The gender gap in employment protection The role of fertility and statistical discrimination

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Introduction

- In **Italy**, temporary employment accounts for 17% of employees aged 15-64

- There is a large prevalence among **young workers** (25-34 age group) and women
  - 28.7 % of young workers have temporary contracts (18.6% in EU-27)
  - Large gender gap: 32% women, 25.4% men

One third of women has a temporary contract in a **crucial period for fertility**

$\rightarrow$ possible consequences on *fertility* and on *employment after childbirth*

Research question(s)

1. Is there a gender gap in access to permanent contracts?
2. Is there an impact of having a permanent rather than a temporary contract on fertility?
3. How do these two factors interact?

   - Are permanent contracts more difficult to access for women in occupations where they are more important for fertility?

   - Does statistical discrimination limit the access of women to permanent contracts?

Literature

- Temporary jobs and fertility:
  - Women overrepresented in temp contracts in Southern Europe (Petrongolo 2004)
  - Employment instability affects negatively fertility (Aldreotti et al. 2021, De Paola et al. 2021, Scherer and Brini 2023)
- Extensive literature on motherhood penalty on earnings and wages (Kleven et al. 2019, Martino 2017, Casarico and Lattanzio 2021, etc)
  - Less is known about the impact of motherhood on access to permanent contract (de Quinto et al. 2021)

Data and sample selection

- National Security data (INPS data)
- Employer-employee dataset covering the population of private sector employees
- We focus on the age group 18-45
- Years: 2005-2017
  - Fertility for employed women is observed at t+2 in the empirical specification
  - Stop in 2019 for COVID-19

1. The gender gap in access to permanent contracts

$$Perm_{itl} = \alpha_1 + \alpha_2 Female_{itl} + \alpha_3 \mathbf{X}_{itl} + \delta_l + \epsilon_{itl}$$

X: age (cubic), experience (sq.), firm size, migrant, part-time

FE included δ_l:

- Specification 1: δ_l: 2-digits sector, occupation, LLMA, year
- Specification 2: δ_l: 2-digits sector, occupation, LLMA, year*region*10-sectors

α_2: coefficient of interest

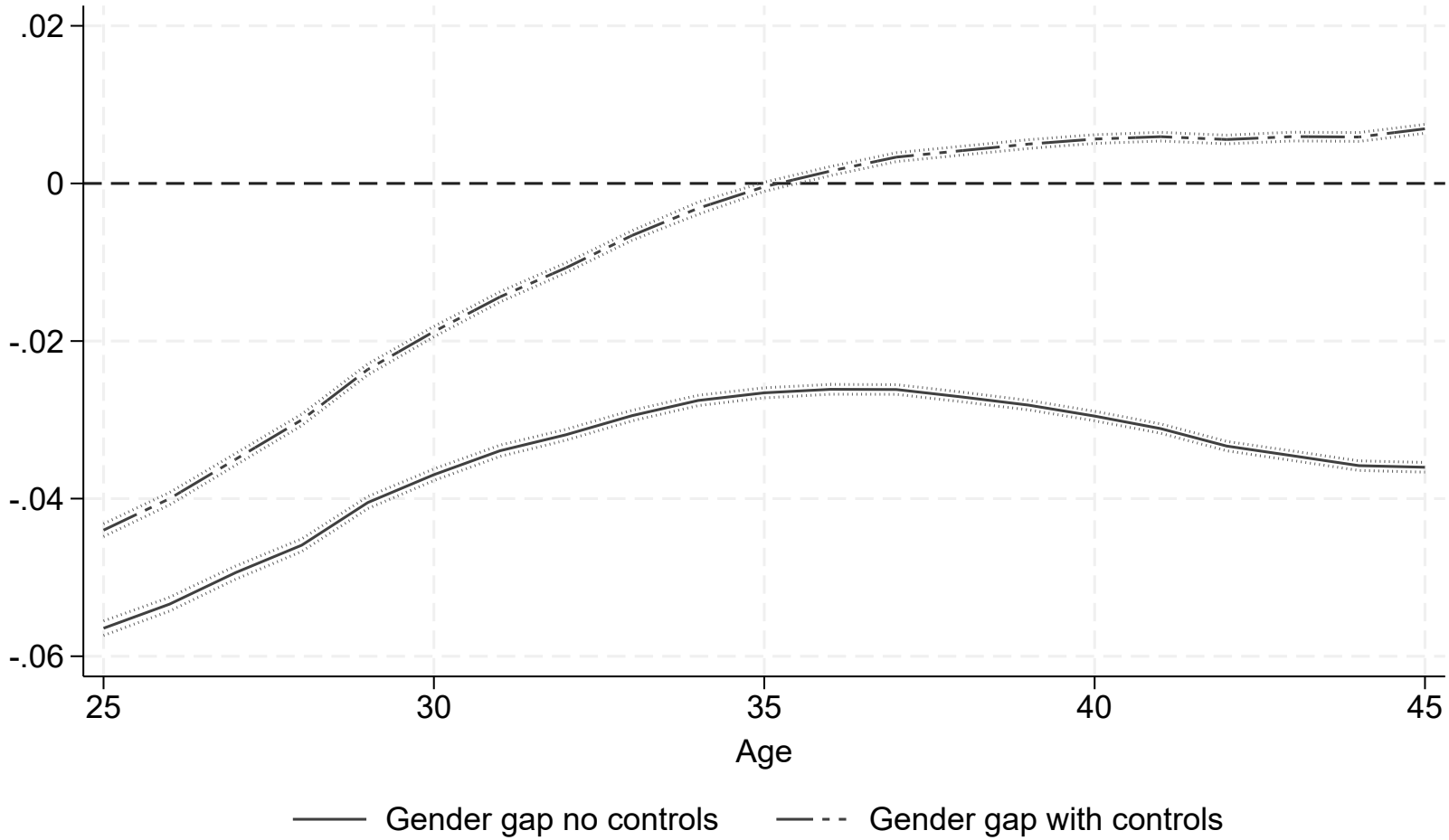
Sample: men and women aged 18-45, years 2005-2017

