

# A first impact evaluation of the Italian Dignity Decree's effects on young workers

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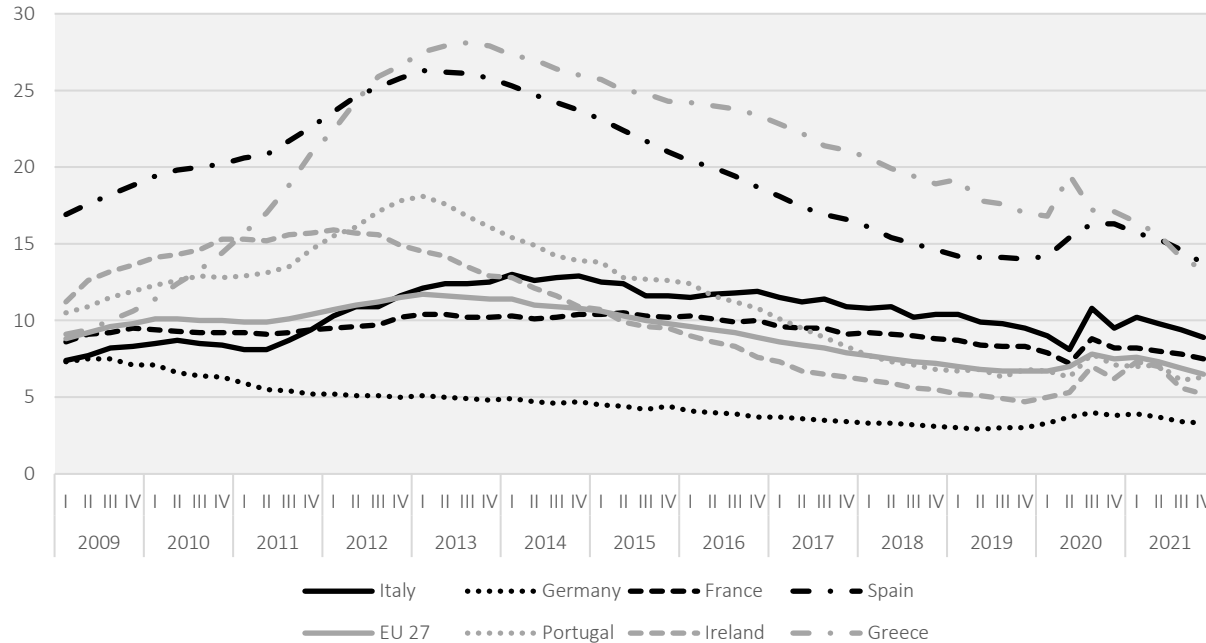
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# The so-called «Dignity Decree»

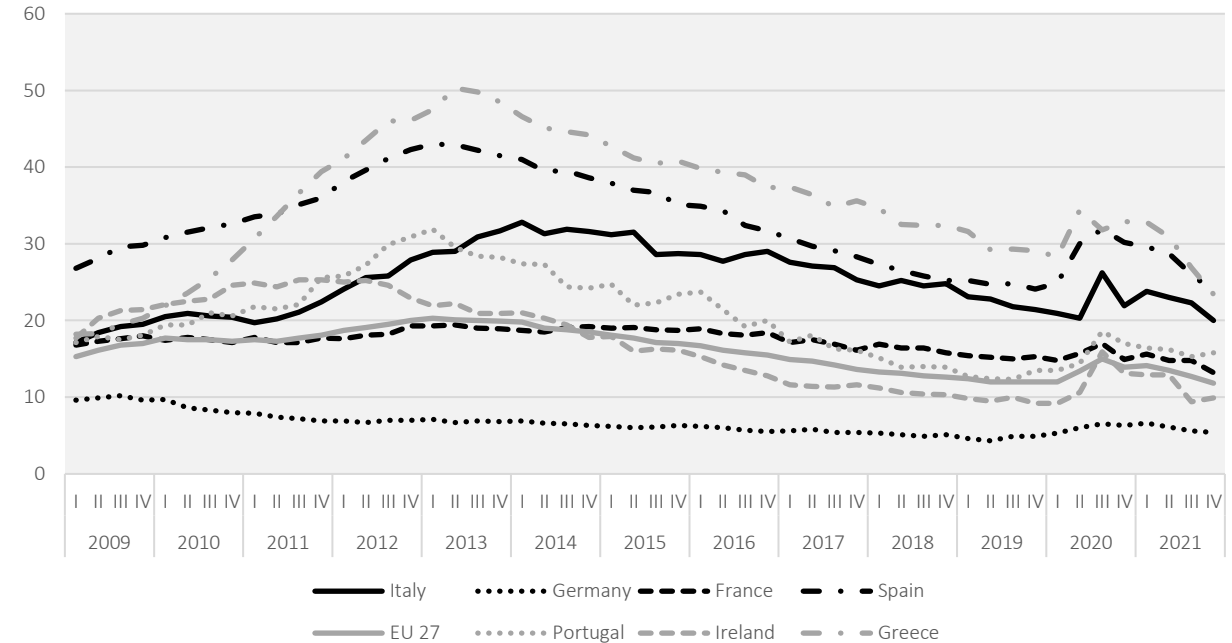
- One of the main legislative interventions of the M5S-Lega coalition government was the so-called “Dignity Decree” (hereafter DD), announced on June 16, 2018, the approved as legislative decree on July 12 (D.l. 87/2018) – effective as of July 14<sup>th</sup> – and then into law on August 9 of the same year (L. 96/2018).
- The main intervention of the reform concerned the Italian labour market and the **fight against precariousness**, implemented in strong opposition with the previous Jobs Act (2015). However, interventions in the decree involved also areas not related to the labour market (*e.g.*, contrast to corporate reallocation and to gambling addiction, reduction of business bureaucracies).
- In the specific case of the labour market, interventions can be grouped into two macro categories:
  - **limitations in the use of fixed-term contracts;**
  - **limitation to unjustified dismissals.**
- The DD was also accompanied by another important intervention that is the **institution of a basic income** (*i.e.*, *reddito di cittadinanza*) (D.L. 4/2019). The beneficiaries – 1.8 million of families over a potential audience of 3 millions (Bergamante *et al.*, 2022) – of this subsidy are individuals belonging to households with low incomes associated with a conditional system of labour market reintegration.

# Unemployment in Europe

Unemployed workers (age class 15-74) as percentage of reference labor force for selected European countries (2009-2021, quarterly)



Unemployed workers (age class 15-29) as percentage of reference labor force for selected European countries (2009-2021, quarterly)



Source: Author's elaboration based on EUROSTAT (2022).

- Italy is the third country in Europe for unemployment rate, especially for the age class 15-29 as a consequence of an highly segmented labour market between young and adult workers (Liotti, 2020).

# Youth (un)employment

- Young employment is generally associated with temporary contracts and precariousness; hence DD's objectives should provide positive effects especially to this group of workers. Three specific characteristics, or rather weaknesses, for this group – in opposition to adult employment – could be gathered from literature:
  - greater **sensitivity to the economic cycle** (O'higgins, 1997; Tomic, 2018);
  - the fact that **in case of recession**, due to their low work experience, higher propensity in being employed through fixed-term contracts and the low firms' cost-opportunity **they are the first to be fired** (Choudhry *et al.*, 2012; Demidova *et al.*, 2015);
  - the possibility, **with prolonged periods of unemployment**, of the discouragement effect's occurring leading young workers to become inactive, hence fostering the **NEET** (not in education, employment or training) **phenomenon** (Bynner and Parsons, 2002; Bruno *et al.*, 2014).
- Other characteristics, for example related to the specific case of youth unemployment in Europe are: (i) increased labor market flexibility; (ii) expansion of education, skill, and qualifications mismatch; (iii) youth migration; (iv) family legacies; (v) European policy initiatives (O'Reilly *et al.*, 2015).

# Unemployment and deregulation (1)

- Within the European labour market, starting from the **nineties**, countries were channelled through a dichotomous path named *flexicurity*, where a **reduction of labour market's rigidity counterbalances an increase of worker's social securities**.
  - Reforms which lead to more **flexibility** within the European labour market through a **higher deregulation**, follows the mainstream approach based on the **explanation of unemployment through the NAIRU** (Non-accelerating inflation rate of unemployment).
- Following this approach, **higher deregulation reduces unemployment by reducing labour market frictions and speed up its adjustment after economic shocks** (*e.g.*, Siebert, 1997; Di Tella and MacCulloch, 2005; Lucifora *et al.*, 2005; Forteza and Rama, 2006; Zemanek, 2010; Bernal-Verdugo *et al.*, 2012; Nickell *et al.*, 2005).
  - The resulting reforms lowered the degree of employment protection for workers and facilitated the possibility for young workers to find a job and to firms to adjust their demand in line with the business cycle through the introduction of atypical contracts and the reduction of both hiring and firing costs.
  - A stringent employment protection legislation has negative effects on youth entry into labour market according to a study conducted on OECD economies by Bassanini and Duval, 2006. Furthermore, Botero *et al.*, 2004 show how rigid employment laws are associated with high unemployment especially for young workers while Breen (2005) stresses how countries with more flexible labor markets have lower levels of youth unemployment.

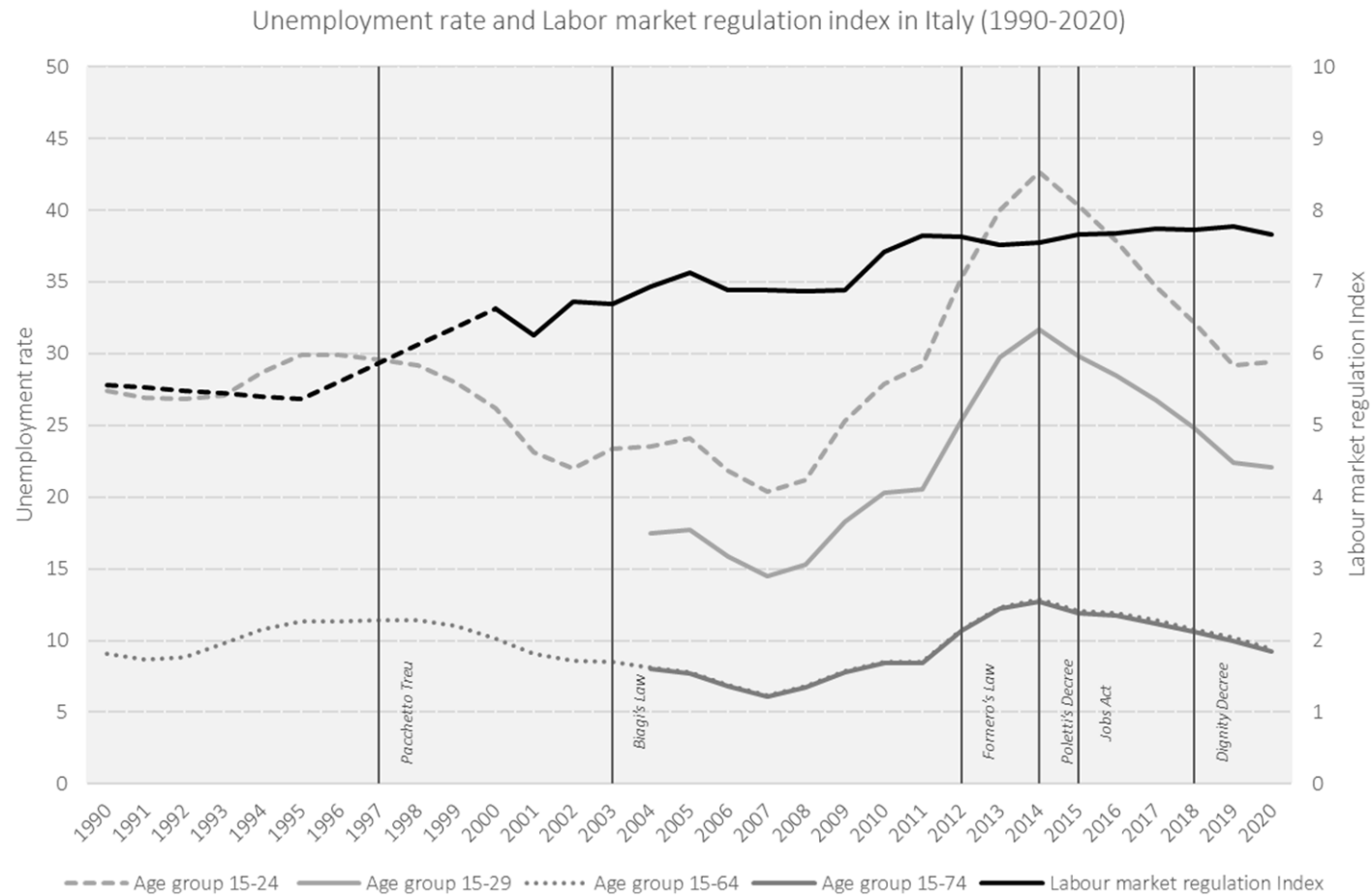
# Unemployment and deregulation (2)

