Public Preschool Provision and Female Labor Supply: Case of Turkey

Mehmet Ali Soytaş
Özyeğin University

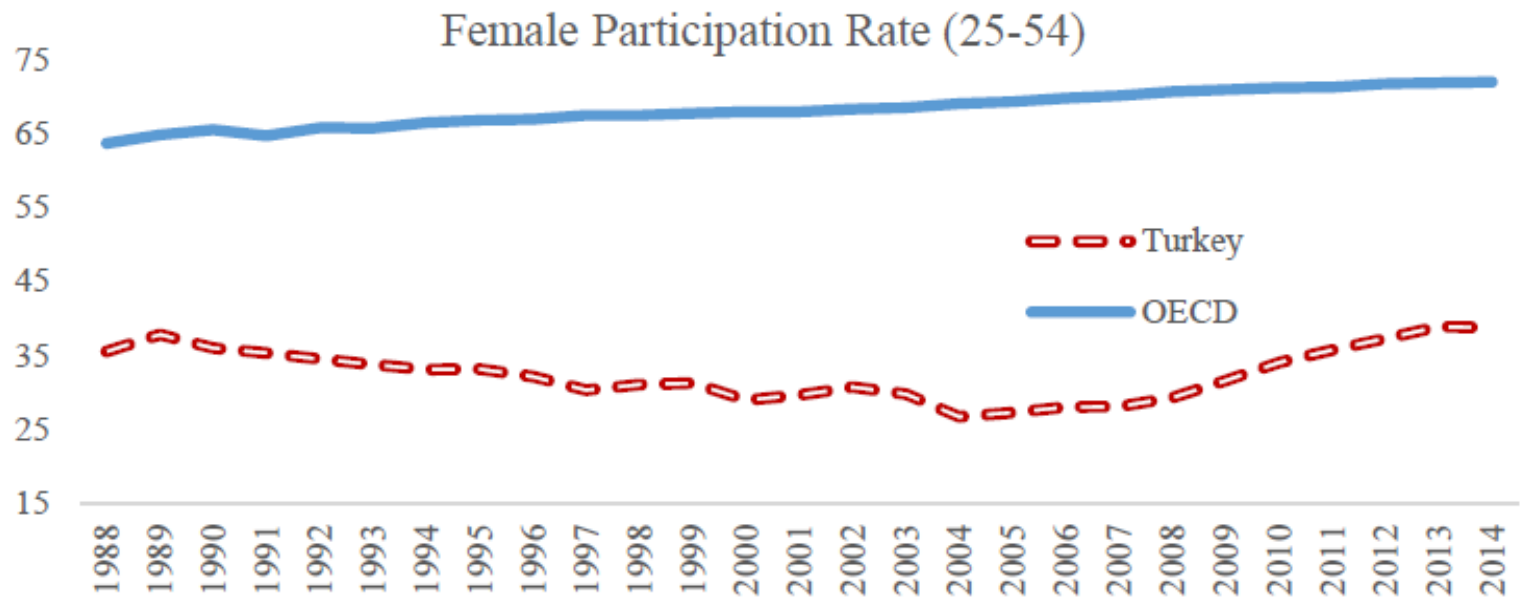
Gönül Şengül
Central Bank of Turkey

February, 19, 2016
Turkey Labor Market Network Meeting

The views expressed herein are those of the authors and not necessarily those of the Central Bank of the Republic of Turkey.

Motivation

- Turkey has the lowest female employment among OECD countries and it has been increasing



- Empirical evidence from different countries suggest that provision of pre-school education can increase mothers' labor supply
  - Turkish Ministry of Education introduced a pre-school education program in 2009.

This study

Question

- What is the quantitative effect of pre-school education program introduced on female labor supply in Turkey?

