

The Effect of Compulsory Schooling Expansion on Mothers' Attitudes Towards Domestic Violence in Turkey

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ISS, Erasmus University Rotterdam

2018 Nordic Conference on Development Economics

UNU WIDER, Helsinki

12.06.2018

In a Nutshell

- **Focus:**

Intergenerational spillover effects of children's schooling on their mothers' attitudes towards domestic violence in Turkey
- **Identification:**
 - Education reform which expanded compulsory schooling from 5 to 8 years in Turkey in 1997 (retroactive law)
 - Regression discontinuity design based on monthly birth cohorts
 - Compare women whose first-born child (daughter/son) was exposed to the educational reform versus women whose first-born child was not exposed
- **Data:**

2008 and 2013 Turkey Demographic and Health Surveys
- **Results:**

Mothers whose daughters were affected by the reform are by 12 percentage points less likely to find domestic violence acceptable (40% of sample mean)
- **Potential mechanisms:**

Suggestive evidence for “parental empathy”
→ Mothers react to the increase in domestic violence experienced by their daughters due to the schooling reform.

Motivation

- Prevalence of domestic violence:
 - Domestic violence affects nearly one in three women globally (WHO 2013)
 - Women in low-income countries are nearly 10 times more likely to experience domestic violence compared to women in high-income settings (Heise and Kotsadam 2015)
 - In Turkey, 42% of women reported having experienced domestic violence in 2008
- Acceptability of domestic violence is highly correlated with the prevalence of domestic violence (Garcia-Moreno et al. 2005)
- Limited evidence on what drives the variation in attitudes towards domestic violence and in the underlying norms (Alesina et al. 2016)

This Paper

- We exploit a reform in compulsory schooling laws in Turkey that took place in 1997 and led to a sharp increase in schooling
 - The reform led to a sharp difference in the schooling of cohorts born one month apart (Gulesci and Meyersson 2016)
 - ➔ RDD based on monthly birth cohorts
- We test if mothers whose children were affected by the reform exhibit differences in terms of their attitudes towards domestic violence
- We find that mothers whose *daughters* were affected by the reform are less likely to find domestic violence acceptable
- Possible channels:
 1. Active Persuasion
 2. Economic Empowerment
 3. Parental Empathy

Related Literature

- Intergenerational spillover effects of education:
 - Effects of parental education on their children's outcomes
 - Black et al., 2005; Currie and Moretti, 2003; Oreopoulos et al., 2006; and Lundborg et al., 2014, in developed countries, and Breierova and Duflo, 2004; Chen and Li, 2009; and Glewwe, 1999, in developing countries
 - Spillover effects of children's schooling on their parents' outcomes
 - mainly in developed countries, mixed evidence
 - Berniell et al. (2013): health education in primary schools in the US led to an increased physical activity among parents of exposed children
 - Torssander (2013), Friedman and Mare (2014): positive relationship between children's education and their parents' longevity in Sweden and USA, respectively
 - Lundborg and Majlesi (2015): no significant effect of children's education on their parents' longevity in Sweden
 - Kuziemko (2014) finds that children who acquire certain skills might disincentivize their parents from acquiring the same skill, i.e. parents lean on their children rather than learn from them
- Our paper:
 - Evidence on the causal effects of children's education on their mothers' attitudes towards domestic violence in a developing country
 - Parental empathy is likely to be an important mechanism through which children's education and experiences may affect the attitudes of their parents

1997 Education Reform in Turkey

- Part of military-initiated ‘February Process’ in 1997 to counter perceived threats to secular state
- Pre-Reform Education Path
 - Compulsory 5-year “Primary school” (6-11 year-olds)
 - Optional 3-year “Junior high school” (11-14 year-olds)
 - General (centralized curriculum, co-ed, headscarf ban)
 - Vocational, including religious (imam-hatip) schools
- Post-Reform Education Path
 - 8 years compulsory “Primary Education”
- Reform was *binding* for children born in January 1987 and later, and *optional* for older cohorts due to combination of two laws:
 - According to Turkish Education Law, schooling starts in September of the year a child turns 6 years old
 - The Education Reform stipulated that students starting grade 5 in September 1997 were subject to 8 years of education

Exposure of Different Cohorts

- Timeline of the reform:
 - Process started in February 1997
 - Law was adopted in August 1997
 - Law went into effect as of school year 1997/1998 (which began in September 1997)
- Students exposure to the reform:
 1. Students in grade **5** in school year 1996/1997 → old regime
 - Students allowed to drop out after **5** years
 - Students born before January 1987
 2. Students in grade **4** in school year 1996/1997 → new regime
 - Students obliged to stay in school **8** years
 - Students born in January 1987 or afterwards
- Retroactive nature of the law

Data

- 2008 and 2013 Turkish Demographic and Health Survey (DHS)
- Representative household survey of 10,500 + 11,800 households
- Main respondent: 8,000 ever-married women + 9,750 women
 - All respondents:
 - Attitudes towards domestic violence
 - Ever-married respondents:
 - Full birth histories
 - Birth date (year and month) of each child born to the respondent

