

The Impact of Restricting Fixed-Term Contracts on Labor and Skill Demand

Giuseppe Grasso¹ Konstantinos Tatsiramos²

¹University of Luxembourg and LISER

²University of Luxembourg, LISER and IZA

CRETE 2021

July 13, Naxos



Motivation

- ▶ Growing divergence in the **forms of employment** in Europe due to labor market liberalization since 1980s:
 - ▶ Regular **open-ended contracts**: subject to **stringent** employment protection;
 - ▶ **Fixed-term contracts**: subject to **less stringent** rules and protection.
- ▶ In recent years: **new contract types** (e.g., variable hours contracts, platform work).
- ▶ This labor market **segmentation/duality** creates a tension:
 - ▶ **Firms** have **flexibility** to adjust the level and composition of workforce;
 - ▶ **Workers** face employment and earnings **instability** affecting well-being and increasing **inequality**.
- ▶ Policy response aims at striking a balance in two ways:
 - ▶ **Reducing** protection of **permanent contracts**;
 - ▶ **Increasing** the cost of hiring under **fixed-term** contracts.
- ▶ Previous studies have documented the effects of **liberalization** of **fixed-term contracts** and **reforming permanent contracts**.
- ▶ However, very little is still known about the way in which firms respond to **restrictions** in the use of **fixed-term contracts**.

Research Question

- ▶ What is the impact of **increasing the cost** of hiring through **fixed-term contracts** on firms' **labor** and **skill demand**?
- ▶ Firms may adjust their hiring policies by changing the **level** and **composition** of their workforce across all type of contracts, including flexible and permanent ones.
- ▶ Understanding these **labor demand adjustments** is important for evaluating the **efficiency** of the policy response.
- ▶ Does **restricting flexibility** for firms lead to **more stability** for workers?
- ▶ What if firms' reaction leads to **lower employment opportunities** for the most vulnerable workers that policymakers intend to protect?

This Paper

- ▶ We exploit a **2018 Italian labor law reform**, which **increased the cost of fixed-term contracts**, while leaving that of open-ended contracts unchanged.
- ▶ We base the analysis on a unique data source covering the near universe of **online job vacancies (OJVs)** in Italy.
 - ▶ Characterize the demand for labor under different contractual arrangements, including detailed **human capital** and specific **skill requirements**.
- ▶ Identification is based on a difference-in-differences research design:
 - ▶ Exploit variation in **firms' exposure** to the reform due to **heterogenous reliance** on fixed-term contracts;
 - ▶ This difference in reliance to fixed-term contracts is driven by **varying reactions** to **earlier labor market reforms**.
- ▶ We compare the **evolution of labor demand** by contract type, as well as by specific skill requirements, between firms which were **more exposed** to the higher cost of hiring through fixed-term contracts due to the reform and their **less exposed** counterparts.

Related Literature

- ▶ **Labor Market Effects of Fixed-Term Contracts (FTCs) regulation:**
Autor and Houseman (2010); Booth et al. (2002); Cahuc et al. (2021); Cappellari et al. (2012); Daruich et al. (2020); Dolado et al. (2012); García-Pérez et al. (2018); Güell and Petrongolo (2007).
- ▶ **Role of FTCs as screening tool; signaling/adverse selection in hiring:**
Ballance et al. (2020); Faccini (2014); Kuhnen and Oyer (2016); Portugal and Varejão (2009); Weinstein (2018).
- ▶ **Gaps in job tasks and skill content between FTCs and OECs:** Kahn (2018).
- ▶ **Data using OJVs and trends in skill demand and other LM outcomes:**
Acemoglu et al. (2020); Azar et al. (2018); Deming and Kahn (2018); Hershbein and Kahn (2018); Modestino et al. (2016, 2020).

Preview of Findings

- ▶ Higher cost of fixed-term contracts leads to **higher demand** for permanent and **lower demand** for temporary workers.
 - ▶ Large degree of **substitution** between temporary and permanent contracts; the reform was successful in promoting hiring workers under **permanent contracts**.
- ▶ Lower demand for **temporary workers**: affecting workers with **low education and experience**.
- ▶ Higher demand for **permanent workers**: directed towards **more educated and experienced** workers and with **specific skills** such as cognitive, managerial, computer and soft skills.
- ▶ Restricting the use of fixed-term contracts encouraged firms to **hire more permanent workers** but with a change in the **composition** of their workforce.
 - ▶ More **qualified workers** faced **higher demand** but **less qualified** workers experienced **lower employment opportunities**.

Outline

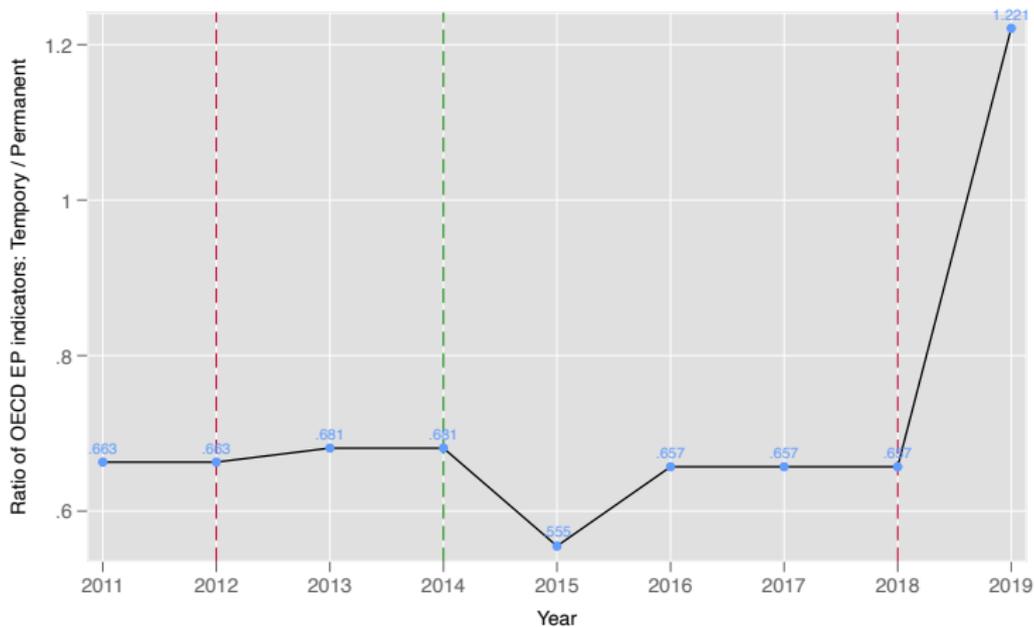
- ▶ Institutional Setting
- ▶ Data
- ▶ Research Design
- ▶ Results
- ▶ Conclusion

