporting and storage	0.0434	0.0032	13.7009	0.0000

	Accommodation and food service activities	0.0425	0.0024	17.7957	0.0000
	Information and communication	0.0005	0.0034	0.1380	0.8902
	Financial and insurance activities	0.0516	0.0092	5.5854	0.0000
	Professional, scientific, and technical activities	0.1221	0.0048	25.5182	0.0000
	Education	-0.0217	0.0031	-6.9773	0.0000
	Human health and social work activities	0.0537	0.0038	14.2380	0.0000
	Other services activities	0.0125	0.0023	5.3873	0.0000
Economic activity*T	Mining and Quarrying	-0.1057	0.0321	-3.2977	0.0010
	Manufacture of food, beverages, tobacco	-0.2509	0.0080	-31.2565	0.0000
	Textiles, wearing apparel, leather	-0.3245	0.0069	-46.8257	0.0000
	Manufacture of wood, paper and paper products	-0.0861	0.0130	-6.6078	0.0000
	Manufacture of chemicals, pharmaceutical, rubber and plastic products	-0.1835	0.0122	-15.0189	0.0000
	Manufacture of basic metals and fabricated metal products	-0.1247	0.0077	-16.2080	0.0000
	Manufacture of electrical equipment, electronic and optical products	-0.1773	0.0099	-17.8442	0.0000
	Manufacture of machinery, motor vehicles, transport equipment	-0.1558	0.0098	-15.9502	0.0000
	Other manufacturing	-0.1428	0.0106	-13.4674	0.0000
	Electricity, gas, steam and air conditioning supply	-0.2502	0.0111	-22.5328	0.0000
	Construction	-0.1384	0.0054	-25.6437	0.0000
	Wholesale and retail trade; repair of motor vehicles and motorcycles	-0.2163	0.0059	-36.3523	0.0000
	Transporting and storage	-0.3283	0.0058	-56.4287	0.0000
	Accommodation and food service activities	-0.2369	0.0058	-40.6592	0.0000
	Information and communication	-0.3727	0.0077	-48.1096	0.0000
	Financial and insurance activities	-0.2404	0.0138	-17.4831	0.0000
	Professional, scientific and technical activities	-0.2781	0.0085	-32.8274	0.0000
	Education	-0.0906	0.0076	-11.8555	0.0000
	Human health and social work activities	-0.2518	0.0075	-33.6518	0.0000

	Other services activities	-0.3485	0.0054	-64.0601	0.0000
Added value		0.0845	0.0165	5.1072	0.0000
Age*P*T	From 24 to 34 years	0.0302	0.0063	4.7940	0.0000
Omitted cat.: From 15 to 24 years	From 35 to 44 years	-0.0038	0.0064	-0.5890	0.5559
	From 45 to 54 years	-0.0200	0.0067	-2.9767	0.0029
	From 55 to 64 years	-0.0301	0.0085	-3.5301	0.0004
	Over 64 year	-0.0542	0.0244	-2.2192	0.0265
n		R	R-square	R-square corr.	Est std. err.
1,905,715		0.4865	0.2367	0.2366	0.3713

