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TEMPORARY CONTRACTS: AN ANALYSIS OF THE NORTH-SOUTH GAP IN ITALY

by Silvia Camussi*, Fabrizio Colonna** and Francesca Modena***

Abstract

In Italy the share of temporary employment varies significantly across areas, being on average significantly higher in the southern regions. Using a unique source of administrative data, we show that the gap does not accrue from differences in firms' hiring strategies: as a matter of fact workers are initially hired on a temporary basis more often in the North. The largest share of fixed-term contracts in the South reflects instead (i) the lower probability that they will eventually be converted into open-ended ones and (ii) the shorter duration of permanent positions.

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1 Introduction[1]

In Italy, following a series of labor market reforms in the early 1990s, the share of fixed-term contracts rapidly increased (Barbieri and Sestito, 2008), rising up to over 17% in 2019, one of the highest percentages in Europe (15.7% on average in the euro area). This growth, coupled with the persistence of a stringent employment protection legislation for permanent workers[2], led to a drastic labor market segmentation that often left on the shoulders of precarious workers, typically the youngest or the less educated, the weight of labor market adjustments. The recession caused by the Covid-19 pandemic is only the most recent example: upon the onset of the health emergency temporary work immediately collapsed while permanent positions were prolonged by both the extensive use of short-time working schemes and the ban on dismissals.

The size of temporary work is not homogeneous across areas, accounting for a larger share of total employment in southern regions, already plagued by systematically higher unemployment rates. Both the fast growth of temporary work and its uneven geographical distribution raised policy concerns, leading to a vast theoretical and empirical literature discussing the causes and the implications of a wide use of non-permanent jobs. Our analysis aims to investigate the determinants of the North-South gap: after assessing how much of it can be explained by the composition of both labor demand and supply, we focus on the role played by job creation and destruction dynamics. In particular we study whether the larger use of fixed term contracts in the South relates to different hiring strategies, or rather stems from the evolution and the duration of the job relationships.

Theoretically, there are different economic reasons behind the use of temporary jobs. From the employers' perspective, temporary contracts might respond to the necessity to accommodate seasonality of the production cycle (Colonna and Giupponi, 2015), allow firms to reduce labor market cost circumventing downward wage rigidities (Bulligan and Viviano, 2017) or represent an escape from firing costs, which is particularly valuable in an environment with high employment protection for standard jobs (Berton et al., 2011; Picchio, 2008; Bertola, 1990) or higher uncertainty about future demand and productivity dynamics (Lotti and Viviano, 2012). Firms' preference for temporary arrangements is however constrained by the costly search for a replacement when a temporary worker quits; the latter are more likely and more costly to be replaced in a tight market, which may explain cyclical and regional differences in the propensity to use fixed-term contracts. Moreover temporary jobs might be associated to a lower human capital accumulation, especially of the firm-specific form, if a shorter expected employment spell curbs workers'

[1]We would like to thank Antonio Accetturo, Domenico Depalo, Roberto Torrini, Eliana Viviano for their helpful comments. We are grateful to participants at the internal seminars of the Bank of Italy for their useful suggestions. The views expressed in the paper are those of the authors and do not necessarily reflect those of the Bank of Italy.

[2]See `https://stats.oecd.org/Index.aspx?DataSetCode=EPL_OV`

incentive to acquire new skills (Lilla and Staffolani, 2012).

From the workers' standpoint, temporary jobs may reduce unemployment spells and increase the employment rates of the weakest workers, serving as stepping stones to more stable and better paid jobs[3]. However, temporary workers might be trapped in a sequence of temporary working arrangements without enhancing future employability and leading to lower labour conditions even in the long term[4]. An issue particularly debated is whether and to what extent temporary jobs work as springboards to stable jobs: it is not temporary employment *per se* but the intermittent associated with it that is detrimental to employment prospects (Gagliarducci, 2005).

Our analysis does not explore the possible economic reasons behind the preference for different working arrangements, it rather investigates job flows examining whether regional differences in job creation and destruction might explain the observed differences in temporary work shares. In particular an area, specifically the South of Italy in our case, might display a larger number of fixed-term contracts if (i) workers are more likely to be hired on a temporary basis, (ii) temporary contracts last longer or (iii) are converted more rarely into permanent ones, (iv) permanent positions are terminated prematurely more often. Using Italian administrative data on employment flows (*Comunicazioni obbligatorie*) we show that temporary job is the main entry channel in the labor market in all areas. However, fixed-term contracts in the South are characterized by lower probability of transformation into stable jobs: the conversion rate is on average about 11% in the South and 18% in the North. Moreover, even permanent contracts have a lower duration in southern regions, further reducing their share over total employment (in the South only about 37% of new permanent contracts last more than 24 months; 49% in the North).

From a policy point of view, the findings of this paper may enrich the debate regarding regulatory tools that aim at reducing job instability, i.e. the time spent by individuals in temporary employment. In particular, our results suggest that, in order to reduce the share of temporary work, policies might not necessarily need to focus on new hires but rather promote the conversion of fixed-term positions and the duration of permanent ones. With this in mind, in the last section we analyze the impact of a labor market policy on the duration of permanent contracts. Specifically, in 2015 Italy adopted a generous subsidy regarding both hiring with permanent jobs and transformations from temporary to permanent positions (together with new regulations lowering firing costs and making them less uncertain Sestito and Viviano (2016)); the subsidy was renewed in 2016 with some adjustments. Our findings suggest that subsidized contracts lasted longer than non-subsidized ones.

[3]See Berton and Garibaldi (2012); Ichino et al. (2008); Blanchard and Landier (2002); Booth et al. (2002), among the others.

[4]See Berton et al. (2011); Autor and Houseman (2010); Guell and Petrongolo (2007); D'Addio and Rosholm (2005), among others.

The rest of the paper is structured as follows. Section 2 assesses the geographical distribution of temporary workers, investigating its determinants. Section 3 analyzes flow data separately for the North and the South of Italy, drawing some facts about the use of temporary and permanent contracts, in particular about hiring, transformation and duration. Section 4, as anticipated, discusses a labor market policy impacting permanent work. Section 5 concludes.

2 Descriptive Statistics and Preliminary Evidence

In order to assess the geographical distribution of temporary work we draw information from the Labor Force Survey (LFS), collected by Istat, the Italian Institute for Statistics, that provides detailed data on employment status and personal characteristic for a representative sample of Italian residents; for those employed, both firms characteristics and job specifics are available. We use data between 2004, year of the release of the new LFS, and 2020. Moreover, in order to focus on the role of temporary versus open-ended positions, we restrict our analysis to employees in firms of the non farm private sector, by excluding agriculture and predominantly public sectors, as well as domestic workers, leaving us with 1.8 million observations.

In the sample the average share of temporary workers, over the total number of employees, ranged from the 9.9% in Lombardy to the 19.3% in Sardinia. The indicator is significantly higher in the South, reaching 16.2% compared to the 12.5% of the central and northern areas (to which, in the rest of the paper, we might refer as North for simplicity) and the national average of 13.3% (Figure 1). The North-South gap[5], albeit always significant, changed over time (Figure 2).