Institutional Setting

The 2018 temporary contracts reform: **Decreto Dignità (DD)**

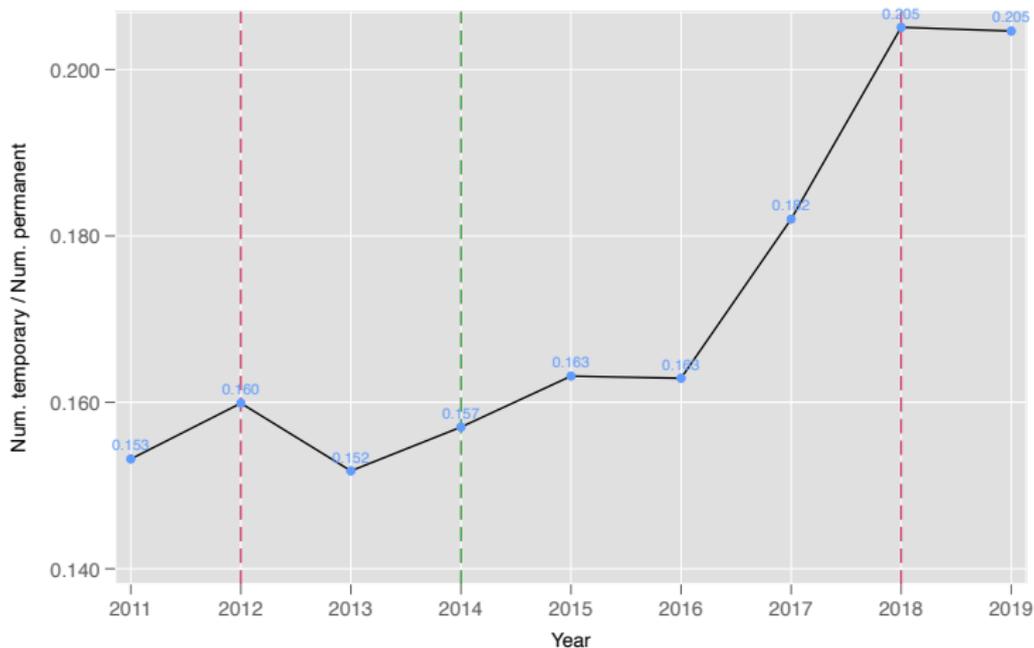
- ▶ Implemented in August 2018 with the aim to “**curb precarious employment**”:
 - ▶ shortened **maximum duration** of overall temporary work relationship (from 36 to 24 months);
 - ▶ reduced the **number of times** termination date can be **extended** (from 5 to 4 times);
 - ▶ increased the **social security contribution penalty rate** for non-conversion to permanent (from 1.4 to 1.9% of pre-tax earnings);
 - ▶ re-introduced obligation to specify a “**broad**” **motivation** for choosing a fixed-term work relationship (for contracts of 12+ months).

OECD Employment Protection Gap - Temp/Perm



Note: Own elaboration using OECD Indicators of Employment Protection data available on <https://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm>. Variables used: Summary indicators v1 for EPR (regular) and EPT (temporary)

Time Evolution of Temporary Contracts



Note: Own elaboration using aggregate ISTAT Labor Force Survey data available on <http://dati.istat.it>

Data - Online Job Vacancies (OJVs)

- ▶ Unique and rich information on **labor and skill demand** derived from a dataset covering the near-universe of **online job vacancies (OJVs)** for Italy for 2014-2019, produced by *Tabulaex*, a LM analytics company of the Burning Glass Technologies (BGT) group.
- ▶ We exploit detailed information advertised in the OJVs on:
 - ▶ province (NUTS-3), sector (NACE 1-dig), occupation (ISCO 1-dig)
 - ▶ **education** and **experience** requirements
 - ▶ **contractual arrangements** (e.g. permanent, temporary contracts etc.)
 - ▶ **high-detail skill requirements** (e.g. teamwork, Excel, problem solving)

Skill Requirements

- ▶ We map given **keywords** and **phrases** in the job ads, that identify granular skill requirements, into **job skill categories**:
 - ▶ **hard skills**: cognitive, computer
 - ▶ **soft skills**: management, social
- ▶ For this exercise we follow Deming and Kahn (2018).

Job Skills Taxonomy

4 Aggregate Job Skills (own aggregation)	10 Job Skills (D&K 2018)	Keywords and Phrases
COGNITIVE	Cognitive	Problem solving, research, analytical, critical thinking, math, statistics
COGNITIVE	Writing	Writing
MANAGEMENT	Project Management	Project management
MANAGEMENT	People Management	Supervisory, leadership, management (not project), mentoring, staff
MANAGEMENT	Financial	Budgeting, accounting, finance, cost
COMPUTER	Computer (general)	Computer, spreadsheets, common software (e.g., Microsoft Excel, PowerPoint)
COMPUTER	Software (specific)	Programming language or specialized software (e.g., Java, SQL, Python)
SOCIAL	Social	Communication, teamwork, collaboration, negotiation, presentation
SOCIAL	Character	Organized, detail oriented, multitasking, time management, meeting deadlines, energetic
SOCIAL	Customer Service	Customer, sales, client, patient

See Deming and Kahn (2018) Table 1.