- The **flexibilization** of the labor market is considered one of the core determinants of youth unemployment which result to be employed largely through temporary contracts, making them the first to be replaced by companies in times of need (Stewart, 2007; O'Reilly *et al.*, 2015).
- Nevertheless, other contributions casts **doubts** about the **effectiveness of labour market deregulation in halting unemployment** (*e.g.*, Krishna Dutt *et al.*, 2015; O'Higgins *et al.*, 2017; Brancaccio *et al.*, 2018; Ferreriro and Gómez, 2018; ).
  - By investigating 28 European countries between 2000 and 2018, Liotti (2022) concludes that labor flexibility did not help those countries in reducing their youth unemployment rates.
  - For the specific Italian case the works of Barbieri and Scherer (2009) and Liotti (2020) show no evidence that higher labour market flexibility would improve youth employment.
- Therefore, what is generally identified as “**IMF-OECD Consensus**” (Howell, 2004) where labour market deregulation increases employment and reduces unemployment does not seem, even for the specific Italian case, to represent a necessary truth. In fact, a meta-analysis conducted by Brancaccio *et al.* (2018) over 53 academic papers, shows how only 28% corroborate the consensus approach.

# Italian labour market

- Since the early nineties, the Italian labour market has embarked a profound path of reforms aimed at aligning it to the European labour market.
  - The so-called “**Pacchetto Treu**” (L. 196/1997) and then the **Biagi's law** (L. 30/2003) represented two of the most important reforms within this new European paradigm. They introduced more flexibility within the Italian labour market mostly through the constitution of new atypical temporary contracts.
  - In 2012 the **Fornero's reform** (L. 92/2012) introduced more flexibility on both hiring and dismissal sides also providing compensation funds for specific categories of layoffs.
  - The subsequent **Poletti's decree** (D.L. 23/2014) highly boosted the use of fixed-term contracts by extending their duration and favouring their reiteration.
  - The **Jobs Act** reform that followed, attempted to reduce the segmentation among Italian workers in different ways: it eased young workers' entrance in the labour market; it removed article 18 from the labour's chart, hence reduced the number of workers covered by the previous protection system by also limiting the possibility of their reinstatement. Accordingly, a new type of open-ended contract with “increasing protections” has been introduced (*i.e.*, *contratto a tutele crescenti* – CTC).
  - Introduction of the **Dignity Decree** on July 2018.

# Employment rate and labour market regulation in Italy



Source: Author's elaboration based on Fraser Institute (2022) and Istat (2022).



# Main labour market interventions of the Dignity Decree

- Fixed term contracts.
  - The maximum duration changes from 36 down to 24 months.
  - For the extension of a contract beyond 12 months, the following reasons (*i.e.*, *causalità*) are reintroduced:
    - temporary and objective needs, unrelated to ordinary activities, or replacement of other workers;
    - needs related to temporary, significant and non-programmable increases in ordinary activity.
  - The maximum number of extensions goes from 5 down to 4.
  - The renewal of a contract after 12 months can only take place in the presence of the aforementioned reasons.
  - The renewal of contracts becomes more onerous for employers (NASpI tax rate increase).
  - The limitations on extensions and renewals do not apply in the case of seasonal activities.
  - The provisions envisaged for fixed-term contracts also concern temporary agency work contracts (*i.e.*, *somministrazione*).
  - Introduction of quota limits (*i.e.*, *limiti di contingentamento*) in the hiring of fixed-term workers in the company workforce (20% and 30% with temporary agency work contracts).
- Contracts with increasing protections (D.l. 23/2015).
  - Modification of the economic allowance for unjustified dismissal (ascertained by the judge) with the maximum limit of monthly payments moved from 24 up to 36.

# A scant literature (1)

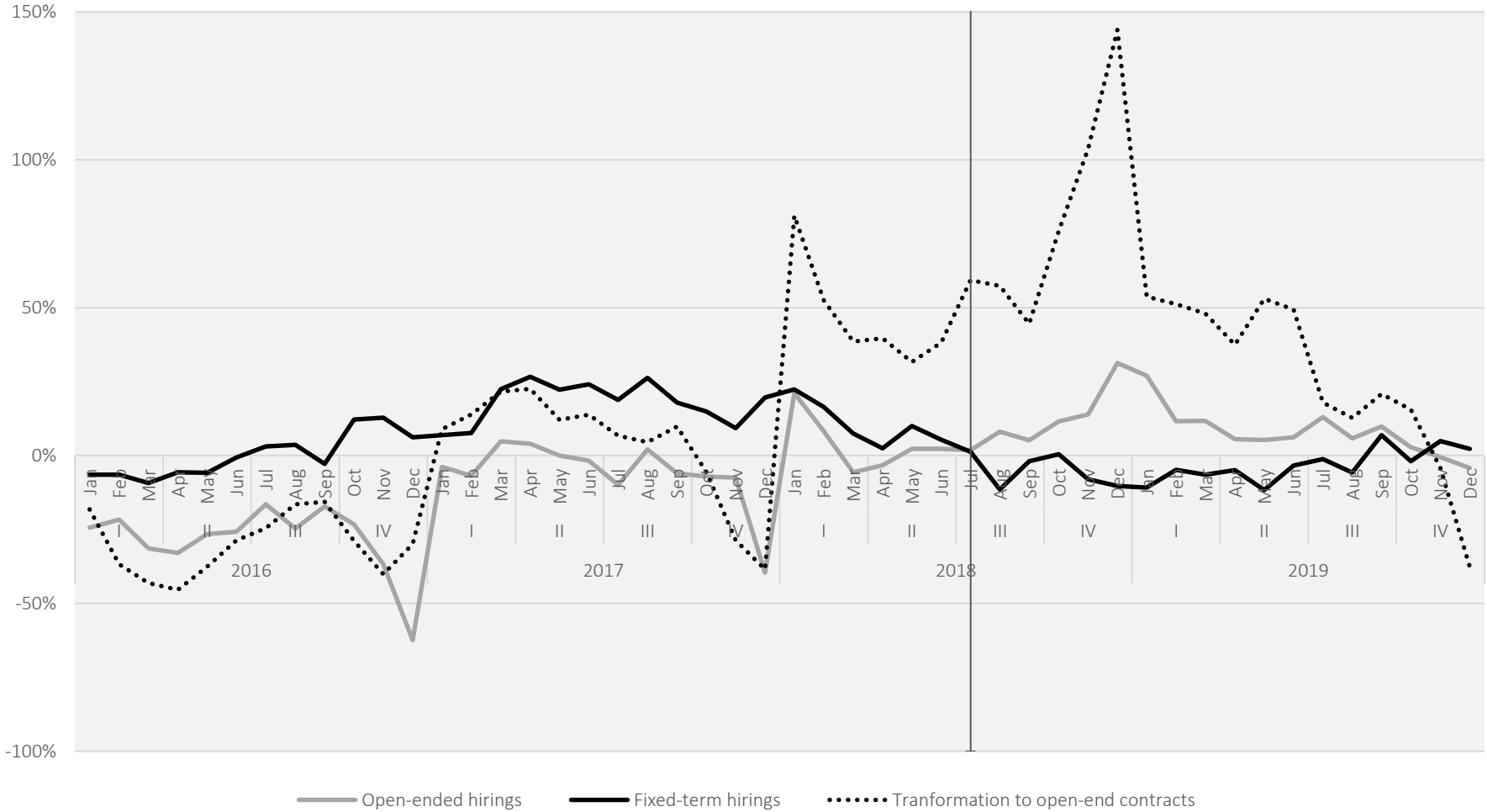
- The literature that aims at studying the impact of DD on the labour market is rather scant if not entirely absent. Probably, the subsequent follow of the Covid-19 pandemic (about 1 and a half years after the introduction of this reform) has shifted the general attention to studies focused on the impact of the global health crisis on national and international labour markets.
- DD studies investigate mainly labour law aspects of this reform with a particular focus on temporary agency work contracts (*e.g.*, Passalacqua, 2018; Dolores Ferrara, 2019). However, a rather critical and sceptical picture emerges about the effective possibilities of the DD reform to pursue the ambitious contrasts precariousness.
  - For example, Sartori (2018) stresses how the reform, hastily conceived, dangerously equates flexibility with precariousness and results may lead to work stagnation and excessive turnover of fixed-term workers, especially those low-skilled.
- Conversely, the previous reform of the Jobs Act was characterized by a definitely more flourishing economic literature (*e.g.*, Fana et al., 2015; Cirillo *et al.*, 2017; Sestio and Viviano, 2018; Boeri and Garibaldi, 2019).

# A scant literature (2)

- While Nannicini *et al.* (2019) carry out a purely political evaluation of the previous Jobs Act as well as of the main government interventions of the M5S-Lega coalition, with particular reference to the DD, one of the few works to offer a quantitative evaluation of the DD was conducted by the Centro Studi di Confindustria (Labartino and Mazzolari, 2019).
- The authors highlighted some interesting results for the first half of 2019:
  - results from a survey conducted on a sample of (4,000) companies showed that in 50% of cases they expected a reduction in the use of fixed-term contracts. However, this was not accompanied by a necessary increase in permanent contracts (almost 19% of companies would have opted for turnover with fixed-term contracts);
  - starting from July 2018 (and different from previous years), the number of workers with fixed-term contracts has remained stable (and this could be explained also by the responsiveness of temporary employment to the cycle) while the number of permanent workers has remarkably increased. This growth was greatly supported by the transformations of fixed term contracts into open-ended contracts. However, as early as mid-2019 that growth had faded, suggesting that the effects of DD were wearing off;
  - in the second half of 2018, fixed-terms hirings flows decreased, especially for temporary contracts. However, this reduction could have, in future, some side effects: a reduction today in the number of short-term contracts activated will lead tomorrow to a smaller pool of workers who can be potentially transformed from fixe-term to permanent positions.

