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(Occasional Papers)

Subsidies for permanent employment in the time of Covid-19

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# SUBSIDIES FOR PERMANENT EMPLOYMENT IN THE TIME OF COVID-19

by Antonio Accetturo\*, Francesca Modena\*\* and Giacomo Ziglio\*\*

## Abstract

This paper analyses the impact of a regional policy aimed at fostering permanent employment after the COVID-19 recession. Using administrative micro data from the Italian private sector, we estimate the impact of subsidies on permanent employment by examining variations in their implementation across regions and over time. We find that, on average, the effect on the hiring of previously unemployed people is limited, but the impact on the conversion of fixed-term contracts to permanent ones is positive and sizeable. However, we observe that the average effect masks great heterogeneity across age groups, with young people - for whom subsidies were more generous - benefiting the most. Furthermore, we find no evidence that this regional policy encouraged employee poaching.

**JEL Classification:** J21, J41, J48.

**Keywords:** Covid-19, employment subsidies, hiring, place-based policy, policy evaluation.

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## 1. Introduction<sup>1</sup>

Italy was severely affected by the spread of the Covid-19 pandemic and by the consequent adoption of lockdown measures to prevent infections. Economic repercussions of the crisis were asymmetrical: job losses were concentrated in the service sector, especially tourism (Basso et al., 2021), and mainly affected workers with unstable and poorly protected jobs (Carta and Philippis, 2021). In the exceptional context of the pandemic emergency, the Italian Government adopted for most of 2020 and 2021 a massive use of job retention schemes, a layoff ban and non-conditional transfers in order to significantly contain the potential wave of job destruction, but benefited more employees on permanent contracts (Basso et al., 2022). Regional policies were also added to national ones, differentiated by the level of legislative autonomy and the available funds.

In this paper we evaluate a policy – established at the end of 2020 – by testing whether and to what extent the evolution of job positions is affected by policy measures, exploiting the regional and time heterogeneity given by a reform adopted in the Italian region Trentino<sup>2</sup> in the first semester 2021 aimed at stimulating permanent job creation. The focus on the province of Trento is particularly important since this region was most exposed to the effects of the crisis (tourism activities are prevalent and there is a high share of fixed-term contracts) and it has a large degree of autonomy (it is *inter alia* in charge of defining the local social security cushion policies), involving also labour market issues.

Several studies have tried to estimate the effectiveness of policies that subsidize permanent employment, both in terms of new permanent hiring and conversion of fixed-term contracts (Ciani and de Blasio, 2015; Sestito and Viviano, 2018; Cahuc et al., 2018; Camussi et al., 2022; Depalo and Viviano, 2022). Given the information asymmetry between workers and potential employers, an incentive for a contract conversion might be more effective than one for any direct hires because it exploits the preference of employers to sign permanent contracts with workers that have already been screened (Ciani and de Blasio, 2015). From a theoretical point of view, unconditional hiring subsidies might lead to a rise in temporary hiring, as firms exploit the possibility to test workers through a temporary contract, eventually converting it into an open-ended contract later on; this is particularly valuable in an environment, like Italy, with relatively high employment protection for standard jobs (Berton et al., 2011; Picchio, 2008). Previous studies have found mixed evidence for these types of incentives in Italy. Cipollone and Guelfi (2003, 2006) use survey data to evaluate an Italian program introduced in 2001, a generous tax credit designed to foster hiring with open-ended rather than with fixed-term contracts, and they only find a weak positive impact for previously employed individuals and for those with higher education. Concerning incentives targeted to the conversion of fixed term contracts, Ciani and de Blasio (2015) rely on administrative microdata and consider a very short-term policy introduced in Italy in 2013 which provides benefits for employers who convert contracts for female and young workers: they show that the subsidy increased conversions by 83% on average. Using the same data, Sestito and Viviano (2016) evaluate a non-targeted subsidy introduced in Italy in 2015 for firms hiring workers with an open-ended contract or converting temporary contract to permanent contract: the policy contributed to double the monthly rate of conversion and the possibility of benefiting from the incentives in case

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<sup>1</sup>We would like to thank Fabrizio Colonna, Roberto Torrini, Riccardo Salomone, Stefania Terlizzi, Isabella Speziali, Giulio Zanella, Agnese Vitali and all the participants to the Bank of Italy territorial research network workshop. The views expressed in the paper are those of the authors and do not necessarily reflect those of the Bank of Italy.

<sup>2</sup>In the rest of the paper, we will refer to the province of Trento or Trentino region interchangeably.

of a conversion also boosted temporary hiring, as it allowed firms to test for the quality of a job match. Nevertheless, the effectiveness of these subsidies aimed at improving conversion should not be taken for granted. For instance, Battiloro and Costabella (2011), by exploiting administrative data, evaluate a subsidy for conversions introduced in 2007 in the province of Turin in Italy and they find no evidence of an increase in the number of conversions.

While previous policies were introduced in non-recessionary times – with the aim to reduce the negative consequences of the 1990s and 2000s labor market reforms – the Trentino measure can be considered as a counter-cyclical measure, adopted in exceptional macroeconomic conditions induced by the Covid-19 crisis. In 2020, Italian GDP recorded the largest drop ever registered in peace time (-9 percent) and, at the beginning of 2021, uncertainty related to the occurrence and the magnitude of a recovery was extremely high, due to the persistent risk of new sanitary restrictions.<sup>3</sup> Moreover, the persistent freeze on dismissals determined a reduction in the turnover rate, which influenced recruitment dynamics, with negative consequences for the employment opportunities for those returning to the labour market or joining it for the first time (Bank of Italy, 2021). At the end of 2020, there were widespread fears that labor demand would be extremely weak and a large share of new hirings would be temporary, with negative consequences for the career prospects of young and females (Rosolia and Torrini, 2016) and detrimental effects on aggregate productivity (Cappellari et al., 2012).

In order to correctly identify the subsidy effect, we employ a difference-in-differences approach that exploits a geographical variation in the costs of hiring with a permanent contract (PC) due to a policy that took place in Trentino region in the first semester of 2021. We compare the trends in permanent hiring in Trentino with those from another unaffected bordering region with similar characteristics (province of Bolzano); this allows us to rely on a clear control group, improving the causal interpretation of our results. We deem that this is a relevant improvement compared with previous studies (Ciani and de Blasio (2015) and Sestito and Viviano (2016)) that exploit the eligibility status across groups, based on previous contract type or demographic characteristics.

The policy is an incentive which applies to all new permanent job contracts offered to firms and workers located in Trentino. These incentives are not selective subsidies targeting specific groups of workers supposed to be weaker and less employable (e.g. long term job seekers) and they also apply to conversions from a temporary contract (TC) to a PC; they show some heterogeneity in the amount in favour of females and youths. We rely on very rich administrative data on a representative sample of labour contract events for which we observe hiring, conversion and termination, as well as features of the work relationship (sector, occupation, type of contract, location) and of the worker (education, age, gender). The estimated effect can be interpreted as an intention to treat effect (ITT) of the policy, which captures how the change in incentives altered permanent hiring/conversion for eligible contracts during the period in which the subsidy was available. To estimate the ITT, we need only eligibility information, not information about who actually receives the incentive. ITT is an interesting quantity for the policy makers, as it measures the effect of the reform over the wide population of workers targeted under the scheme, which includes both treated and untreated workers.

In this work we analyze the impact of the policy from two main perspectives. First, we focus on individuals and examine whether the permanent hiring incentives (PHI) actually increased the probability of being hired with PCs, the probability of having TCs converted into PCs, and the

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<sup>3</sup>GDP growth forecasts on 2021 at the start of the year were roughly half of the actual figure registered at the end of the year.



probability of job-to-job transitions from a PC to another PC (poaching). We investigate whether these probability changes were homogeneous across workers or rather favoured only specific workforce groups. Second, we focus on firm-level panel and evaluate whether PHI influenced the total job flows at the firm level.

The analysis provides evidence that PHI influence the probability to be employed with a permanent job position, although the specific effects depend on the previous working status considered and on the characteristics of the worker. Specifically, our results suggest that there is a weak positive relationship between the implementation of the measure and the probability to find a permanent job for non employed individuals: the monthly probability increased, on average, from 0.26% to 0.31%. The effect holds only for females and, in particular, for youths (aged 15 to 35), for whom the amount of the subsidy is higher and the negative consequences of the pandemic crisis more severe (Bank of Italy, 2021). Moreover, we observe a statistically significant and sizeable positive effect on the probability of workers securing a permanent position within firms: the monthly transition probability from TC to PC in the same firm increased, on average, from 1.67% to 2.43% in the presence of the policy. Even in this case we detect heterogeneous effects across age: a greater marginal impact is observed among young workers. The results also indicate that, on average, there are no effects in terms of transitions between firms (the so called labour poaching): the estimated coefficients for both the movements from TC and from PC are not statistically significant. As a further evidence, we find that the policy was effective in shifting the employment composition towards permanent job contracts, but it does so only for young people.

From the firms perspective, the possibility of benefiting from the incentives also made firms more likely to increase the number of gross and net permanent hires, as well as the number of conversions. All our results are robust to alternative specifications.

The paper is organized as follows. In Section 2 we briefly describe the permanent hiring incentives adopted in the province of Trento in the first semester of 2021. Section 3 describes the data and Section 4 presents the empirical strategy and discusses the identification issues. Sections 5.1, 5.2 and 5.3 show the results, respectively, on employment transitions, conversion and on total flows at the firm level. We also investigate the existence of heterogeneous effects and we perform some robustness checks. Section 6 provides an economic impact analysis and Section 7 concludes.

## **2. Institutional setting and incentives for permanent contracts**

Italy was the first European country hit by the Covid-19 pandemic and it acted as a front runner in the implementation of labour and income support measures (Carta and Philippis, 2021). The consequences of the pandemic for the labour market were substantial and the reduction in employment opportunities was especially severe for young, often fixed-term, workers, and for women, whose presence in the hardest hit sectors - in particular services related to tourism - is greater than average. The measures introduced by the Government helped to stem job losses. Starting from March 2020, the Government adopted several policies to support workers, benefiting more permanent employees: it extended social insurance benefits, banned dismissals of all employees and introduced business support measures. Therefore job losses varied by worker category, with fixed-term employment which had dropped sharply in the early months of the pandemic (Bank of Italy, 2021). The recovery of economic activity in 2021 led to a relatively limited increase in the number of people employed and a more marked rise in the number of hours worked, which in 2020 had absorbed most of the decrease in labour demand. Employment recovery has been driven by the growth in fixed-term jobs, whereas the dynamics in new permanent jobs were much weaker. The likelihood to hire workers under fixed-term contracts rather than open-ended ones

has been also driven by the high level of uncertainty about the evolution of the pandemic and of the recovery that still characterized the 2021. Permanent employment continue to be supported by the freeze on dismissals for economic reasons (Bank of Italy, 2022a).<sup>4</sup>

Because of their economies highly dependent on tourism, the provinces of Trento and Bolzano were among the hardest hit regions by the economic crisis. As in the rest of the country, the recovery in Trentino and Alto Adige was mainly driven by the fixed-term component, which had declined significantly in 2020. During 2020 the Province of Trento adopted a package of emergency measures in addition to those put in place by the national Government, meant to provide support to local workers and firms particularly affected by the adverse economic impacts following the Covid-19 pandemic.<sup>5</sup> As for the local labour market, several actions were carried out, mainly resorting to specific policies already laid down in the “*Documento degli interventi di politica del lavoro*”.<sup>6</sup> Early interventions mostly consisted in passive measures aimed at providing financial support to the local economy as supplementary income for workers (employees or self-employed) suspended or who have stopped working due to the crisis, as well as non-refundable aid for self-employed workers or allowances for low-income families negatively affected by the pandemic. At the end of 2020 the Provincial Executive also approved a package of extraordinary active measures entitled “*Interventi di politica attiva del lavoro per favorire la ripresa del mercato del lavoro in esito al periodo emergenziale*”<sup>7</sup>, in order to both stimulate local employment and prevent potential severe repercussions following the end of the national ban on dismissals.<sup>8</sup> In particular, the actions included a hiring subsidy<sup>9</sup> covering all new permanent contracts that extended to the first 6 months of 2021 the analogous national incentive established by art. 6 of Decree Law 14 August 2020, no. 104. The national benefit consisted in an automatic tax credit, up to 8,060 euros per half year (proportionate to the reference period on a monthly basis), to all firms hiring workers with open-ended contracts in the period 15 August - 31 December 2020.