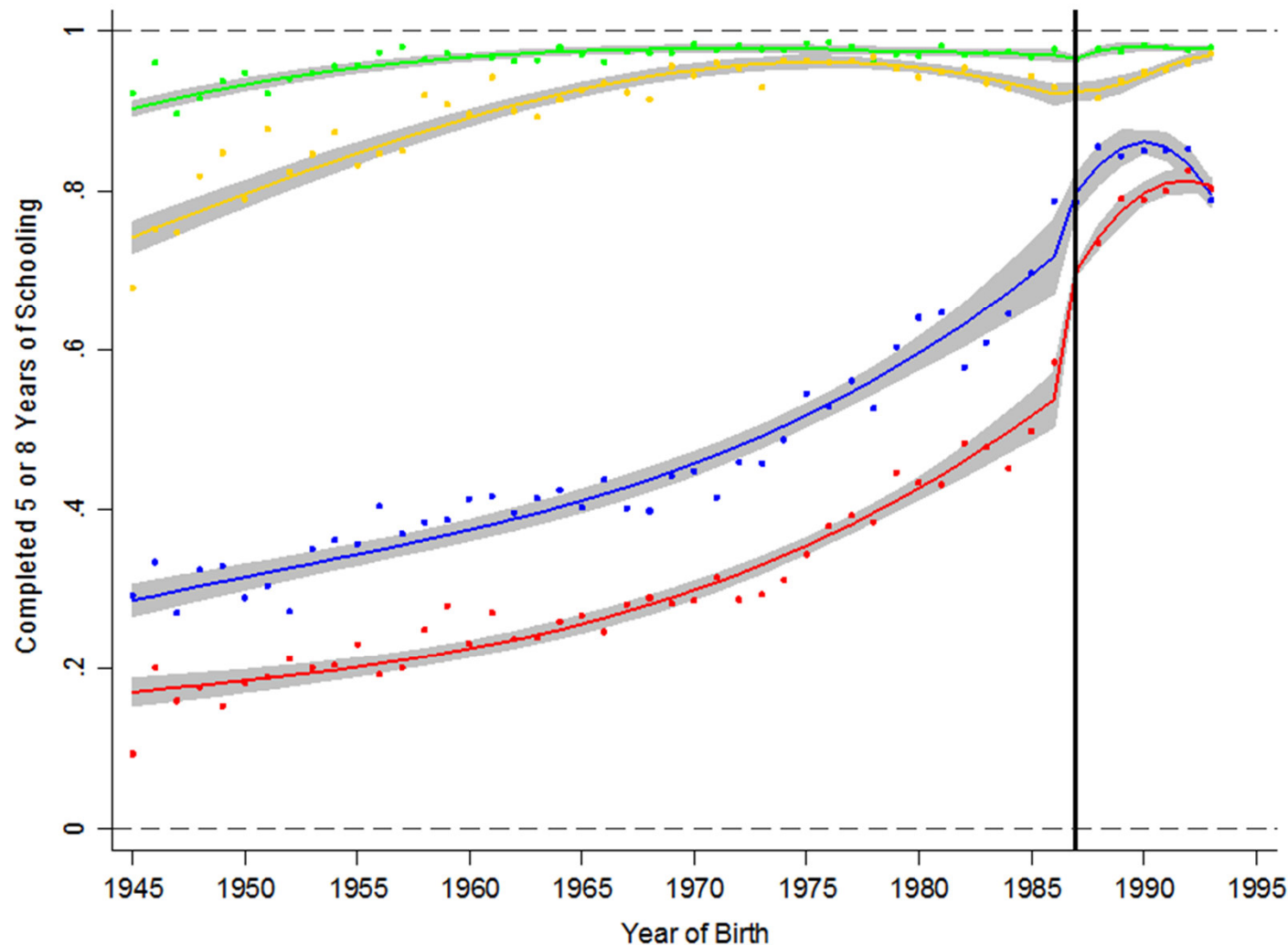
Identification Strategy

- We estimate:

$$Y_i = \alpha + \tau T_i + f(X_i, T_i) + \varepsilon_i$$
$$\forall X_i \in (c + h_r, c - h_l), T_i \equiv 1(X_i > c)$$