Both geographical differences and their evolution over time might depend on several reasons. First of all an higher use of temporary work might depend on firms and job characteristics: for example the seasonality of the production cycle, e.g. those related to touristic flows, could call for a more extensive use of temporary contracts. Similarly, younger (and smaller) firms can initially require higher flexibility in personnel management, investing in permanent work once they increase their size. Finally some tasks, and therefore some occupations, need to be performed preferably, or even exclusively, on a temporary basis. The use of temporary contracts can sometimes be also associated to employees' characteristics, either because of workers' preferences or employers' need to test their skills for a longer period. Finally, the choice of open ended or fixed-term contracts yields also from the relative bargaining power of the employer on the employee:

[5]The gap is computed between the average share of temporary worker in the so called Mezzogiorno (Abruzzo, Puglia, Basilicata, Calabria, Campania and Molise) and in the northern-central regions (Valle d'Aosta, Piemonte, Liguria, Lombardia, Emilia-Romagna, Veneto, Friuli-Venezia Giulia, Trentino-Alto Adige, Lazio, Marche, Toscana and Umbria.

a larger labor market slack, for example, will encourage workers to accept more often temporary contracts. In order to assess the determinants of the existing gap, after summarizing the descriptive statistics, we estimate first a simple multivariate probit regression; then, building on this model, a Blinder-Oaxaca decomposition is performed.

Table 1 reports the distribution of temporary jobs across different groups of employees (by age, gender, education and occupation) and firms (size, sector). First of all the use of fixed term contracts is higher in smaller firms which are more numerous in the South, moreover in the North it decreases more steeply with firms' size. Temporary work share differs widely across industries reaching minimum higher levels in labor intensive sector (manufacturing, construction, retail), relatively more concentrated in the South. Finally, temporary jobs are more intensively used for medium-low skilled occupations, less common in the North. Focusing on workers' characteristics, the incidence of temporary contracts is particularly high among young people in both areas (roughly one fourth of total employees in the 15-34 cohort) but it declines with age much more rapidly in the North. Finally the geographical gap is much larger among women, but quite homogeneous across educational levels.

2.1 Econometric method and decomposition analysis

In order to assess the relative importance of these factors into shaping geographical differences we estimate a probit model for the probability of being a temporary worker, conditionally on being an employee. After performing a pooled-estimation, including geographical location as an independent variable, we replicate the analysis separately for the northern-central regions and the southern areas. Our specification includes the aforementioned demographic variables (age, gender, education) and job/firm characteristics (size, industry, occupation).

Table 2 shows the marginal effects of our independent variables. First of all we notice that, starting with an unconditional gap of 3.7 percentage points, once observable workers and firms characteristics are taken into account, the South is associated *per se* to a 2 percentage points-higher probability to hold a temporary job. As discussed while workers start as temporary workers at the beginning of their career in both areas, they eventually move to a permanent position more often in the North , either via job-to-job transition or through conversion of an existing contract. In all regions women and less educated and low-skilled workers (especially sales workers and elementary occupations) are relegated to fixed-term jobs everywhere, but especially in the South. By looking at employment composition across industries, the incidence of temporary work is lower in manufacturing that is more concentrated in the North. Finally open-ended contracts appears to increase with firm's size only in the North. In order to investigate which one of these factors plays a larger role in explaining the North-South gap, a Blinder-Oaxaca decomposition analysis

is conducted.

Denoting t with y_i the outcome variable of interest defined only for employees and taking value equal to 1 if the worker has a temporary contract, we can define our probit model as:

$$PR(y = 1) = \Phi(\beta_j X) \tag{1}$$

where Φ is the normal cumulative distribution function, X is the vector of our independent variables relative to workers and firms characteristics and the parameters β's are different for the North and the South ($j = N, S$). The North-South gap can therefore be written as:

$$\begin{aligned} E_S(y) - E_N(y) &= E_S\Phi(\beta_S X) - E_N\Phi(\beta_N X) \\ &= \underbrace{E_S[\Phi(\beta_N X)] - E_N[\Phi(\beta_N X)]}_{endowments} + \underbrace{E_S[\Phi(\beta_S X) - \Phi(\beta_N X)]}_{unexplained} \end{aligned} \tag{2}$$

where the first component is the fraction of the gap explained by the "endowments", that is by the North-South differences of the observed X; the second component is unexplained gap, attributable to the homogeneity of "returns" of workers and jobs characteristics. Results are shown in Table 3. In order to disentangle the contributions of a single variable, the detailed decomposition proposed by Yun (2004) is implemented [6]. Around half of the geographical gap, 2 percentage points out of 3.7 is *explained* by observable differences in firms' or workers' characteristics. In particular the use of fixed-term contracts in the South is fueled by the larger share of low-skilled occupations and the relatively limited diffusion of the manufacturing sector: they can account for 1 and 0.7 percentage points, respectively. On the other hand the composition of the workforce explain only a negligible part of the gap: the lower female participation actually curbs the share of temporary workers in the South.

A large part of the gap remains *unexplained*, accruing from how temporary jobs are distributed across firms or workers, for example how concentrated are fixed-term contracts in a given age cohort or in a particular sector. Table 3 shows that a large fraction of the *unexplained* gap is due to differences in the age profile, namely to the fact that in the North temporary workers is highly concentrated in the younger cohorts, suggesting that in this area employees eventually transit into a permanent job. In the South the distribution is more homogeneous across age groups: many workers, mainly women and low-skill workers, remain employed with a fixed term contract even at a later stage of life. The share of temporary jobs in the South would be 0.8 percentage points lower if the probability of working on a temporary basis decreased with age as it does in the North,

[6] In a case of a non-linear model, such as the probit used in this analysis, the computation of the effects of individual variables is not straightforward since a simple replacement method can lead to path-dependent result (see Ham et al. (1998) for an extensive discussion). The methodology proposed by Yun (2004), relying on a basic Taylor's expansion, is free from this issue.

and 1.3 percentage points lower if southern women would suffer the same gender penalty as their northern counterparts.

Figure 2 shows the evolution of the gap and its decomposition, over time, in the explained and unexplained components. While the former is roughly constant, the latter drives the time variation of the North-South gap and appears to be correlated with local aggregate labor market dynamics. In particular the gap is counter-cyclical, larger when the unemployment rate falls, and modest when labor market condition deteriorates. During the double-dip recession and the subsequent employment stagnation (2011-2014), the recovery of temporary work was faster in the North: the gap reached a minimum of 2.6 percentage points in 2012. Vice versa the gradual employment recovery started in 2014 widened the geographical divide that reached a maximum of 5.6 percentage points in 2019. In 2020, with the outbreak of Covid-19, the freeze of firings and the extension of short time work schemes prevented the termination of open-ended contracts in all regions.

These results suggests that the geographical gap depends, aside from differences in the economic fabric, on the functioning of the labor market, on how jobs are created, destroyed or transformed over time. In particular temporary workers in the northern regions appear to eventually transit and remain into permanent positions, especially during economic booms. In the next section we'll therefore analyze the employment flows studying the evolution of job contracts, from the hiring to the possible conversion until the separation.