1. Results: The gender gap in access to permanent contracts

	Permanent contract	
	(1)	(2)
Female	-0.014***	-0.014***
	(0.000)	(0.000)
Individual characteristics	YES	YES
2-digit sector	YES	YES
Occupation	YES	YES
Local labor market	YES	YES
Year	YES	NO
Year*region*10-sectors	NO	YES
Adj R Sq.	0.364	0.367
Observations	124,210,662	
Avg. P(permanent)	0.212	

*** $p < 0.001$.

Gender gap in permanent contract: age profile



Controls include firm size, part-time, migrant, year FE, LLM FE, occupation.

2. The impact of temporary contracts on fertility

$$F_{ijpt+2} = \beta_1 + \beta_2 Perm_{ijpt} + \beta_3 X_{ijpt} + \theta_t + \lambda_{jp} + \epsilon_{ijpt}$$

- F_{ijt+2}: 1 if has a child
- X: age, migrant, part-time, occupation, log wage, experience
- θ_t: year FE; λ_{sp}: sector*LLMA FE
- β_2: coefficient of interest

Sample:

women aged 18-45, years 2006-2017, excluding women out of the private sector at t+2

Endogeneity issues

We address the issue of endogeneity with an adapted version of the **shift-share instrument** (Bartik instrument):

$$B_{pst} = \sum_{s=1}^{J} \chi_{spt0} E_{-pst}$$

- *Share* χ_{spt0}: share of permanent male employees (over total male employees) in LLM p, sector s, $t_0 = 2005$ (**pre-estimation year**)
- *Shift* E_{-pst}: numb. male workers employed with a permanent contract in sector s, year t, **excluding own LLM** p
- We consider the share of permanent contracts held by *men*, to ensure more exogeneity with women's choices

Results: The impact of temporary contracts on fertility

	Fertility (t+2)	
	OLS	IV
Permanent	0.019***	0.039***
	(0.002)	(0.005)
Log wage	0.003***	0.001***
	(0.001)	(0.000)
Kleibergen-Paap F statistic		14072.04
Observations		37,837,728
Avg. P(fertility)		0.038

*** $p < 0.001$. Controlling for age, occupation, wage, sector*LLMA, year, migrant status, part-time.

3. Indirect motherhood penalty I

A two step analysis:

First step, we estimate the **conditional difference in fertility between permanent and fixed-term by job cell** j (defined using 38 sectors, 106 LLMAs, 4 occupations), with the following regression on women aged 18-45:

$$F_{ijt+2} = \beta_1 + Perm_{ijt} * \mu_j + \beta_3 X_{ij} + \theta_t + \epsilon_{ijt}$$

$\widehat{\mu_j}$: Job-Stability-Relevance Index

- It captures by how much the conditional probability of having a child increases with a permanent contract (rather then a temporary) in each job-cell

3. Indirect motherhood penalty II

Second step, estimated on men and women aged 18-45:

$$Perm_{itl} = \alpha_1 + \alpha_2 Female_{itl} + \alpha_3 X_{itl} + \alpha_4 \widehat{\mu_j} + \alpha_5 Female_{itl} * \widehat{\mu_j} + \delta_l + \epsilon_{itl}$$

Coefficient of interest:

- α_5: does the gender gap in permanent contracts increase together with the positive effect of permanent contracts on fertility?
  - Under the hypothesis of *taste-based discrimination alone*, α_5 should not be significant in principle
  - Under **statistical discrimination**, employers anticipate the effect of permanent contracts on motherhood, and restrict access to these contracts more if this effect is stronger (α_5 should be significant)

Results: The indirect impact of motherhood on permanent contracts

	Permanent contract	
	(1)	(2)
Female	-0.015***	-0.014***
	(0.000)	(0.000)
Job-stability relevance index	-0.071***	-0.071***
	(0.002)	(0.001)
Female * Job-stability relevance index	-0.079***	-0.086***
	(0.003)	(0.003)
Year	YES	NO
Year*region*10-sectors	NO	YES
Observations	116,170,722	116,170,722
Adj R Sq.	0.368	0.371

*** $p < 0.001$.

Controls: age (cubic), experience, part-time, migrant, firm size, sector, occupation, LLM.

Job-stability relevance index s.d.=0.0294

Results: The indirect impact of motherhood on permanent contracts (II)

- A one standard deviation increase in the job stability relevance index increases the gender gap in access to permanent conteracts by around 20% with resepect to its baseline level
- This effect is also larger in large firms (>15 employees), where EPL for permanent contracts is stronger
- This is a problematic relationshisp. Women face more difficulties in finding permanent contracts with respect to men exactly in occupations where permanent contracts are more relevant for fertility, which is consistent with statistical discrimination

Robustness checks

- We repeat the analysis on women applying for child allowance (2017-2019), without conditioning on working at t + 2

  Results

- We control for workers' education

  Results

Conclusions I

- There is a gender gap in employment protection:
  - Women are 6% less likely than men to have a permanent contract, even when controlling for possible segregation (sector, occupation, geographical location)
- Having a permanent contract almost doubles the probability of having a child.
- In jobs where job security is a more important driver of fertility decisions, women suffer an additional loss with respect to men in their likelihood of obtaining permanent contracts.

- As fertility responds positively to women's job security, targeted EPL improvements for women in reproductive age could help foster child-births.
- Lowering the perceived cost of motherhood for employers could reduce statistical discrimination in job security.

Thank you!

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Workers' educational attainment

- For a selected sample, we have information on the level of education obtained
- The sample comes from *Comunicazioni obbligatorie*: firms' communication about change of contract (e.g. hiring, lay off) from 2008
  - By comparing the educational attainment in our sample and LFS stats, we see that we are oversampling low-educated individuals (less than high school education)

Model 1. Gender gap in permanent contracts		
Dep. Var.: Permanent contract. *Sample: men & women.*		
	(1)	(2)
Female	-0.013***	-0.012***
	(0.000)	(0.000)
Year	✓	
Year*region*10-sectors		✓
Model 2. Temporary contracts and fertility		
Dep. Var.: Fertility at t+2. *Sample: women only.*		
	(3)	(4)
Permanent contract	0 .015***	0.042***
	(0.002)	(0.005)
OLS	✓	
IV		✓
Model 3. Statistical discrimination		
Dep. Var.: Permanent contract. *Sample 2nd stage: men & women.*		
	(5)	(6)
Female	-0.014***	-0.013***
	(0.000)	(0.000)
JSRI	-0.050***	-0.049***
	(0.002)	(0.002)
Female*JSRI	-0.128***	-0.133***
	(0.004)	(0.004)
Year	✓	
Year*region*10-sectors		✓

Bonus mamma

- Child allowance introduced in 2017
- INPS gathers data on mothers applying for the bonus, regardless of their working status
- This allows us to avoid the selection of women still in the labor market on $t + 2$
- We may have another type of selection due to mothers choosing to apply

- We repeat the analysis on women applying for the bonus in 2017, 2018, and 2019 $\rightarrow$ new measure of fertility
- We observe the type of contract held by women in 2015, 2016 and 2017 (2 years before)

Model 2. Temporary contracts and fertility		
Dep. Var.: Fertility at t+2. Sample: women only.		
	(3)	(4)
Permanent contract	0.008***	0.024**
	(0.001)	(0.009)
OLS	✓	
IV		✓
Model 3. Statistical discrimination		
Dep. Var.: Permanent contract. Sample 2nd stage: men & women		
		(5)
Female		-0.013***
		(0.000)
JSRI		-0.032***
		(0.003)
Female*JSRI		-0.061***
		(0.004)

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