Descriptives - Requirements posted in OJVs

	Mean	(Std. Dev.)
<i>Contract</i>		
Contractual arrangement stated	0.949	(0.219)
Permanent contract	0.239	(0.427)
Temporary contract	0.449	(0.497)
Self-employed position	0.166	(0.372)
Internship	0.095	(0.293)
<i>Education</i>		
Education requirement stated	0.998	(0.048)
Up to Secondary	0.682	(0.466)
Post-Secondary	0.316	(0.465)
<i>Experience</i>		
Experience requirement stated	0.622	(0.485)
0-1 yrs	0.181	(0.385)
1-2 yrs	0.148	(0.355)
>=2 yrs	0.294	(0.455)
<i>Specific skills</i>		
Specific skill requirements stated	0.847	(0.360)
Cognitive	0.484	(0.500)
Management	0.385	(0.487)
Computer	0.437	(0.496)
Social	0.700	(0.458)
<hr/>		
N of online job vacancies (OJVs)	3,067,610	

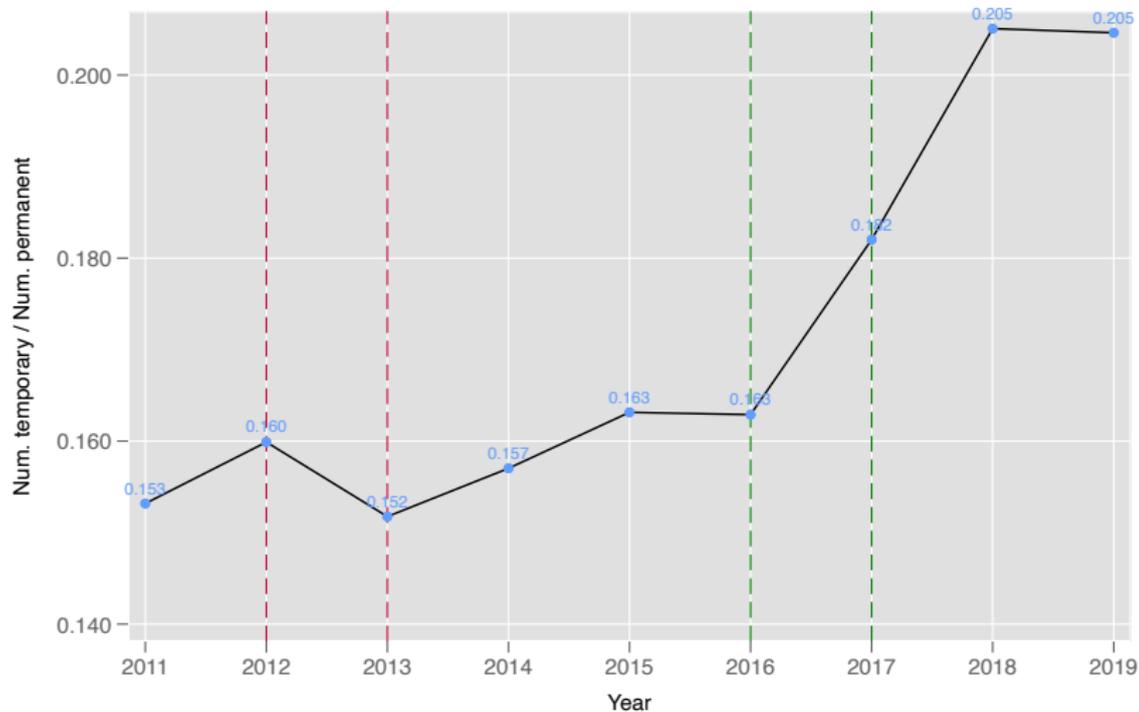
Research Design

- ▶ Since the policy reform does not separate treated from non-treated units, we construct an **exposure-to-treatment** measure following Hershbein and Kahn (2018).
- ▶ **Reliance to fixed-term contracts** varies across **sectors** and across **provinces**.
 - ▶ For example, **tourism** relies more on fixed-term contracts, while some areas are more touristic than others.
- ▶ **Reliance to fixed-term contracts** also varies **over time** due to past institutional changes.
- ▶ We exploit the **change in reliance** to fixed-term contracts across **sectors over time** at the **national level**.
- ▶ We then use this **national-sector-specific** change to obtain variation in the **reliance to fixed-term contracts at the province level** driven by the sectoral structure of each province.
- ▶ We use aggregated data derived from the Italian Statistical Register of Active Enterprises (ASIA), maintained by ISTAT, which draws from administrative data sources covering the universe of Italian firms.

Exposure to Treatment-1

- ▶ Italy is characterized by **frequent policy changes** which generate **time variation** in the reliance to fixed-term contracts.
- ▶ There are **two policy reforms** implemented before the reform of interest.
 1. In **2012** (Fornero labor law): **restricted** the use of temporary contracts leading to a **drop in reliance to fixed term contracts**.
 2. In **2014** (Jobs Act): **relaxed the regulation** leading to a sharp **increase in reliance to fixed term contracts**.
- ▶ Our exposure-to-treatment measure is the **difference of the change in reliance** across these two periods computed at the trough (2013) and peak years (2017).