The Trentino measure, called “*Incentivi straordinari per l’assunzione a tempo indeterminato*”,<sup>10</sup> was targeted to employers located in the province of Trento that, during the period 14 December 2020 - 30 June 2021, permanently hired people resident in the province of Trento or turned fixed-

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<sup>4</sup>Decree Law 41/2021 (“Support Decree”) envisaged that this rule would remain in force until 30 June for sectors with access to ordinary wage supplementation (essentially industry and construction) and until 31 October for the services sector, which has been hit hardest by the pandemic.

<sup>5</sup>These measures were set out by the Provincial Laws no. 2 of March 23, 2020 “*Misure urgenti di sostegno per le famiglie, i lavoratori e i settori economici connesse all’emergenza epidemiologica da COVID-19 e altre disposizioni*”, no. 3 of May 13, 2020 “*Ulteriori misure di sostegno per le famiglie, i lavoratori e i settori economici connesse all’emergenza epidemiologica da COVID-19*”, no. 6 of August 6, 2020 “*Assestamento del bilancio di previsione della Provincia autonoma di Trento per gli esercizi finanziari 2020 - 2022*” as well as no. 7 of May 17, 2021 “*Prime misure del 2021 connesse all’emergenza epidemiologica da COVID-19 e conseguente variazione al bilancio di previsione della Provincia autonoma di Trento per gli esercizi finanziari 2021 - 2023*” and gradually adopted by Provincial Government’s Resolutions (PGR) during the three-year period 2020-22.

<sup>6</sup>This document, as part of the provincial development program approved by the provincial Executive for the whole legislature (the latest version was approved by the PGR no. 75 of 24 January 2020), defines the priorities and the type of interventions, as well as the criteria, terms and procedures for implementing measures aimed at fostering the local labour market.

<sup>7</sup>The document was adopted through the PGR no. 2089 of 14 December 2020.

<sup>8</sup>At the time of the document’s approval, the end of the ban was set at 31.1.2021.

<sup>9</sup>In order to support local job retention, at the end of August 2020 the PAT also approved subsidies to firms in the tourism or transport sectors retaining their workforce despite the crisis.

<sup>10</sup>This incentive was laid down by art. 10 of Provincial Law 2/2020 and afterwards set out by PGR no. 2089/2020. Access criteria and financial coverage were established through determinations of the provincial employment Agency’s General Manager no. 35/2021, 278/2021 and 78/2022.

term to open-ended job positions, even in case of leasing contracts. Requirements to access the subsidy were: a) the production unit where the employee was hired had to be located in Trentino and not to be operating in the agricultural sector, b) recruitment via apprenticeship or intermittent contracts, as well as domestic work or on-the-job training was not facilitated, c) the worker had to be resident in Trentino and not to have in the last 6 months a permanent employment relationship with the same employer (or with someone in a control relationship with or related to such person).

The subsidy amounted to 4,000 euros for each permanent hiring/conversion; the incentive was raised to 6,000 euros for women or young workers aged 15 to 35, so as to promote their employment.<sup>11</sup> In case of part-time job, the amount of the subsidy was proportionally reduced. The scheme required that the job last for at least 6 months after hiring/conversion; to comply with this requirement, the employer may apply, and the incentive were distributed, only after this period of time. On the whole, the provincial employment Agency (Agenzia del lavoro) funded 3,111 applications - received by the deadline of January 14, 2022 - for a total amount of 14,900,000 euros.

### 3. Data and descriptive statistics

We exploit a sample of administrative micro-data from the *Campione Integrato delle Comunicazioni obbligatorie* (CICO), which provides information concerning job positions. This is a unique dataset that contains administrative records on job contracts for a sample of Italian employees. In Italy, all private firms (and some public sectors) are required to electronically communicate all events related to their employees' contracts: namely the activation, termination, fixed-term extension and transformation from fixed-term to permanent jobs or any other type of contract variation. Therefore, the administrative archive built on these communications contains information on all contracts that were signed, terminated or changed starting from 2009 (Ciani et al., 2019). Moreover, each record contains information about the employer and the employee (such as firm's location, sector of activity, occupation, age, gender, nationality, education). The Ministry releases a sample of micro-data on all workers born on certain dates (the 1st, 9th, 10th and 11th day of each month. In this work we use the I quarter 2022 release).

Given the rich set of information contained in the CICO, the dataset enables to study workers' employment history: it is possible to track individuals over time, observing in which position they are initially hired, the type of contract, how long the job lasts and if the initial contract is transformed. In the analysis we focus on permanent and fixed-term contracts<sup>12</sup> in the non-farm private sector; we exclude from the analysis the public sector workers, those in the agricultural sector,<sup>13</sup> job on call, domestic workers and apprentices as they are not subject to the policy measures.

The sample is divided into eligible and non-eligible workers to identify ITT. In accordance with the provincial law's requirements, eligible workers are those resident in Trentino at the time of hiring. Unfortunately, we have only data on the region of work instead of that of residence, which could lead to misclassify some observations: non residents that worked in the analysis period 2017-

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<sup>11</sup>The subsidy amounted to 3,000 euros for people with disabilities or particular conditions of disadvantage already benefiting from other provincial incentives

<sup>12</sup>In the rest of the paper, we will refer to permanent or open-ended contracts, as well as to fixed-term or temporary contracts interchangeably.

<sup>13</sup>We exclude the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99.

2021 at least once in Trentino could be classified as residents and vice versa residents that did not work in Trentino in that period could be classified as non residents. The potential misclassification of the dummy variable identifying the eligibility status could result in a non-classical measurement error that could lead to a downward bias on the regression coefficient estimating the impact of PHI on permanent employment. In this regard, we have carried out some analysis in order to appraise the misclassification probability. According to our elaboration on data from Italian National Institute of Social Insurance (INPS) there is a slight chance of misidentification, which could imply a quite limited impact on the estimate.<sup>14</sup>

As control group, totally unaffected by the policy, we focus on the individuals who work in the province of Bolzano,<sup>15</sup> a region similar to the province of Trento in terms of size, sectoral composition, demographic composition, and similar economic patterns before and during the pandemic crisis (Bank of Italy, 2022b). We focus on the period 2017-2021, in order to analyze the evolution of the labour market after the double-dip recession of 2008-09 and 2011-13 and after the hiring incentives and firing cost reduction adopted in Italy in 2015.

After this selection, and considering only eligible and non eligible groups, our dataset includes around 108 thousand labour contracts involving 43,200 workers and 18,800 firms. About 11% of contracts are open-ended ones and 41% were potentially eligible. Figure 1 shows the trend of permanent hires (panel (a)) and conversions from fixed-term to open-ended (panel (b)) for eligible workers as compared to those who are not eligible. In panel (a) we only find a slightly change in trends in permanent hiring in the first semester of 2021, when the regional incentives were in force. Instead, in panel (b) we find a clear-cut evidence of a change in trends after the introduction of PHI. Considering the total net flow of permanent job contracts, defined as the difference between job created (hiring or conversion) and destructed, it was about four fifty higher for eligible workers than for non eligible ones.

Table 1 reports descriptive statistics for eligible and non-eligible individuals for the period before the reform (2017-2020), at the level of job contracts. With respect to the control group, eligible workers have a slightly lower share of foreign workers, they are more educated, more likely to work as middle-skill occupation and they are more likely to be employed in the manufacturing sector. We will control for these demographic and sectoral variables in the regressions, in order to take into account possible bias due to selection on observable characteristics.

In this paper we use three different versions of our dataset. First, from the flow data at the contract level we construct a panel in which we follow individuals over time, recording their employment status month by month (Sestito and Viviano, 2018; Basso et al., 2021).<sup>16</sup> Thus, for each individual in each month we track his/her employment status, sector, type of contract, occupation, firm and region of work. In particular we consider an individual as employed in a given year-month if he/she worked at least a day in that period and as non-employed otherwise; when an individual has more than one active contract in the same month, we select the contract with the longest spell (Basso et al., 2021). The panel is strongly balanced, implying that the group composition is guaranteed to be stable over time.

Second, based on the flow structure of the database, we record each temporary hiring and

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<sup>14</sup>According to data from INPS available on the period 2017-19, the "false negative" rate (the probability to classify a resident as non resident) amount to 13.24% and the "false positive" rate (the probability to classify a non resident as resident) amount to 0.16%; the odds of misclassification is 0.29%. These values are robust to both different periods and eligibility specifications.

<sup>15</sup>In the rest of the paper, we will refer to the province of Bolzano or South Tyrol region interchangeably.

<sup>16</sup>We do not observe people who have never get an employment.

we follow it week by week until termination or conversion into a permanent contract; the unit of analysis is the contract-week level. This allows to precisely estimate the probability of conversion. Moreover, in the Appendix we focus on flow data analyzing hiring composition by type of contract (TC and PC).

Third, we also consider the firm-level panel dimension, i.e. for each firm in our dataset we compute monthly flows (hiring, conversions and net job creation) as well as the workforce composition (share of 15-35 years old workers, share of foreign born workers, share of females, share of high educated workers and share of high occupation job positions). The panel is strongly balanced. This specification allows to analyze whether PHI induce employers to increase the overall workforce or simply substitute new hire for another employee whose contract is ending.

#### 4. Estimation strategy

Fully exploiting the employee’s work history, we can estimate the impact of PHI according to workers’ previous employment status and at the firm level. Specifically, we concretely ask the following questions:

1. Do the PHI increase the probability of obtaining a permanent job for jobless people?
2. Do the PHI increase the probability to stabilize workers previously employed with a fixed term job contract, in a different firm or in the same firm?
3. Do the PHI affect labour market flows through poaching of permanent workers from one firm to another?
4. Do the PHI impact on hiring compositions, i.e. on the probability of being employed with a PC vs TC?
5. Do the PHI affect total permanent job flows at the firm level?

We first rely on the individual level panel dimension to analyze employment transition probabilities between employment and non-employment, between different types of contract and across firms (Section 4.1). We then track the evolution of each contract, until conversion or termination, to examine the conversion probability (Section 4.2), and we rely on the flow structure of the data to study hiring composition (Section Appendix). Finally, we compute the extent of permanent job flows originated by each firm (Section 4.3).