# Hiring trends

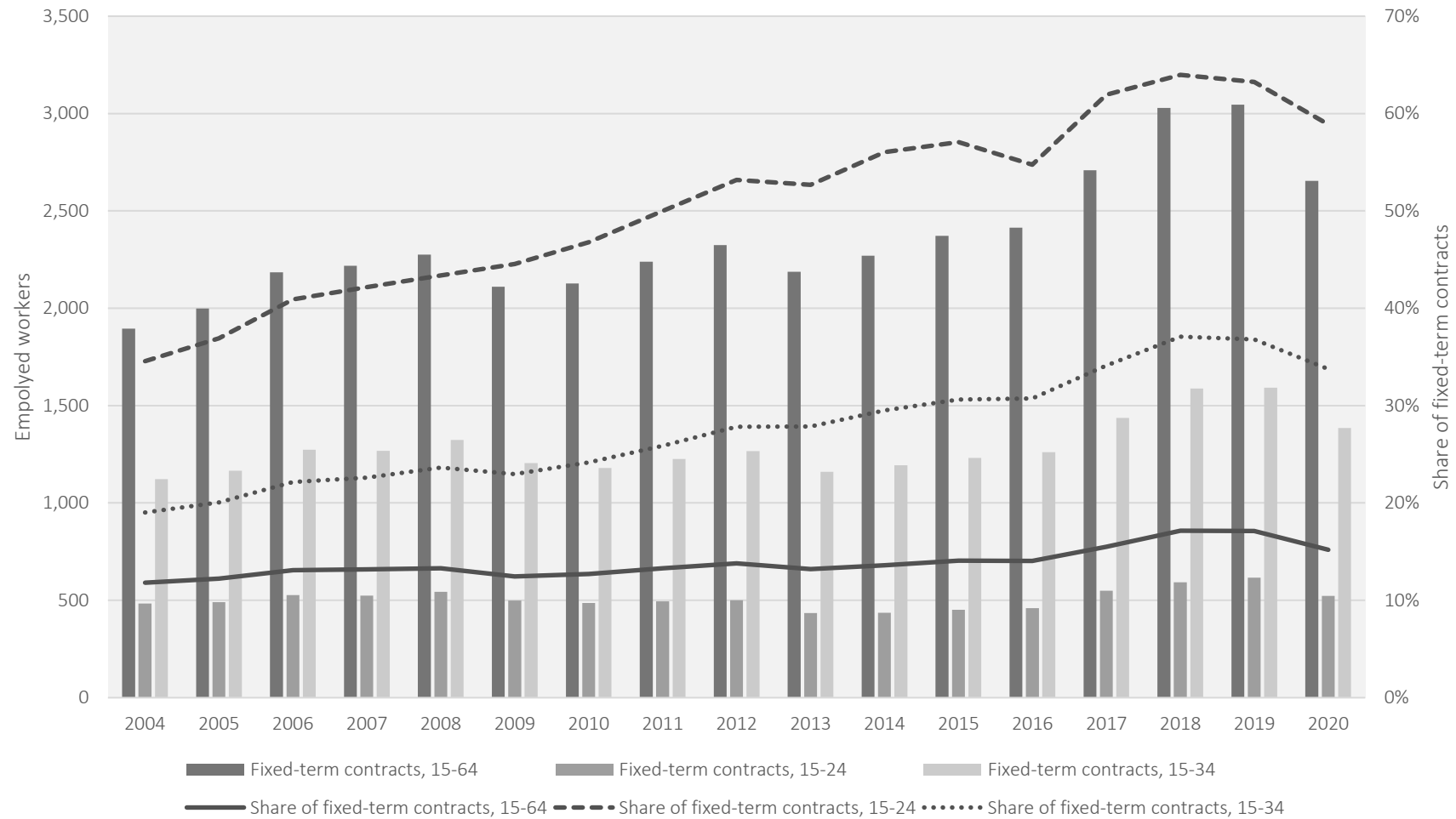
Trend variation in the activation of fixed-term and permanent contracts and in open-ended transformations (2016-2019)



Source: Author's elaboration on CO data.

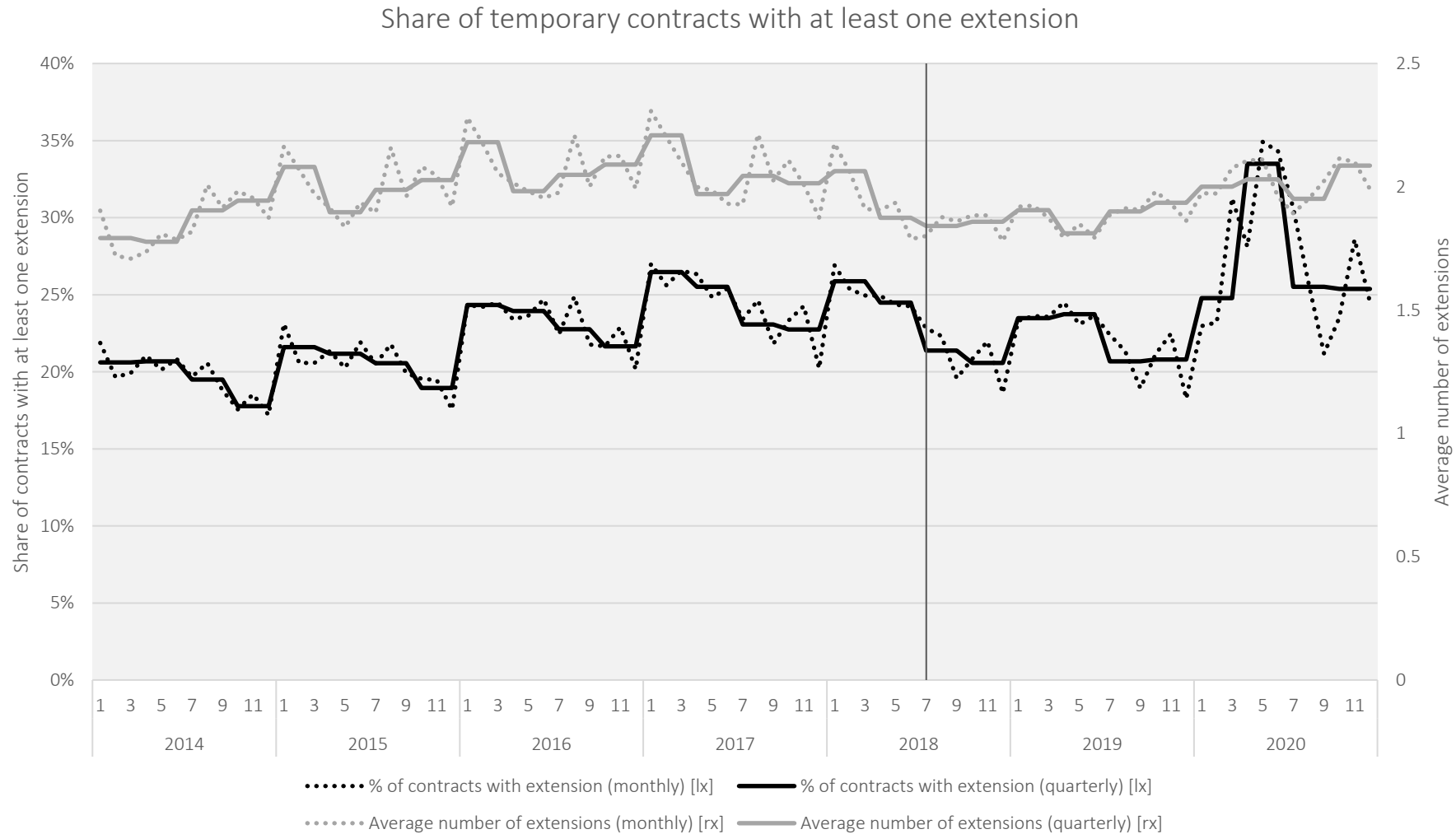
# Employed workers

Employed workers with fixed-term contracts in Italy (2004-2020)



Source: Author's elaboration based on Istat (2022).

# Contract extensions



Source: Author's elaboration based on CO data.

# Data (1)

- Our analysis relies on the use of an exclusive sample of **Compulsory Communications** (*i.e.*, *Comunicazioni Obbligatorie* – CO) **data** provided to by the Italian Ministry of Labour and Social Policies (ML).
- The aim of the study is to evaluate the **impact of DD on young workers (15-29 years)** recently entered in the labour market, in particular on their **probability of being employed after 1 year or more from the implementation of the reform** as well as the **probability of reaching an open-ended contract** within the same time horizons.
- The choice to focus the analysis on young workers in the age group 15-29 is threefold:
  - (i) the category of **young workers**, especially those with their first work experiences, is often characterized by temporary and occasional jobs, hence particularly **prone to precariousness**;
  - (ii) workers in the age group 15-24 that have undertaken a university career would allegedly be employed mostly in seasonal and temporary contracts aimed at sustain their income and pay for their education – the average graduation age is equal to 25.7 years (AlmaLaurea, 2022). Therefore, **by considering only workers up to 24 years would preclude the possibility to properly observe graduated workers in their pattern to job stabilization**. Furthermore, by extending the age group up to 29 years would allow to consider the whole pool of workers employable through apprenticeships contracts which potentially represents a roadway to work stabilization (INAPP, 2021);
  - (iii) the CO system represents the trend in the labour demand from the Italian private and public sector, hence is a flow variable. However, having the **need to use a stock of workers**, this is **possible only by considering young workers** from what presumably represents the first activation in their work history (first entry in the CO system) and thereafter.

# Data (2)

- The main source of analysis for CO studies is the CICO database (integrated sample of mandatory communications). However, the sample we rely upon differs from CICO under manifold characteristics.
- Different sample size and sampling approach.
  - In the latest release (second quarter of 2022), the number of observations in CICO was approximately 20 million. Our dataset, on the other hand, was approximately 24 million. However, to these entries we should also add activations concerning temporary employment agencies (*i.e.*, *missioni* and *somministrazioni*) (not included in CICO), reaching a total sample of over 27 million observations able to account for the entire Italian labour demand from private firms. Therefore, the sample we used is about 23.5% larger than CICO.
  - Sampling is carried out solely on the basis of the individual tax code and not on the date of birth leading to a significantly lower margin of error when reporting to the entire population.
- Presence of additional information.
  - Additional variables such as those on extensions or contracts' expected end dates.
  - Greater disaggregation of variables such as territorial ones or those referring to professional codes (CP2011).
  - However, compared to the CICO data, the INPS integration concerning wages is lacking.
- Registry details unlocked.