Answer

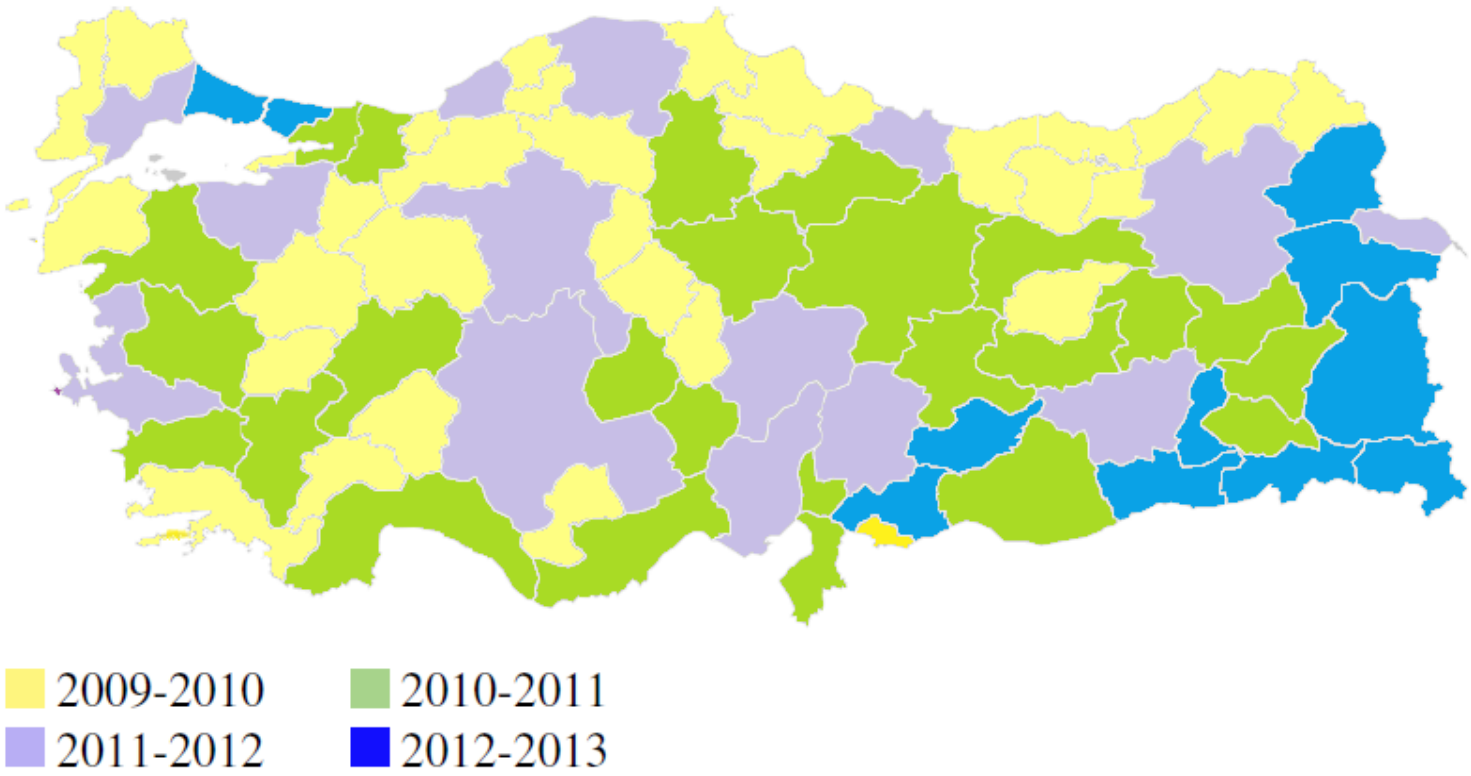
- Preliminary results suggest a positive and significant effect.

Pre-school Education Program

- Ministry of Education introduced in 2009-2010 school year.
- Aimed 100% attendance to preschool by 2013.

Year	Age (mo)	Requirement	Coverage
Pre 2009	73	1st grade	Nationwide
2009-2010	60-72	Preschool	32 Cities
2010-2011	60-72	Preschool	(+25) 57 Cities
2011-2012	60-72	Preschool	(+14) 71 Cities
2012-2013	60-66	Preschool	Nationwide
	66-72	Preschool/1st gr	Nationwide

Pre-school Education Program



Related Literature

- Positive effect of public preschool provision on mothers' labor supply
  - Gelbach (AER, 2002); Baker et. al. (JPE, 2008); Schlosser (2011).
- Positive effect of other indirect pre-school policies
  - Berlinski and Galiani (LabEcon, 2007); Lundin et. al. (LabEcon, 2008); Gruber (1994).