3 Flow analysis. Hiring, transformation, duration

We exploit administrative micro-data from the *Comunicazioni obbligatorie* (CO), provided by the Italy's National Agency for Active Labour Market Policies (ANPAL), which provides information concerning job positions. This is a unique dataset that contains administrative records on job contracts for the whole universe of Italian employees. In Italy, all private firms (and some public sector) 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[7]. Moreover, each record contains information about the employer and the employee (such as firm's location, sector of activity, occupation, age, gender, nationality, education). Given the rich set of information contained in the CO, the dataset enables to study workers employment history: it is possible to track individuals over time, observing in which position they are initially hired, how long the job lasts and if when the initial contract is transformed. In the analysis we focus on permanent and

[7]Data include both the expected end date and the actual one. June 2019 is the last date for which the micro data are available.

fixed-term contracts in the non-farm private sector[8]. Table 4 shows the main descriptive statistics of our dataset. According to flow data, employees in the South are characterized by a lower incidence of female and of workers in the manufacturing sector, and by a higher presence of low-skilled and low-educated individuals.

3.1 Entry conditions: new hires

First, we examine the hiring flows to check if temporary jobs are more frequent in the South because workers are hired with permanent contract less often. Since our empirical analysis is based on flow data at the contract level, as a proxy for job market entry we estimate the probability of being hired by a new firm after a 3 months non employment spell (in order to drop job-to-job transitions). We computed the share of individuals without a job for at least 3 months hired in the subsequent 3 months at a new firm (with which the worker had no previous employment relationship) with a temporary (permanent) contract. These shares are estimated net of individual's, firm's and local characteristics (age, gender, sector, region); data are seasonally adjusted. Results are reported in Figure 3. In the south unemployed workers are not less likely to be immediately hired with an open-ended contract: The probability of finding a permanent position probability has been slightly below 2% in both areas for all the considered period, raising around 3% between 2015 and 2016 where generous universal subsidy were granted. Fixed-term contracts are the main entry channels into the labor market in both areas, but the probability to find a temporary job is higher in the North, raising overall employment prospects. The higher likelihood of exiting unemployment through a temporary contract should, *ceteris paribus* lead to a larger share of temporary jobs in the North: the main source of the geographical gap lies therefore elsewhere. In the next sections the evolution of the employment relationship after the hiring is discussed.

3.2 Evolution of temporary positions

Temporary contrast can be terminated, continued on a temporary basis, or converted into permanent ones. Figure 4 displays the cumulative distribution, over time, of these three possible outcomes. The full line indicated, for the two macroareas, the cumulative share of *survived* contracts while the dotted lines represent the cumulative share of *converted* contracts. The distance between the two lines accounts therefore for the positions continued on a temporary basis.

Two stylized facts emerge. First of all temporary contracts last less in the South: 48% of them is terminated within the first 3 months (37% in the North), and only 30% survives after 6 months (42% in the North). This gap is not due to composition effects

[8]We exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99.

and remained roughly constant in the considered time period. Figure 5 reports the probability that a temporary job lasts less than 6 months, net of observable workers' and jobs' characteristics estimated through a multivariate OLS regression[9].

Second, the conversion rate, similar in both areas at the beginning of the employment relationship (within the first 6 months roughly when 6% of temporary contracts are transformed into permanent ones), diverges later: the overall share of TCs converted into PCs increases up to 18% in the North, lagging at 11% in the South (Table 5)[10]. The conversion rate is lower for females and young workers, while it is higher for medium-high skilled individuals and employees in the manufacturing sector.

The two stylized facts described above might actually be two sides of the same coin: for example employers might be willing to convert a temporary position only after having known and trained their employee for a longer period or tested extensively their skill. With no pretense of investigating a casual relationship, we analyze the possible correlation between the two aspects by modeling an hazard model where the *risk* of transformation depends also on the temporary contract duration, that is the probability of conversion might change over time. As standard in the literature, we write the the hazard probability model as a logit function. We treat time in discrete units (week) (Jenkins, 1995):

$$Pr(d_{it} = 1|X_{it}, Dur_{it}) = \frac{\exp(z_{it})}{1 + \exp(z_{it})} \tag{3}$$

where d_{ijt} is dummy variable equal to 1 if a temporary contract i is transformed into a permanent contract in week t; z_{ijt} is defined as

$$\begin{aligned} z_{it} = \alpha + \beta_1 \ln(Dur_{it}) + \beta_2 \ln(Dur_{it}) \times South + \beta_3 \ln(Dur_{it})^2 \\ + \beta_4 \ln(Dur_{it})^2 \times South + \gamma South + \delta X_{it} \end{aligned} \tag{4}$$

where Dur_{it} is contract duration and X_{it} are control variables at the contract and individual level (region, age, gender, education, occupation, sector). Standard errors are clustered at the firm level.

Table 7 shows the results of the logit model. These findings, beside confirming the descriptive evidence previously discussed, show that the probability of transformation increases with the duration of temporary contract in both areas, but they do it faster in the North. The odds ratio on log(duration) is greater than one, implying that the odds of transformation of temporary contract into a permanent job increase the longer the individual has been temporary employed. In other words fixed-term contracts are more likely to be converted after the temporary position has been held for a longer period

[9]The duration is computed as the difference between the end and starting date for terminated contracts, and as the difference between the transformation and starting date for converted ones.

[10]Employment spells may be censored if hiring date is close to the last date available in our database, which is 30 June 2019. In order to limit this bias, we consider only contracts activated before June 2018.

of time. The interaction between duration and the dummy South shows an odds ratio smaller than one, which implies that the effect is less strong in this area. The results hold also if we control for individual and sector variables (column 2), thus suggesting that the North-South differences do not depend on observed employees' and firm' characteristics.

The hazard functions for the two areas, that is the estimated weekly probability of transformation, conditional on having survived up to date t, are depicted in Figure 6. Geographical differences are at play: the probability of transformation increases with contract duration, especially in the North; the subsequent downward trend is more marked in the North, thus slightly reducing the regional gap. Obviously we can't infer any casual relationship between duration of the contract and its probability to be converted, nevertheless our results suggest that allowing fixed-term contract to last for a longer period (for example allowing the development of workers' skills) might enhance overall conversion rates; vice-versa limiting the duration of temporary contracts might preclude the possibility of conversion along the way.

3.3 Duration of permanent contracts

Finally we analyze an additional potential characteristic of employment flows that could inflate the share of temporary jobs in the South, that is a shorter duration of open-ended contracts[11]. In the South one third of the workers hired directly with a permanent contract loses or quits her job within the first six months, in the North it's only one fourth (Table 6). Moreover permanent jobs tend to last longer if they stem from a *late* transformation of temporary contracts adding to the shorter duration of open-ended contracts in the South: for example less than 5% of temporary contracts transformed after two years are terminated within 6 months since the conversion (Figure 7).

Overall our analysis suggest that policy measures and labor market reforms aimed at enhancing permanent employment should at least take into account the impact on the duration of contracts and the long-term probability of conversion. In the next section we'll analyze, under this perspective, one of the measure undertaken in Italy in the most recent years.