Defining the trough and the peak



Note: Own elaboration using aggregate ISTAT Labor Force Survey data available on <http://dati.istat.it>

Exposure to Treatment-2

- ▶ More formally, the **exposure-to-treatment** measure is defined as follows:

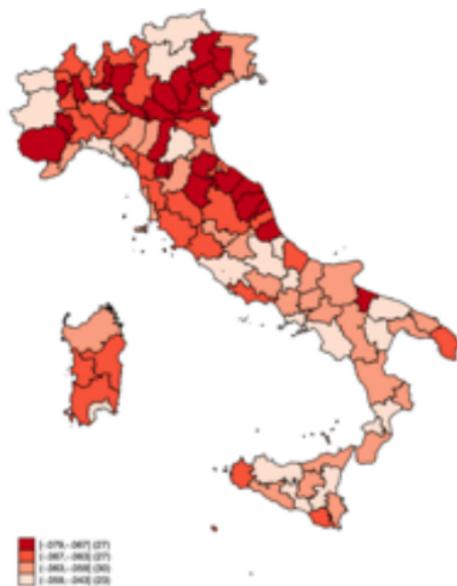
$$\begin{aligned} exposure_p &= \Delta \widehat{RF}_{p,2017} - \Delta \widehat{RF}_{p,2013} \\ &= \sum_{s=1}^S \frac{e_{p,s,2011}}{e_{p,2011}} \left\{ \left[\ln(RF_{s,2017}) - \ln(RF_{s,2016}) \right] - \right. \\ &\quad \left. - \left[\ln(RF_{s,2013}) - \ln(RF_{s,2012}) \right] \right\} \end{aligned} \quad (1)$$

- ▶ A **Bartik-type exposure-to-treatment** measure **plausibly exogenous** with respect to local labor demand and skill requirements, to be used directly as the variable of interest in a **reduced-form** regression.

Change in reliance over time by province

$$\Delta \widehat{RD}_p^T, 2013$$

Annual growth rate of RD at trough



Projected relative demand growth: 2013-2012, projection by weights. Total labor force 2011
min: -076, p5: -070, p95: -047, p99: -043, p75: -056, p50: -054, p25: -044, max: -043

$$\Delta \widehat{RD}_p^T, 2017$$

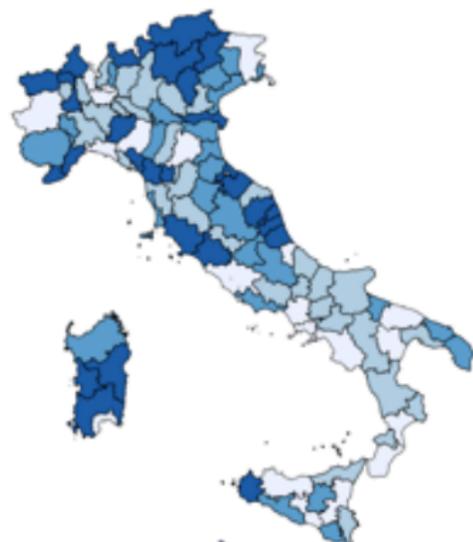
Annual growth rate of RD at peak



Projected relative demand growth: 2017-2016, projection by weights. Total labor force 2011
min: 248, p5: 255, p95: 258, p99: 262, p75: 258, p50: 256, p25: 254, max: 264

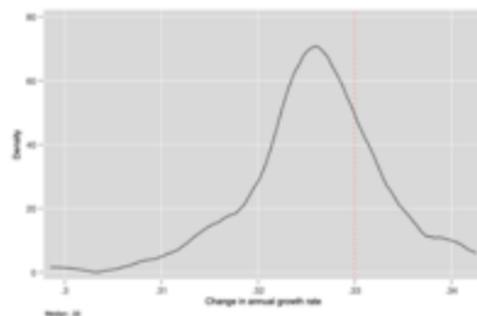
Exposure-to-treatment by province

$$\text{exposure}_p = \widehat{\Delta RD^T}_{p,2017} - \widehat{\Delta RD^T}_{p,2013}$$



Change in projected relative demand annual growth between peak (2017-2016) and trough (2013-2012); projected
min: 286; p5: 314; p25: 322; p50: 326; p75: 330; p95: 338; max: 342

Density of exposure_p



Regression Model

$$Y_{psot}^k = \sum_{\tau \neq 2017Q1} \theta_{\tau} \times I[t = \tau] \times I[\text{exposure}_p \geq p50] + \alpha_p + \beta_s + \gamma_o + \delta_t + \epsilon_{psot}$$

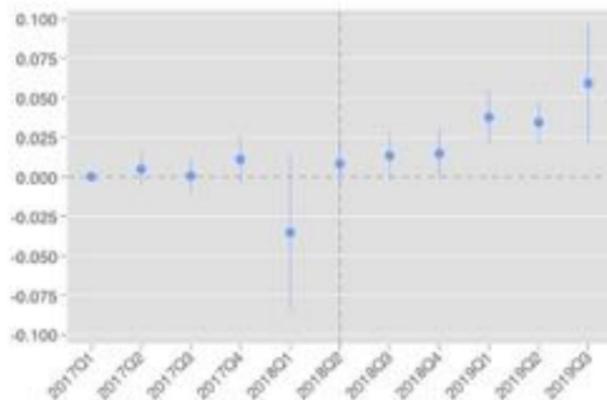
- ▶ Y_{psot}^k is the **share of OJVs** by province-sector-occupation at time t for a **given requirement** k .
- ▶ We collapse the 3,067,610 OJVs into 13,165 **province-sector-occupation** (pso) cells by 11 calendar quarters (t) from 2017:Q1 to 2019:Q3.
- ▶ The result is a panel dataset with **99,434 province-sector-occupation-quarter cells**.
- ▶ $I[\text{exposure}_p \geq p50]$ is an **indicator variable** equal to 1 when **exposure-to-treatment** is above its median; and 0 otherwise.
- ▶ α_p , β_s , γ_o , and δ_t are province, sector, occupation, and year-quarter **fixed effects**.
- ▶ SE's are **clustered** at province level p to address potential serial correlation within local units.
- ▶ Cells are **weighted** by the product of their total labor force in the last pre-reform year (2017) and their share of OJVs within each year-quarter.