##### 4.1. Employment transitions

We base our analysis on the following difference-in-differences (DiD) model at the individual-time level, exploiting the exogenous variation across the two regions and time upon which we base our identification strategy:

$$y_{it} = \alpha + \beta_1 P_t + \beta_2 P2_t + \beta_3 (Elig_i \times P_t) + \beta_4 (Elig_i \times P2_t) + \gamma_1 T_t + \gamma_2 (T_t \times Elig_i) + \phi_i + \epsilon_{it} \quad (1)$$

where  $y_{it}$  is a dummy identifying the employment outcome of individual  $i$  at time  $t$  (month-year; see Section 3 for a description of the dataset panel at the individual level). We consider different outcomes in different specifications, in order to capture all possible employment transitions described above: the dependent variable can be therefore either the transition from non-employment to employment with a permanent contract, or – conditional on being employed – the transition from a temporary to an open-ended contract (in the same or in a different firm) or from an open-ended job to another one with a different firm.

We therefore estimate four models. We first look at the probability that jobless individuals find a permanent job. We estimate equation (1) on the sample of individuals non employed at  $t - 1$  and we define the dummy  $y_{it}$  which is equal to one if the worker  $i$  is hired with a permanent job contract at time  $t$  and zero otherwise; the zero outcome includes both non employment and fixed-term contracts. In a second and third exercises we look at temporary workers' employment stabilization, i.e. moving from a temporary to an open-ended contract. We estimate equation (1) on the sample of workers employed with a TC at  $t - 1$  and the dependent variable is a dummy for PC at time  $t$  in another firm (model 2), or in the same firm (model 3), and equal to zero in case of contracts that continue as temporary. Finally, we explore labour poaching between permanent job contracts and estimate a fourth model where  $y_{it}$  is equal to one for workers employed at time  $t$  with a PC in a different firm with respect to a month before, conditional on being employed with a PC at time  $t - 1$ .

In all models  $Elig_i$  is the dummy capturing the eligibility for the subsidy. Notice that the law identifies two main eligibility conditions, one based on the location of the firm and one based on the residence of the individual (in both cases, the province of Trento). As noted in Section 3, in our data we do not have the information on the worker's region of residence. Moreover, we need to identify the eligibility condition as a characteristic of the worker, and not of the firm. We therefore assume that an individual is eligible if he/she worked at least one day in the province of Trento; as a control group we focus on people who worked at least one day in the province of Bolzano. We drop individuals who worked both in Trentino and in Alto Adige.<sup>17</sup> In this way we can have a proxy for both the region of work and the region of residence. As a robustness check we rely on an alternative way of defining the eligible and the control groups (see Section 5.1).

$P_t$  is a time dummy equal to one if the observation refers to the the period in which the PHI are at play, i.e. from 1 January to 30 June 2021. As reported in Section 2, the reform has been applied from 14 December 2020 to 30 June 2021, but until the end of 2020 the national incentives, applied to all the national territory, were in force.  $P2_t$  is a time dummy equals to one for the period from 1 July 2021 to 31 December 2021, i.e. the semester following the introduction of PHI. We analyze the months after the subsidy since it is plausible that, if employers substitute conversions over time in order to benefit from the incentives, the effect of the policy in  $P2_t$  should compensate the effect observed in  $P_t$ .

The coefficients of interest is  $\beta_3$ , which represents the differential trend due to the subsidy for eligible contracts in the reference period. In order to correctly identify a causal parameter, we need to exclude the possibility that the region which displayed stronger trends of employment transition probabilities toward PCs was also the one that adopted the subsidy for permanent hiring/transformation. In this case, we would still observe higher use of PC ex-post, but the causal relation would be questionable. To control for the possibility that the implementation of the reform is correlated with underlying trends, we first repeat our regression for the period before the introduction of the subsidy. If our indicators were capturing differences in trends between the two regions, we should find that the coefficients for eligible contracts should still be significant when running the same regressions for the years before the subsidy was in force. Figure 2 supports the conclusion that the dummies capturing eligibility for the subsidy is not correlated with some pre-existing underlying trends for all models except for model 4 (panel (d)), an issue that will be discussed in Section 5.1. The common trend tests confirm indeed that there are no differential patterns between the treated and the control group or any significant association between reform

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<sup>17</sup>We drop about 2.6% of the sample.

adoption and the probability of transition to permanent jobs.

We estimate equation (1) including individual fixed-effects ( $\phi_i$ ), aimed at capturing individuals' time-invariant unobserved heterogeneity; such specification has the disadvantage of limiting the identification of  $\beta_3$  out of individuals who switch in and out the considered outcomes at least once in the considered period. As a robustness check we run the regressions without individual fixed effects. Finally, we control for time trends ( $T_t$ ) and its interaction with the dummy eligible. These controls aim at capturing the existence of possible violations of the common trend assumption, a crucial hypothesis in a DiD model. Standard errors are clustered at the individual level. We limit our sample to workers employed in non-agricultural private sectors at time  $t$ , the sectors at time  $t - 1$ , however, comprise the entire economy. From the panel we select individuals aged between 15 and 65, mainly in order to avoid extreme cases that are likely to signal measurement error.<sup>18</sup>

Table 2 reports the mean values of the dependent variables described in equation (1). Considering all workers in the non-agricultural private sector, the probability that somebody who was non employed a month ago is working with a PC in the subsequent month is 0.3%. Conditional on being employed, the monthly share of workers that moved from TC to PC in another firm is 0.3%,<sup>19</sup> 1.9% if we consider transitions in the same firm. The probability that a permanent worker finds a new permanent job in another firm with respect to a month before is 0.4%.

#### 4.2. Conversion from temporary to open-ended contracts

In the previous section we modelled the employment transition from TC to PC in the same firm, which captures both conversion and new hiring. In order to precisely estimate the conversion probability, we switch to a contract-level analysis and track each contract from the starting date until conversion or termination; the risk of conversion depends therefore on the contract duration. Specifically, focusing only on TCs, the data have been organized into contract period format, i.e. one record for each week that the fixed-term contracts are at risk of conversion. TCs exit the panel in the period following their termination or conversion into PCs. The model predicting the weekly probability of conversion is:

$$\begin{aligned}
 y_{ijw} = & \alpha + \beta_1 Elig_{ij} + \beta_2 P_w + \beta_3 P2_w + \beta_4 (Elig_{ij} \times P_w) + \beta_5 (Elig_{ij} \times P2_w) \\
 & + \phi_1 \ln(Dur_{ijw}) + \phi_2 \ln(Dur_{ijw})^2 + \phi_3 \ln(Dur_{ijw}) \times Elig_{ij} + \omega_1 X_{ij} + \omega_2 X_{ijw} \\
 & + \gamma_1 T_t + \gamma_2 (T_t \times Elig_{ij}) + \epsilon_{ijw}
 \end{aligned} \tag{2}$$

where  $y_{ijw}$  is a dummy variable equals to one if the temporary contract for worker  $i$  employed at firm  $j$  is converted at week  $w$ , 0 otherwise (continuing as temporary or terminating). Our results have to be interpreted as the impact of PHI on the probability that an active temporary contract is converted into permanent the following week.  $Elig_{ij}$  is the dummy capturing the eligibility for the subsidy, i.e. the firm is located in the province of Trento, while  $P_w$  and  $P2_w$  are time dummies equal to one if the week  $w$  falls respectively in the period from January to June 2021 (the time when the measure was underway) or in the following semester, i.e. from July to December 2021.

The coefficients of interest is  $\beta_4$ , which represents the DiD estimate. As before, its causal interpretation rests on the hypothesis that omitted variables may influence the level but not the

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<sup>18</sup>It has to be noted that, since in our panel we observe only workers with at least one employed episodes in the period 2017-2021, there may be a sample biased as previously unemployed workers could enter the treated sample through TC. However, according to the Labor Force Survey (LFS), the incidence of long term unemployment in Trentino and in Alto Adige is very low: in 2021 the long-term unemployment rate was 1.7% in the province of Trento and 0.8% in the province of Bolzano, compared to 5.4% on average in Italy.

<sup>19</sup>These monthly probabilities are in line with Sestito and Viviano (2016).

evolution over time of the dependent variable; in other words the common trend assumption must hold. As in Section 4.1, we perform a common trend test estimating our regression for the periods before the introduction of PHI. Results are shown in Figure 3. The estimated effects of the reform for the pre-event years are not statistically significant, providing an informal specification test of the model, and supporting the conclusion that the reform event is not correlated with pre-existing underlying trends.

Equation (2) also controls for the contract duration ( $Dur_{ijw}$ )<sup>20</sup> and its interacts with the dummy eligible to account for heterogeneity in duration effects. We include also time variant and invariant characteristics at job-relationship and individual level ( $X_{ij}$  and  $X_{ijw}$ ; age, gender, education, citizenship, occupation, sector). Additional controls and sample are the same of equation (1).

### 4.3. Total flows

The third model looks at the firm’s perspective. In order to identify aggregate firm level effects, we construct a panel dataset analyzing the monthly flows originated by each firm in our dataset. This analysis should be made with caution since we are using a sample of employee in each firm rather than the universe. We estimate the following model, where the unit of analysis is firm-month:

$$y_{jt} = \alpha + \beta_1 P_t + \beta_2 P2_t + \beta_3 (Elig_j \times P_t) + \beta_4 (Elig_j \times P2_t) + \eta_1 T_t + \eta_2 (T_t \times Elig_j) + \phi_j + \lambda_{jt} \quad (3)$$

where  $y_{jt}$  is the employment flows of firm  $j$  at time  $t$  (month-year). We consider different outcomes in different specifications: in particular, the number of permanent hires, of total hires, of conversions from temporary to permanent job contracts, and net job creation. As in equation (1),  $Elig_j$  is the dummy capturing the eligibility for the subsidy (i.e. if the firm is located in the province of Trento),  $P_t$  is a time dummy equals to one if the month  $t$  is between January and June 2021, when the PHI came into effect, and the coefficients of interest is  $\beta_3$ , which represents the differential trend due to the subsidy for eligible firms in the period 1 January-30 June 2021. Moreover, in addition to time trend ( $T_t$ , and its interaction with the dummy eligible), we include firm fixed effects ( $\phi_j$ ). Standard errors are clustered at the firm level.

## 5. Results

### 5.1. New hiring, stabilization and labour poaching

We begin our core analysis by assessing the impact of PHI on permanent employment, distinguishing individuals by their status in the previous month (out of employment, working with a fixed-term contract or with an open-ended one). Table 3 presents the results of the DiD model (1). The results obtained can be commented according to different dimensions: the first column refers to people moving from non employment into a permanent position in the subsequent month; columns (2) and (3) refer to transitions from fixed-term to open-ended job contracts, respectively in another firm and in the same firm; column (4) refers to transitions from a permanent contract to another (the so called labour poaching).

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<sup>20</sup>The contract duration is computed as the difference between the observed week and the starting week.



First of all, we wonder if PHI have positive effects on new hires. Results show that subsidies have only a slightly statistically significant effect on new permanent hiring: the monthly probability to find a permanent job for jobless people increases from 0.26% to 0.31% for eligible individuals. This small (but statistically significant) effect is in line with the empirical literature that shows that employers are unlikely to directly sign permanent contracts without strong signals of high productivity from the workers (Ciani and de Blasio, 2015).