# Analysis (1)

- The goal is to evaluate the impact that the introduction of DD has had on the work paths of young workers (15-29 years) after their entry into the labour market.
- We evaluate the effect of DD on the probability of being employed identified as a dichotomous variable  $Y_{i,t+s}^{DD}$  for each individual  $i$  at time  $t + s$  conditional on the specific policy (DD). Where the causal effect of DD for each specific individual is equal to:

$$Y_{i,t+s}^1 - Y_{i,t+s}^0$$

- Therefore, the average effect of DD on all interested workers is equal to:

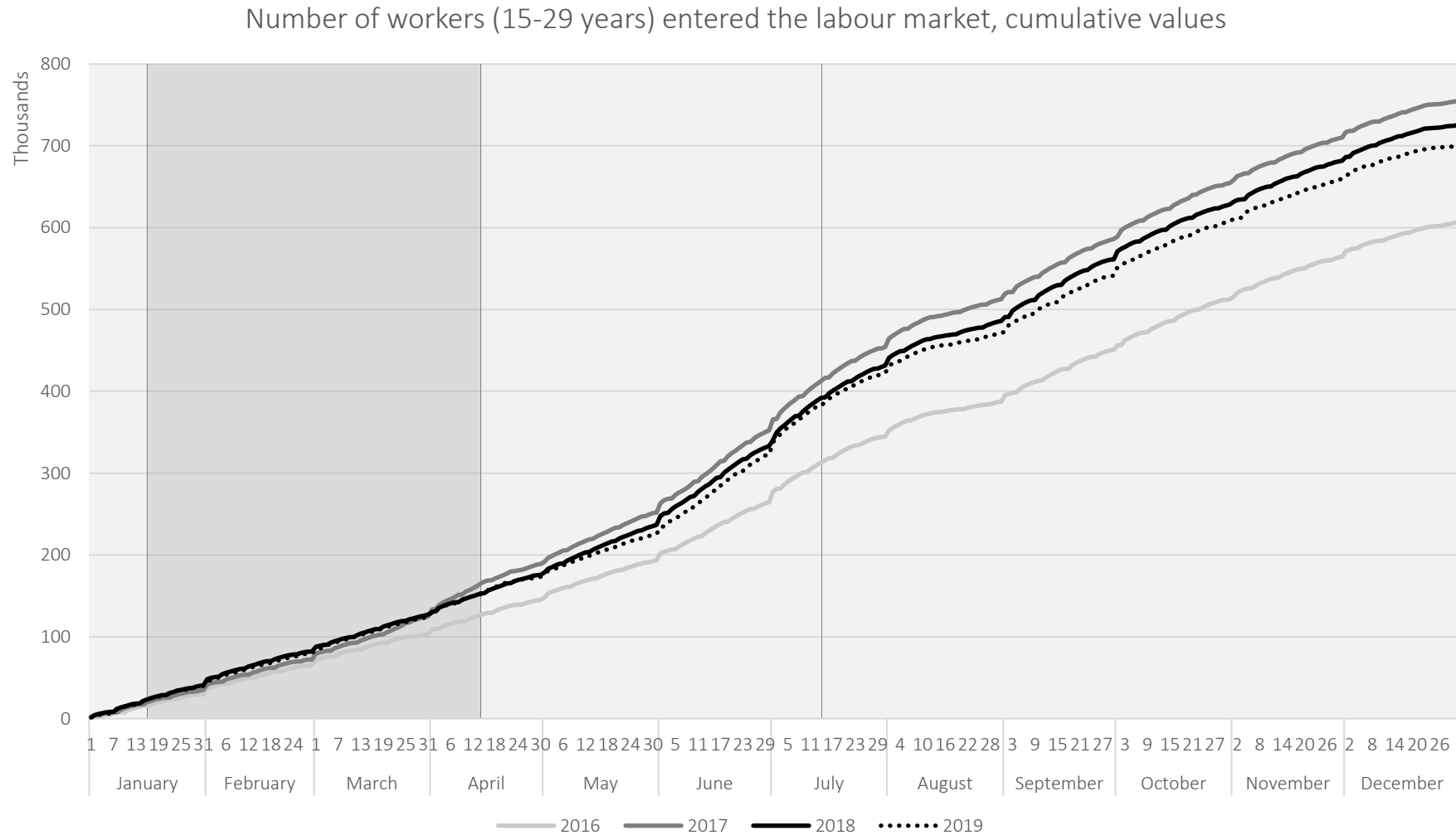
$$E\{ Y_{i,t+s}^1 - Y_{i,t+s}^0 | DD_i = 1 \} = E\{ Y_{i,t+s}^1 | DD_i = 1 \} - E\{ Y_{i,t+s}^0 | DD_i = 1 \}$$

- However, since it is not possible to estimate  $E\{ Y_{i,t+s}^0 | DD_i = 1 \}$ , we have to construct a counterfactual against which the impact of the intervention can be evaluated.

# Analysis (2)

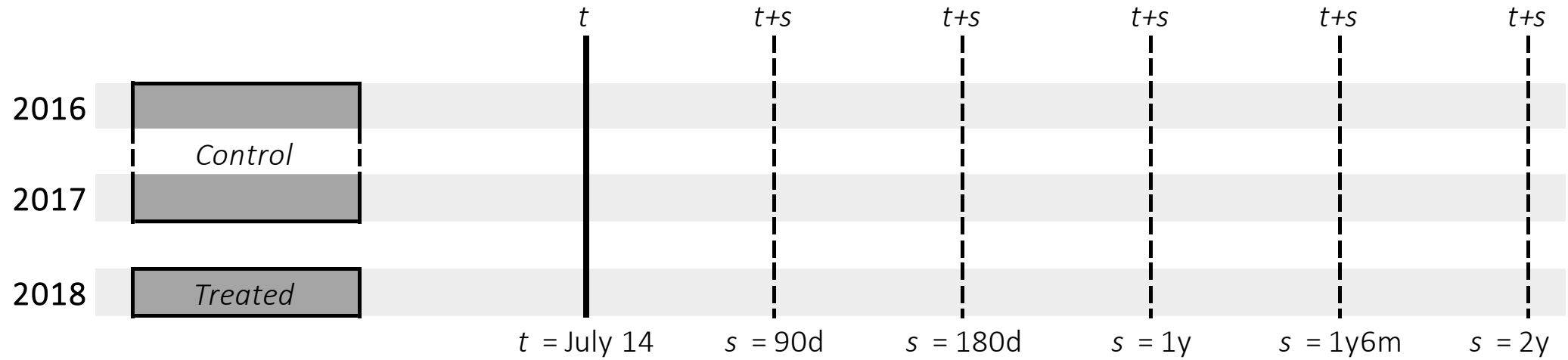
- To do this, we identified two groups of workers: (i) the group of *treated* (20,569), the workers affected by the introduction of the DD; and (ii) the *control* group (39,596), the workers not allegedly affected by the decree.
  - The first group was constructed by identifying all workers (15-29) who entered the labour market from six to three months prior to July 14, 2018. Similarly, the control group was identified with workers who entered the labour market from six to three months prior to July 14, 2016 and July 14, 2017, respectively.
- In order to evaluate the causal impact of the treatment (DD) on our treated units, we adopted a **Propensity Score Matching** (PSM) procedure (Rosenbaum and Rubin, 1983; 1985).
  - Through the PSM we **construct** our **unobserved counterfactual** by pairing each treated worker (entered in the labour market on 2018) with an untreated worker based on a vector of characteristics observed by following the work history of each individual from its entrance in the labour market until July 14 of each reference year.
  - The goal of matching is to produce a covariate balance between the two groups as they would be in a randomized experiment. In this way, it is possible to overcome the issue of selection bias which affects non-experimental methods, hence yield to unbiased estimate of treatment impact.

# Young workers entering in the labour market



Source: Author's elaboration on CO data.

# Identification of treated and control units



# Analysis (3)

- In particular, PSM computes the probability that a unit will be treated based on a vector of characteristics ( $X$ ).

$$\text{Prop}(DD_i = 1) = F(X_i)$$

- We used a 1:1 nearest-neighbours PSM model with *glm* as the distance and *probit* as the link function.
- One by one, each treated unit is paired with an available control unit that has the closest propensity score to it. Any remaining control units are left unmatched and excluded.
- Post matching results show an **optimal balancing** between the two groups with no treated units left unpaired.
- **Once conducted the PSM we calculated the ATT** (Average Treatment Effect on the treated) (Imbens, 2004) which represents the effect on individuals who have “benefited” from the reform.

$$ATT_{PSM} = E_{P(X_i)|DD_i=1} \{ E[Y_{i,t+s}^1 | DD_i = 1, P(X_i)] - E[Y_{i,t+s}^0 | DD_i = 0, P(X_i)] \}$$

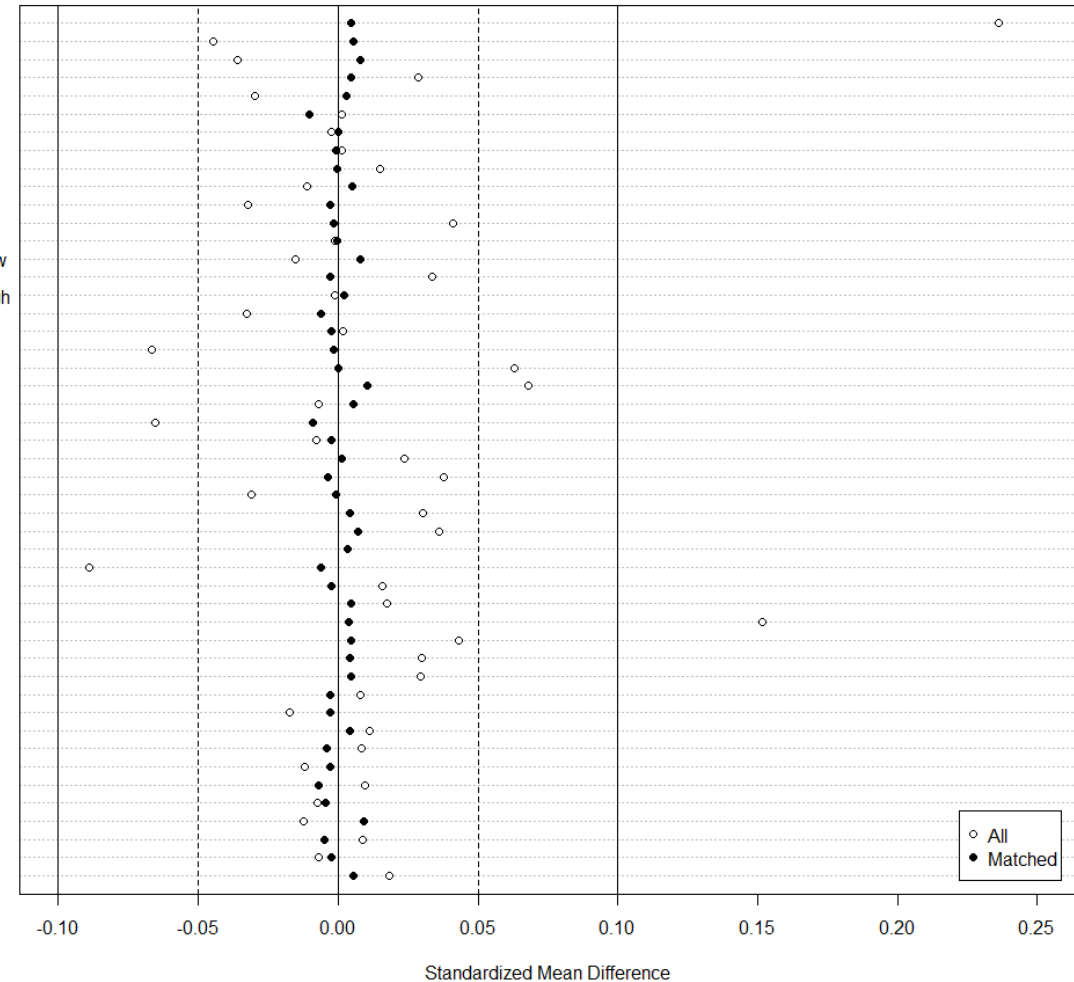
- The ATT is computed as the difference between expected outcome values with and without treatment for those who actually participated in the treatment. Through the propensity score we identified, among workers untreated, the counterfactual values for those being treated.
- A benefit of matching is that the outcome model used to estimate the treatment effect is robust to misspecification when balance is achieved, such as in our case.