4 Regulatory tools

In Italy in recent years Italian Governments implemented several schemes of hiring subsidies, differentiated according to the geographical area and type of beneficiaries, in order to sustain (permanent) employment growth. In 2014, the main recipients of the subsidy were long term unemployed subjects: the program only targeted firms that

[11]The duration of PCs is computed as the difference between the end and starting date for new open-ended contracts, and as the difference between the end and transformation date for converted ones.

hired through a permanent contract individual had been jobless for at least 24 months or who had been covered by the national short-time work compensation scheme (Ciani et al., 2019). Though applied to all the national territory, the incentive was mainly used by firm located in the South of Italy, were the number of eligible individuals was wider and the benefit was more generous[12]. In 2015 the Italian government introduced homogeneously over the Italian territory a generous non-conditional subsidy for the activation of open-ended contract, through new hires or conversion of preexisting fixed-term ones (Sestito and Viviano, 2018). This subsidy, a 3-year exemption[13] from social security paid by the employer in place from January to December 2015, was destined to workers who had no permanent contract in the previous 6 months. The following year the subsidies were renewed but at a reduced rate, granting a to 2-year exemption for no more than 40% of social security contributions. In 2017, the measure was restricted only to firms operating in the South of Italy (the so-called *Occupazione sud* incentive). In 2018 and 2019 the Government introduced a new subsidy aimed at young workers in all regions. Figure 8 shows that the share of open-ended contracts (both new and converted) that benefited from incentives in the period 2014-19 was generally higher in Southern regions compared to the Centre-North. Only in 2015 and 2016, the share was comparable across the two areas.

Monetary incentives always involve cost-benefit trade-offs. For example, universal measures, aimed at large segments of the population, generally involve large dead-weight loss, financing the activation (or maintenance) of jobs that would have been activated (or maintained) anyway. Conversely, specific measures, intended only for particular segments of the population, entail greater risks of displacement. In general, as shown by Sestito and Viviano (2018) in Italy employment subsidies have overall had significant expansionary effects. In particular, focusing on the 2015 subsidies scheme, the authors provide evidence that they had a significant positive impact on gross employment hires. In this paper we take a further step analysing whether subsidized contracts last longer than non-subsidized ones. Our exercise therefore does not aim to assess the impact on employment levels, but that on the duration of the employment relationship.

Using the rich set of information available in the CO dataset (mainly workers' past employment histories together with the precise date of the new contract), we identify eligible workers according to the following criteria: the worker was not having been employed with a permanent contract in the six months before the new job, the worker was not having worked with a permanent contract for the same firm asking for the subsidy in the three months before the law was passed (October-December 2014), the worker has no previous subsidized contracts. The same conditions hold also for the

[12]In the South, the subsidy was equal to 100% of social security contributions for three years, while it was 50% in the rest of Italy.

[13]Up to a maximum of 8.060 on a yearly basis for full-time jobs.

2016 subsidies. Unfortunately, in our data we cannot identify workers that actually receive benefits, therefore we only identify potential eligible individuals (we cannot check the third eligibility condition). Table 8 reports descriptive statistics for eligible and non-eligible individuals: with respect to the control group, eligible workers are younger, with a higher share of females, and they are less likely to be employed in the construction sector. We will control for these demographic variables in the regressions, in order to take into account possible bias due to selection on observable characteristics.

Figure 9 shows the share of open-ended contracts that last more than 3 years for eligible and non eligible workers. In both areas, eligible contracts last longer than non-eligible ones and the share of contracts surviving more than 3 years is higher when looking at those started in 2015. To study the relationship between permanent contract survival probability and the implementation of the 2015 subsidies' scheme, we use a difference-in-differences (DiD) approach. We exploit the time and individual variation of the subsidy to estimate the following model:

$$Sur_{ijt} = \alpha + \beta_1 Elig_i + \beta_2(Elig_i \times Y_{2015}) + \beta_3(Elig_i \times Y_{2015} \times South) + \beta_4(Elig_i \times South) + \beta_5(Y_{2015} \times South) + \beta_6 South + \gamma_z Z_{it} + \gamma_w W_{jt} + d_r + d_t + d_i + \epsilon_{ijt} \quad (5)$$

where the dependent variable Sur_{ijt} is a dummy equal to one if the permanent contract for worker i employed at firm j at time t survives more than 3 years (the 2015 subsidy was a 3-year exemption from social security contributions). $Elig_i$ is a dummy variable equal to one when individual i is eligible. The coefficients of interest are β_2 and β_3, which represent the differential trend due to the participation to the subsidy in the North (β_2) and in the South of Italy ($\beta_2 + \beta_3$).

To ensure that our comparisons across treatment groups over time do not reflect individual specific characteristics, we control for employee fixed effects (d_i) which can provide reassurance that the estimated reforms' effects are not reflecting time-invariant individual omitted variables that are potentially correlated with the adoption of the subsidy. The regression also controls for individual time variant (age, Z_{it}) characteristics, and for firm characteristics (sector, W_{jt}). Lastly, the specification also includes time and regional dummies (d_t, d_r). Standard errors are clustered at the firm level.

Table 9 reports the results of the DiD model, without (column 1) and with (columns 2 and 3) individual's and firm's controls. Column (3) shows the results without job-to-job transitions (within 2 months). Our preferred specification is the one reported in column (2). Since in the year 2016 subsidies where renewed but with a lower amount and length (2-year exemption for no more than 40% of social security contributions), we include also the dummy for the year 2016, main effects and interactions.

The 2015 subsidies' scheme is associated with a sizeable increase in the probability that a PC (both new and converted) lasts more than 3 years: the estimated effect is equal to about 19 percentage points in the North and 17 in the South (column 2). Our results are quantitatively confirmed even excluding job-to-job transitions. The impact remains significant, even if slightly lower in magnitude, also for the year 2016.

The diff-in-diff estimator provides an unbiased estimate of the treatment effect under the assumption that, absent the treatment, the outcomes in the two groups would have followed parallel trends. To control for the possibility that the implementation of the subsidy is correlated with underlying trends, we repeat our regression as in column (2) of Table 9 interacting the dummy eligible with year dummies before 2015. If our indicators are capturing differences in trends, we should find that the coefficients for the subsidies should still be significant when running the same regressions for the years before 2015. Figure 10 supports the conclusion that the dummy capturing the introduction of the subsidies were not correlated with some pre-existing underlying trends.

5 Conclusions

According to Istat LFS statistics, over the past decades, the share of temporary workers on total employment has been systematically higher in the South of Italy compared to the rest of the country: on average in the period 2004-2020 the indicator was equal to 16.2% in southern regions and 12.5% in central-northern areas. More than half of the gap between the two areas is explained by the differences in observable characteristics, in particular in sectoral and occupational composition. A large part of the gap remains unexplained and is associated to differences in the age profile of temporary workers: while in the North fixed-term contracts seem to act as an entry point in the labor market with workers eventually stepping to permanent position, in the South some workers, mostly low-skilled and women, move from fixed-term contract to another even at an older age. Moreover the unexplained component strongly correlates with labor market conditions: in the year of employment growth (2015-2019) the temporary work share grew faster in the South, slowing down in the North.

Our findings are confirmed in the analysis carried in the second section where, using data from the *Comunicazioni obbligatorie*, we investigate how differently permanent jobs are created, through hiring or conversion of temporary position, and eventually destroyed. Three stylized facts emerge. First of all, a larger number of permanent contracts is created in the North not through openings of new positions but rather via conversion of existing ones. Second the greater conversion rate registered in the North is associated to a higher survival rate of temporary positions. Finally open-ended contracts are terminated sooner in southern regions, forcing employees to find often a new employment that is likely to be temporary.