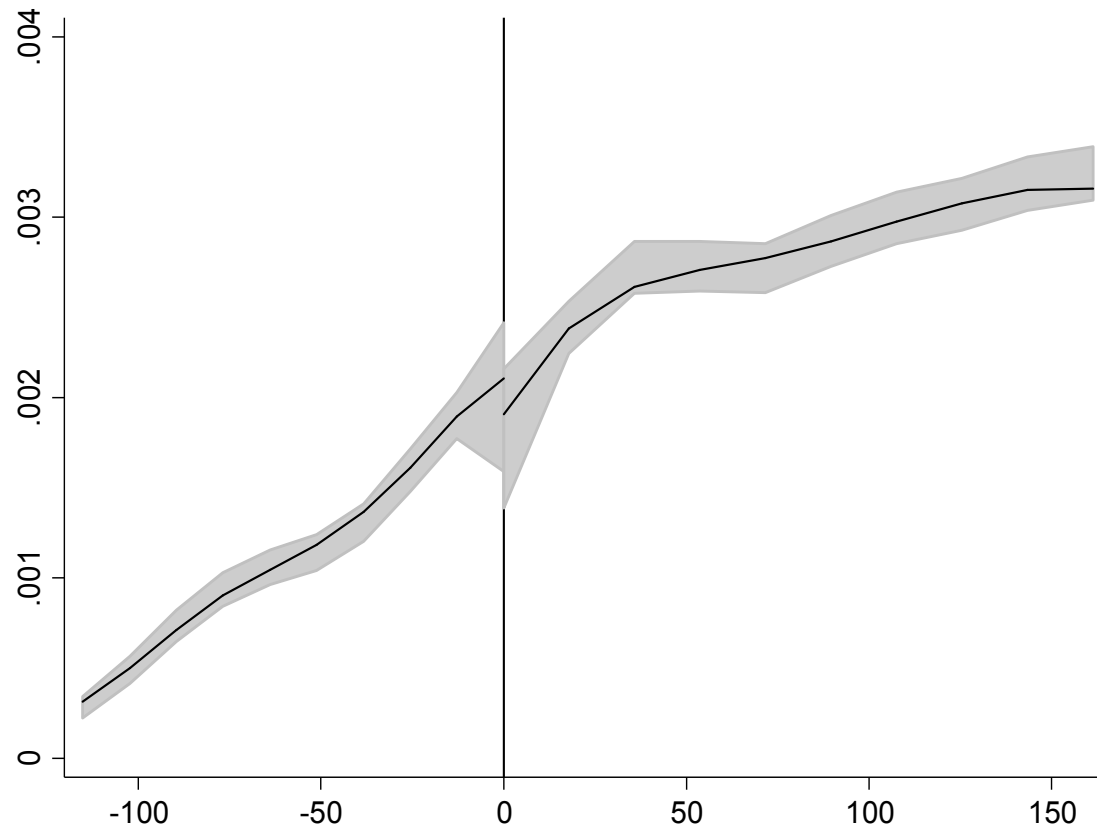
- Treatment (T_i)
 - dummy variable for whether the first-born child of the respondent i was born in January 1987 or afterwards
- Forcing variable (X_i)
 - birth month * birth year of the child
- Control function $f(X_i, T_i)$
 - local linear (Imbens and Lemieux, 2008)
- Bandwidths h_r and h_l
 - determined by Calonico et al. (2014 and 2017) algorithm
- Robustness checks
 - control for respondent's background characteristics (and ex-post family characteristics)

Validity of the Empirical Strategy (1)



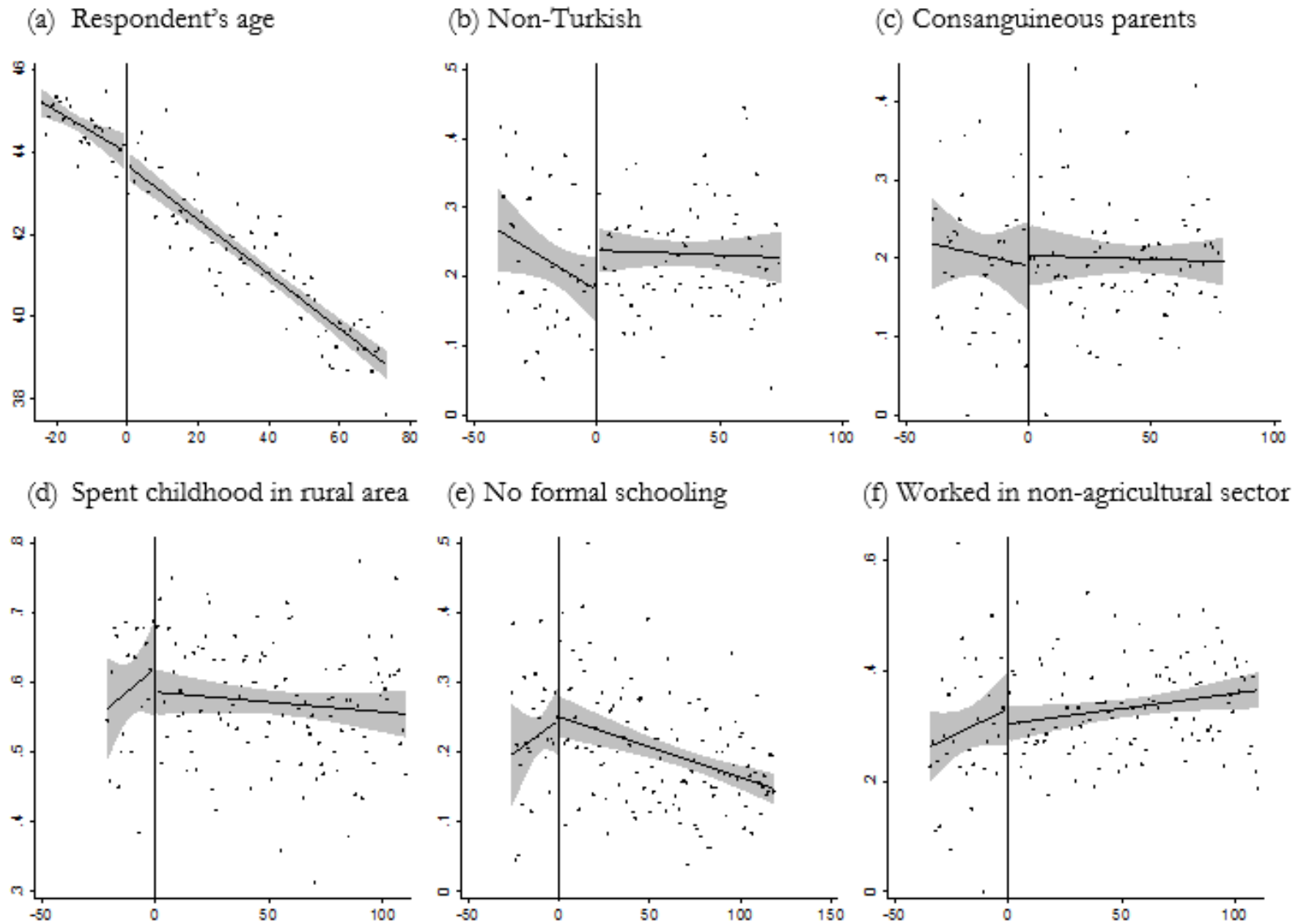
- Fraction of household members in DHS who have completed at least 5 or 8 years of education, by gender and year of birth