# Analysis (4)

- The selection of covariates to balance, necessary to have a resulting treatment effect estimate free of confounding factors (VanderWeele, 2019) is based on characteristics retrieved directly from CO data.
- The **matching was carried out using 24 covariates** (of which 5 categorical) obtaining an optimal balancing:
  - the Standard Mean Difference (SMD) after matching is always less than 0.02 for each covariate;
  - the Variance Ratio is always close to 1 for each non-categorical covariate.

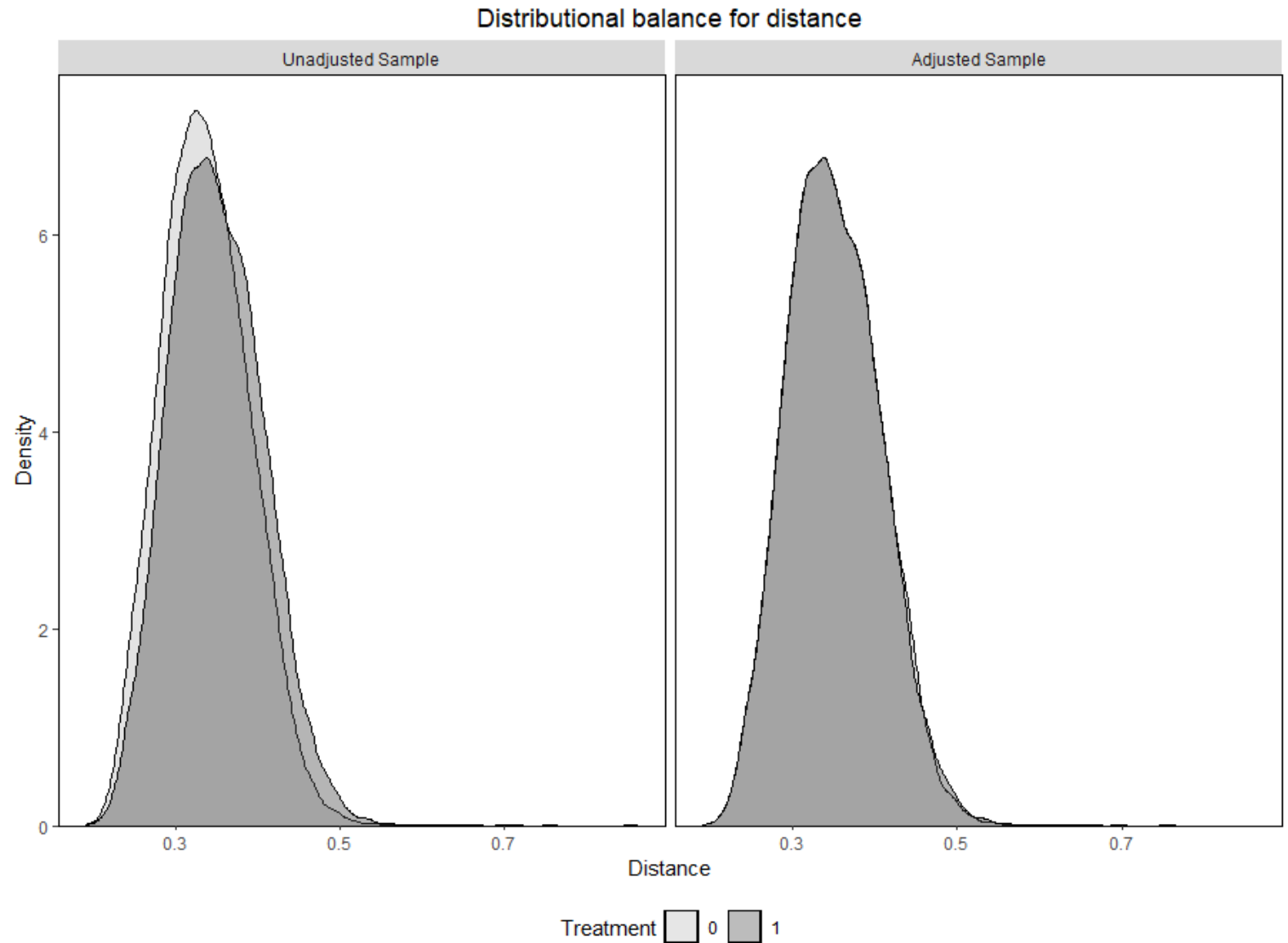
	Control	Treated
All	39,596	20,569
Matched	20,569	20,569
Unmatched	19,027	0
Discarded	0	0

distance  
sex  
citiz  
study\_Low  
study\_Medium  
study\_High  
geo\_N.D.  
geo\_North-West  
geo\_North-East  
geo\_Center  
geo\_South  
geo\_Islands  
mobility\_Low  
mobility\_Medium-Low  
mobility\_Medium  
mobility\_Medium-High  
mobility\_High  
age\_first  
ct\_first\_CTI  
ct\_first\_CTD  
ct\_first\_INT  
ct\_first\_CAP  
ct\_first\_ESP  
ct\_first\_PAR  
ct\_first\_DOM-COLF  
ct\_dd\_N.A.  
ct\_dd\_CTI  
ct\_dd\_CTD  
ct\_dd\_INT  
ct\_dd\_CAP  
ct\_dd\_ESP  
ct\_dd\_PAR  
ct\_dd\_DOM-COLF  
diff\_gg\_dd  
att\_dd  
ggI\_dd  
mis\_dd  
ggI\_agr\_dd  
ggI\_ind\_dd  
ggI\_ser\_dd  
ggI\_cp1\_dd  
ggI\_cp2\_dd  
ggI\_cp3\_dd  
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ggI\_cp5\_dd  
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ggI\_cp7\_dd  
ggI\_cp8\_dd



# Analysis (5)

- The contribution of the PSM in creating the “as good as random” scenario is clearly confirmed by the distribution of the propensity score before and after the PSM application.



# Main results (1)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0450	0.0124 ***	0.0204	0.0124 .	0.0050	0.0124	0.0198	0.0124	-0.0793	0.0124 ***
		<i>0.0175</i>	<i>0.0048</i>	<i>0.0081</i>	<i>0.0049</i>	<i>0.0019</i>	<i>0.0048</i>	<i>0.0078</i>	<i>0.0049</i>	<i>-0.0313</i>	<i>0.0049</i>
ATT (2)		0.0595	0.0145 ***	0.0242	0.0137 .	0.0028	0.0133	0.0232	0.0131 .	-0.0902	0.0131 ***
		<i>0.0160</i>	<i>0.0039</i>	<i>0.0075</i>	<i>0.0042</i>	<i>0.0009</i>	<i>0.0043</i>	<i>0.0080</i>	<i>0.0045</i>	<i>-0.0313</i>	<i>0.0045</i>

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0166	0.0153	0.0492	0.0150 **	0.0936	0.0145 ***	0.0843	0.0140 ***	0.0493	0.0136 ***
		<i>0.0036</i>	<i>0.0034</i>	<i>0.0115</i>	<i>0.0035</i>	<i>0.0244</i>	<i>0.0038</i>	<i>0.0239</i>	<i>0.0040</i>	<i>0.0149</i>	<i>0.0041</i>
ATT (2)		0.0402	0.0229 .	0.0831	0.0191 ***	0.1180	0.0167 ***	0.1010	0.0153 ***	0.0566	0.0147 ***
		<i>0.0034</i>	<i>0.0019</i>	<i>0.0111</i>	<i>0.0025</i>	<i>0.0226</i>	<i>0.0032</i>	<i>0.0233</i>	<i>0.0035</i>	<i>0.0145</i>	<i>0.0037</i>

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 41138.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

- We can see how the DD impact on the stability of workers' career is modest if not absent. While not statistically significant after 1 year, when considering the time-horizon of 1 year and half, the impact was equal to 0.8%.
- Nonetheless, the impact on employment with a permanent contract was more substantial, with +2.3% both after one year and after one year and a half.
- We also analysed, with the same approach, the impact on the number of activated contracts and working days. Results (ATT) show a slight decrease in the former case and an increase in the latter.



# Main results (1)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0450	0.0124 ***	0.0204	0.0124 .	0.0050	0.0124	0.0198	0.0124	-0.0793	0.0124 ***
		<i>0.0175</i>	<i>0.0048</i>	<i>0.0081</i>	<i>0.0049</i>	<i>0.0019</i>	<i>0.0048</i>	<i>0.0078</i>	<i>0.0049</i>	<i>-0.0313</i>	<i>0.0049</i>
ATT (2)		0.0595	0.0145 ***	0.0242	0.0137 .	0.0028	0.0133	0.0232	0.0131 .	-0.0902	0.0131 ***
		<i>0.0160</i>	<i>0.0039</i>	<i>0.0075</i>	<i>0.0042</i>	<i>0.0009</i>	<i>0.0043</i>	<i>0.0080</i>	<i>0.0045</i>	<i>-0.0313</i>	<i>0.0045</i>
<b>Employed with an open-ended contrat</b>											
		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0166	0.0153	0.0492	0.0150 **	0.0936	0.0145 ***	0.0843	0.0140 ***	0.0493	0.0136 ***
		<i>0.0036</i>	<i>0.0034</i>	<i>0.0115</i>	<i>0.0035</i>	<i>0.0244</i>	<i>0.0038</i>	<i>0.0239</i>	<i>0.0040</i>	<i>0.0149</i>	<i>0.0041</i>
ATT (2)		0.0402	0.0229 .	0.0831	0.0191 ***	0.1180	0.0167 ***	0.1010	0.0153 ***	0.0566	0.0147 ***
		<i>0.0034</i>	<i>0.0019</i>	<i>0.0111</i>	<i>0.0025</i>	<i>0.0226</i>	<i>0.0032</i>	<i>0.0233</i>	<i>0.0035</i>	<i>0.0145</i>	<i>0.0037</i>

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 41138.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

- We can see how the DD impact on the stability of workers' career is modest if not absent. While not statistically significant after 1 year, when considering the time-horizon of 1 year and half, the impact was equal to 0.8%.
- Nonetheless, the impact on employment with a permanent contract was more substantial, with +2.3% both after one year and after one year and a half.
- We also analysed, with the same approach, the impact on the number of activated contracts and working days. Results (ATT) show a slight decrease in the former case and an increase in the latter.