Identification

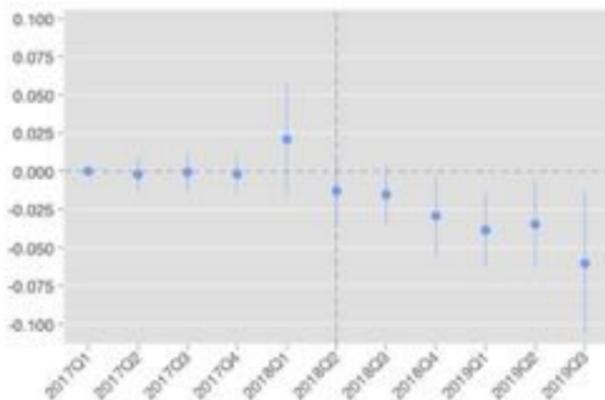
- ▶ **Identification** relies on two assumptions:
 1. **parallel trend** assumption (test for pre-trends, placebo test)
 2. **no anticipation** assumption (change the reference period)

FTC hiring costs and labor demand – permanent vs. temporary

Permanent



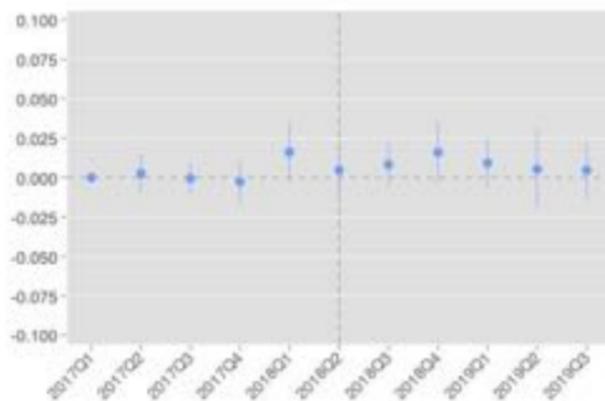
Temporary



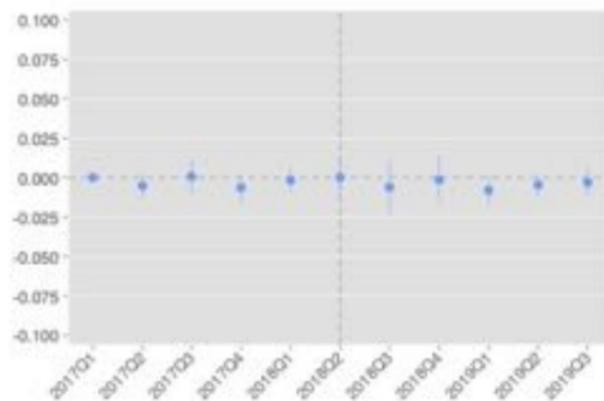
- ▶ **Higher cost** of hiring under FTC leads to **higher demand** for *permanent* and **lower demand** for *temporary* positions.
- ▶ 25% increase in permanent positions and 13% reduction in temporary positions.
- ▶ Large degree of **substitution**.

FTC hiring costs and labor demand – other contracts

Self-employed



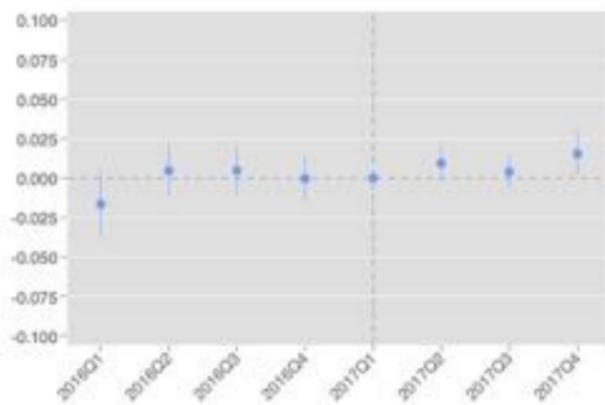
Internship



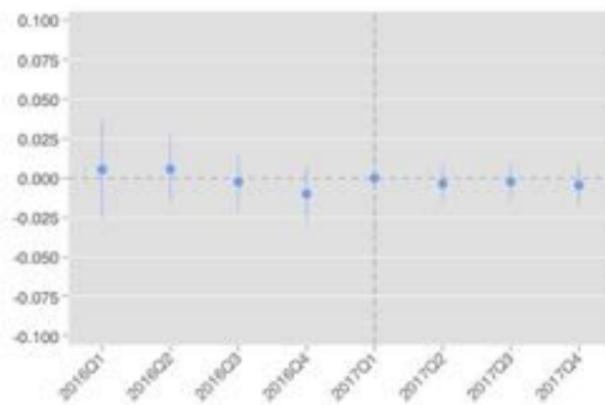
- ▶ **No effects** on other types of contracts.