Validity of the Empirical Strategy (2)



- Test of discontinuity in the forcing variable at the cut-off (p-value 0.18)

Validity of the Empirical Strategy (3)



- Individual tests of discontinuity of selected covariates at the cut-off

Validity of the Empirical Strategy (4)

Characteristic	Local Linear Approach						
	T	s.e.	N	N left	N right	h left	h right
Background Characteristics							
Age	-0.2677	(0.2977)	3,066	597	2,469	25	73
Year of birth	0.4576*	(0.2428)	4,537	848	3,689	37	106
Interviewed in 2013	0.0122	(0.0366)	2,707	780	1,927	33	57
Years of education	0.0665	(0.2143)	4,993	670	4,323	27	121
Not Turkish	0.0442	(0.0286)	3,443	900	2,543	41	75
Parents are relatives	0.0113	(0.0410)	3,568	879	2,689	40	79
Spent childhood in rural area	-0.0279	(0.0351)	4,401	537	3,864	21	110
Mother has no education	-0.0428	(0.0503)	4,995	715	4,280	29	121
Mother has primary education	0.0025	(0.0259)	3,833	900	2,933	41	86
Mother has secondary education	0.0402	(0.0405)	3,065	758	2,307	32	68
Mother has higher education	-0.0084	(0.0100)	3,378	1,109	2,269	54	67
Father has no education	-0.0329	(0.0325)	4,914	840	4,074	37	115
Father has primary education	0.0385	(0.0242)	2,966	780	2,186	34	66
Father has secondary education	-0.0106	(0.0362)	4,820	867	3,953	38	113
Father has higher education	0.0132	(0.0214)	4,654	1,081	3,573	51	102
Fertility-related outcomes							
Birth interval after 1st birth	0.1976	(2.2722)	2,635	731	1,904	32	60
Birth interval (average all births)	2.4237	(1.6955)	5,298	939	4,359	45	129
Share of girls (excluding the first-born)	-0.0244	(0.0308)	2,968	839	2,129	39	67
Fertility (number of children ever born)	0.1467	(0.1292)	3,443	867	2,576	39	77
Household size	0.2305	(0.1432)	4,634	802	3,832	34	110

Descriptive Statistics (1)

	(1)	(2)	(3)	(4)	
	Child	Daughter	Son	Difference (D - S)	
	Mean	Mean	Mean	Diff.	p-value
Background Characteristics					
Age	43.36	43.36	43.36	0.00	1.00
Year of birth	1967	1967	1967	-0.04	0.77
Interviewed in 2013	0.40	0.39	0.40	-0.01	0.76
Years of education	4.61	4.58	4.63	-0.05	0.77
No education completed	0.29	0.28	0.30	-0.02	0.24
Completed primary education	0.56	0.58	0.54	0.04	0.06
Completed secondary education	0.15	0.14	0.16	-0.02	0.29
Not Turkish	0.22	0.22	0.23	-0.01	0.60
Parents are relatives	0.20	0.18	0.22	-0.04	0.04
Spent childhood in rural area	0.59	0.58	0.59	0.00	0.84
Mother has no education	0.72	0.73	0.71	0.01	0.47
Mother has primary education	0.09	0.09	0.10	-0.01	0.34
Mother has secondary education	0.16	0.16	0.16	0.00	0.88
Mother has higher education	0.02	0.01	0.02	0.00	0.66
Father has no education	0.37	0.36	0.37	-0.01	0.59
Father has primary education	0.09	0.11	0.08	0.02	0.07
Father has secondary education	0.41	0.42	0.41	0.01	0.51
Father has higher education	0.06	0.05	0.07	-0.01	0.19

Note: Observations: 1,934 in "Child" sample, 887 in "Daughter" sample, 1,047 in "Son" sample.