Data

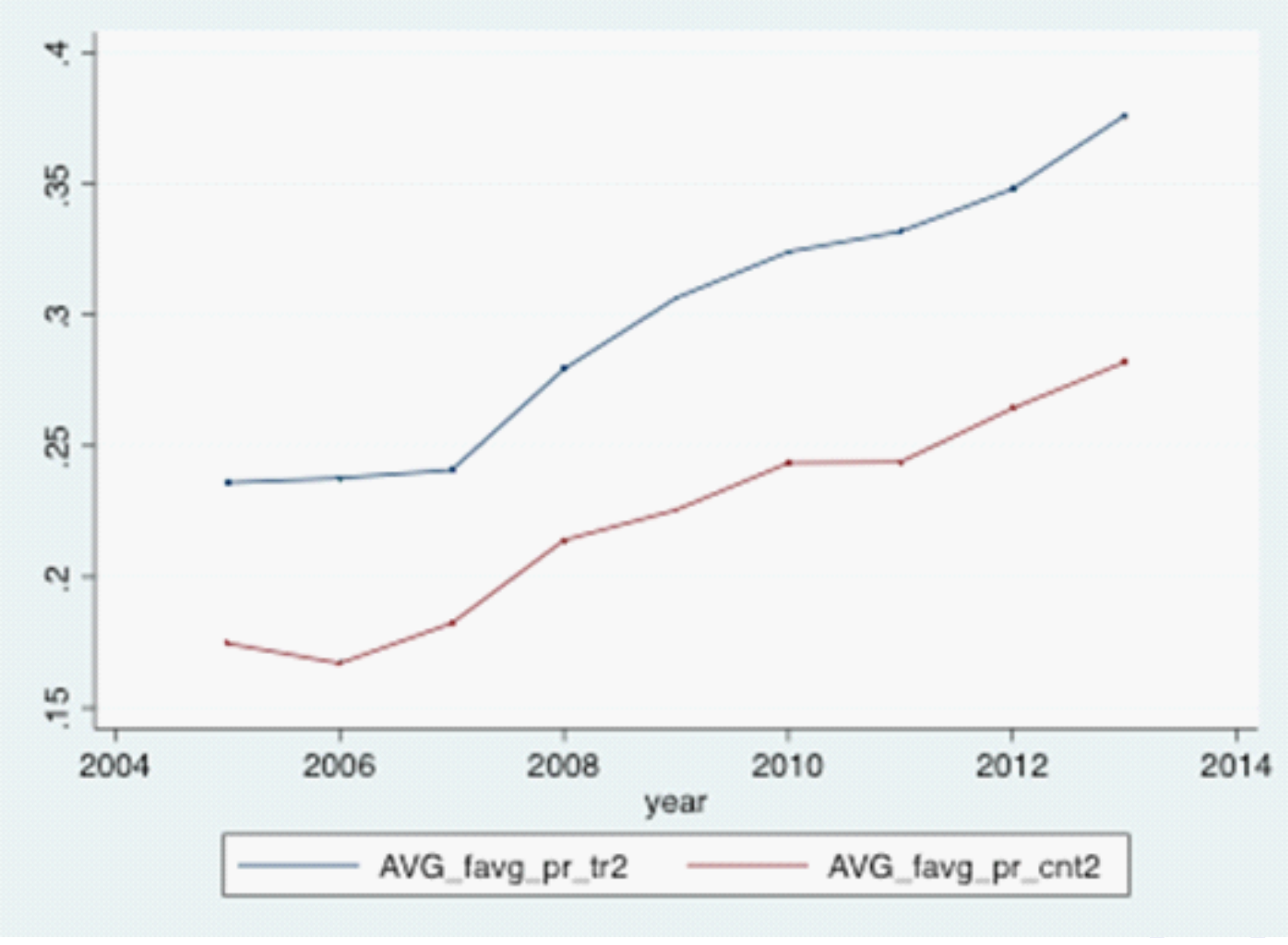
- Turkstat Household Labor Force Survey, years 2005 to 2013
- Include only individuals who are household head and spouse of the head.
- Use labor market participation (employed + unemployed)
- Calculate household number of children at different age groups.
- Only urban population is included.

Methodology

- Use difference-in-difference approach
- Definitions for benchmark model:
  - Policy region: NUTS2 region that had at least one city without policy prior to 2011, and all cities had the policy in 2011
  - Non-policy regions: All other regions
  - Treatment group: Females with kid(s) older than 4 years and younger than 11 years, but no children under age 5
  - Control group: Females with kid(s) under age 5.
- We also consider alternative definitions of control groups.

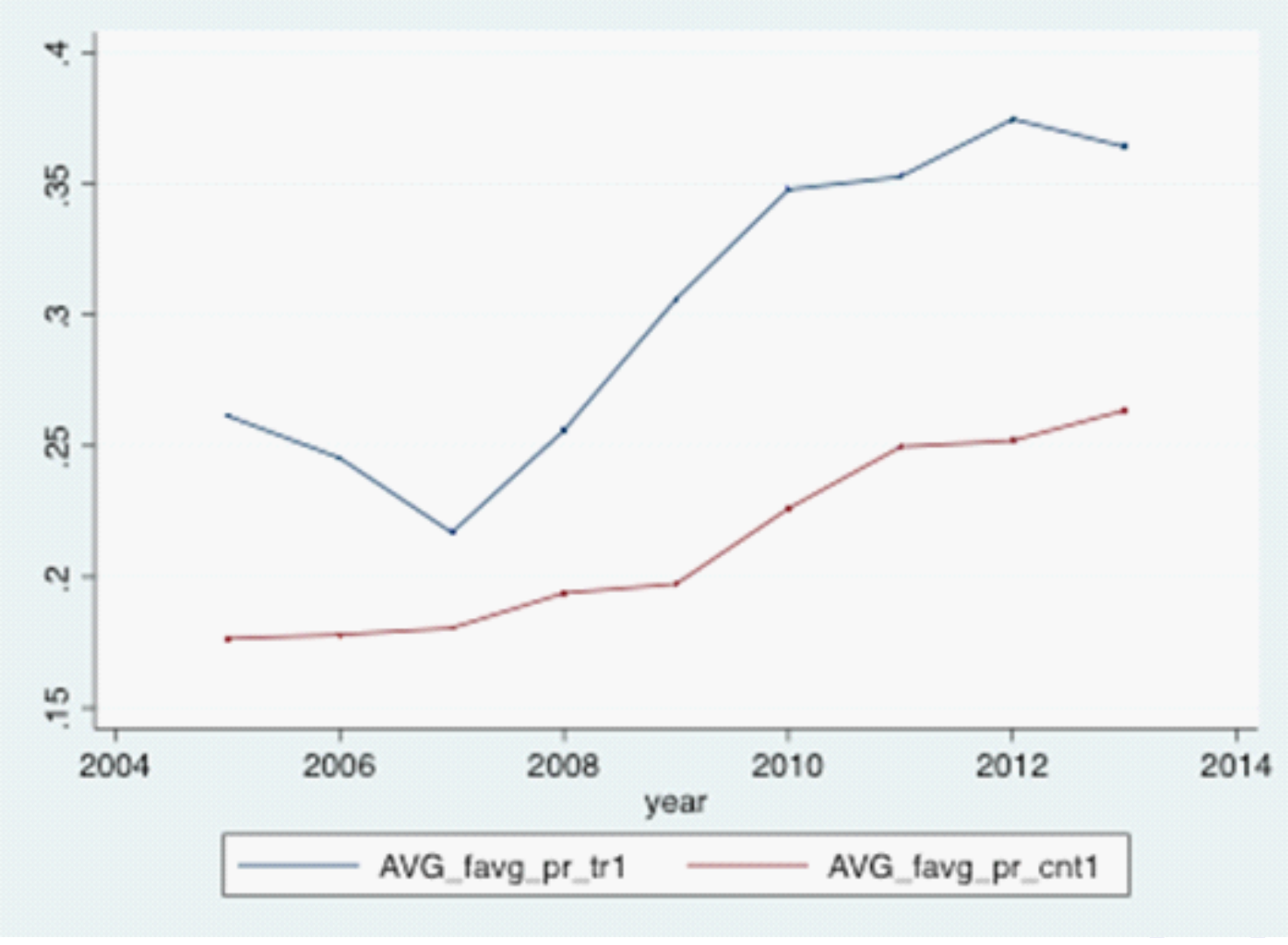
Non-Policy regions

- Female Participation
  - treated group (blue), control group (red)



Policy regions

- Female Participation
  - treated group (blue), control group (red)



Estimation Results

DD Estimation

- We use the 2011 as our policy year (later experiment on different cutoffs).
- Our treatment group is married women with a child over 4 years and less than 11 years old
- Control groups women have a younger child ($<$ 5 years old)
- We use the before and after the policy to estimate the effect of public-pre-school.
- The potential problem with this DD analysis is that other factors unrelated to the policy might affect the treatment group differently than control group in the regions where the policy is implemented.

Estimation Results

DD Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
TimeAfter	0.0761***	0.0582***	0.0563***	0.0291***	0.0263***	0.0249***
	(0.00458)	(0.00611)	(0.00544)	(0.00467)	(0.00682)	(0.00565)
Treatment	0.0711***	0.0823***	0.0823***	0.0521***	0.0625***	0.0616***
	(0.00385)	(0.00569)	(0.00572)	(0.00705)	(0.00998)	(0.00943)
Treatment$X$TimeAfter	0.0220***	0.0139	0.0108	0.0424***	0.0352***	0.0276***
	(0.00703)	(0.00938)	(0.00836)	(0.00639)	(0.00857)	(0.00761)
Controls	No	No	No	Yes	Yes	Yes
All years included	Yes	No	No	Yes	No	No
2008-2013	No	Yes	No	No	Yes	No
2011 excluded	No	No	Yes	No	No	Yes
Observations	71,141	38,387	45,760	71,141	38,387	45,760
R-squared	0.016	0.014	0.014	0.192	0.182	0.186

Estimation Results

DDD Estimation

.

- A more robust analysis than the DD analyses can be obtained by using both a different region (non-policy regions) and a control group within the treatments.
- this can be achieved by the DDD analysis.
- We observe the same control and treatment groups before and after the policy
  - in regions where the policy is implemented in 2011
  - in regions where the policy is not implemented in 2011.
- Our only requirement: no contemporaneous shock that affects the relative outcomes of the treatment group in the same region-years as the policy.

Estimation Results

DDD Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
TimeAfter	0.0716***	0.0622***	0.0538***	0.0345***	0.0368***	0.0291***
	(0.00241)	(0.00321)	(0.00288)	(0.00238)	(0.00344)	(0.00292)
Treatment	0.0700***	0.0779***	0.0779***	0.0410***	0.0448***	0.0425***
	(0.00229)	(0.00332)	(0.00333)	(0.00333)	(0.00471)	(0.00449)
Policy	0.0360***	0.0381***	0.0381***	0.0123***	0.0115***	0.0115***
	(0.00283)	(0.00413)	(0.00414)	(0.00257)	(0.00375)	(0.00376)
Treatment$X$TimeAfter	0.00965**	0.00572	0.00176	0.0304***	0.0239***	0.0185***
	(0.00389)	(0.00520)	(0.00466)	(0.00351)	(0.00470)	(0.00421)
Policy$X$TimeAfter	0.00457	-0.00399	0.00253	-0.00605	-0.0108*	-0.00598
	(0.00500)	(0.00668)	(0.00595)	(0.00450)	(0.00603)	(0.00537)
Treatment$X$Policy	0.00111	0.00445	0.00445	0.0198***	0.0231***	0.0232***
	(0.00433)	(0.00639)	(0.00641)	(0.00391)	(0.00577)	(0.00579)
Treatment$X$Policy$X$TimeAfter	0.0124	0.00815	0.00903	0.0115	0.011	0.00862
	(0.00776)	(0.0104)	(0.00926)	(0.00699)	(0.00939)	(0.00836)
Controls	No	No	No	Yes	Yes	Yes
All years included	Yes	No	No	Yes	No	No
2008-2013	No	Yes	No	No	Yes	No
2011 excluded	No	No	Yes	No	No	Yes
Observations	274,715	153,198	184,666	274,715	153,198	184,666
R-squared	0.018	0.016	0.015	0.204	0.198	0.198

Logit Estimation

	DD	DD with cluster	DDD
TimeAfter	0.182***	0.182*	0.260***
	(0.0373)	(0.0968)	(0.0219)
Treatment	0.261***	0.261**	0.124***
	(0.0675)	(0.117)	(0.0359)
Policy			0.132***
			(0.0278)
Treatment$X$TimeAfter	0.100**	0.1	0.0288
	(0.0468)	(0.0834)	(0.0289)
Policy$X$TimeAfter			-0.0854**
			(0.0386)
Treatment$X$Policy			0.0577
			(0.0392)
Treatment$X$Policy$X$TimeAfter			0.0723
			(0.0551)
Controls	Yes	Yes	Yes

Conclusion

- This paper estimates the effect of public preschool policy on female labor market participation.
- Effects are positive for the group of females who are likely to be affected by the policy.
- DDD estimation shows there is differential effects across regions.
- More robustness checks are required.