# Main results (2)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(without considering workers with an active open-end contract on July 14)

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
Employed	ATT (1)	0.0442	0.0133 ***	0.0171	0.0132	0.0032	0.0133	0.0019	0.0131	-0.0982	0.0132 ***
		<i>0.0175</i>	<i>0.0053</i>	<i>0.0068</i>	<i>0.0052</i>	<i>0.0013</i>	<i>0.0052</i>	<i>0.0008</i>	<i>0.0052</i>	<i>-0.0389</i>	<i>0.0052</i>
Employed with an open-ended contrat	ATT (2)	0.0572	0.0152 ***	0.0197	0.0144	0.0021	0.0142	0.0030	0.0139	-0.1107	0.0139 ***
		<i>0.0161</i>	<i>0.0043</i>	<i>0.0063</i>	<i>0.0046</i>	<i>0.0007</i>	<i>0.0047</i>	<i>0.0011</i>	<i>0.0048</i>	<i>-0.0385</i>	<i>0.0048</i>

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 36070.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

- To further validate those results, we excluded from the sample of workers those active with an open-end contract on June 14.
- Results for the probability of being employed are non statistically significant when considering one year or one year and half. Conversely, when considering the probability of achieving a permanent contract, probabilities increase in both cases by 2.5% due to the affect of DD.
- Therefore, the boosting effect of the DD in promoting open-end contracts holds also (an more) for workers not previously employed with similar permanent contracts before the implementation of the reform.

# Main results (2)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(without considering workers with an active open-end contract on July 14)

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0442	0.0133 ***	0.0171	0.0132	0.0032	0.0133	0.0019	0.0131	-0.0982	0.0132 ***
		<i>0.0175</i>	<i>0.0053</i>	<i>0.0068</i>	<i>0.0052</i>	<i>0.0013</i>	<i>0.0052</i>	<i>0.0008</i>	<i>0.0052</i>	<i>-0.0389</i>	<i>0.0052</i>
ATT (2)		0.0572	0.0152 ***	0.0197	0.0144	0.0021	0.0142	0.0030	0.0139	-0.1107	0.0139 ***
		<i>0.0161</i>	<i>0.0043</i>	<i>0.0063</i>	<i>0.0046</i>	<i>0.0007</i>	<i>0.0047</i>	<i>0.0011</i>	<i>0.0048</i>	<i>-0.0385</i>	<i>0.0048</i>
<b>Employed with an open-ended contrat</b>											
		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0526	0.0258 *	0.1092	0.0211 ***	0.1480	0.0178 ***	0.1143	0.0162 ***	0.0556	0.0154 ***
		<i>0.0038</i>	<i>0.0019</i>	<i>0.0129</i>	<i>0.0025</i>	<i>0.0268</i>	<i>0.0032</i>	<i>0.0261</i>	<i>0.0037</i>	<i>0.0145</i>	<i>0.0040</i>
ATT (2)		0.0545	0.0267 *	0.1106	0.0220 ***	0.1493	0.0187 ***	0.1206	0.0169 ***	0.0594	0.0161 ***
		<i>0.0037</i>	<i>0.0018</i>	<i>0.0123</i>	<i>0.0020</i>	<i>0.0249</i>	<i>0.0033</i>	<i>0.0252</i>	<i>0.0035</i>	<i>0.0141</i>	<i>0.0038</i>

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 36070.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

- To further validate those results, we excluded from the sample of workers those active with an open-end contract on June 14.
- Results for the probability of being employed are non statistically significant when considering one year or one year and half. Conversely, when considering the probability of achieving a permanent contract, probabilities increase in both cases by 2.5% due to the affect of DD.
- Therefore, the boosting effect of the DD in promoting open-end contracts holds also (an more) for workers not previously employed with similar permanent contracts before the implementation of the reform.

# Workers with temporary agency work (1)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later for workers who have passed through temporary agency work

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0406	0.0428	0.0129	0.0423	-0.1063	0.0433 *	-0.0350	0.0427	-0.1867	0.0437 ***
		<i>0.0158</i>	<i>0.0166</i>	<i>0.0051</i>	<i>0.0167</i>	<i>-0.0400</i>	<i>0.0163</i>	<i>-0.0135</i>	<i>0.0165</i>	<i>-0.0704</i>	<i>0.0164</i>
ATT (2)		0.0451	0.0497	0.0086	0.0457	-0.1362	0.0466 **	-0.0453	0.0449	-0.2130	0.0460 ***
		<i>0.0119</i>	<i>0.0131</i>	<i>0.0027</i>	<i>0.0144</i>	<i>-0.0423</i>	<i>0.0144</i>	<i>-0.0154</i>	<i>0.0153</i>	<i>-0.0709</i>	<i>0.0153</i>

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.2312	0.0764 **	0.3278	0.0630 ***	0.3328	0.0529 ***	0.1796	0.0477 ***	0.1051	0.0459 *
		<i>0.0208</i>	<i>0.0069</i>	<i>0.0468</i>	<i>0.0089</i>	<i>0.0732</i>	<i>0.0116</i>	<i>0.0507</i>	<i>0.0134</i>	<i>0.0332</i>	<i>0.0145</i>
ATT (2)		0.2606	0.0924 **	0.3545	0.0704 ***	0.3504	0.0580 ***	0.1734	0.0510 ***	0.0991	0.0485 *
		<i>0.0162</i>	<i>0.0058</i>	<i>0.0416</i>	<i>0.0078</i>	<i>0.0663</i>	<i>0.0107</i>	<i>0.0436</i>	<i>0.0127</i>	<i>0.0279</i>	<i>0.0136</i>

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 3550.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

- Only workers that experienced at least one temporary agency work contract before July 14 were considered.
- The DD had a double and opposing impact on these specific workers. While, on the one hand, it has reduced the probability of remaining employed, on the other hand, it has led to an increase in the probability of reaching a permanent contract. This figure is also justified by the strong increase in workers with open-ended contracts in recent years (even in post-pandemic periods) among employees in temporary working agencies.

# Workers with temporary agency work (1)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later for workers who have passed through temporary agency work

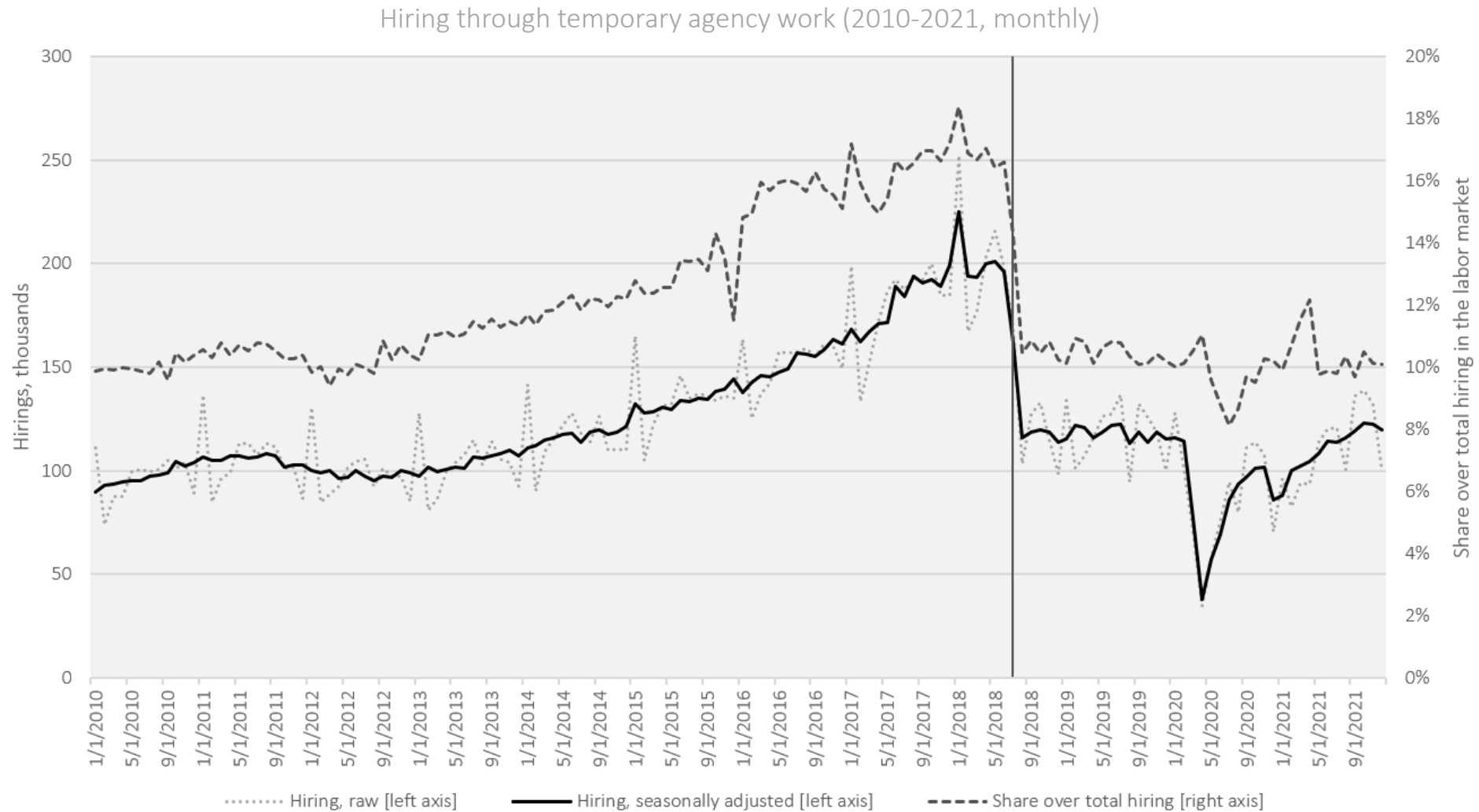
		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0406	0.0428	0.0129	0.0423	-0.1063	0.0433 *	-0.0350	0.0427	-0.1867	0.0437 ***
		<i>0.0158</i>	<i>0.0166</i>	<i>0.0051</i>	<i>0.0167</i>	<i>-0.0400</i>	<i>0.0163</i>	<i>-0.0135</i>	<i>0.0165</i>	<i>-0.0704</i>	<i>0.0164</i>
ATT (2)		0.0451	0.0497	0.0086	0.0457	-0.1362	0.0466 **	-0.0453	0.0449	-0.2130	0.0460 ***
		<i>0.0119</i>	<i>0.0131</i>	<i>0.0027</i>	<i>0.0144</i>	<i>-0.0423</i>	<i>0.0144</i>	<i>-0.0154</i>	<i>0.0153</i>	<i>-0.0709</i>	<i>0.0153</i>
<b>Employed with an open-ended contract</b>											
		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.2312	0.0764 **	0.3278	0.0630 ***	0.3328	0.0529 ***	0.1796	0.0477 ***	0.1051	0.0459 *
		<i>0.0208</i>	<i>0.0069</i>	<i>0.0468</i>	<i>0.0089</i>	<i>0.0732</i>	<i>0.0116</i>	<i>0.0507</i>	<i>0.0134</i>	<i>0.0332</i>	<i>0.0145</i>
ATT (2)		0.2606	0.0924 **	0.3545	0.0704 ***	0.3504	0.0580 ***	0.1734	0.0510 ***	0.0991	0.0485 *
		<i>0.0162</i>	<i>0.0058</i>	<i>0.0416</i>	<i>0.0078</i>	<i>0.0663</i>	<i>0.0107</i>	<i>0.0436</i>	<i>0.0127</i>	<i>0.0279</i>	<i>0.0136</i>

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 3550.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

- Only workers that experienced at least one temporary agency work contract before July 14 were considered.
- The DD had a double and opposing impact on these specific workers. While, on the one hand, it has reduced the probability of remaining employed, on the other hand, it has led to an increase in the probability of reaching a permanent contract. This figure is also justified by the strong increase in workers with open-ended contracts in recent years (even in post-pandemic periods) among employees in temporary working agencies.