Descriptive Statistics (2)

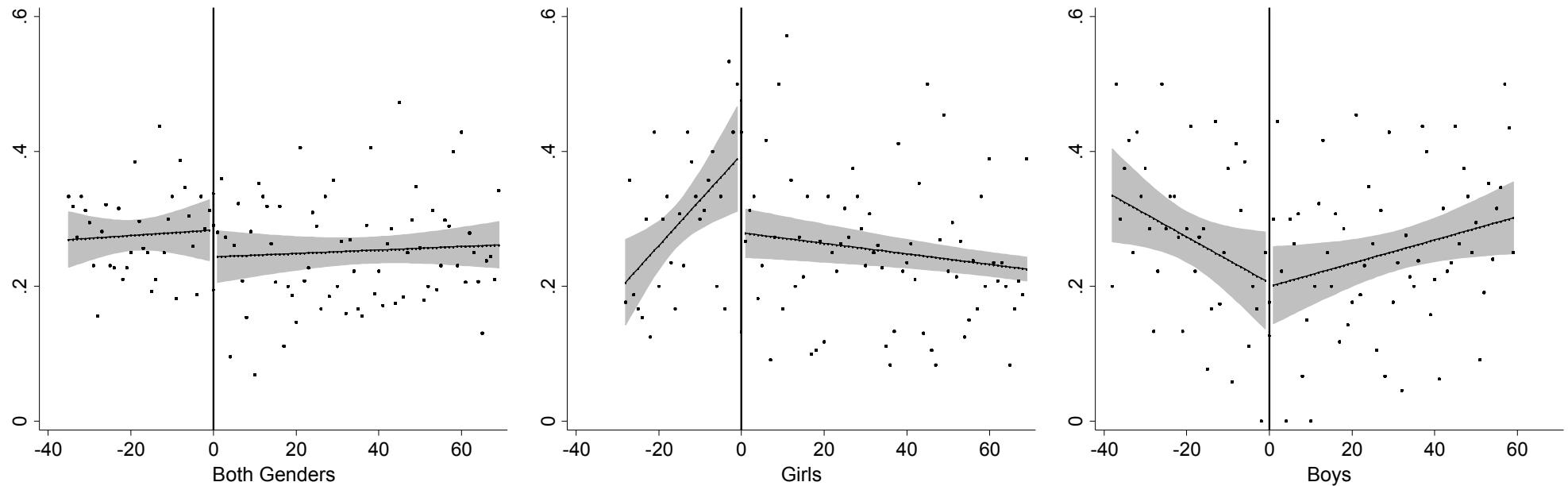
	(1)	(2)	(3)	(4)	
	Child	Daughter	Son	Difference (D - S)	
	Mean	Mean	Mean	Diff.	p-value
Labor Market Outcomes					
Ever worked	0.57	0.58	0.55	0.03	0.20
Duration of employment	4.42	4.58	4.28	0.30	0.43
Currently employed	0.34	0.35	0.33	0.02	0.32
Currently employed in the non-agricultural sector	0.16	0.17	0.15	0.01	0.47
Currently employed in a job with social security	0.06	0.07	0.06	0.01	0.26
Employed as an unpaid family worker	0.14	0.15	0.14	0.01	0.60
Self-employed	0.08	0.07	0.08	0.00	0.87
Fertility-related outcomes					
Birth interval after 1st birth	36.78	34.92	38.39	-3.46	0.01
Birth interval (average all births)	47.31	46.30	48.17	-1.87	0.11
Share of girls (excluding the first-born)	0.47	0.47	0.48	-0.01	0.38
Fertility (number of children ever born)	3.80	3.91	3.71	0.20	0.04
Household size	5.06	4.98	5.13	-0.15	0.13

Descriptive Statistics (3)

	(1)	(2)	(3)	(4)	
	Child	Daughter	Son	Difference (D - S)	
	Mean	Mean	Mean	Diff.	p-value
Wife beating is acceptable if the wife:					
does any of these 4 things	0.26	0.28	0.24	0.03	0.10
neglects children	0.19	0.20	0.18	0.03	0.13
argues with husband	0.14	0.16	0.13	0.03	0.06
refuses to have sex	0.09	0.10	0.09	0.01	0.49
burns the food	0.03	0.03	0.04	-0.01	0.41

Note: Observations: 1,928 in "Child" sample, 885 in "Daughter" sample, 1,043 in "Son" sample.