Hiring subsidies can result in new employment involving marginal workers less attached to the labour market with potential lower expected productivity and motivation. In our context is unlikely that this process has occurred. If we replicate our estimate excluding new entrants, i.e. individuals with no working experience before 2021, results, available upon request, remain basically unchanged. Even the distribution of individual fixed effects has changed in a similar way between the eligible and the non-eligible groups.

Second, we are interested in understanding the effects of PHI on workers' stabilization. We find that PHI are associated with a statistically significant increase in the transition probability from fixed-term to open-ended job contracts in the same firm (column (3)); the magnitude of the effect is sizeable: the monthly transition probability for eligible workers increases from 1.7% to 2.4% in the presence of the policy. Our results are in line with previous studies that focused on Italian policies fostering conversion from TCs to PCs; in terms of magnitude they are only slightly lower (the permanent hiring subsidies adopted in Italy in 2015 contributed to double the monthly conversion rate (Sestito and Viviano, 2016)).<sup>21</sup> This result may be influenced by high macroeconomic uncertainty at the beginning of 2021 as well as by the presence of analogous incentives at the national level in 2020; new permanent hires may also be affected by these factors.

As far as the labour poaching is concerned, columns (2) and (4) of Table 3 provide evidence that, on average, PHI do not affect transitions among firms, both from TCs and from PCs. As for the latter type of transition, the positive pre-existing dynamics pointed out in the common trend test (Figure 2, panel d) would introduce an upward bias in estimating the coefficient of interest, which strengthens our finding that PHI does not affect labour poaching.

In all the four specifications of Table 3 there are no effects of the scheme in  $P2_t$ , that is after the policy ends. This implies that the change in stock induced by the policy is not offset by a negative effect in the following months.

### *Robustness and heterogeneity*

We consider a set of exercises aimed at testing the robustness of our results to different specifications. A first set of robustness checks is based on an alternative definition of eligible and control groups; in particular, we identify the region of work as the mode, i.e. the value occurring most frequently. The results are set out in Table 4 and confirm the baseline findings.

Second, we find that our main results on stabilization in the same firm are robust to the exclusion of individual fixed effects (and the inclusion of workers' characteristics, such as age and age squared, occupation, education, dummy for foreign, dummy for female (see Table 5); this

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<sup>21</sup>As previously discussed, permanent hiring incentives that also apply to contract conversion could promote temporary hires, as firms exploit the possibility to test workers through a temporary contract, eventually converting them into an open-ended contract later on. To test this hypothesis, we focus on how the probability of conversion changes according to whether TCs pre-exist or started in the first semester of 2021. Results, available upon request, suggest that the policy has a positive and significant impact only on existing TCs; therefore, we fail to find evidence of the signalling mechanism. This finding may depend on the fact that the policy has only been implemented for a short period, 6 months; as noted in Camussi et al. (2022), the conversion rate is low within the first 6 months of TC duration.

specification allows the identification of  $\beta_3$  over the all sample, and not out of individuals who switch in and out the considered outcomes at least once in the considered period as in the model with individual fixed-effects.

Third, from the autumn of 2020, following the second wave of the pandemic, containment measures were applied at regional level and to differing degrees, in accordance with local epidemiological risk profiles. To assess the possible different impact of these measures between the treated and control groups on employment dynamics, as a robustness check we exclude the industries most affected by restrictions, such as trade and food services. Results, available upon request, are confirmed.

The coefficients obtained in all the robustness checks are mostly in line with those obtained in the baseline specification, in terms of signs and of magnitudes.

To refine our analysis and detect possible heterogeneous effects of the policy, we estimate employment transitions focusing on people's characteristic. First, we check heterogeneous effects according to demographic characteristics (gender and age), since the amount of the subsidy was higher for women and young workers (see Section 2). Women and young people have been hit much harder than others by the pandemic shock, potentially inducing a higher employment elasticity with respect to incentives. However, it is reasonable to assume that this effect holds for both eligible and control groups. We run regression (1) separately for females and males, and for individuals aged 15-35 and older than 35. We split the sample, instead of using interaction terms, in order to allow to all the parameters to vary for these groups. Tables 6 and 7 show the results of the heterogeneity analyses. PHI impact the monthly probability to find a permanent job for jobless individuals only for females and for youth. The estimated coefficients correspond, respectively, to an increase of 0.07 percentage points, being the average probability equal to 0.16%, and of 0.12 percentage points (0.21% the average value). As regard the employment transition from TC to PC in the same firm, the policy affects both gender and age groups, but with a stronger impact on females and youth; the effects are sizeable when compared to average size of the monthly transitions probabilities for eligible workers: 0.96 percentage points for females (the average value of the dependent variable is 1.24%) and 0.89 percentage points for young workers (the average value is 1.78%). Comparing our results with previous studies evaluating subsidies aimed at fostering job stabilization, the magnitude of our effects is in line with the other findings (see for example Ciani and de Blasio (2015)).

Second, we also discuss the heterogeneity of the effects by educational status. A policy maker might want to know whether the policy provided everybody with an additional opportunity of entering permanent employment or rather favoured only specific workforce groups, for example those with low education who are less attached to the labour market. Table 8 shows the estimates on the sub sample of individuals by educational level. PHI have no impact for individuals who have at most completed primary school. Differently, PHI increase the probability to find a permanent job for jobless people only for medium-educated individuals. The positive effect of PHI on the conversion from fixed-term to open-ended contract holds for both medium and high education, with an increase in the magnitude of the estimated coefficient associated with higher education.

## 5.2. Conversion from temporary to open-ended contracts

Our findings so far provide some evidence of the effects of the PHI in terms of employment stabilization from TC to PC. Given this evidence, we now turn to analyzing in detail the impact of the policy in terms of conversions from fixed-term to open-ended contracts. Table 9 reports the results of the DiD model (2), focusing on the sample of temporary contracts in the non farm private sector in the provinces of Trento and Bolzano. The unit of analysis is contract-week. The

effect of PHI is positive and sizeable: being eligible for the subsidies in the first semester of 2021 increases the weekly probability of conversion by 0.2 percentage points (column (3)), being the average weekly conversion probability for eligible workers equal to 0.34%.

The coefficient of  $Elig_{ij} \times P2_w$  is not statistically different from zero, suggesting that in  $P2_w$  the conversion probability for eligible contracts with respect to the control group returned to the average value for the pre-reform period.

As noted in Section 4.2, conversion rate depends on the *log* of the elapsed duration (in weeks). As a robustness check we include also the interaction term between duration and a dummy for years 2020-21: indeed in these years, in order to prevent fixed-term contracts from being interrupted, the national Government suspended the requirement of the cause for the extension or renewal of fixed-term contracts,<sup>22</sup> thereby increasing the duration of these contracts; results remain confirmed.

The coefficient is robust to several specifications, such as different time trend unit and the inclusion of individuals fixed effects.<sup>23</sup> Moreover, we estimate equation (2) as a simple discrete-hazard model using a logit (as common in the literature in duration models). Results, available upon request, are in line with those from our main regression: the conversion rate increases for the eligible group with respect to the control one in period  $P_w$ .

We add some further analyses to test whether the effects are heterogeneous across workers' characteristics. Table 10 shows that PHI increase the probability of conversion from TC to PC for both females and males and for both age groups, but with a stronger impact on young workers, for which the amount of the subsidy is higher with respect to older workers. Moreover, as a further check, we also included a full set of interactions between duration, dummy  $Elig_{ij}$ , dummy  $P_w$ , and  $Elig_{ij} \times P_w$  interaction dummy in order to allow for heterogeneity in the policy effect by duration; results, available upon request, shows that PHI are more likely to impact on long-lasting job-relationships.

### 5.3. Total flows

In this section we estimate equation (3), which refers to hires made at the firm level. Results are reported in Table 11. The first and the second columns report the effects of PHI on gross permanent hires and on total hiring, the third column adds the effect on the number of conversions from fixed-term contracts to open-ended contracts; we then estimate the impact of the policy on net permanent job creation (equal to hiring plus conversion minus firing; column (4)). The inclusion of firm fixed effects allows us to control for average firm-level hiring, which can depend on unobservable firm-specific characteristics. The impact of PHI is positive and significant for both permanent hiring (gross and net) and conversions. All effects are sizeable when compared to the average size of the monthly average value of the dependent variable; we find a higher impact of PHI on the number of conversions and on net permanent hires. Nevertheless we do not find any effect on total hires, meaning that PHI do not encourage firms to increase their size, only their employment compositions between permanent and temporary contracts.

## 6. Assessing the economic impact

As specified in the Section 2, the Province of Trento has eventually funded 3,111 subsidies for a total amount of 14, 900, 000 euros. However, part of that hiring would have taken place even in the absence of the PHI.

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<sup>22</sup>Introduced by Decree Law 87/2018, the 'Dignity Decree'.

<sup>23</sup>Results are available upon request.

In order to correctly measure the additional job creation generated by the policy, we use the estimated parameters in our regression models. In particular, the monthly probability to find a permanent job for unemployed people has increased by 0.05 percentage points and by 0.76 in case of conversion from fixed-term to open-ended job contracts in the same firm. Therefore, using data on employed and non employed individuals from Istat LFS we can estimate the policy's benefits in terms of additional permanent contracts. In 2020 in the province of Trento there were 115,511 non employed individuals; this implies that the PHI has potentially induced 347 new hires ( $347 = 115,511 \cdot 0.0005 \cdot 6$ , taking into account that the measure has been implemented for 6 months). In the same period, there were 35,616 workers with a fixed-term contract, so according to our estimate the conversions attributable to the PHI have been 1,624 ( $1,624 = 35,616 \cdot 0.0076 \cdot 6$ ). At the end, out of a total of 3,111 subsidies, 1,140 represent hires that would have been taken place even in the absence of the incentives and 1,971 are the additional number of permanent contracts generated by the provincial policy, at an average cost of 7,556 euros per subsidy.

We have also shown that the average effect hides a great heterogeneity among individuals: youths, for whom the subsidy was more generous (it raised from 4,000 to 6,000 euros for each permanent hiring/conversion involving workers aged 15 to 35), benefited most. As in the previous approach, exploiting the estimated parameters in our regression models and data on employed and non employed young individuals from Istat LFS, we estimate the additional number of permanent contracts generated by the provincial policy. In 2020 in the province of Trento there were 18,260 young workers with a fixed-term contract and 56,907 non employed young individuals. Taking into account that the PHI increased by 0.89 percentage points the monthly probability to find a permanent job for unemployed people and by 0.12 percentage points that one of conversion from fixed-term to open-ended job contracts in the same firm, it resulted in 1,385 additional permanent contracts (out of 1.512 in the 6 months analysis period). Despite the larger subsidy, the local government paid an average of 6,551 euros per extra permanent hire of young people, lower than the average amount, suggesting greater youth employment elasticity.

## 7. Conclusions

The Covid-19 crisis had a dramatic impact on the labour market in terms of activations and terminations, penalizing especially those with less stable contracts. This paper uses a large sample of Italian employees extracted from the Ministry of Labour's mandatory reporting administrative data to analyse the impact of subsidies for permanent employment adopted by the Italian region Trentino to support stable positions during the pandemic, on job flows, both at the individual and firm level.

Our results suggest that permanent hiring incentives have a positive effect mainly on conversion of temporary contracts into permanent ones. The findings highlight the existence of heterogeneous effects. The positive effects are stronger for younger individuals, for which the subsidy was more generous. The measure did not incentive, instead, labour poaching among firms. At firm level, the incentive did not encourage firms to increase their size, but it had an impact on the overall composition of the labour force across types of contracts.