# Workers with temporary agency work (2)

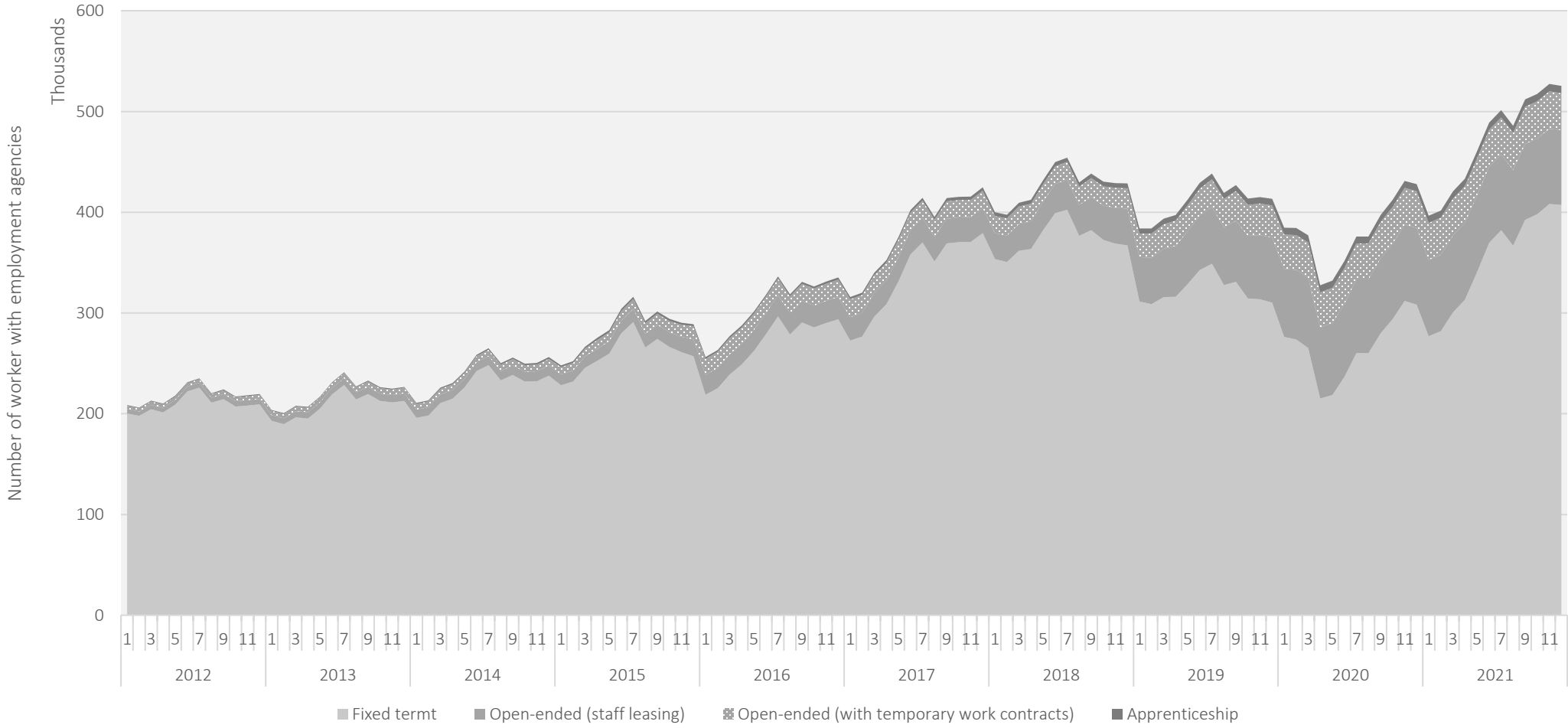


Note: TRAMO-SEATS procedure for seasonally adjustment through JDemetra+.

Source: Author's elaboration on CO data.

# Workers with temporary agency work (2)

Number of workers with temporary work agency (2012-2021)



Source: Author's elaboration on CO data.

# Robustness checks (1)

- The first analysis is conducted only on workers within the age group 15-24. In fact, in the attempt to identify the stock of young workers from CO data, when considering the age group 15-29, there is a chance to not effectively capture all contracts from the history of relatively older workers.
- In the second analysis we excluded workers who had a career mostly as a public employee in the period before July 14.
- The third robustness analysis considers only workers in the control group by dividing them according to the year in which they entered in the labour market identified as treated those entered in 2017. In fact, by extending the analysis up to two years after July 14 of 2017, the reference period would effectively falls – for the treated workers in 2017 – within the period in which the DD began to take effect.
- For fourth and last robustness analysis the PSM has been also associated with a Difference in differences (DiD) regression (Abadie, 2005). Here we replicated not only the main analysis but also the approach used in the three previous robustness checks.



# Robustness checks (2)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(age class 15-24)

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0272	0.0146 .	0.0073	0.0144	-0.0160	0.0146	-0.0096	0.0145	-0.1069	0.0146 ***
		<i>0.0107</i>	<i>0.0057</i>	<i>0.0029</i>	<i>0.0057</i>	<i>-0.0062</i>	<i>0.0057</i>	<i>-0.0038</i>	<i>0.0057</i>	<i>-0.0421</i>	<i>0.0057</i>
ATT (2)		0.0452	0.0168 **	0.0170	0.0159	-0.0140	0.0157	-0.0043	0.0153	-0.1147	0.0153 ***
		<i>0.0124</i>	<i>0.0046</i>	<i>0.0053</i>	<i>0.0050</i>	<i>-0.0046</i>	<i>0.0051</i>	<i>-0.0015</i>	<i>0.0053</i>	<i>-0.0402</i>	<i>0.0053</i>

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)		0.0197	0.0185	0.0569	0.0181 **	0.0980	0.0173 ***	0.0785	0.0168 ***	0.0494	0.0164 **
		<i>0.0040</i>	<i>0.0037</i>	<i>0.0122</i>	<i>0.0039</i>	<i>0.0238</i>	<i>0.0042</i>	<i>0.0210</i>	<i>0.0045</i>	<i>0.0141</i>	<i>0.0047</i>
ATT (2)		0.0729	0.0278 **	0.1098	0.0232 ***	0.1347	0.0200 ***	0.1023	0.0185 ***	0.0651	0.0177 ***
		<i>0.0058</i>	<i>0.0024</i>	<i>0.0136</i>	<i>0.0028</i>	<i>0.0242</i>	<i>0.0034</i>	<i>0.0224</i>	<i>0.0041</i>	<i>0.0158</i>	<i>0.0043</i>

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 29810.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

# Robustness checks (2)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(age class 15-24)

<b>Employed</b>											
	90 days		180 days		1 year		1 year and 6 months		2 years		
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	
ATT (1)	0.0272	0.0146 .	0.0073	0.0144	-0.0160	0.0146	-0.0096	0.0145	-0.1069	0.0146 ***	
	<i>0.0107</i>	<i>0.0057</i>	<i>0.0029</i>	<i>0.0057</i>	<i>-0.0062</i>	<i>0.0057</i>	<i>-0.0038</i>	<i>0.0057</i>	<i>-0.0421</i>	<i>0.0057</i>	
ATT (2)	0.0452	0.0168 **	0.0170	0.0159	-0.0140	0.0157	-0.0043	0.0153	-0.1147	0.0153 ***	
	<i>0.0124</i>	<i>0.0046</i>	<i>0.0053</i>	<i>0.0050</i>	<i>-0.0046</i>	<i>0.0051</i>	<i>-0.0015</i>	<i>0.0053</i>	<i>-0.0402</i>	<i>0.0053</i>	

<b>Employed with an open-ended contract</b>											
	90 days		180 days		1 year		1 year and 6 months		2 years		
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	
ATT (1)	0.0197	0.0185	0.0569	0.0181 **	0.0980	0.0173 ***	0.0785	0.0168 ***	0.0494	0.0164 **	
	<i>0.0040</i>	<i>0.0037</i>	<i>0.0122</i>	<i>0.0039</i>	<i>0.0238</i>	<i>0.0042</i>	<i>0.0210</i>	<i>0.0045</i>	<i>0.0141</i>	<i>0.0047</i>	
ATT (2)	0.0729	0.0278 **	0.1098	0.0232 ***	0.1347	0.0200 ***	0.1023	0.0185 ***	0.0651	0.0177 ***	
	<i>0.0058</i>	<i>0.0024</i>	<i>0.0136</i>	<i>0.0028</i>	<i>0.0242</i>	<i>0.0034</i>	<i>0.0224</i>	<i>0.0041</i>	<i>0.0158</i>	<i>0.0043</i>	

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 29810.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

# Robustness checks (3)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(without public employees)

<b>Employed</b>										
	90 days		180 days		1 year		1 year and 6 months		2 years	
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)	0.0394	0.0126 **	0.0199	0.0125	0.0094	0.0126	0.0156	0.0125	-0.0835	0.0125 ***
	<i>0.0153</i>	<i>0.0049</i>	<i>0.0079</i>	<i>0.0049</i>	<i>0.0036</i>	<i>0.0049</i>	<i>0.0062</i>	<i>0.0050</i>	<i>-0.0328</i>	<i>0.0049</i>
ATT (2)	0.0533	0.0146 ***	0.0239	0.0137 .	0.0096	0.0135	0.0184	0.0133	-0.0941	0.0132 ***
	<i>0.0142</i>	<i>0.0039</i>	<i>0.0074</i>	<i>0.0042</i>	<i>0.0031</i>	<i>0.0044</i>	<i>0.0063</i>	<i>0.0046</i>	<i>-0.0327</i>	<i>0.0046</i>

<b>Employed with an open-ended contract</b>										
	90 days		180 days		1 year		1 year and 6 months		2 years	
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)	0.0211	0.0155	0.0583	0.0152 ***	0.1078	0.0147 ***	0.0926	0.0142 ***	0.0530	0.0139 ***
	<i>0.0046</i>	<i>0.0034</i>	<i>0.0137</i>	<i>0.0036</i>	<i>0.0281</i>	<i>0.0038</i>	<i>0.0263</i>	<i>0.0040</i>	<i>0.0160</i>	<i>0.0042</i>
ATT (2)	0.0605	0.0232 **	0.1019	0.0193 ***	0.1413	0.0169 ***	0.1134	0.0156 ***	0.0611	0.0149 ***
	<i>0.0052</i>	<i>0.0021</i>	<i>0.0137</i>	<i>0.0025</i>	<i>0.0269</i>	<i>0.0032</i>	<i>0.0261</i>	<i>0.0036</i>	<i>0.0157</i>	<i>0.0038</i>

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 40132.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

# Robustness checks (3)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(without public employees)

<b>Employed</b>											
	90 days		180 days		1 year		1 year and 6 months		2 years		
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	
ATT (1)	0.0394	0.0126 **	0.0199	0.0125	0.0094	0.0126	0.0156	0.0125	-0.0835	0.0125 ***	
	<i>0.0153</i>	<i>0.0049</i>	<i>0.0079</i>	<i>0.0049</i>	<i>0.0036</i>	<i>0.0049</i>	<i>0.0062</i>	<i>0.0050</i>	<i>-0.0328</i>	<i>0.0049</i>	
ATT (2)	0.0533	0.0146 ***	0.0239	0.0137 .	0.0096	0.0135	0.0184	0.0133	-0.0941	0.0132 ***	
	<i>0.0142</i>	<i>0.0039</i>	<i>0.0074</i>	<i>0.0042</i>	<i>0.0031</i>	<i>0.0044</i>	<i>0.0063</i>	<i>0.0046</i>	<i>-0.0327</i>	<i>0.0046</i>	

<b>Employed with an open-ended contract</b>											
	90 days		180 days		1 year		1 year and 6 months		2 years		
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	
ATT (1)	0.0211	0.0155	0.0583	0.0152 ***	0.1078	0.0147 ***	0.0926	0.0142 ***	0.0530	0.0139 ***	
	<i>0.0046</i>	<i>0.0034</i>	<i>0.0137</i>	<i>0.0036</i>	<i>0.0281</i>	<i>0.0038</i>	<i>0.0263</i>	<i>0.0040</i>	<i>0.0160</i>	<i>0.0042</i>	
ATT (2)	0.0605	0.0232 **	0.1019	0.0193 ***	0.1413	0.0169 ***	0.1134	0.0156 ***	0.0611	0.0149 ***	
	<i>0.0052</i>	<i>0.0021</i>	<i>0.0137</i>	<i>0.0025</i>	<i>0.0269</i>	<i>0.0032</i>	<i>0.0261</i>	<i>0.0036</i>	<i>0.0157</i>	<i>0.0038</i>	

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 40132.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

# Robustness checks (4)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(2017 as treated)

<b>Employed</b>											
	90 days		180 days		1 year			1 year and 6 months		2 years	
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)	0.0724	0.0118 ***	0.0800	0.0118 ***	0.0280	0.0119 *	0.0276	0.0118 *	-0.0005	0.0119	
	<i>0.0281</i>	<i>0.0046</i>	<i>0.0316</i>	<i>0.0047</i>	<i>0.0109</i>	<i>0.0046</i>	<i>0.0109</i>	<i>0.0047</i>	<i>-0.0002</i>	<i>0.0046</i>	
ATT (2)	0.1050	0.0137 ***	0.1108	0.0130 ***	0.0406	0.0128 **	0.0429	0.0124 ***	0.0081	0.0125	
	<i>0.0288</i>	<i>0.0038</i>	<i>0.0347</i>	<i>0.0041</i>	<i>0.0133</i>	<i>0.0042</i>	<i>0.0148</i>	<i>0.0043</i>	<i>0.0028</i>	<i>0.0043</i>	

<b>Employed with an open-ended contract</b>											
	90 days		180 days		1 year			1 year and 6 months		2 years	
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)	-0.0209	0.0144	-0.0826	0.0143 ***	-0.0442	0.0138 **	0.0425	0.0134 **	0.0700	0.0131 ***	
	<i>-0.0045</i>	<i>0.0031</i>	<i>-0.0187</i>	<i>0.0032</i>	<i>-0.0110</i>	<i>0.0034</i>	<i>0.0116</i>	<i>0.0037</i>	<i>0.0206</i>	<i>0.0039</i>	
ATT (2)	-0.0337	0.0219	-0.1324	0.0183 ***	-0.0425	0.0159 **	0.0712	0.0148 ***	0.0977	0.0142 ***	
	<i>-0.0028</i>	<i>0.0030</i>	<i>-0.0171</i>	<i>0.0012</i>	<i>-0.0077</i>	<i>0.0029</i>	<i>0.0157</i>	<i>0.0032</i>	<i>0.0244</i>	<i>0.0035</i>	

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 45148.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

# Robustness checks (4)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later (2017 as treated)

<b>Employed</b>											
	90 days		180 days		1 year			1 year and 6 months		2 years	
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)	0.0724	0.0118 ***	0.0800	0.0118 ***	0.0280	0.0119 *	0.0276	0.0118 *	-0.0005	0.0119	
	<i>0.0281</i>	<i>0.0046</i>	<i>0.0316</i>	<i>0.0047</i>	<i>0.0109</i>	<i>0.0046</i>	<i>0.0109</i>	<i>0.0047</i>	<i>-0.0002</i>	<i>0.0046</i>	
ATT (2)	0.1050	0.0137 ***	0.1108	0.0130 ***	0.0406	0.0128 **	0.0429	0.0124 ***	0.0081	0.0125	
	<i>0.0288</i>	<i>0.0038</i>	<i>0.0347</i>	<i>0.0041</i>	<i>0.0133</i>	<i>0.0042</i>	<i>0.0148</i>	<i>0.0043</i>	<i>0.0028</i>	<i>0.0043</i>	

<b>Employed with an open-ended contract</b>											
	90 days		180 days		1 year			1 year and 6 months		2 years	
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
ATT (1)	-0.0209	0.0144	-0.0826	0.0143 ***	-0.0442	0.0138 **	0.0425	0.0134 **	0.0700	0.0131 ***	
	<i>-0.0045</i>	<i>0.0031</i>	<i>-0.0187</i>	<i>0.0032</i>	<i>-0.0110</i>	<i>0.0034</i>	<i>0.0116</i>	<i>0.0037</i>	<i>0.0206</i>	<i>0.0039</i>	
ATT (2)	-0.0337	0.0219	-0.1324	0.0183 ***	-0.0425	0.0159 **	0.0712	0.0148 ***	0.0977	0.0142 ***	
	<i>-0.0028</i>	<i>0.0030</i>	<i>-0.0171</i>	<i>0.0012</i>	<i>-0.0077</i>	<i>0.0029</i>	<i>0.0157</i>	<i>0.0032</i>	<i>0.0244</i>	<i>0.0035</i>	

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 45148.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

# Robustness checks (5)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(Difference in differences)

		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
Employed	ATT (1)	0.0641	0.0293 *	0.0353	0.0355	0.0107	0.0355	0.0343	0.0355	-0.1243	0.0355 ***
		<i>0.0205</i>		<i>0.0079</i>		<i>0.0023</i>		<i>0.0077</i>		<i>-0.0276</i>	
Employed with an open-ended contract	ATT (2)	0.1397	0.0390 ***	0.0452	0.0359	0.0051	0.0365	0.0334	0.0336	-0.2165	0.0348 ***
		<i>0.0092</i>		<i>0.0045</i>		<i>0.0005</i>		<i>0.0061</i>		<i>-0.0256</i>	
		90 days		180 days		1 year		1 year and 6 months		2 years	
		<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>
Employed with an open-ended contract	ATT (1)	0.0336	0.0409	0.0927	0.0402 *	0.1693	0.0391 ***	0.1497	0.0382 ***	0.0873	0.0376 *
		<i>0.0022</i>		<i>0.0069</i>		<i>0.0155</i>		<i>0.0163</i>		<i>0.0109</i>	
Employed with an open-ended contract	ATT (2)	0.1822	0.0883 *	0.2954	0.0654 ***	0.3670	0.0511 ***	0.2726	0.0444 ***	0.1508	0.0409 ***
		<i>0.0004</i>		<i>0.0028</i>		<i>0.0101</i>		<i>0.0126</i>		<i>0.0092</i>	

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 41138.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.

# Robustness checks (5)

Effect of DD on the probability of being employed and employed with an open-end contract after 90 days up to 2 years later  
(Difference in differences)

<b>Employed</b>											
	90 days		180 days		1 year		1 year and 6 months		2 years		
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	
ATT (1)	0.0641	0.0293 *	0.0353	0.0355	0.0107	0.0355	0.0343	0.0355	-0.1243	0.0355 ***	
	<i>0.0205</i>		<i>0.0079</i>		<i>0.0023</i>		<i>0.0077</i>		<i>-0.0276</i>		
ATT (2)	0.1397	0.0390 ***	0.0452	0.0359	0.0051	0.0365	0.0334	0.0336	-0.2165	0.0348 ***	
	<i>0.0092</i>		<i>0.0045</i>		<i>0.0005</i>		<i>0.0061</i>		<i>-0.0256</i>		
<b>Employed with an open-ended contract</b>											
	90 days		180 days		1 year		1 year and 6 months		2 years		
	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Estimate</i>	<i>S.E.</i>	
ATT (1)	0.0336	0.0409	0.0927	0.0402 *	0.1693	0.0391 ***	0.1497	0.0382 ***	0.0873	0.0376 *	
	<i>0.0022</i>		<i>0.0069</i>		<i>0.0155</i>		<i>0.0163</i>		<i>0.0109</i>		
ATT (2)	0.1822	0.0883 *	0.2954	0.0654 ***	0.3670	0.0511 ***	0.2726	0.0444 ***	0.1508	0.0409 ***	
	<i>0.0004</i>		<i>0.0028</i>		<i>0.0101</i>		<i>0.0126</i>		<i>0.0092</i>		

Notes: (1) regression without covariates adjustment; (2) regression with covariates adjustment; number of observations 41138.

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1. Cluster-robust standard errors with pair membership as the clustering variable. Marginal effects (risk-difference) are in *italics*.



# Conclusions

- The introduction of DD seems to have brought, at least for a group of young workers – analysed in this work, some benefits: **while we do not observe a substantial increase in the probability of remaining employed within certain time frames, we do have and a slightly higher probability of being employed with open-ended contracts**, hence greater stability. Nonetheless, the results appear to be somewhat modest.
- Furthermore, the risk is that these positive effects were only temporary and the pandemic crisis that followed certainly does not allowed to conduct an analysis over proper broad time horizons.
- *Limitations*
  - The work does not take into account the possible effect of business cycle as well as the role played by Labor Market Policies (ALMPs) (*e.g.*, incentives to open-end hiring), especially contribution reliefs established in each annual stability law. Necessity to rely to a different approach, for example a regression discontinuity design (RDD).
- *Possible future developments*
  - Try to extend the analysis to all workers in the labor market also considering firm's behavior in order to evaluate, for example, possible turnovers. However, in both case there is the necessity to use the INPS database.

Thank you  
for your attention!

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