Placebo-1

Permanent

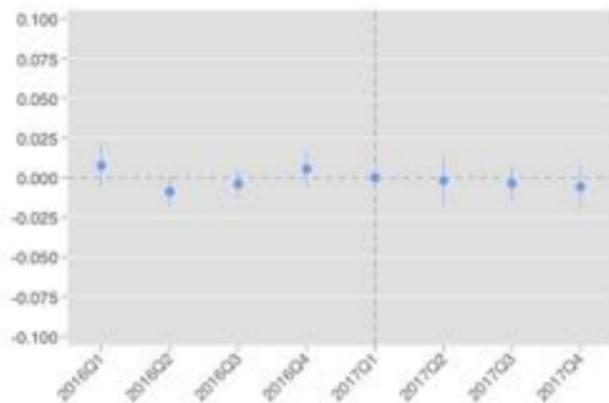


Temporary

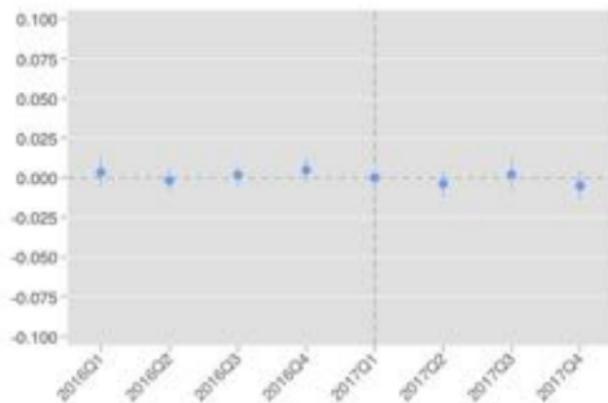


Placebo-2

Self-employed



Internship



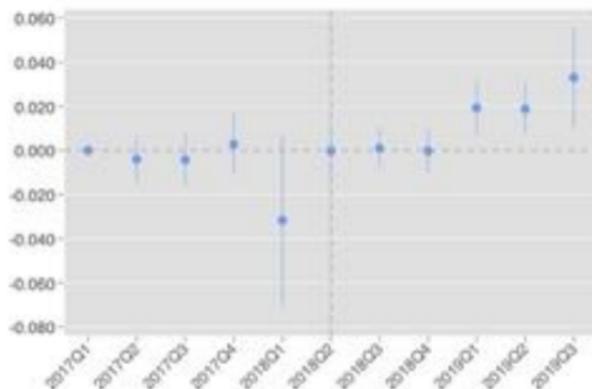
Results on skill requirements

- ▶ **Drop in demand** for **temporary** workers affecting:
 1. low educated
 2. without prior experience
 3. with high experience
- ▶ **Increase in demand** for **permanent** workers affecting:
 1. high educated (immediately)
 2. low educated (with delay)
 3. with high experience
- ▶ **Experienced** workers do not seem to face a drop in demand (**substitution**).
- ▶ **Low educated** workers face a drop in demand at least in the short-term.
- ▶ Those **without prior experience** are mostly affected.
- ▶ There is also an increase in **specific skill requirements** for permanent positions (cognitive, computer, management and social skills) – (**upskilling**).

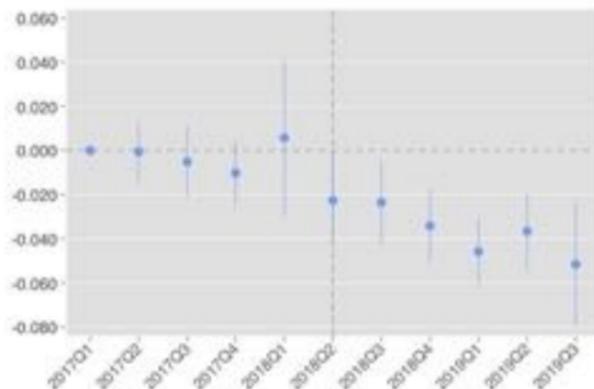
Demand for **low educated** workers – permanent vs. temporary

Up to Secondary Education

Permanent



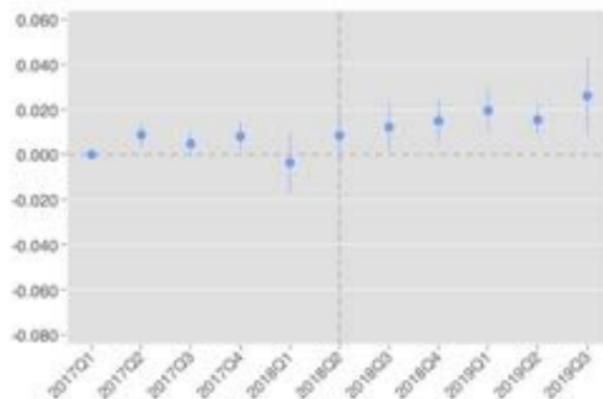
Temporary



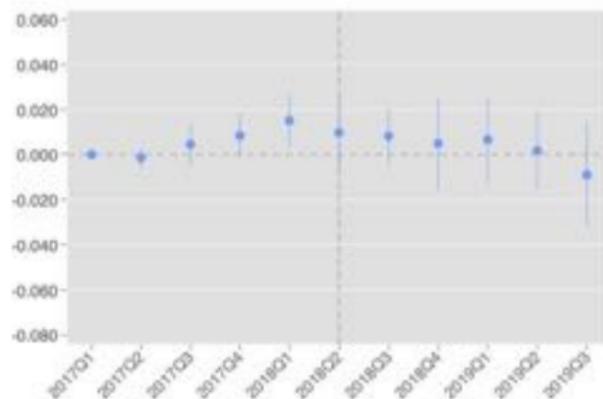
Demand for high educated workers – permanent vs. temporary

Post-Secondary Education

Permanent



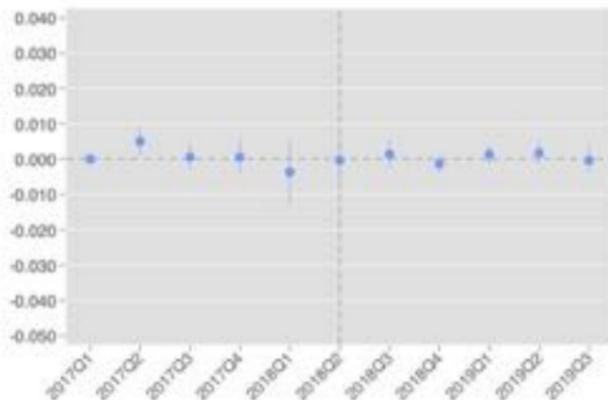
Temporary



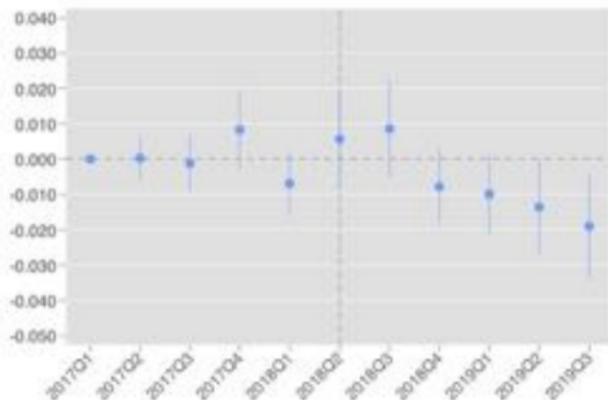
Demand for workers **without prior experience** – permanent vs. temporary

Low Experience (up to 1 years)

Permanent



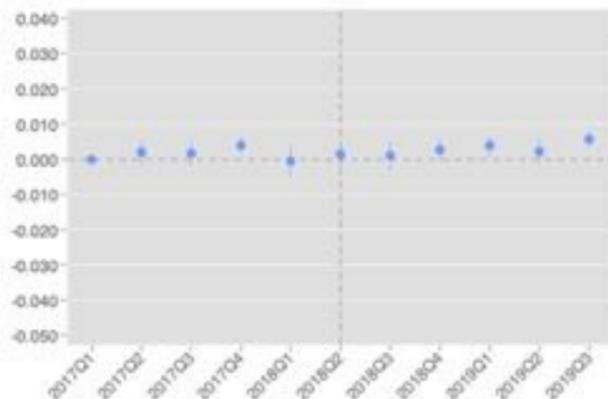
Temporary



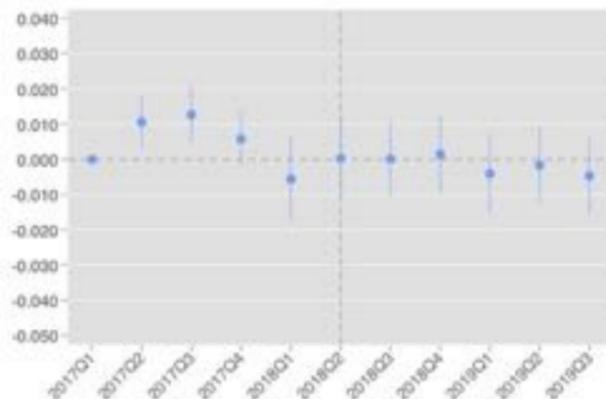
Demand for workers **with some experience** – permanent vs. temporary

Mid Experience (1-2 years)

Permanent



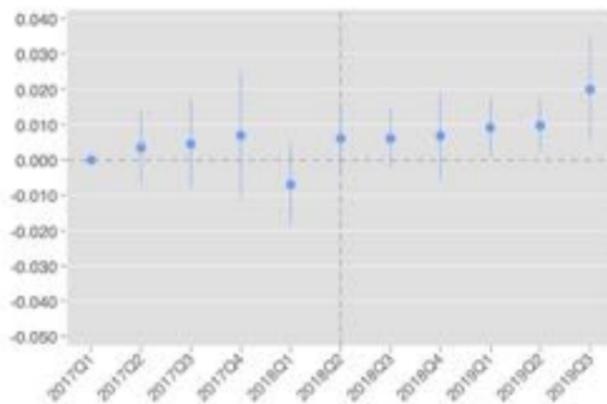
Temporary



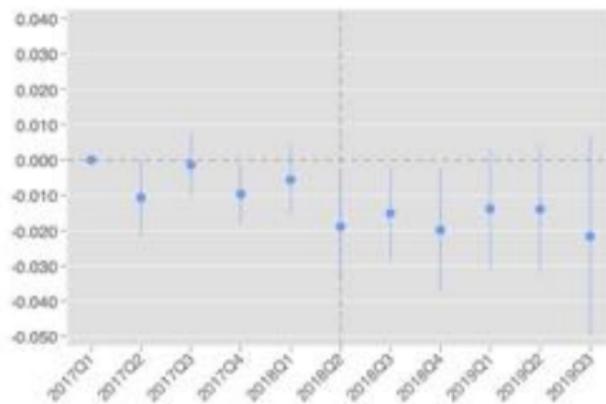
Demand for workers **with experience** – permanent vs. temporary

High Experience (2+ years)

Permanent



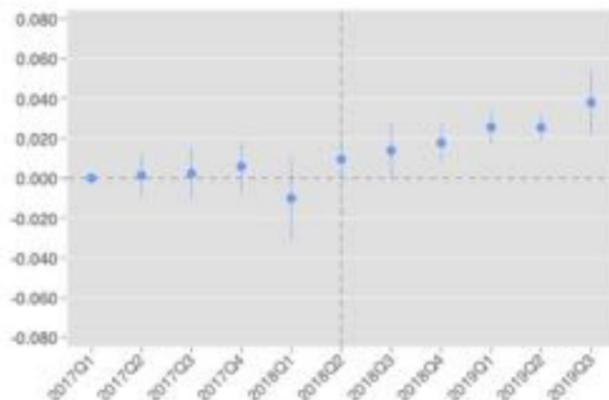
Temporary



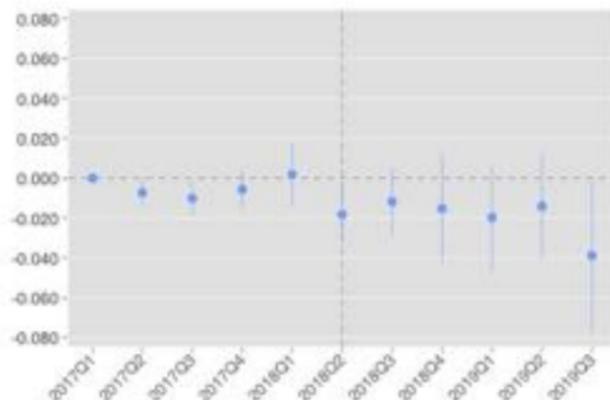
Demand for workers with cognitive skills – permanent vs. temporary

Cognitive skills

Permanent



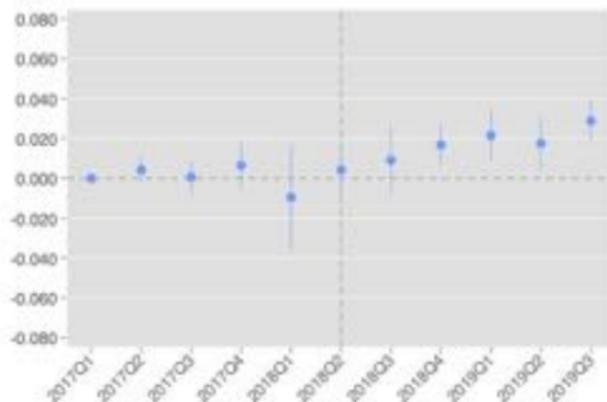
Temporary



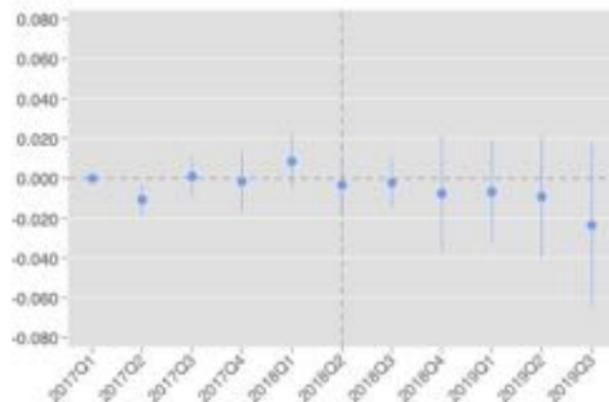
Demand for workers **with computer skills** – permanent vs. temporary

Computer skills

Permanent



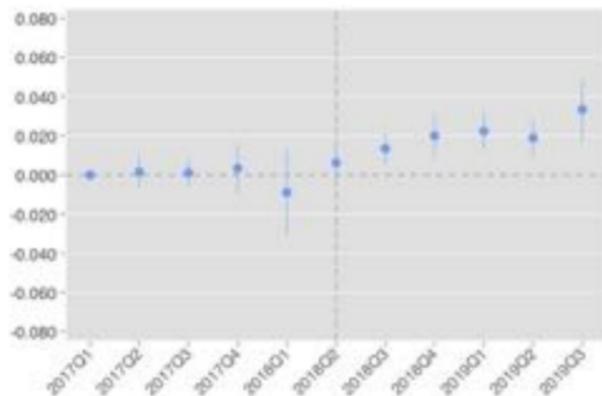
Temporary



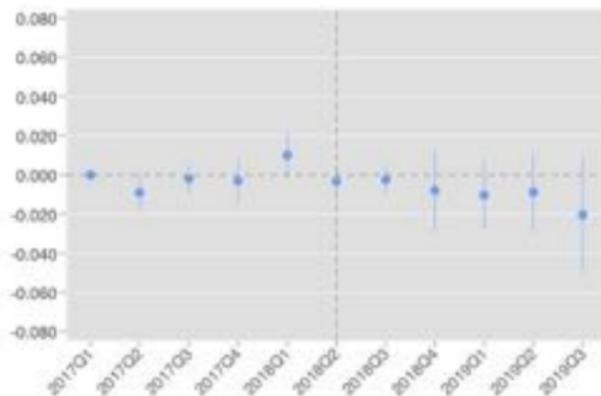
Demand for workers **with management skills** – permanent vs. temporary

Management skills

Permanent



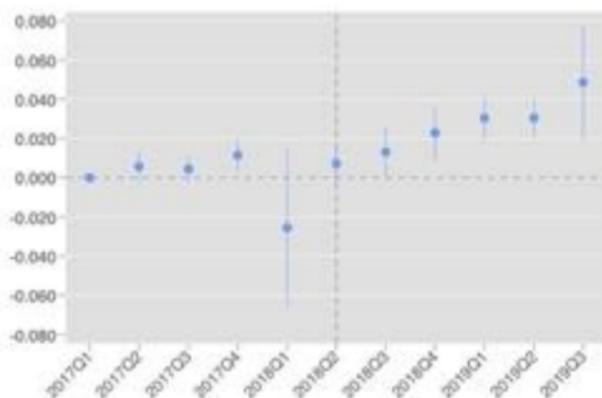
Temporary



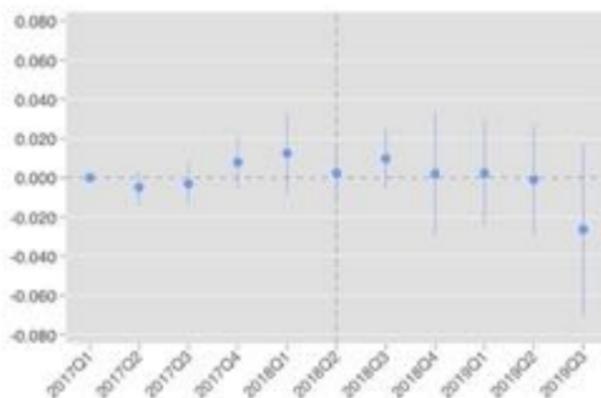
Demand for workers **with social skills** – permanent vs. temporary

Social skills

Permanent



Temporary



Conclusion

- ▶ **Restricting** the use of *temporary* contracts **increases** demand for *permanent* workers.
- ▶ However, due to the increased screening costs and the loss of flexibility, firms shift their demand to **more qualified workers**:
 - ▶ workers with **prior experience** and **higher levels of education**;
 - ▶ workers with **specific skills**.
- ▶ This leads to **fewer employment opportunities** for less qualified and especially workers with **no prior experience**.
- ▶ Policy concern for countries with high reliance on **flexible forms of employment** and high **youth unemployment rates**.
- ▶ Implications for policies promoting **school-to-work transition** and **vocational training**, as well as **upskilling** and **training** of workers.