To assess the quantitative relevance of these results we report some back-on-the-envelope calculations of the impact of the policy on job creation. We find that almost two-thirds of the jobs that received the subsidy would have not been created without the policy. Each new permanent hire actually generated by the PHI had an average cost of 7,500 euros, which makes the measure quite effective from a cost-benefit analysis point of view.

These results confirm the relevance of PHI for stabilization purposes, even in periods characterized by high macroeconomic uncertainty.

## References

- BANK OF ITALY (2021): “Annual Report for 2020,” Annual report, Bank of Italy.
- (2022a): “Annual Report for 2021,” Annual report, Bank of Italy.
- (2022b): “The economy of the Autonomous provinces of Trento and Bolzano,” Annual report, Bank of Italy.
- BASSO, G., D. DEPALO, S. LATTANZIO, ET AL. (2022): “Job flows and reallocation during the recovery,” Tech. rep., Bank of Italy, Economic Research and International Relations Area.
- BASSO, G., A. GROMPONE, AND F. MODENA (2021): “The (little) reallocation potential of workers most hit by the COVID-19 crisis,” *Politica economica*, 151–186.
- BATTILORO, V. AND L. M. COSTABELLA (2011): “Hiring subsidies vs activation. The effectiveness of two programs to favour stable jobs,” *Politica economica*, 197–218.
- BERTON, F., F. DEVICIENTI, AND L. PACELLI (2011): “Are temporary jobs a port of entry into permanent employment?: Evidence from matched employer-employee,” *International Journal of Manpower*, 32, 879–899.
- CAHUC, P., S. CARCILLO, AND T. LE BARBANCHON (2018): “The Effectiveness of Hiring Credits,” *The Review of Economic Studies*, 86, 593–626.
- CAMUSSI, S., F. COLONNA, AND F. MODENA (2022): “Temporary contracts: an analysis of the North-South gap in Italy,” Questioni di Economia e Finanza (Occasional Papers) 707, Bank of Italy, Economic Research and International Relations Area.
- CAPPELLARI, L., C. DELL’ARINGA, AND M. LEONARDI (2012): “Temporary Employment, Job Flows and Productivity: A Tale of Two Reforms,” *Economic Journal*, 122, 188–215.
- CARTA, F. AND M. D. PHILIPPIS (2021): “The impact of the COVID-19 shock on labour income inequality: evidence from Italy,” Questioni di Economia e Finanza (Occasional Papers) 606, Bank of Italy, Economic Research and International Relations Area.
- CIANI, E. AND G. DE BLASIO (2015): “Getting stable: an evaluation of the incentives for permanent contracts in Italy,” *IZA Journal of European Labor Studies*, 4, 1–29.
- CIANI, E., A. GROMPONE, AND E. OLIVIERI (2019): “Long-term unemployment and subsidies for permanent employment,” Temi di discussione (Economic working papers) 1249, Bank of Italy, Economic Research and International Relations Area.
- CIPOLLONE, P. AND A. GUELFY (2003): “Tax credit policy and firms’ behaviour: the case of subsidy to open-end labour contract in Italy,” Temi di discussione (Economic working papers) 471, Bank of Italy, Economic Research and International Relations Area.
- (2006): “Financial support to permanent jobs. The Italian case,” *Politica economica*, 51–76.
- DEPALO, D. AND E. VIVIANO (2022): “Hiring subsidies and firm growth: some new evidence from Italy,” *mimeo*.

- PICCHIO, M. (2008): “Temporary contracts and transitions to stable jobs in Italy,” *Labour*, 22, 147–174.
- ROSOLIA, A. AND R. TORRINI (2016): “The generation gap: a cohort analysis of earnings levels, dispersion and initial labor market conditions in Italy, 1974-2014,” *Questioni di Economia e Finanza (Occasional Papers)* 366, Bank of Italy, Economic Research and International Relations Area.
- SESTITO, P. AND E. VIVIANO (2016): “Hiring incentives and/or firing cost reduction? Evaluating the impact of the 2015 policies on the Italian labour market,” *Questioni di Economia e Finanza (Occasional Papers)* 325, Bank of Italy, Economic Research and International Relations Area.
- (2018): “Firing costs and firm hiring: evidence from an Italian reform,” *Economic Policy*, 33, 101–130.

## Appendix

### *Hiring composition*

We assess the impact of the PHI on hiring composition, i.e. on a workers' probability of being employed with an open-ended contract with respect to a temporary one. We use the flow structure of the database and we estimate the following model:

$$y_{ijt} = \alpha + \beta_1 Elig_{ij} + \beta_2 P_t + \beta_3 P2_t + \beta_4 (Elig_{ij} \times P_t) + \beta_5 (Elig_{ij} \times P2_t) + \gamma_1 X_i + \gamma_2 X_{it} + \gamma_3 X_{jt} + \delta_1 T_t + \delta_2 (T_t \times Elig_{ij}) + \epsilon_{ijt} \quad (A1)$$

where the dependent variable  $y_{ijt}$  is equal to one if the new contract for worker  $i$  employed at firm  $j$  at time  $t$  is a permanent one, zero if it is a temporary one.  $Elig_{ij}$  is the dummy capturing the eligibility to the subsidy described in the previous section, i.e. working in the province of Trento, and  $P_t$  is a time dummy equal to one if the date of activation of the contract is between 1 January 2021 to 30 June 2021; as reported in Section 2, the reform has been applied from 14 December 2020 to 30 June 2021, but until the end of 2020 the national incentives, applied to all the national territory, were in force.  $P2_t$  is a time dummy equal to one if the date of activation of the contract is between 1 July 2021 to 31 December 2021, i.e. the period after the introduction of PHI.

The coefficients of interest is  $\beta_4$ , which represents the differential trend due to the subsidy for eligible contracts in the period 1 January-30 June 2021;  $\beta_5$  captures the probability of permanent hiring in the period after the reform in the province of Trento.

Additionally, we also control for individual time variant and invariant characteristics ( $X_i$  and  $X_{it}$ , which comprehend gender, dummy for foreign, age and age squared, education and occupation), for firm's characteristics ( $X_{jt}$ , sector), and time trend (year-month); we allow the coefficient of the time trend to different for eligible and non eligible workers. We report standard errors clustered at the firm level, but the results are robust to alternative treatments of the error terms.

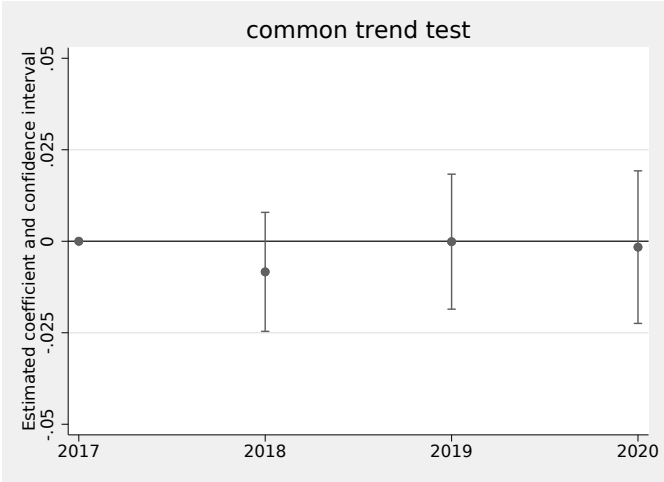
We focus on firms located in the province of Trento and in the province of Bolzano, since, as noted in the previous section, these regions are comparable. Although we have argued that the implementation of the labor market reform was to some extent random, we nonetheless need to exclude the possibility that the region which displayed an extended use of open ended contracts was also the one that adopted the subsidy for permanent hiring/transformation. In this case, we would still observe higher use of temporary contracts ex-post, but the causal relation would be questionable. To control for the possibility that the implementation of the reform is correlated with underlying trends, we first repeat our regression for the period before the introduction of the subsidy. If our indicators are capturing differences in trends among regions, we should find that the coefficients for eligible contracts should still be significant when running the same regressions for the years before the subsidy was passed. Figure A1 supports the conclusion that the dummies capturing eligibility for the subsidy was not correlated with some pre-existing underlying trends. The common trend tests confirm indeed that there are no differential patterns between treated and control groups or any significant association between reform adoption and the probability of permanent hiring.

Table A1 reports the results of the DiD model (A1). In the first column there are no other controls apart from the eligible and time dummies, and time trend. In columns (2) and (3) we add, respectively, individual's and firm's characteristics. We find that PHI have no impact on the probability of finding a permanent job (column (3)). As noted in Section 2, the amount of



the subsidy was higher for women or young workers aged 15 to 35, for whom it was raised from 4,000 to 6,000 euros. Columns from (4) to (7) of Table A1 show the results of the heterogeneity analysis, where we focus on the sample of females, males, young and non-young workers. PHI are associated with a statistically significant increase in the probability of finding a permanent job only for young workers; the effect is sizeable: the estimated coefficient is 0.026, which means that the permanent hiring probability for eligible young workers increases from 9.1% (the average value before PHI) to 11.7% due to the PHI.

Figure A1: Test for the common trend assumption. Hiring composition.



Notes. Test for the common trend assumption, choosing fake reform years for all the periods before the introduction of the reforms. Regressions are based on equation A1. Dependent variable is a dummy variable equals to one in case of new permanent contract and zero otherwise. We consider temporary (TC) and permanent (PC) contracts in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. We consider only firms located in the provinces of Trento and of Bolzano. Years 2017-2020. We consider eligible contracts if the firms is located in the province of Trento. Workers' and firms' controls are included as well as time trend (plus interaction with the dummy eligible).