Model 3: ITT estimates by age and gender interaction

Table 8 Estimation results by age and gender

		Coefficients		t	Sign.
		B	Std err		
Constant		0.1353	0.0156	8.6799	0.0000
Treatment (T)		0.1493	0.0157	9.4933	0.0000
Period (P)		-0.1084	0.0122	-8.8808	0.0000
Treatment*Period (T*P)		0,1099	0.0069	15.9289	0.0000
Citizenship (Omitted cat.: Italian)	Foreign	0.0919	0.0024	37.7649	0.0000
Citizenship*P	Foreign	-0.0164	0.0015	-10.7755	0.0000
Citizenship*T	Foreign	-0.0304	0.0024	-12.4960	0.0000
Educational attainment level	Upper secondary	-0.0795	0.0025	-31.3783	0.0000
Omitted cat.: Lower secondary	Tertiary and over	0.0733	0.0045	16.1377	0.0000
Educational attainment level*P	Upper secondary	0.0291	0.0014	20.1565	0.0000
	Tertiary and over	0.0394	0.0025	15.7484	0.0000
Educational attainment level*T	Upper secondary	0.0623	0.0025	24.7326	0.0000
	Tertiary and over	-0.0316	0.0045	-6.9930	0.0000
Region (nuts2)	Piemonte	0.1073	0.0080	13.3631	0.0000
Omitted cat.: Trentino A.A.	Valle D'Aosta	0.0742	0.0215	3.4524	0.0006
	Lombardia	0.1172	0.0072	16.2321	0.0000
	Veneto	0.0375	0.0077	4.8720	0.0000
	Friuli V.G.	-0.0076	0.0109	-0.7010	0.4833
	Liguria	0.0474	0.0095	4.9706	0.0000
	Emilia Romagna	0.0204	0.0077	2.6366	0.0084
	Toscana	0.0508	0.0078	6.5092	0.0000
	Umbria	-0.0213	0.0113	-1.8738	0.0610
	Marche	-0.0721	0.0094	-7.6756	0.0000
	Lazio	0.0929	0.0074	12.5273	0.0000
	Abruzzo	0.0876	0.0090	9.7477	0.0000
	Molise	0.1047	0.0143	7.3430	0.0000
	Campania	0.1536	0.0075	20.5543	0.0000
	Puglia	0.0802	0.0076	10.5357	0.0000
	Basilicata	-0.0086	0.0110	-0.7777	0.4368
	Calabria	0.0894	0.0090	9.8833	0.0000
	Sicilia	0.1469	0.0076	19.2010	0.0000
	Sardegna	0.0219	0.0095	2.3144	0.0206
Region*P	Piemonte	0.0536	0.0040	13.3921	0.0000
	Valle D'Aosta	0.0216	0.0110	1.9707	0.0488
	Lombardia	0.0279	0.0035	8.0960	0.0000
	Veneto	0.0278	0.0037	7.4380	0.0000
	Friuli V.G.	0.0510	0.0055	9.2350	0.0000
	Liguria	0.0392	0.0050	7.7919	0.0000
	Emilia Romagna	0.0253	0.0037	6.9264	0.0000
	Toscana	0.0260	0.0038	6.7798	0.0000
	Umbria	0.0388	0.0059	6.5891	0.0000
	Marche	0.0339	0.0049	6.9376	0.0000

	Lazio	0.0378	0.0035	10.7734	0.0000
	Abruzzo	0.0124	0.0048	2.5693	0.0102
	Molise	0.0084	0.0085	0.9928	0.3208
	Campania	0.0089	0.0036	2.4631	0.0138
	Puglia	-0.0001	0.0035	-0.0237	0.9811
	Basilicata	0.0010	0.0054	0.1789	0.8580
	Calabria	0.0054	0.0042	1.2825	0.1997
	Sicilia	-0.0135	0.0036	-3.7157	0.0002
	Sardegna	0.0010	0.0046	0.2222	0.8242
Region*T	Piemonte	-0.0523	0.0080	-6.5331	0.0000
	Valle D'Aosta	-0.0891	0.0212	-4.1969	0.0000
	Lombardia	-0.0393	0.0072	-5.4536	0.0000
	Veneto	-0.0036	0.0077	-0.4630	0.6433
	Friuli V.G.	0.0236	0.0108	2.1779	0.0294
	Liguria	-0.0168	0.0095	-1.7752	0.0759
	Emilia Romagna	0.0065	0.0077	0.8459	0.3976
	Toscana	-0.0076	0.0078	-0.9800	0.3271
	Umbria	0.0637	0.0113	5.6446	0.0000
	Marche	0.0716	0.0094	7.6508	0.0000
	Lazio	-0.0444	0.0074	-6.0102	0.0000
	Abruzzo	-0.0068	0.0090	-0.7582	0.4484
	Molise	0.0187	0.0143	1.3145	0.1887
	Campania	0.0002	0.0075	0.0275	0.9780
	Puglia	-0.0018	0.0076	-0.2402	0.8102
	Basilicata	0.0869	0.0110	7.9070	0.0000
	Calabria	0.0193	0.0090	2.1323	0.0330
	Sicilia	-0.0293	0.0076	-3.8447	0.0001
	Sardegna	0.0252	0.0094	2.6710	0.0076
Full/part-time (Omitted category=Full-time)	Part-time	0.0530	0.0022	24.2912	0.0000
Full/part-time*P	Part-time	0.0264	0.0013	19.6053	0.0000
Full/part-time*T	Part-time	0.0205	0.0022	9.4337	0.0000
Occupation Omitted cat.: Managers	Professionals	-0.2546	0.0129	-19.8147	0.0000
	Technicians and associate professionals	-0.2392	0.0126	-18.9311	0.0000
	Clerical support workers	-0.2216	0.0125	-17.6881	0.0000
	Service and sales workers	-0.2619	0.0124	-21.0435	0.0000
	Skilled agricultural, forestry and fishery workers, Craft and related trades workers	-0.2461	0.0125	-19.7340	0.0000
	Plant and machine operators and assemblers	-0.3211	0.0127	-25.3023	0.0000
	Elementary occupations	-0.2255	0.0124	-18.1743	0.0000
Occupation*P	Professionals	0.0053	0.0098	0.5417	0.5881
	Technicians and associate professionals	0.0489	0.0098	4.9871	0.0000
	Clerical support workers	0.0703	0.0098	7.2057	0.0000
	Service and sales workers	0.0169	0.0097	1.7461	0.0808
	Skilled agricultural, forestry and fishery workers, Craft and related trades workers	0.0211	0.0097	2.1670	0.0302
	Plant and machine operators and assemblers	0.0446	0.0099	4.5088	0.0000

	Elementary occupations	0.0041	0.0097	0.4229	0.6724
Occupation*T	Professionals	-0.1519	0.0129	-11.7339	0.0000
	Technicians and associate professionals	-0.1028	0.0127	-8.0744	0.0000
	Clerical support workers	-0.0247	0.0126	-1.9566	0.0504
	Service and sales workers	-0.0928	0.0126	-7.3842	0.0000
	Skilled agricultural, forestry and fishery workers, Craft and related trades workers	-0.1327	0.0126	-10.5456	0.0000
	Plant and machine operators and assemblers	-0.0677	0.0128	-5.2865	0.0000
	Elementary occupations	-0.1864	0.0125	-14.8845	0.0000
Economic activity Omitted cat.: Agriculture	Mining and Quarrying	0.3711	0.0320	11.5926	0.0000
	Manufacture of food, beverages, tobacco	0.3615	0.0081	44.9088	0.0000
	Textiles, wearing apparel, leather	0.7319	0.0069	106.6956	0.0000
	Manufacture of wood, paper and paper products	0.3459	0.0131	26.4589	0.0000
	Manufacture of chemicals, pharmaceutical, rubber and plastic products	0.4275	0.0124	34.4492	0.0000
	Manufacture of basic metals and fabricated metal products	0.3383	0.0077	43.7827	0.0000
	Manufacture of electrical equipment, electronic and optical products	0.4433	0.0100	44.2486	0.0000
	Manufacture of machinery, motor vehicles, transport equipment	0.4265	0.0099	43.1349	0.0000
	Other manufacturing	0.4300	0.0107	40.2249	0.0000
	Electricity, gas, steam and air conditioning supply	0.5103	0.0112	45.5573	0.0000
	Construction	0.4802	0.0054	89.0580	0.0000
	Wholesale and retail trade; repair of motor vehicles and motorcycles	0.4242	0.0060	71.1275	0.0000
	Transporting and storage	0.5421	0.0058	93.4270	0.0000
	Accommodation and food service activities	0.2936	0.0058	50.2919	0.0000
	Information and communication	0.4485	0.0078	57.4764	0.0000
	Financial and insurance activities	0.5763	0.0138	41.6345	0.0000
	Professional, scientific and technical activities	0.4870	0.0085	57.1006	0.0000
	Education	0.1648	0.0077	21.4670	0.0000
	Human health and social work activities	0.4269	0.0075	56.7283	0.0000
	Other services activities	0.5149	0.0054	94.6658	0.0000
Economic activity*P	Mining and Quarrying	0.0734	0.0228	3.2144	0.0013
	Manufacture of food, beverages, tobacco	0.0630	0.0038	16.6966	0.0000
	Textiles, wearing apparel, leather	0.0663	0.0044	14.9127	0.0000
	Manufacture of wood, paper and paper products	0.1209	0.0078	15.4001	0.0000
	Manufacture of chemicals, pharmaceutical, rubber and plastic products	0.1327	0.0072	18.3518	0.0000
	Manufacture of basic metals and fabricated metal products	0.1146	0.0043	26.8569	0.0000
	Manufacture of electrical equipment, electronic and optical products	0.1071	0.0062	17.3442	0.0000

	Manufacture of machinery, motor vehicles, transport equipment	0.1218	0.0059	20.5793	0.0000
	Other manufacturing	0.1175	0.0066	17.7225	0.0000
	Electricity, gas, steam and air conditioning supply	0.0714	0.0074	9.6505	0.0000
	Construction	0.0827	0.0026	32.0073	0.0000
	Wholesale and retail trade; repair of motor vehicles and motorcycles	0.1041	0.0026	39.3072	0.0000
	Transporting and storage	0.0437	0.0032	13.7967	0.0000
	Accommodation and food service activities	0.0428	0.0024	17.9148	0.0000
	Information and communication	0.0014	0.0034	0.4020	0.6877
	Financial and insurance activities	0.0524	0.0092	5.6696	0.0000
	Professional, scientific and technical activities	0.1227	0.0048	25.6508	0.0000
	Education	-0.0209	0.0031	-6.7091	0.0000
	Human health and social work activities	0.0543	0.0038	14.4107	0.0000
	Other services activities	0.0131	0.0023	5.6659	0.0000
Economic activity*T	Mining and Quarrying	-0.1063	0.0321	-3.3158	0.0009
	Manufacture of food, beverages, tobacco	-0.2519	0.0080	-31.3768	0.0000
	Textiles, wearing apparel, leather	-0.3253	0.0069	-46.9403	0.0000
	Manufacture of wood, paper and paper products	-0.0870	0.0130	-6.6835	0.0000
	Manufacture of chemicals, pharmaceutical, rubber and plastic products	-0.1837	0.0122	-15.0383	0.0000
	Manufacture of basic metals and fabricated metal products	-0.1247	0.0077	-16.2208	0.0000
	Manufacture of electrical equipment, electronic and optical products	-0.1774	0.0099	-17.8658	0.0000
	Manufacture of machinery, motor vehicles, transport equipment	-0.1552	0.0098	-15.8888	0.0000
	Other manufacturing	-0.1421	0.0106	-13.4013	0.0000
	Electricity, gas, steam and air conditioning supply	-0.2503	0.0111	-22.5403	0.0000
	Construction	-0.1386	0.0054	-25.6664	0.0000
	Wholesale and retail trade; repair of motor vehicles and motorcycles	-0.2163	0.0059	-36.3591	0.0000
	Transporting and storage	-0.3289	0.0058	-56.5311	0.0000
	Accommodation and food service activities	-0.2367	0.0058	-40.6374	0.0000
	Information and communication	-0.3713	0.0077	-47.9085	0.0000
	Financial and insurance activities	-0.2392	0.0138	-17.3981	0.0000
	Professional, scientific and technical activities	-0.2774	0.0085	-32.7470	0.0000
	Education	-0.0914	0.0077	-11.9381	0.0000
	Human health and social work activities	-0.2499	0.0075	-33.3577	0.0000
	Other services activities	-0.3476	0.0054	-63.8893	0.0000
Gender*age Omitted variable=Male*From 15 to 24 years	Male*From 24 to 34 years	0.0809	0.0056	14.4470	0.0000
	Male*From 35 to 44 years	0.1396	0.0057	24.6371	0.0000
	Male*From 45 to 54 years	0.1680	0.0060	27.9222	0.0000

	Male*From 55 to 64 years	0.2093	0.0075	27.9172	0.0000
	Male*Over 64 year	0.2447	0.0201	12.1824	0.0000
	Female*From 15 to 24 years	-0.0061	0.0078	-0.7803	0.4352
	Female*From 24 to 34 years	0.0307	0.0061	5.0023	0.0000
	Female*From 35 to 44 years	0.1656	0.0063	26.1315	0.0000
	Female*From 45 to 54 years	0.2068	0.0069	29.9869	0.0000
	Female*From 55 to 64 years	0.2969	0.0096	30.8341	0.0000
	Female*Over 64 year	0.2639	0.0390	6.7751	0.0000
Gender*age*P	Male*From 24 to 34 years*P	-0.0560	0.0076	-7.3284	0.0000
	Male*From 35 to 44 years*P	0.0161	0.0077	2.0920	0.0364
	Male*From 45 to 54 years*P	0.0198	0.0081	2.4418	0.0146
	Male*From 55 to 64 years*P	0.0376	0.0101	3.7267	0.0002
	Male*Over 64 year*P	0.0190	0.0271	0.7009	0.4834
	Female*From 15 to 24 years*P	0.0160	0.0107	1.5000	0.1336
	Female*From 24 to 34 years*P	0.0237	0.0083	2.8622	0.0042
	Female*From 35 to 44 years*P	-0.0258	0.0085	-3.0196	0.0025
	Female*From 45 to 54 years*P	0.0021	0.0093	0.2236	0.8230
	Female*From 55 to 64 years*P	-0.0482	0.0130	-3.7016	0.0002
	Female*Over 64 year*P	0.0872	0.0503	1.7332	0.0831
Gender*age*T	Male*From 24 to 34 years*T	-0.0476	0.0059	-8.0709	0.0000
	Male*From 35 to 44 years*T	-0.0936	0.0060	-15.7291	0.0000
	Male*From 45 to 54 years*T	-0.1265	0.0063	-20.0369	0.0000
	Male*From 55 to 64 years*T	-0.1651	0.0078	-21.0372	0.0000
	Male*Over 64 year*T	-0.2135	0.0206	-10.3729	0.0000
	Female*From 15 to 24 years*T	-0.0228	0.0081	-2.8105	0.0049
	Female*From 24 to 34 years*T	-0.0354	0.0064	-5.5175	0.0000
	Female*From 35 to 44 years*T	-0.1438	0.0066	-21.7600	0.0000
	Female*From 45 to 54 years*T	-0.1732	0.0072	-24.1397	0.0000
	Female*From 55 to 64 years*T	-0.2371	0.0100	-23.7262	0.0000
	Female*Over 64 year*T	-0.2285	0.0399	-5.7327	0.0000
Gender*age*T*P	Male*From 24 to 34 years*T*P	0.0538	0.0080	6.7022	0.0000
	Male*From 35 to 44 years*T*P	-0.0285	0.0081	-3.5236	0.0004
	Male*From 45 to 54 years*T*P	-0.0340	0.0085	-4.0021	0.0001
	Male*From 55 to 64 years*T*P	-0.0635	0.0105	-6.0288	0.0000
	Male*Over 64 year*T*P	-0.0478	0.0278	-1.7213	0.0852
	Female*From 15 to 24 years*T*P	-0.0270	0.0111	-2.4298	0.0151
	Female*From 24 to 34 years*T*P	-0.0365	0.0087	-4.2150	0.0000
	Female*From 35 to 44 years*T*P	0.0117	0.0089	1.3121	0.1895
	Female*From 45 to 54 years*T*P	-0.0227	0.0096	-2.3574	0.0184
	Female*From 55 to 64 years*T*P	0.0118	0.0135	0.8709	0.3838
	Female*Over 64 year*T*P	-0.1142	0.0516	-2.2139	0.0268
Added value		0.0836	0.0165	5.0550	0.0000

n	R	R-square	R-square corr.	Est std. err.
1,905,715	0.487	0.2371	0.2371	0.3712

Credits

Marco Centra, INAPP (Chapters 1, 4, 5, 6, 7, 8, Appendices)

Massimiliano Deidda, INAPP (Chapters 1, 4, 5, 6, 7, 8, Appendices)

Valentina Gualtieri, INAPP (Chapters 1, 4, 5, 6, 7, 8, Appendices)

Sergio Scicchitano, INAPP (Chapter 1)

Francesco Trentini, Collegio Carlo Alberto (Chapters 1, 2, 3, 8)

Claudia Villosio, Collegio Carlo Alberto (Chapters 1, 2, 3, 8)

Iceland Liechtenstein Norway grants

Youth employment partnerSHIP

INAPP

Corso d'Italia 33
00198 Roma
Italy
https://www.inapp.org/

COLLEGIO CARLO ALBERTO

Piazza Arbarello 8
10123 Torino
Italy
https://www.carloalberto.org/