Treatment Effects (1)



- Reduced form effects on mothers' attitudes towards domestic violence
- Dependent variable: wife beating is acceptable in any of the 4 listed situations

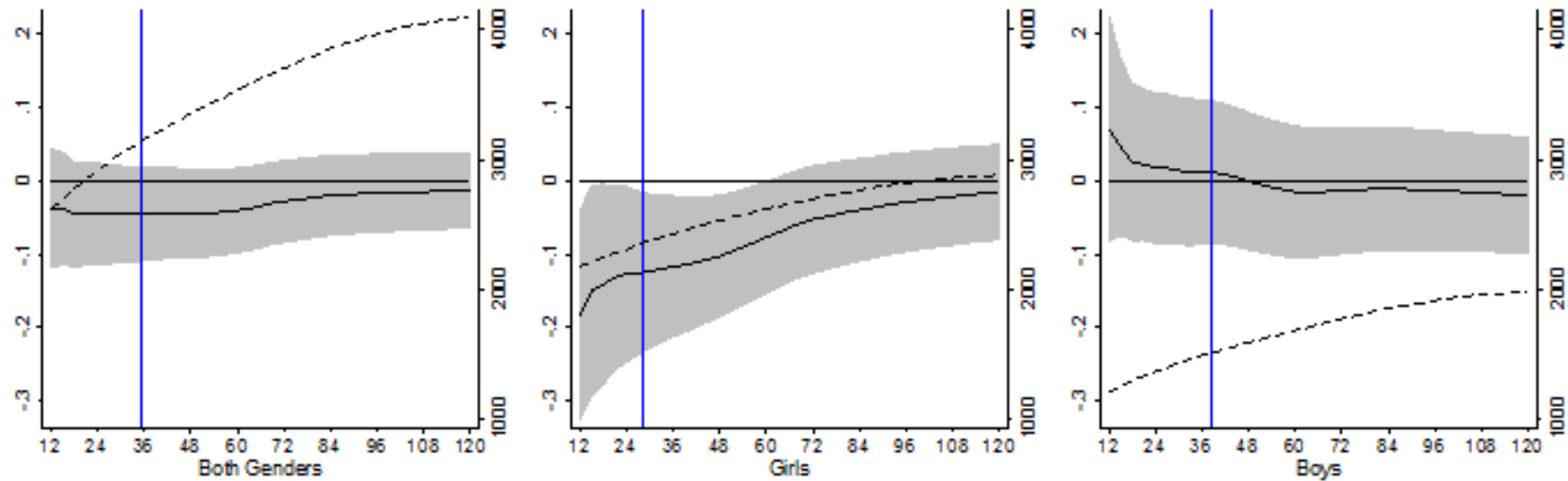
Treatment Effects (2)

Indicator		Sample	Local Linear Approach						Sample Mean	
			T	s.e.	N	N left	N right	h left		h right
Wife beating is acceptable in any of the 4 situations		Child	-0.0444	(0.0326)	3,156	817	2,339	35	69	0.277
		Girl	-0.1242**	(0.0555)	2,373	333	2,040	28	121	0.289
		Boy	0.0123	(0.0494)	1,516	454	1,062	38	59	0.265
Wife beating is acceptable if the wife...	neglects children	Child	-0.0586*	(0.0348)	2,898	845	2,053	38	61	0.204
		Girl	-0.1132*	(0.0608)	2,487	339	2,148	29	127	0.214
		Boy	-0.0069	(0.0442)	1,275	374	901	30	52	0.195
	argues with husband	Child	-0.0283	(0.0313)	3,600	837	2,763	36	82	0.146
		Girl	-0.0800*	(0.0435)	3,259	367	2,892	34	163	0.163
		Boy	0.0085	(0.0356)	1,720	502	1,218	45	68	0.130
	refuses to have sex	Child	-0.0041	(0.0240)	4,837	946	3,891	44	111	0.100
		Girl	-0.0517	(0.0391)	2,493	397	2,096	37	124	0.101
		Boy	0.0342	(0.0373)	2,178	440	1,738	37	97	0.100
	burns the food	Child	-0.0088	(0.0165)	3,188	966	2,222	45	67	0.038
		Girl	-0.0307	(0.0238)	2,331	357	1,974	32	116	0.031
		Boy	-0.0100	(0.0194)	1,153	483	670	43	39	0.044

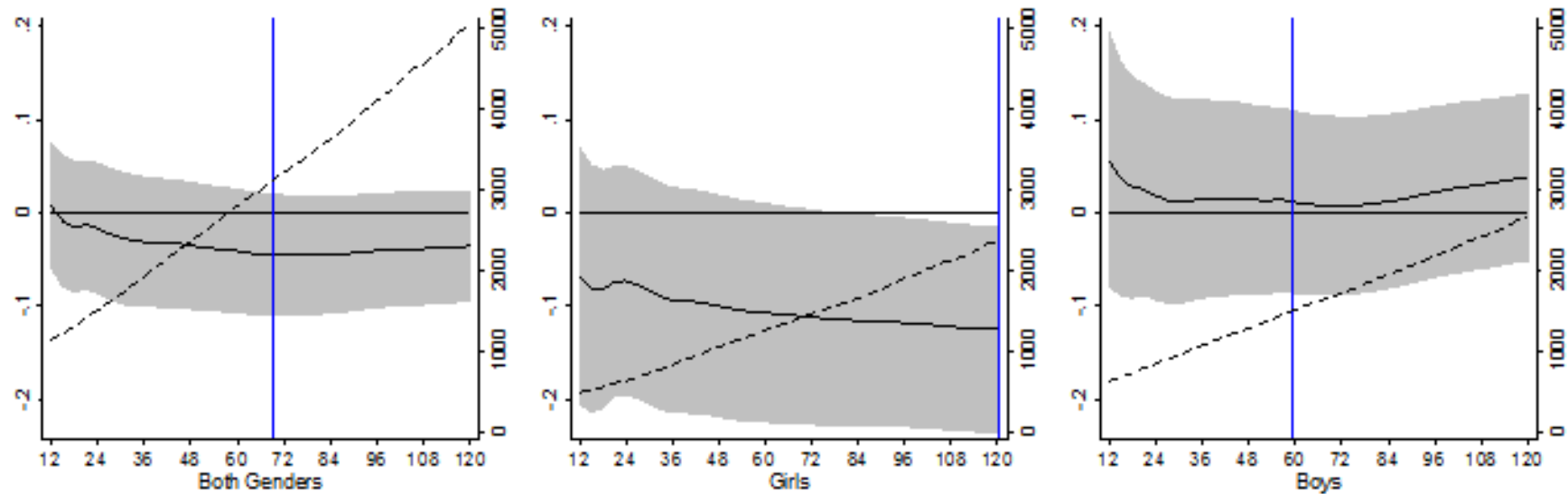
Robustness Checks:

1. Varying Bandwidth

a) Bandwidth to the left of the cut-off is fixed, bandwidth to the right varies



b) Bandwidth to the right of the cut-off is fixed, bandwidth to the left varies



Robustness Checks:

2. Alternative Techniques

Estimation Method		Sample	Child	Girl	Boy
Local Linear Approach	Main estimate	T s.e.	-0.0444 (0.0326)	-0.1242** (0.0555)	0.0123 (0.0494)
	With predetermined covariates	T s.e.	-0.0469 (0.0331)	-0.1298** (0.0563)	0.0296 (0.0517)
	With predetermined and endogenous covariates	T s.e.	-0.0469 (0.0326)	-0.1352** (0.0578)	0.0292 (0.0507)
	Bias-corrected estimate with robust s.e.	T s.e.	-0.0483 (0.0385)	-0.1356** (0.0670)	0.0161 (0.0565)
	Coverage error-rate (CER) bandwidth	T s.e.	-0.0375 (0.0356)	-0.1238* (0.0651)	0.0205 (0.0535)
	Uniform Kernel function	T s.e.	-0.0525 (0.0373)	-0.1036* (0.0574)	0.0146 (0.0553)
	Epanechnikov Kernel function	T s.e.	-0.0472 (0.0340)	-0.1247** (0.0565)	0.0088 (0.0497)
Local Quadratic Approach		T s.e.	-0.0496 (0.0379)	-0.1391** (0.0601)	0.0119 (0.0557)
Global Polynomial Approach	Cubic function	T s.e.	-0.0204 (0.0324)	-0.0967** (0.0477)	0.0475 (0.0487)
	Quartic function	T s.e.	-0.0762* (0.0394)	-0.1440** (0.0600)	-0.0160 (0.0583)
	Quintic function	T s.e.	-0.0742 (0.0451)	-0.1610** (0.0720)	-0.0033 (0.0649)

Two-Sample-2SLS Estimation

- Based on Inoue and Solon (2010)
- Relationship between reduced form parameter, IV parameter, and structural equation parameter:

$$\text{structural equation parameter (2nd stage 2SLS)} = \frac{\text{reduced form parameter}}{\text{IV parameter (1st stage 2SLS)}}$$

$$\text{effect of education on } Y = \frac{\text{effect of the reform on } Y}{\text{effect of the reform on education}}$$

Table: Two-Sample-2SLS estimation for daughters

		T	s.e.	N	h left	h right
Reduced form (Main sample)		-0.1242**	(0.0555)	2,373	28	121
First stage (Different sample)	Years of schooling	0.9313***	(0.2665)	17,130	93	39
	Years of schooling (capped at 8 years)	0.5117***	(0.1862)	17,130	72	52
	Years of schooling (capped at 13 years)	0.7915**	(0.3236)	15,398	93	26
Two-sample-2SLS estimate	Years of schooling	-0.1333*	(0.0707)			
	Years of schooling (capped at 8 years)	-0.2427*	(0.1398)			
	Years of schooling (capped at 13 years)	-0.1569*	(0.0950)			

Channels

1. Active Persuasion

Girl's education

- ➔ Change in girls' attitudes towards domestic violence (e.g. Friedman et al. 2015)
- ➔ Girls influence their mothers' attitudes towards domestic violence

2. Economic Empowerment

Education reform

- ➔ Spillover effects on treated girls' mothers' labor market outcomes
- ➔ Mothers' own exposure to and attitudes towards domestic violence may change

3. Parental Empathy

Girls' schooling

- ➔ Higher exposure of these girls to domestic violence
- ➔ Influence their mothers' attitudes towards wife beating

Channels:

1. Active Persuasion

- Girl's education
 - ➔ Change in girls' attitudes towards domestic violence (e.g. Friedman et al. 2015)
 - ➔ Girls influence their mothers' attitudes towards domestic violence

- Direct effect

Table: Treatment effects of own exposure to education reform on respondent's attitudes towards domestic violence

Indicator		Local Linear Approach						Sample Mean	
		T	s.e.	N	N left	N right	h left		h right
Wife beating is acceptable in any of the 4 situations		-0.0257	(0.0269)	4,890	3,306	1,584	74	48	0.143
Wife beating is acceptable if the wife...	neglects children	0.0030	(0.0215)	5,745	4,030	1,715	89	53	0.080
	argues with husband	-0.0258	(0.0168)	5,073	3,489	1,584	77	48	0.077
	refuses to have sex	-0.0146	(0.0121)	4,490	2,653	1,837	61	59	0.046
	burns the food	-0.0112	(0.0079)	5,014	3,700	1,314	81	39	0.015

Channels:

2. Economic Empowerment

- Education reform
 - ➔ Spillover effects on treated girls' mothers' labor market outcomes
 - ➔ Mothers' own exposure to and attitudes towards domestic violence may change

Table: Treatment effects of daughter's exposure to education reform on their mothers' labor market outcomes

Indicator	Local Linear Approach							Sample Mean
	T	s.e.	N	N left	N right	h left	h right	
Ever worked	0.0310	(0.0510)	2,002	357	1,645	33	99	0.54
Duration of employment	0.1172	(0.7989)	1,870	257	1,613	30	125	2.33
Currently employed	0.0282	(0.0605)	2,118	357	1,761	33	106	0.27
Currently employed in the non-agricultural sector	0.0212	(0.0443)	2,035	427	1,608	41	98	0.17
Currently employed in a job with social security	-0.0063	(0.0280)	1,740	479	1,261	46	80	0.11
Employed as an unpaid family worker	-0.0274	(0.0314)	1,925	280	1,645	25	99	0.08
Self-employed	-0.0001	(0.0221)	2,106	545	1,561	55	95	0.05

Channels:

3. Parental Empathy (1)

- Girls' schooling
 - ➔ Higher exposure of these girls to domestic violence
 - ➔ Influence their mothers' attitudes towards wife beating
- No direct test possible with our data
- Indirect evidence:
 1. Erten and Keskin (2018): Increase in women's education thanks to the reform increased the likelihood that they experience psychological abuse and financial controlling behaviors by their spouses.
 2. Our finding: No effect of boys' exposure to the reform on their mothers' attitudes.
 3. Our finding: No general shift in mothers' gender norms.

Channels:

3. Parental Empathy (2)

- Indirect evidence #3:
 - No effect on mothers’ attitudes towards other gender-related questions.
 - The change in mothers’ attitudes is specific to domestic violence, not to gender norms in general.

Table: Treatment effects of daughters’ exposure to education reform on their mothers’ opinions about gender roles

Indicator	Local Linear Approach							Sample Mean
	T	s.e.	N	N left	N right	h left	h right	
Men should also do the housework like cooking, washing, ironing, and cleaning. (Yes=1)	0.0376	(0.0645)	2251	339	1912	29.35	114	0.85
The important decisions in the family should be made only by men of the family. (No=1)	-0.0054	(0.0609)	2000	357	1643	32.48	99.96	0.67
It is better to educate a son than a daughter. (No=1)	0.0524	(0.0523)	2869	339	2530	29.81	145.2	0.91
Women should be more involved in politics. (Yes=1)	0.0665	(0.0591)	1565	242	1323	20.69	83.14	0.72
Women should be virgins when they get married. (No=1)	0.0175	(0.0339)	1706	500	1206	48.24	76.78	0.18

Conclusions

- Improvements in (girls') education may have significant impacts that go beyond the targeted generation of girls
 - Previous literature: spillover effects of girls' education on younger generations (e.g. child health)
 - This paper: evidence of upward intergenerational spillover effects of girls' schooling
- Suggestive evidence that parental empathy can be an important mechanism through which children's experiences may influence their parents' attitudes.
- Future work on intergenerational spillover effects:
 - study parental empathy mechanism more carefully
 - explore other channels through which children's schooling may affect their parents' outcomes

Annex:

Choice of First-born Children

- Reasons for this choice:
 - Unit of observation is the respondent/mother
 - ➔ Incorrect to use multiple observations (children) per respondent (mother)
 - Avoid endogeneity problems (sample selection)
 - ➔ Using later-born children would lead to sample selection based on fertility preferences of households which are related to households' or respondents' (unobserved) characteristics
 - Possible to conduct sex-disaggregated analysis
 - ➔ Sex of the first-born child at birth is reasonably exogenous; not necessarily sex of later-born children (differential stopping rule)
 - ➔ Caveat: sex of the first-born child is likely correlated with ex-post family characteristics (household size, number and gender composition of siblings).
- Consequences of this choice:
 - **T**: If the first-born was treated, then so were younger children
 - **C**: If the first-born was not treated, younger children may have been treated (they were not treated for first-borns born close to the cut-off)
 - ➔ marginal effect of having *one less* child exposed to the reform
 - ➔ lower-bound of the true effect
 - First-borns may have a larger impact on their parents' lives than later born children