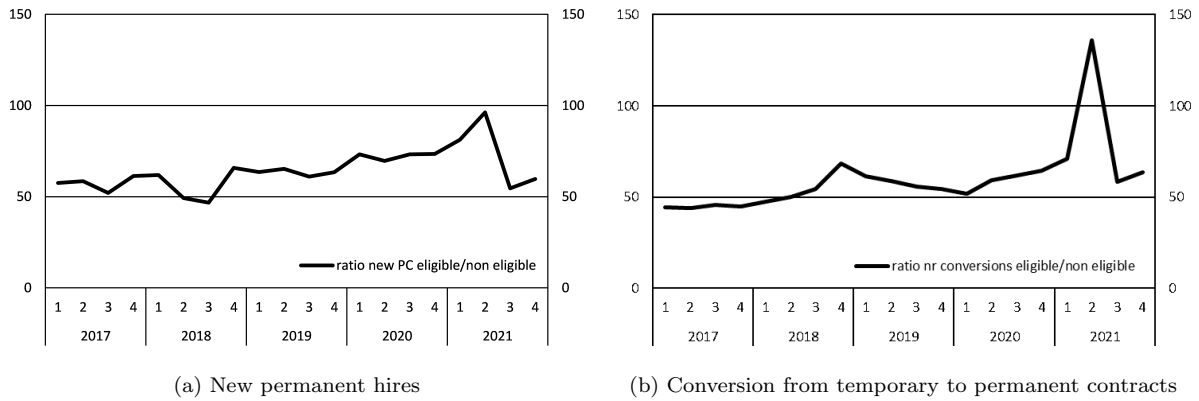
Table A1: Effect of PHI on permanent hiring.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Baseline	Worker ctrl	All ctrl	Female	Male	Age $\leq$ 35	Age $>$ 35
$Elig_{ij}$	-0.404** (0.167)	-0.485*** (0.166)	-0.358** (0.160)	0.164 (0.165)	-0.768*** (0.242)	-0.137 (0.185)	-0.597*** (0.229)
$P_t$	-0.011* (0.006)	-0.017*** (0.006)	-0.019*** (0.006)	-0.012 (0.007)	-0.023*** (0.008)	-0.022*** (0.008)	-0.017** (0.008)
$P2_t$	-0.016** (0.007)	-0.014* (0.007)	-0.012* (0.007)	-0.001 (0.008)	-0.021** (0.009)	-0.019** (0.007)	-0.006 (0.011)
$Elig_{ij} \times P_t$	0.026** (0.011)	0.014 (0.010)	0.007 (0.010)	0.017 (0.012)	-0.002 (0.014)	0.026** (0.013)	-0.012 (0.013)
$Elig_{ij} \times P2_t$	-0.032*** (0.010)	-0.034*** (0.010)	-0.023** (0.009)	-0.009 (0.011)	-0.034** (0.014)	-0.007 (0.012)	-0.039*** (0.013)
$N$	108,248	108,248	108,248	47,329	60,919	53,129	55,119
adj. $R^2$	0.001	0.085	0.154	0.142	0.154	0.135	0.181
Worker ctrl	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm ctrl	No	No	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend $\times Elig_{ij}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Probability to find a PC for elig. in 2017-2020	0.108	0.108	0.108	0.068	0.140	0.091	0.124

Note: This table reports contract level regressions. We consider TC and PC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only firms located in the provinces of Trento and Bolzano. We consider eligible contracts if the firm is located in the province of Trento. Regressions are based on equation (A1). The dependent variable is a dummy equals to 1 if the new contract is a permanent one, 0 if it is a temporary one. All regressions include time trend (year-month), main effect and the interaction with the dummy eligible. Column (2) includes workers' characteristics (age and age squared, occupation, education, dummy for foreign, dummy for female); column (3) includes also firm's characteristics (sector). Standard errors clustered at the firm level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Tables and figures

Figure 1: Number of new permanent hires (panel a) and conversion from temporary to permanent contracts (panel b). Ratio of eligible and non eligible workers (%).



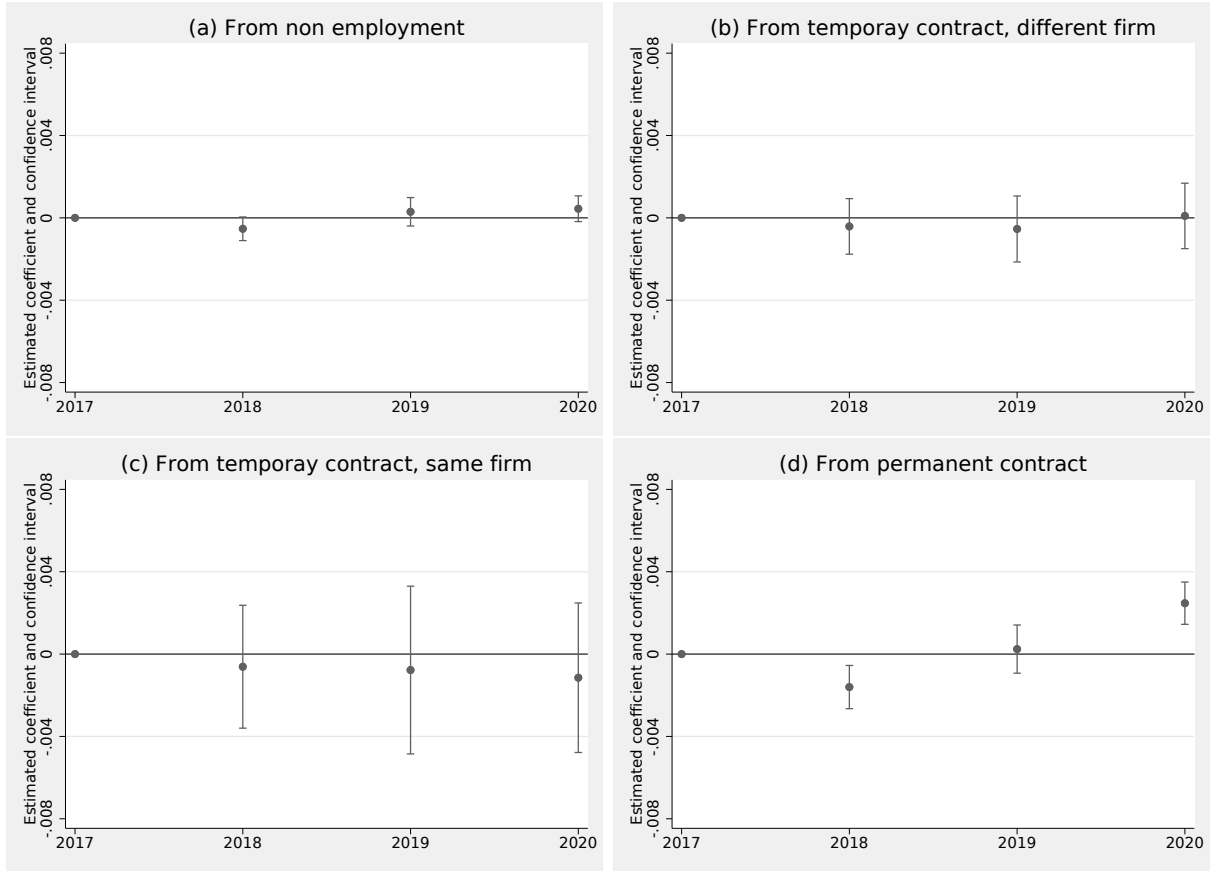
Notes: We consider permanent contracts (PCs), in panel (a), and temporary contracts (TCs), in panel (b), in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. We consider workers whose region of work is the province of Trento (eligible) and the province of Bolzano (control group).

Table 1: Descriptive statistics on contracts and workers, eligible and non eligible for PHI.

	Full sample (N=85,215)	Non-eligible (N=50,697)	Eligible (N=34,518)	Differences
Permanent contract	0.114	0.119	0.108	-0.011** (0.005)
Female	0.426	0.421	0.432	0.011 (0.014)
Foreign born	0.337	0.372	0.291	-0.081*** (0.013)
Age	37.135	37.051	37.260	0.209 (0.249)
Low education	0.507	0.534	0.470	-0.064*** (0.015)
Medium education	0.396	0.375	0.425	0.050*** (0.011)
High education	0.098	0.092	0.105	0.014 (0.009)
Low-skill occupation	0.691	0.705	0.671	-0.034*** (0.012)
Middle-skill occupation	0.243	0.225	0.269	0.044*** (0.010)
High-skill occupation	0.066	0.070	0.060	-0.009* (0.005)
Manufacturing	0.082	0.073	0.096	0.024*** (0.008)
Construction	0.085	0.085	0.085	0.000 (0.007)
Trade	0.156	0.149	0.167	0.019 (0.012)
Tourism	0.536	0.575	0.478	-0.096*** (0.017)

Notes: We consider temporary (TC) and permanent (PC) contracts in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. We consider only firms located in the provinces of Trento (eligible) and of Bolzano (control group). Period 2017-2020. Workers' characteristics (female, foreign born, education) are computed using the individual as unit of observation. Job-relationship characteristics are computed using the contract as unit of observation. Low-skill occupations include service workers and shop and market sales workers, and elementary occupations; middle-skill occupations include clerks, craft and related trades workers, and plant and machine operators and assemblers; high-skill occupations include managers, professionals, and technicians and associate professionals. Standard errors clustered at the firm level in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Figure 2: Test for the common trend assumption. Employment transitions (at individual level).



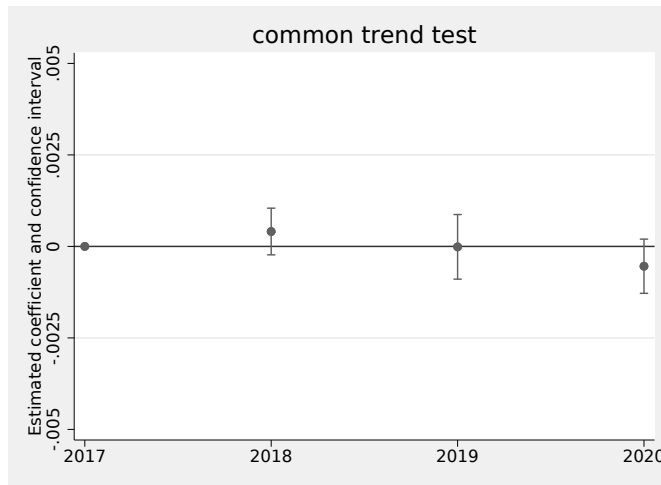
Notes. Test for the common trend assumption, choosing fake reform years for all the periods before the introduction of the reforms. Regressions are based on equation (1). We consider temporary (TC) and permanent (PC) contracts in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. We consider only individuals who have worked at least one day in the province of Trento or in the province of Bolzano. We consider eligible individuals those who have worked in the province of Trento. Years 2017-2020. Workers' fixed effects are included as well as time trend (plus interaction with the dummy eligible). Panel (a) refers to people moving from non employment into a permanent position in the subsequent month; panels (b) and (c) refer to transitions from fixed-term to open-ended job contracts, in another firm and in the same firm; panel (d) refers to transitions from a permanent contract to another between different firms. The dependent variables are: a dummy equals to one if an unemployed person finds a permanent job and 0 otherwise (panel (a)); a dummy equals to 1 if a worker with a temporary contract finds a permanent job in another firm (panel (b)) and in the same firm (panel (c)); a dummy equals to 1 if a worker with a permanent contract signs finds a permanent job in another firm (panel (d)).

Table 2: Monthly probability of finding a permanent job.