From a policy point of view, the findings of this paper may enrich the debate regarding regulatory tools aimed at reducing the share of temporary work: policies might not necessarily need to focus exclusively on promoting permanent hires but rather on enhancing the duration of both fixed-term and open ended contracts. Although the type of investigation here conducted is descriptive and does not aim to assert a causal relationship, we find that there is a positive correlation between the length of fixed-term contracts and the probability of conversion into permanent positions. Moreover, our analysis on the impact of the subsidies adopted in 2015-2016 shows that a temporary but substantial reduction of labor cost can potentially enhance the lifespan of permanent contracts beyond the duration of the measure in all areas, even in the South.

References

Autor, D. H. and S. N. Houseman (2010): "Do Temporary-Help Jobs Improve Labor Market Outcomes for Low-Skilled Workers? Evidence from "Work First"," *American Economic Journal: Applied Economics*, 2, 96–128.

Barbieri, G. and P. Sestito (2008): "Temporary workers in Italy: Who are they and where they end up," *Labour*, 22, 127–166.

Bertola, G. (1990): "Job security, employment and wages," *European Economic Review*, 34, 851–879.

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.

Berton, F. and P. Garibaldi (2012): "Workers and Firms Sorting into Temporary Jobs," *Economic Journal*, 122, 125–154.

Blanchard, O. and A. Landier (2002): "The Perverse Effects of Partial Labour Market Reform: fixed–Term Contracts in France," *Economic Journal*, 112, 214–244.

Booth, A. L., M. Francesconi, and J. Frank (2002): "Temporary Jobs: Stepping Stones Or Dead Ends?" *Economic Journal*, 112, 189–213.

Bulligan, G. and E. Viviano (2017): "Has the wage Phillips curve changed in the euro area?" *IZA Journal of Labor Policy*, 6, 1–22.

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.

Colonna, F. and G. Giupponi (2015): "Why do firms hire on a fixed-term basis? Evidence from longitudinal data," *Evidence from Longitudinal Data (November 26, 2015). Bank of Italy Occasional Paper*.

D'Addio, A. C. and M. Rosholm (2005): "Exits from temporary jobs in Europe: A competing risks analysis," *Labour Economics*, 12, 449–468.

Gagliarducci, S. (2005): "The dynamics of repeated temporary jobs," *Labour Economics*, 12, 429–448.

Guell, M. and B. Petrongolo (2007): "How binding are legal limits? Transitions from temporary to permanent work in Spain," *Labour Economics*, 14, 153–183.

Ham, J. C., J. Svejnar, and K. Terrell (1998): "Unemployment and the social safety net during transitions to a market economy: evidence from the Czech and Slovak Republics," *American Economic Review*, 1117–1142.

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

Jenkins, S. P. (1995): "Easy Estimation Methods for Discrete-Time Duration Models," *Oxford Bulletin of Economics and Statistics*, 57, 129–138.

Lilla, M. and S. Staffolani (2012): "Young Entrants, Temporary Jobs and Career Opportunities: Short-Term Perspectives of Young Italian Workers," *Rivista di statistica ufficiale*, 14, 50–60.

Lotti, F. and E. Viviano (2012): "Why hiring temporary workers," *Rome: Banca d'Italia*.

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

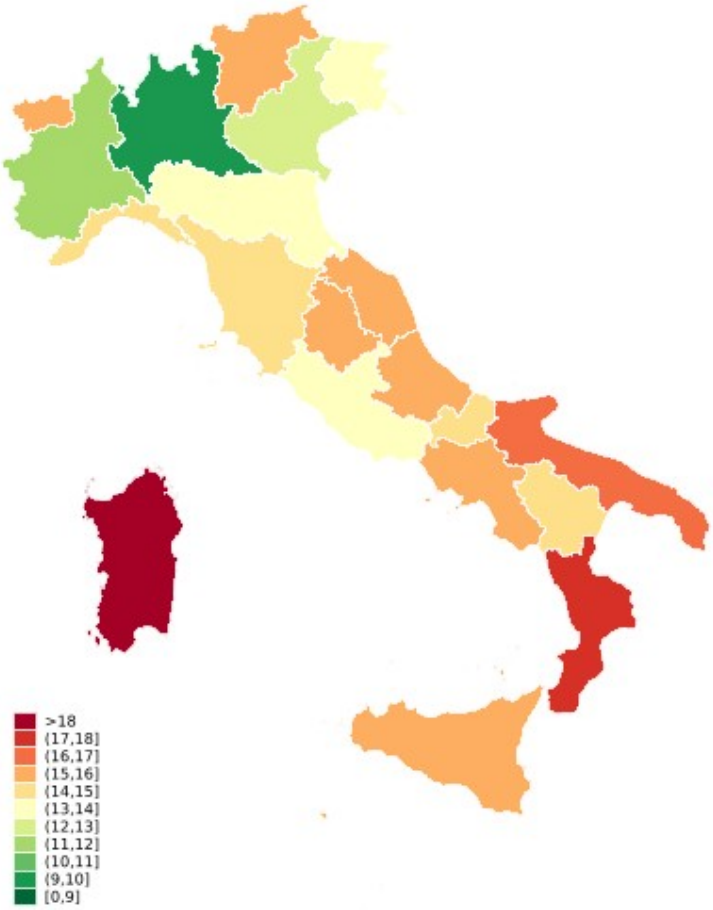
Sestito, P. and E. Viviano (2016): "Hiring incentives and/or firing cost reduction? Evaluating the impact of the 2015 policies on the Italian labour market," Questioni di Economia e Finanza (Occasional Papers) 325, Bank of Italy, Economic Research and International Relations Area.

——— (2018): "Firing costs and firm hiring: evidence from an Italian reform," *Economic Policy*, 33, 101–130.

Yun, M.-S. (2004): "Decomposing differences in the first moment," *Economics letters*, 82, 275–280.

Tables and figures

Figure 1: Temporary Workers in the Non Farm Private Sector (%)

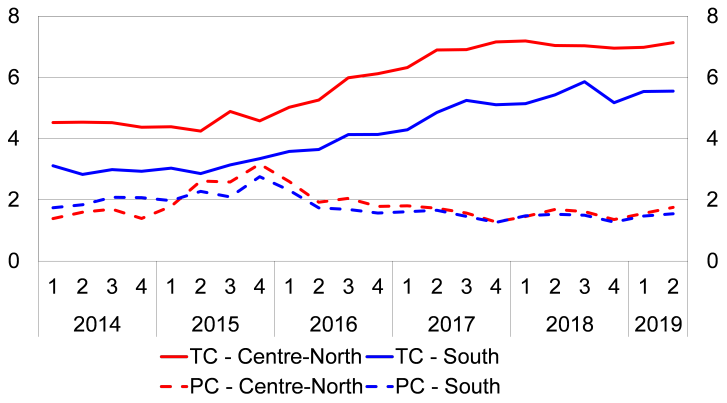


Source: LFS, Istat
Notes: We consider the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Period: 2004-2020.

Figure 2: Temporary Share and Unemployment

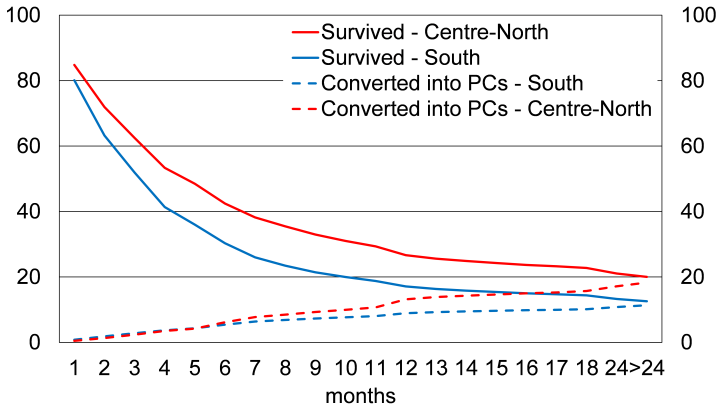
Source: LFS, Istat
Notes: We consider the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99.

Figure 3: Hirings by type of contract (%)



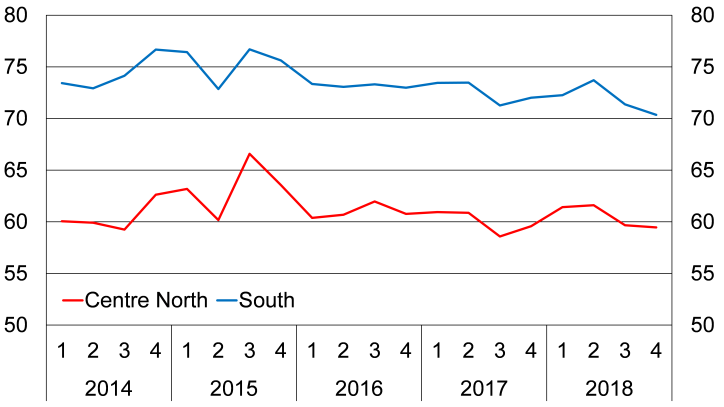
Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: Probability that an individual with a 3 months non employment spell find a job in the subsequent 3 months. TC means temporary contracts and PC means permanent contracts. We consider contracts in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Net of individual, firm and local characteristics. Seasonally adjusted series, obtained by subtracting from the raw data the OLS estimate of hires on a set of separate monthly dummies.

Figure 4: Share of TCs survived and converted into PCs by contract duration (%)



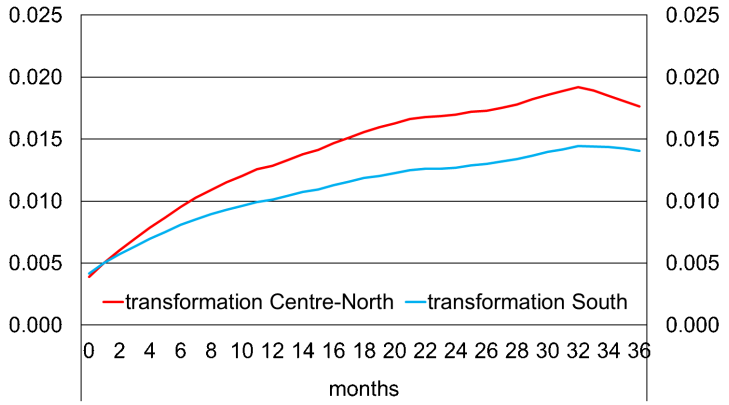
Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: We consider temporary contracts in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Period 2014- I semester 2018.

Figure 5: Probability that duration of TC is lower than 6 months (%)



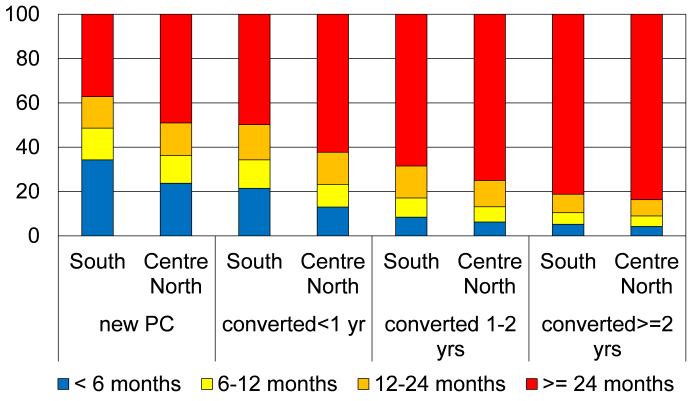
Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: We consider temporary contracts (TCs) in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Net of individual, firm and local characteristics. Seasonally adjusted series, obtained by subtracting from the raw data the OLS estimate of duration on a set of separate monthly dummies.

Figure 6: Probability of transformation into PCs - hazard function (weekly estimates)



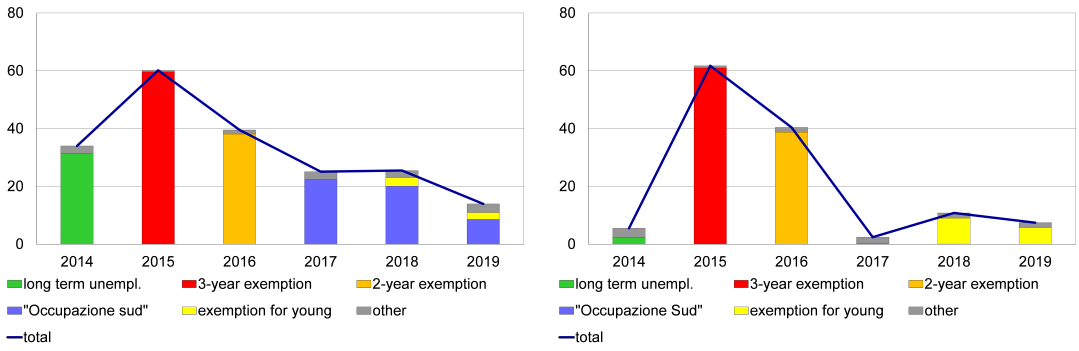
Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: Hazard functions, moving averages (5 years). We disregard durations longer than three years. The figure represents the monthly averages of the weekly estimates. We consider temporary contracts in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Period 2014- I semester 2018.

Figure 7: Duration distribution of PCs (%)



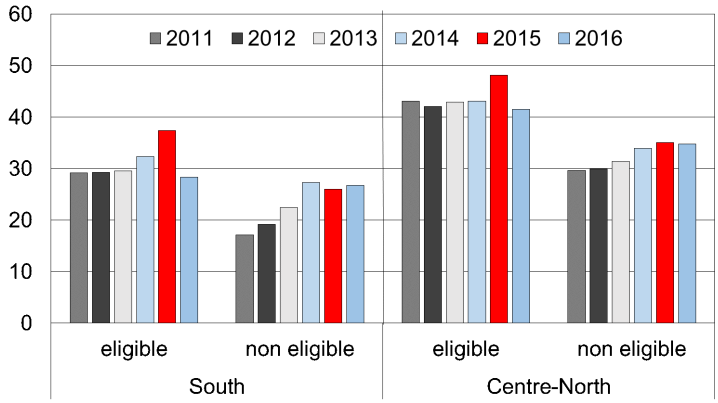
Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: We consider permanent contracts (PCs) in the non-farm private sector; we exclude from the analysis the two-digit NACE codes for sectors from 01 to 03, 84 to 88 and 97 to 99. Period: 2010- I semester 2016.

Figure 8: Share of PCs (new and converted) that received the subsidies (%).



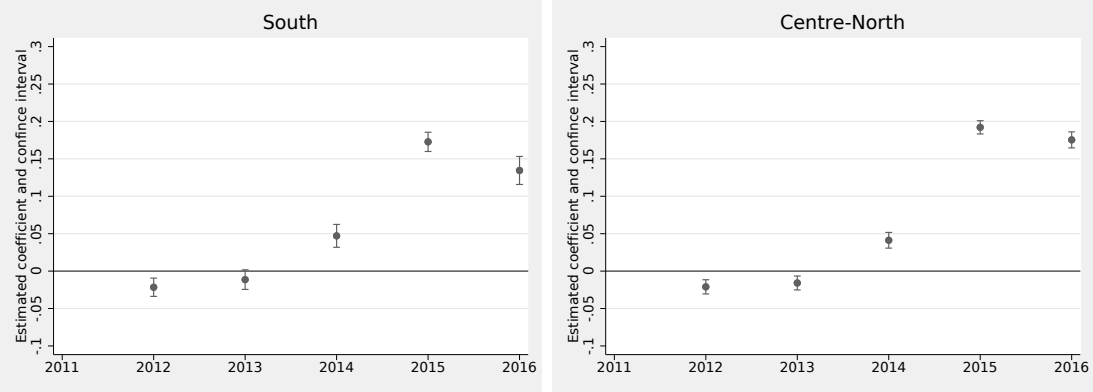
Source: Inps, Osservatorio sul Precariato.
Notes: The left panel represents the South, the right panel the Centre-North.

Figure 9: Share of PCs that last more than 3 years, by eligibility to 2015's subsidy (%).



Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: We consider permanent contracts (PCs) 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. In each year, we consider eligible workers those with the following characteristics: the worker was not having been employed with a permanent contract in the six months before the new job, the worker was not having worked with a permanent contract for the same firm asking for the subsidy in the three months before the law was passed.

Figure 10: Impact of 2015's subsidies on contract survival. Common trend test.



Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: Results of the event common trend test. The left panel reports the coefficients, together with standard errors, for the South, while the right panel does the same for the Centre-North. The regression includes employees' fixed effects. We consider permanent contracts (PCs) 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.

Table 1: Share of temporary workers, 2004-2020 (%)

		Italy	Center-North	South
Firm size	≤10 employees	16.9	16.5	17.8
	>10 employees	11.6	10.8	15.1
Industry	Manufacturing	10.6	10.2	12.2
	Construction	10.4	9.4	14.5
	Wholesale and Retail trade	14.5	13.8	16.0
	Accommodation and Food	21.0	20.0	23.8
	Transportation	16.5	15.5	19.2
	Information and Communication	8.5	8.1	9.7
	Financial	5.1	5.1	5.1
	Real Estate	15.0	14.2	17.6
	Personal services	20.6	20.1	21.8
Occupation	Managers	2.6	2.5	3.1
	Professionals	8.9	8.3	11.9
	Technicians and professionals	8.4	8.0	10.3
	Clerical support workers	11.2	10.8	12.7
	Service and sales workers	22.8	22.4	23.6
	Skilled blue collars	12.6	11.8	14.9
	Plant and machine operators	11.1	10.8	12.2
	Elementary occupations	18.9	17.2	23.3
Age	15-34	24.9	24.7	25.6
	35-54	7.5	6.6	11.0
	≥ 55	9.6	8.8	12.5
Gender	Female	15.4	14.4	20.1
	Male	12.1	11.3	14.7
Education	No Education/Primary/Missing	12.4	10.3	16.4
	Middle	12.6	11.5	
	Secondary	13.8	13.1	16.5
	Tertiary	13.9	13.4	16.1
Total		13.3	12.5	16.2

Source: LFS, Istat.
Notes: We consider 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.

Table 2: Determinants of temporary employment: multinomial probit

	(1) Italy	(2) North	(3) South
Area (baseline=Center-North)			
South	0.020***		
	(0.001)		
Age (baseline=15-34)			
Age 35-54	-0.140***	-0.145***	-0.122***
	(0.001)	(0.001)	(0.001)
Age 55+	-0.087***	-0.085***	-0.889***
	(0.001)	(0.001)	(0.010)
Gender (baseline=Male)			
Female	0.015***	0.011***	0.031***
	(0.001)	(0.001)	(0.001)
Education (baseline=None or Primary education)			
Middle School	0.013***	0.005***	0.022***
	(0.001)	(0.001)	(0.002)
High School	0.015***	0.016***	0.012***
	(0.001)	(0.001)	(0.001)
Graduates	0.063***	0.061***	0.060***
	(0.001)	(0.002)	(0.003)

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Table 2: continued

Occupation (baseline=Managers)			
Professionals	0.077***	0.062***	0.137***
	(0.006)	(0.001)	(0.016)
Technicians	0.078***	0.143***	0.488***
	(0.005)	(0.005)	(0.015)
Clerical workers	0.132***	0.168***	0.565***
	(0.006)	(0.006)	(0.015)
Service and sales workers	0.237***	0.228***	0.269***
	(0.007)	(0.007)	(0.016)
Skilled blue collars	0.188***	0.168***	0.243***
	(0.006)	(0.007)	(0.015)
Plant and machine operators	0.186***	0.174***	0.218***
	(0.006)	(0.007)	(0.016)
Elementary occupations	0.278***	0.249***	0.356***
	(0.007)	(0.008)	(0.018)
Industry (baseline=Manufacturing)			
Construction	-0.019***	-0.027***	0.012***
	(0.001)	(0.001)	(0.002)
Wholesale and Retail trade	-0.006***	-0.009***	0.005
	(0.001)	(0.001)	(0.002)
Accommodation and Food	0.029***	0.020***	0.060***
	(0.001)	(0.001)	(0.003)
Transportation and Storage	0.026***	0.016***	0.060***
	(0.001)	(0.001)	(0.012)
Information and Communication	-0.019***	-0.019***	-0.016***
	(0.001)	(0.001)	(0.003)
Finance	-0.055***	-0.051***	-0.0705***
	(0.001)	(0.001)	(0.003)
Real Estate	0.023***	0.018***	0.038***
	(0.001)	(0.001)	(0.003)
Personal services	0.067***	0.063***	0.078***
	(0.002)	(0.002)	(0.004)
Firm's size (baseline=≤10)			
>10 employees	-0.013***	-0.019***	0.009***
	(0.001)	(0.001)	(0.001)
N	1,838,164	1,380,439	457,725

Source: LFS, Istat.
Notes: We consider 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. Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Blinder-Oaxaca decomposition

South		0.162***	(0.001)
North		0.125***	(0.000)
Difference		0.038***	(0.001)
	Explained	0.020***	(0.000)
	Unexplained	0.017***	(0.001)
Explained			
Workers		0.003***	(0.000)
	Age	0.007***	(0.000)
	Gender	-0.002***	(0.000)
	Education	-0.002***	(0.000)
Firms		0.017***	(0.000)
	Industry	0.007***	(0.000)
	Size	0.001***	(0.000)
	Occupation	0.009***	(0.000)
Unexplained			
Workers		0.022***	(0.002)
	Age	0.008***	(0.000)
	Gender	0.013***	(0.001)
	Education	0.001	(0.000)
Firms		0.006***	(0.001)
	Industry	0.004***	(0.001)
	Size	0.002***	(0.000)
	Occupation	0.000	(0.001)
Constant		-0.011***	(0.002)
N		1,823,255	

Source: LFS, Istat.
Notes: We consider 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. Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Descriptive statistics - Workers' characteristics (%). Flow data (CO)

	South	Centre-North
Female	31.7	38.3
Age (mean)	37.3	36.8
	Sector	
Manufacturing	16.2	20.2
Construction	21.0	11.5
Services	62.8	68.3
	Occupation	
low-skill	52.4	46.9
mid-skill	41.1	40.7
high-skill	6.5	12.4
	Education	
primary	63.5	60.7
secondary	32.0	30.7
tertiary	4.6	8.5

Source: our calculations based on *Comunicazioni Obbligatorie*.
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. Period 2014-I semester 2018. 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.

Table 5: Descriptive statistics - Temporary Contracts

	South	Centre-North
Conversion rate	11.4	18.4
Female	10.5	16.9
Male	11.9	19.5
Under 25	8.6	14.6
Over 25	12.1	19.3
Low skill	9.8	14.7
Med-high skill	13.4	22.3
Manufacturing	13.0	27.1
Construction	9.4	15.4
Services	11.6	16.6
	Duration distribution of non-converted TCs (%)	
$<$ 1 month	20.9	17.4
1-3 months	33.4	28.6
3-6 months	24.4	24.6
6-12 months	14.4	18.1
$\geq$ 12 months	6.9	11.3
	Duration distribution of converted TCs (%)	
$<$ 1 month	6.6	2.3
1-3 months	18.0	10.6
3-6 months	23.0	20.5
6-12 months	28.0	32.2
$\geq$ 12 months	24.5	34.4
N of TCs	2,790,524	7,098,682

Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: We consider temporary contracts (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. The contract duration is computed as the difference between the end and starting date for terminated contracts. The length until conversion is computed as the difference between the transformation and starting date. Period 2014-I semester 2018. Low-skill occupations include service workers and shop and market sales workers, and elementary occupations; middle-high skill occupations include clerks, craft and related trades workers, plant and machine operators and assemblers, managers, professionals, technicians and associate professionals.

Table 6: Descriptive statistics - Permanent Contracts

	South	Centre-North
	Duration distribution of new PCs (%)	
$<$ 6 month	34.3	23.7
6-12 months	14.3	12.6
12-24 months	14.2	14.6
$\geq$ 24 months	37.2	49.1
	Duration distribution of PCs converted from TCs (%)	
$<$ 6 month	18.7	11.1
6-12 months	11.8	9.2
12-24 months	15.3	13.5
$\geq$ 24 months	54.3	66.1
N of PCs	3,727,121	7,233,639

Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: We consider permanent contracts (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. The contract duration is computed as the difference between the end and starting date for terminated contracts. The length after conversion is computed as the difference between the end and transformation date. To compute the duration distribution of permanent contracts we consider years 2010-I semester 2016 in order to have a longer time spell.

Table 7: Logistic regression: Probability of transformation of temporary contracts

	(1)	(2)
$Log(Duration)$	3.595***	3.621***
	(0.086)	(0.087)
$Log(Duration) \times South$	0.540***	0.551***
	(0.018)	(0.019)
$Log(Duration)^2$	0.917***	0.920***
	(0.003)	(0.003)
$Log(Duration)^2 \times South$	1.064***	1.061***
	(0.006)	(0.006)
N	55,624,753	55,624,753
adj. R^2	0.0380	0.131
Controls	No	Yes
Cluster	firm	

Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: The dependent variable is a dummy equal to one if the temporary contract (TC) is transformed into a permanent one (PC). We consider temporary 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. Period: 2014- I semester 2018. Column (1) includes only log(duration), log(duration) squared, both interacted with the dummy South, and the dummy South which is equal to one for contracts activated in southern Italy, 0 for contracts activated in Centre-North. Column (2) includes the same variables as in column (1) and also demographic (age, gender, education, occupation) and sector controls. Standard errors in parentheses: * p<0.10, **p<0.05, *** p<0.01.

Table 8: Descriptive statistics. Eligible and non eligible contracts for 2015's subsidies.

	South			Centre-North		
	Eligible	Non eligible	Difference	Eligible	Non eligible	Difference
Female	0.331	0.232	0.099***	0.379	0.345	0.033***
			(0.001)			(0.000)
15-34 years	0.480	0.363	0.117***	0.453	0.400	0.053***
			(0.001)			(0.000)
35-54 years	0.445	0.532	-0.087***	0.481	0.531	-0.050***
			(0.001)			(0.000)
Over 55 years	0.075	0.105	-0.030***	0.066	0.069	-0.003***
			(0.000)			(0.000)
Industry	0.164	0.127	0.037***	0.238	0.205	0.032***
			(0.000)			(0.000)
Constructions	0.222	0.376	-0.154***	0.123	0.144	-0.021***
			(0.001)			(0.000)
Services	0.613	0.496	0.117***	0.639	0.651	-0.012***
			(0.001)			(0.000)
N	2,335,553	797,356		4,482,479	1,611,156	

Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: We consider new permanent contracts and converted ones 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. In each year, we consider eligible workers those with the following characteristics: the worker was not having been employed with a permanent contract in the six months before the new job, the worker was not having worked with a permanent contract for the same firm asking for the subsidy in the three months before the law was passed. Years 2011-16 (for 2016 we consider only contracts starting or converted in the first semester of the year so that we can observe if the duration is more than 3 years). Standard errors in parentheses: * p<0.10, **p<0.05, *** p<0.01.

Table 9: Impact of 2015's subsidies on contract survival. Difference in difference model

	Sur_{ijt}		
	(1)	(2)	(3)
$Elig_{ijt} \times Y_{2015}$	0.196***	0.194***	0.187***
	(0.004)	(0.004)	(0.003)
$Elig_{ijt} \times Y_{2015} \times South$	-0.026***	-0.025***	-0.023***
	(0.005)	(0.005)	(0.005)
$Elig_{ijt} \times Y_{2016}$	0.177***	0.176***	0.156***
	(0.005)	(0.005)	(0.004)
$Elig_{ijt} \times Y_{2016} \times South$	-0.047***	-0.046***	-0.030***
	(0.009)	(0.009)	(0.008)
N	4.692.669	4.692.669	2.563.859
adj. R^2	0.253	0.255	0.299
Year FE	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
Employee FE	Yes	Yes	Yes
Controls	No	Yes	Yes
Cluster		firm	

Source: our calculations based on *Comunicazioni Obbligatorie*.
Notes: We consider new permanent contracts and converted ones 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 2011-16 (for 2016 we consider only contracts starting or converted in the first semester of the year so that we can observe if the duration is at least 3 years). We consider eligible workers those with the following characteristics: the worker was not having been employed with a permanent contract in the six months before the new job, the worker was not having worked with a permanent contract for the same firm asking for the subsidy in the three months before the law was passed. The dependent variable Sur_{ijt} is a dummy equal to one if the contract length is higher than 3 years. *South* is a dummy equal to one if the contract is activated in southern Italy. Regression controls for all main effects and all double interactions between dummies South, eligible and years 2015 and 2016. Columns (2) and (3) control also for age, gender, sector, region of work. Column (3) excludes job-to-job transitions (within 2 months). Standard errors in parentheses: * p<0.10, **p<0.05, *** p<0.01.