	Mean	<i>N</i>
From non employment	0.0030	1,989,362
In another firm, from TC	0.0033	430,805
In the same firm, from TC	0.0186	430,805
In another firm, from PC	0.0039	948,354

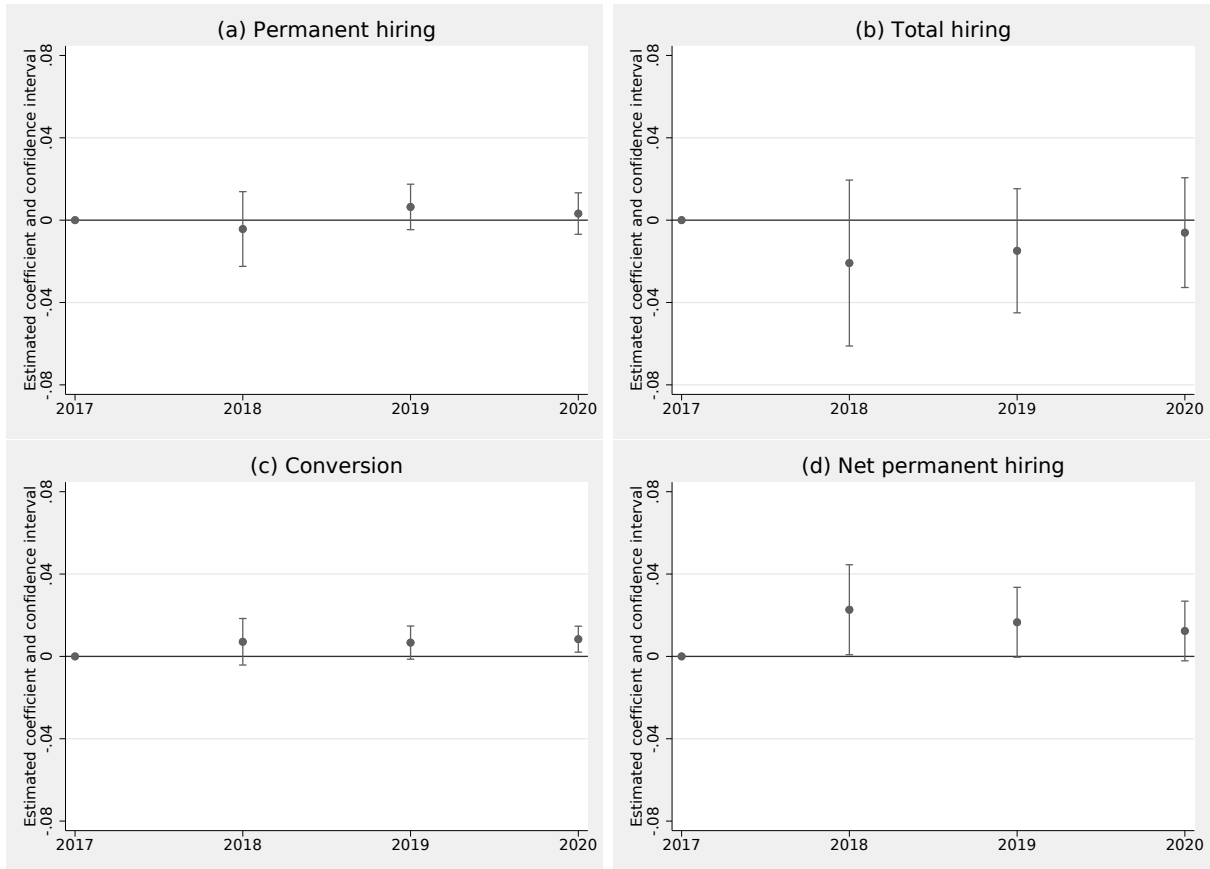
Notes: This table reports individual-month level descriptive statistics. We consider PC and TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only individuals who worked at least one day in the province of Trento or in the province of Bolzano.

Figure 3: Test for the common trend assumption. Conversion from TC to PC (at contract level).



Notes. Test for the common trend assumption, choosing fake reform years for all the periods before the introduction of the reforms. Regressions are based on equation 2. The dependent variable is a dummy equal to 1 if the TC is converted into a PC the next week, 0 otherwise. We consider TC contracts in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. We consider only firms located in the provinces of Trento and of Bolzano. Years 2017-2020. We consider eligible contracts if the firms is located in the province of Trento. Workers' and firms' controls are included as well as time trend (plus the interaction with the dummy eligible) and contract's duration.

Figure 4: Test for the common trend assumption. Firm level analysis.



Notes. Test for the common trend assumption, choosing fake reform years for all the periods before the introduction of the reforms. Regressions are based on equation (3). We consider temporary (TC) and permanent (PC) contracts in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. We consider only firms located in the province of Trento or in the province of Bolzano. We consider eligible firms those who are located in the province of Trento. Years 2017-2020. Firms' fixed effects are included as well as time trend (plus interaction with the dummy eligible). The dependent variables are total number of gross permanent hires in panel (a), number of conversions in panel (b) and net permanent hires in panel (c).

Table 3: Effect of PHI on employment transitions: individual-level estimates.

	(1)	(2)	(3)	(4)
	Non-working at time $t - 1$	TC at time $t - 1$	TC at time $t - 1$	PC at time $t - 1$
$P_t$	-0.0013*** (0.0002)	-0.0003 (0.0007)	-0.0133*** (0.0016)	0.0003 (0.0003)
$P2_t$	-0.0008*** (0.0003)	0.0005 (0.0006)	-0.0095*** (0.0012)	0.0009** (0.0004)
$Elig_i \times P_t$	0.0005* (0.0003)	-0.0003 (0.0010)	0.0076*** (0.0024)	0.0003 (0.0005)
$Elig_i \times P2_t$	-0.0000 (0.0004)	-0.0008 (0.0009)	0.0022 (0.0019)	-0.0007 (0.0005)
$N$	1,988,079	428,228	428,228	947,737
adj. $R^2$	0.077	0.071	0.038	0.010
Worker FE	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes
Time trend $\times Elig_i$	Yes	Yes	Yes	Yes
Monthly average dep.var. for elig. in 2017-2020	0.0026	0.0027	0.0167	0.0036

Note: This table reports individual-month level regressions. We consider PC and TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only individuals who worked at least one day in the province of Trento or in the province of Bolzano. We consider eligible individuals those who worked in the province of Trento. Regressions are based on equation (1). Column (1) refers to people moving from non employment into a permanent position in the subsequent month; columns (2) and (3) refer to transitions from fixed-term to open-ended job contracts, in another firm and in the same firm, respectively; column (4) refers to transitions from a permanent contract to another between different firms. The dependent variables are: a dummy equals to 1 if a non-employed person finds a permanent job and 0 otherwise (column (1)); a dummy equals to 1 if a person with a temporary contract finds a permanent job in another firm (column (2)) and in the same firm (column (3)); a dummy equals to 1 if a person with a permanent contract signs finds a permanent job in another firm (column (4)). Standard errors clustered at the individual level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



Table 4: Effect of PHI on employment transitions. Robustness check with alternative definition of eligible and control groups (mode for the region of work).

	(1)	(2)	(3)	(4)
	Non-working at time $t - 1$	TC at time $t - 1$		PC at time $t - 1$
$P_t$	-0.0014*** (0.0002)	-0.0006 (0.0006)	-0.0124*** (0.0014)	0.0003 (0.0003)
$P2_t$	-0.0007*** (0.0003)	0.0004 (0.0005)	-0.0083*** (0.0011)	0.0008** (0.0004)
$Elig_i \times P_t$	0.0009*** (0.0003)	0.0005 (0.0010)	0.0074*** (0.0026)	0.0004 (0.0005)
$Elig_i \times P2_t$	-0.0003 (0.0004)	-0.0009 (0.0009)	-0.0005 (0.0021)	-0.0004 (0.0005)
$N$	1,988,079	428,228	428,228	947,737
adj. $R^2$	0.077	0.071	0.038	0.010
Worker FE	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes
Time trend $\times Elig_i$	Yes	Yes	Yes	Yes
Monthly average dep.var. for elig. in 2017-2020	0.0021	0.0020	0.0179	0.0029

Note: This table reports individual-month level regressions. We consider PC and TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only individuals whose mode for the region of work is the province of Trento or the province of Bolzano. We consider eligible individuals if the mode for the region of work is the province of Trento. The mode is the value occurring most frequently. Regressions are based on equation (1). Column (1) refers to people moving from non employment into a permanent position in the subsequent month; columns (2) and (3) refer to transitions from fixed-term to open-ended job contracts, in another firm and in the same firm, respectively; column (4) refers to transitions from a permanent contract to another between different firms. The dependent variables are: a dummy equals to 1 if the person finds a permanent job and 0 otherwise (column (1)); a dummy equals to 1 if the person finds a permanent job in another firm (column (2)) and in the same firm (column (3)); a dummy equals to 1 if the person finds a permanent job in another firm (column (4)). Standard errors clustered at the individual level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 5: Effect of PHI on employment transitions. Robustness check without individual FE

	(1)	(2)	(3)	(4)
	Non-working at time $t - 1$	TC at time $t - 1$		PC at time $t - 1$
$Elig_i$	-0.0144*** (0.0042)	-0.0276*** (0.0099)	-0.0359 (0.0232)	-0.0168** (0.0074)
$P_t$	-0.0005*** (0.0002)	0.0006 (0.0006)	-0.0089*** (0.0014)	0.0003 (0.0003)
$P2_t$	0.0003 (0.0002)	0.0008* (0.0005)	-0.0111*** (0.0011)	0.0010*** (0.0003)
$Elig_i \times P_t$	0.0002 (0.0003)	-0.0006 (0.0009)	0.0052** (0.0022)	0.0004 (0.0005)
$Elig_i \times P2_t$	-0.0005 (0.0004)	-0.0014* (0.0007)	0.0004 (0.0017)	-0.0006 (0.0005)
$N$	1,989,362	430,805	430,805	948,354
adj. $R^2$	0.001	0.001	0.003	0.000
Worker FE	No	No	No	No
Time trend	Yes	Yes	Yes	Yes
Time trend $\times Elig_i$	Yes	Yes	Yes	Yes
Monthly average dep.var. for elig. in 2017-2020	0.0027	0.0030	0.0169	0.0036

Note: This table reports individual-month level regressions. We consider PC and TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only individuals who have worked at least one day in the province of Trento or in the province of Bolzano. We consider eligible individuals those who have worked in the province of Trento. Regressions are based on equation (1). Column (1) refers to people moving from non employment into a permanent position in the subsequent month; columns (2) and (3) refer to transitions from fixed-term to open-ended job contracts, in another firm and in the same firm, respectively; column (4) refers to transitions from a permanent contract to another between different firms. The dependent variables are: a dummy equals to 1 if the person finds a permanent job and 0 otherwise (column (1)); a dummy equals to 1 if the person finds a permanent job in another firm (column (2)) and in the same firm (column (3)); a dummy equals to 1 if the person finds a permanent job in another firm (column (4)). Standard errors clustered at the individual level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 6: Effect of PHI on employment transitions: gender heterogeneity.

	Female				Male			
	(1) Non-working at time $t - 1$	(2) TC at time $t - 1$	(3) TC at time $t - 1$	(4) PC at time $t - 1$	(5) Non-working at time $t - 1$	(6) TC at time $t - 1$	(7) TC at time $t - 1$	(8) PC at time $t - 1$
$P_t$	-0.0009*** (0.0003)	-0.0001 (0.0008)	-0.0106*** (0.0024)	-0.0010** (0.0005)	-0.0015*** (0.0003)	-0.0005 (0.0010)	-0.0149*** (0.0020)	0.0011*** (0.0004)
$P2_t$	-0.0002 (0.0003)	0.0003 (0.0006)	-0.0108*** (0.0017)	0.0001 (0.0006)	-0.0012*** (0.0004)	0.0005 (0.0009)	-0.0086*** (0.0018)	0.0013*** (0.0004)
$Elig_i \times P_t$	0.0007* (0.0004)	-0.0008 (0.0011)	0.0096*** (0.0036)	0.0011 (0.0007)	0.0003 (0.0004)	0.0000 (0.0015)	0.0057* (0.0032)	-0.0001 (0.0007)
$Elig_i \times P2_t$	-0.0003 (0.0005)	-0.0019** (0.0009)	0.0064** (0.0025)	0.0002 (0.0009)	0.0002 (0.0005)	0.0000 (0.0014)	-0.0009 (0.0028)	-0.0012* (0.0007)
$N$	812,648	178,758	178,758	328,221	1,175,431	249,470	249,470	619,516
adj. $R^2$	0.058	0.059	0.035	0.012	0.083	0.073	0.039	0.009
Worker FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend $\times Elig_i$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly average dep.var. for elig. in 2017-2020	0.0016	0.0012	0.0124	0.0028	0.0034	0.0037	0.0198	0.0041

Note: This table reports individual-month level regressions. We consider PC and TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only individuals who have worked at least one day in the province of Trento or in the province of Bolzano. We consider eligible individuals those who have worked in the province of Trento. Regressions are based on equation (1). Column (1) refers to people moving from non employment into a permanent position in the subsequent month; columns (2) and (3) refer to transitions from fixed-term to open-ended job contracts, in another firm and in the same firm, respectively; column (4) refers to transitions from a permanent contract to another between different firms. The dependent variables are: a dummy equals to 1 if the person finds a permanent job and 0 otherwise (column (1)); a dummy equals to 1 if the person finds a permanent job in another firm (column (2)) and in the same firm (column (3)); a dummy equals to 1 if the person finds a permanent job in another firm (column (4)). Standard errors clustered at the individual level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 7: Effect of PHI on employment transitions: age heterogeneity.

	Age $\leq$ 35				Age $>$ 35			
	(1) Non-working at time $t - 1$	(2) TC at time $t - 1$	(3) TC at time $t - 1$	(4) PC at time $t - 1$	(5) Non-working at time $t - 1$	(6) TC at time $t - 1$	(7) TC at time $t - 1$	(8) PC at time $t - 1$
$P_t$	-0.0012*** (0.0003)	-0.0000 (0.0010)	-0.0138*** (0.0026)	0.0002 (0.0005)	-0.0015*** (0.0003)	-0.0013 (0.0009)	-0.0135*** (0.0019)	0.0004 (0.0004)
$P2_t$	-0.0000 (0.0004)	0.0001 (0.0009)	-0.0079*** (0.0022)	0.0002 (0.0006)	-0.0014*** (0.0003)	0.0006 (0.0007)	-0.0100*** (0.0015)	0.0013*** (0.0004)
$Elig_i \times P_t$	0.0012*** (0.0004)	0.0002 (0.0016)	0.0089** (0.0040)	0.0009 (0.0010)	0.0000 (0.0004)	0.0001 (0.0013)	0.0055* (0.0030)	0.0001 (0.0006)
$Elig_i \times P2_t$	0.0001 (0.0005)	0.0024 (0.0016)	0.0033 (0.0035)	0.0008 (0.0010)	0.0001 (0.0005)	-0.0024** (0.0011)	0.0014 (0.0023)	-0.0012* (0.0007)
$N$	1,069,611	186,318	186,318	289,205	918,279	241,778	241,778	658,469
adj. $R^2$	0.068	0.055	0.026	0.014	0.089	0.087	0.048	0.009
Worker FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend $\times Elig_i$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly average dep.var. for elig. in 2017-2020	0.0021	0.0029	0.0178	0.0038	0.0033	0.0025	0.0158	0.0036

Note: This table reports individual-month level regressions. We consider PC and TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only individuals who have worked at least one day in the province of Trento or in the province of Bolzano. We consider eligible individuals those who have worked in the province of Trento. Regressions are based on equation (1). Column (1) refers to people moving from non employment into a permanent position in the subsequent month; columns (2) and (3) refer to transitions from fixed-term to open-ended job contracts, in another firm and in the same firm, respectively; column (4) refers to transitions from a permanent contract to another between different firms. The dependent variables are: a dummy equals to 1 if the person finds a permanent job and 0 otherwise (column (1)); a dummy equals to 1 if the person finds a permanent job in another firm (column (2)) and in the same firm (column (3)); a dummy equals to 1 if the person finds a permanent job in another firm (column (4)). Standard errors clustered at the individual level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 8: Effect of PHI on employment transitions: education heterogeneity.

	Low educ			Med educ			High educ					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Non-working at time $t-1$	TC at time $t-1$	TC at time $t-1$	PC at time $t-1$	Non-working at time $t-1$	TC at time $t-1$	TC at time $t-1$	PC at time $t-1$	Non-working at time $t-1$	TC at time $t-1$	TC at time $t-1$	PC at time $t-1$
$P_t$	-0.0009*** (0.0002)	-0.0000 (0.0009)	-0.0095*** (0.0020)	0.0004 (0.0004)	-0.0029*** (0.0006)	-0.0012 (0.0012)	-0.0181*** (0.0027)	0.0003 (0.0005)	0.0014 (0.0014)	0.0008 (0.0029)	-0.0209*** (0.0060)	-0.0000 (0.0013)
$P2_t$	-0.0008*** (0.0002)	0.0000 (0.0006)	-0.0073*** (0.0015)	0.0011** (0.0004)	-0.0008 (0.0008)	0.0011 (0.0012)	-0.0137*** (0.0023)	0.0011* (0.0006)	0.0015 (0.0017)	0.0013 (0.0026)	-0.0062 (0.0060)	-0.0009 (0.0013)
$Elig_t \times P_t$	-0.0000 (0.0003)	0.0004 (0.0014)	0.0006 (0.0032)	0.0003 (0.0006)	0.0023*** (0.0007)	-0.0017 (0.0016)	0.0130*** (0.0038)	0.0007 (0.0008)	-0.0006 (0.0018)	0.0038 (0.0043)	0.0265*** (0.0090)	-0.0008 (0.0018)
$Elig_t \times P2_t$	-0.0001 (0.0004)	0.0004 (0.0011)	-0.0034 (0.0026)	-0.0013* (0.0007)	0.0005 (0.0010)	-0.0022 (0.0016)	0.0091*** (0.0032)	-0.0003 (0.0009)	-0.0021 (0.0020)	-0.0012 (0.0034)	0.0036 (0.0085)	0.0006 (0.0020)
$N$	1,287,181	227,963	227,963	467,090	514,921	168,147	168,147	379,007	150,629	32,118	32,118	101,640
adj. $R^2$	0.086	0.089	0.045	0.016	0.066	0.058	0.032	0.007	0.056	0.055	0.027	0.003
Worker FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend $\times Elig_t$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly average dep.var. for elig. in 2017-2020	0.0023	0.0024	0.0162	0.0028	0.0034	0.0031	0.0169	0.0041	0.0025	0.0021	0.0181	0.0056

Note: This table reports individual-month level regressions. We consider PC and TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only individuals who have worked at least one day in the province of Trento or in the province of Bolzano. We consider eligible individuals those who have worked in the province of Trento. Regressions are based on equation (1). Column (1) refers to people moving from non employment into a permanent position in the subsequent month; columns (2) and (3) refer to transitions from fixed-term to open-ended job contracts, in another firm and in the same firm, respectively; column (4) refers to transitions from a permanent contract to another between different firms. The dependent variables are: a dummy equals to 1 if the person finds a permanent job and 0 otherwise (column (1)); a dummy equals to 1 if the person finds a permanent job in another firm (column (2)) and in the same firm (column (3)); a dummy equals to 1 if the person finds a permanent job in another firm (column (4)). Standard errors clustered at the individual level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 9: Effect of PHI on conversions from TC to PC: contract level estimates.

	(1)	(2)	(3)
	Baseline	Worker ctrl	All ctrl
$Elig_{ij}$	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
$P_w$	-0.003*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)
$P2_w$	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)
$Elig_{ij} \times P_w$	0.002*** (0.001)	0.002*** (0.000)	0.002*** (0.000)
$Elig_{ij} \times P2_w$	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
$N$	2,262,904	2,262,904	2,262,904
adj. $R^2$	0.008	0.009	0.009
Worker ctrl	No	Yes	Yes
Firm ctrl	No	No	Yes
Time trend	Yes	Yes	Yes
Time trend $\times Elig_{ij}$	Yes	Yes	Yes
Weekly conversion probability for elig. in 2017-2020	0.0034	0.0034	0.0034

Note: This table reports contract-week level regressions. We consider TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only firms located in the provinces of Trento and Bolzano. We consider eligible contracts if the firm is located in the province of Trento. Regressions are based on equation (2). The dependent variable is a dummy equal to 1 if the TC is converted into a PC, 0 otherwise. Column (2) includes workers' characteristics (age and age squared, occupation, education, dummy for foreign, dummy for female); column (3) includes also firm's characteristics (sector). Standard errors clustered at the firm level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 10: Effect of PHI on conversions from TC to PC: contract level estimates, heterogeneity.

	(1)	(2)	(3)	(4)
	Female	Male	Age $\leq$ 35	Age $>$ 35
$Elig_{ij}$	0.001 (0.001)	-0.002 (0.001)	0.000 (0.001)	-0.001* (0.001)
$P_w$	-0.004*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)	-0.003*** (0.000)
$P2_w$	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)
$Elig_{ij} \times P_w$	0.002*** (0.001)	0.002*** (0.001)	0.004*** (0.001)	0.001** (0.001)
$Elig_{ij} \times P2_w$	0.001 (0.000)	0.000 (0.001)	0.001* (0.001)	-0.000 (0.001)
$N$	1,017,546	1,245,358	1,086,565	1,176,339
adj. $R^2$	0.008	0.010	0.010	0.009
Worker ctrl	Yes	Yes	Yes	Yes
Firm ctrl	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes
Time trend $\times Elig_{ij}$	Yes	Yes	Yes	Yes
Weekly conversion probability for elig. in 2017-2020	0.0025	0.0041	0.0035	0.0033

Note: This table reports contract-week level regressions. We consider TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only firms located in the provinces of Trento and Bolzano. We consider eligible contracts if the firm is located in the province of Trento. The dependent variable is a dummy equal to 1 if the TC is converted into a PC, 0 otherwise. All regressions include workers' and firm's characteristics. Standard errors clustered at the firm level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 11: Effect of PHI on job creation: firm level estimates

	(1)	(2)	(3)	(4)
	Gross permanent hires	Total hires	Conversions	Net permanent hires
$P_t$	-0.0029** (0.0013)	-0.0010 (0.0030)	-0.0104*** (0.0011)	-0.0094*** (0.0023)
$P2_t$	-0.0008 (0.0014)	0.0326*** (0.0035)	-0.0038*** (0.0010)	-0.0127*** (0.0027)
$Elig_j \times P_t$	0.0039** (0.0017)	0.0071 (0.0044)	0.0050*** (0.0013)	0.0064** (0.0029)
$Elig_j \times P2_t$	-0.0011 (0.0018)	0.0050 (0.0054)	0.0020 (0.0013)	0.0037 (0.0036)
$N$	1,268,460	1,268,460	1,268,460	1,268,460
adj. $R^2$	0.187	0.403	0.287	0.026
Firm FE	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes
Time trend $\times Elig_j$	Yes	Yes	Yes	Yes
Monthly mean dep. var. for elig. in 2017-2020	0.0154	0.1085	0.0101	0.0041

Note: This table reports firm-month level regressions; the panel is strongly balanced. We consider PC and TC in the non-farm private sector. We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Years 2017-2021. We consider only firms who have at least one event of hiring or termination in the province of Trento (eligible) or in the province of Bolzano (control). Regressions are based on equation 3. The dependent variable is the monthly number of permanent hires made by each firm (column (1)), the number of total hires (both TC and PC, column (2)), the number of conversions of fixed-term contracts into open-ended contracts (column (3)), and the number of net permanent hires (equal to hiring plus conversion minus firing; column (4)). Standard errors clustered at the individual level in parenthesis: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .