

# **'For the Love of the Republic' Education, Empowerment, and Religion**

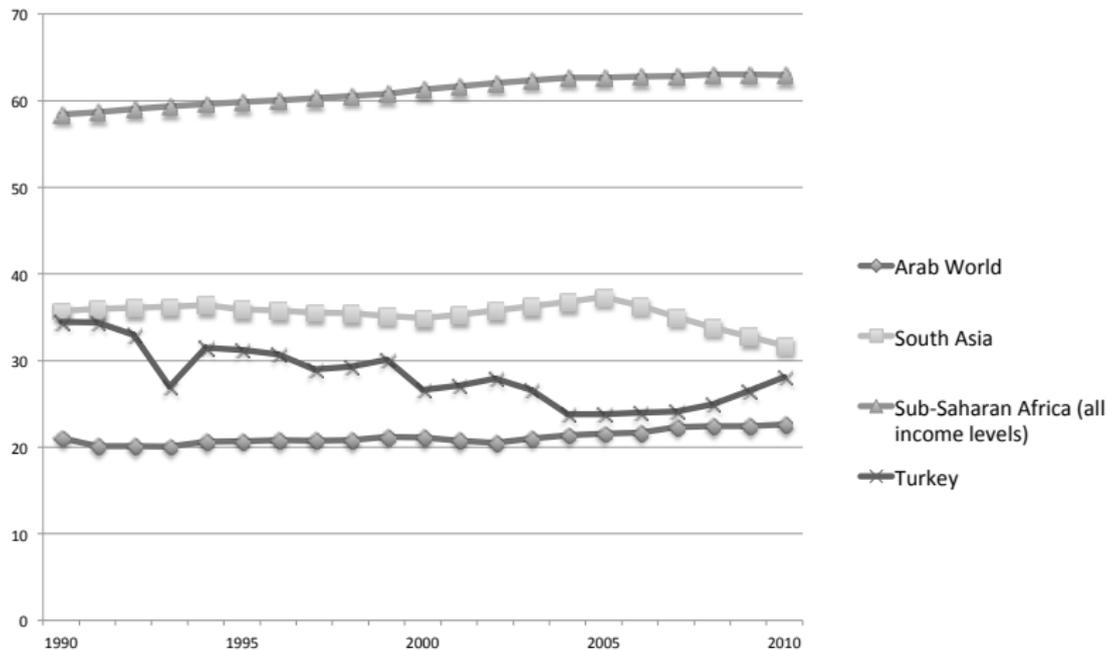
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# Introduction: Motivation

- ▶ Despite educational gains in Muslim countries, women's labor force participation is low (World Bank 2010) and women's rights remain weak (UNDP 2005).
  - ▶ Social norms may limit labor force participation of Muslim women more than others (Field *et al*, 2010)
- ▶ Can education policies alone improve women's status in societies with very low female labor force participation?
  - ▶ Little evidence on causal effects of education on women's status in majority-Muslim settings (Breierova and Duflo, 2004; Alam *et al*, 2011)

# Female Labor Force Participation Rates



# Question: Can education improve women's status..?

... in a majority-Muslim setting?

- ▶ We study a change in compulsory schooling laws in Turkey to provide evidence on the following questions:
- ▶ Does an increase in *secular* education:
  - ▶ reduce religiosity?
  - ▶ enable women to have greater influence on decisions affecting their lives?
  - ▶ improve social mobility?
- ▶ If schooling improves women's status [despite low labor force participation], through what channels?

# Main Findings

- ▶ Reform increased (on average) women's schooling by 1 year, weak impact on men's schooling
- ▶ Higher schooling caused by the reform led to
  - ▶ lower religiosity: headscarf use, prayer (namaz), Quran course
  - ▶ greater decision-making power for women
    - ▶ less likely to have arranged marriages or receive brideprice
    - ▶ more likely to influence decisions in the household (e.g. contraception)
  - ▶ no effect on age at marriage or first birth
  - ▶ higher durables consumption: coming from 'female assets' (dishwasher, washing machine, Hoover)
- ▶ Education lowers religiosity, improves women's status

# Main Findings II

Mechanisms: Through what channels does education improve women's status in a majority-Muslim society?

- ▶ Labor markets outcomes: weak effects.
  - ▶ small increase in labor force participation (insignificant)
  - ▶ change in occupations: self-employment ↑
- ▶ Marriage markets outcomes: weak effects.
- ▶ Average effects shield important heterogeneity by mother's education:
  - ▶ Low mother's education: effects through labor market
    - ▶ labor force participation ↑, self-employment ↑
  - ▶ High mother's education: effects through marriage market
    - ▶ husband's schooling ↑, durables consumption ↑

# Interpretation of the Results

- ▶ Education can empower women and improve their wellbeing in a majority-Muslim society like Turkey, where constraints on female labor force participation are higher
- ▶ Having one more year of schooling at intermediate level weakens role for traditional institutions such as religion, arranged marriages, brideprice
- ▶ Impacts may not work through channels we'd expect
  - ▶ women from a lower socio-economic background: benefit through the labor markets;
  - ▶ women from a higher socio-economic background: benefit through the marriage markets
- ▶ Results may have been different for a reform at higher education (e.g. university)

# Related Literature I : Education and Religion

- ▶ Traditional institutions (religion, caste) as constraints on women's occupational and marital choices
  - ▶ Munshi and Rosenzweig (2006); Field, Jayachandran and Pande (2010); Banerjee et al (forthcoming)
- ▶ Education → Religiosity ?
  - ▶ Modernization theory: Stark (1999), Swatos and Christiano (1999)
  - ▶ Cross-country studies show mixed results: Ianncone (1992), Barro and McVleary (2006), Deaton (2009)
  - ▶ Hungerman (2011) – negative effect of education on religious affiliation in Canada
- ▶ Our findings: Female schooling may reduce the influence of traditional institutions, in this case religion

# Related Literature II : Non-Pecuniary Returns to Education

Other than its pecuniary returns, schooling has been shown to:

- ▶ Delay pregnancy and improve child health
  - ▶ Straus and Thomas (1995), Black et al (2008), McCrary and Royer (2011), Lavy and Zablotsky (2011)
- ▶ Improve marriage market outcomes
  - ▶ Becker (1991), Kremer (1997), Chadwick and Solon (2002)
- ▶ Promote empowerment (and democracy)
  - ▶ Basu and King (2001), Friedman et al. (2011), Mocan and Cannonier (2012)

## **Our contribution:**

- ▶ Often hard to pinpoint non-pecuniary returns as returns in the labor market are likely to  $\uparrow$  as well (Oreopoulos and Salvanes 2011)
- ▶ We show that in a setting where labor market returns are low (due to low participation), there are other significant returns

# The Setting: 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-yr "Primary school" (6-11 yr-olds)
- ▶ Optional 3-yr "Junior high school" (12-14 yr-olds)
  - ▶ General (centralized curriculum, co-ed, headscarf ban)
  - ▶ Vocational, including religious (imam-hatip) schools.

## *Post-Reform Education Path*

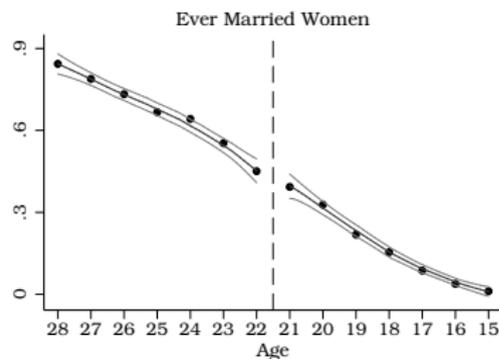
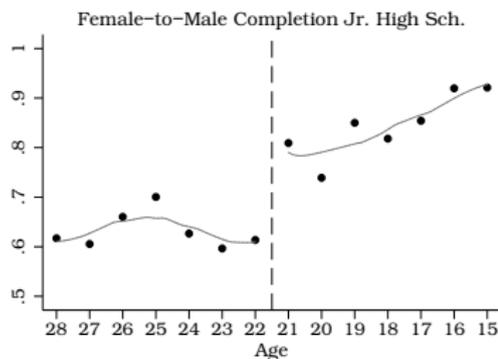
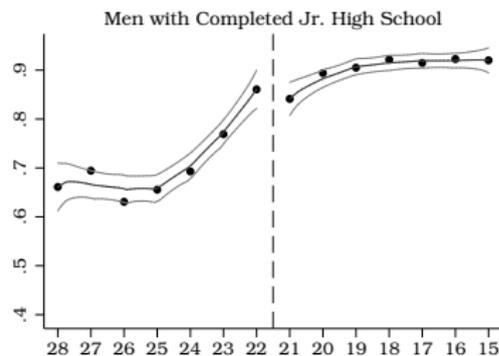
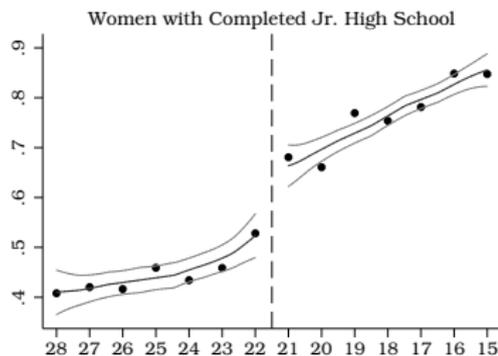
- ▶ 8 yrs compulsory "Primary Education"
- ▶ reform binding for children born after Sep '86, optional for older cohorts.
  - ▶ According to Turkish Education Law, schooling starts in September of the year a child turns 6 years old
  - ▶ The law stipulated that students in grade 4 in '97 were subject to 8 years of education

# Data: 2008 Turkish Demographics Health Survey (DHS)

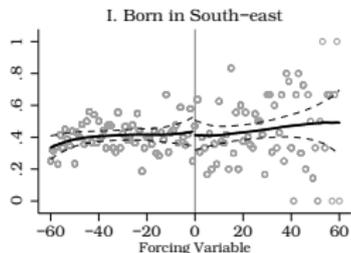
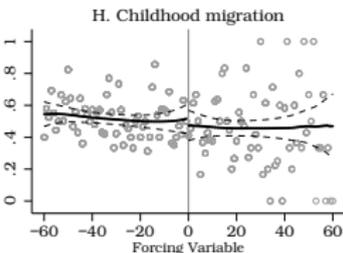
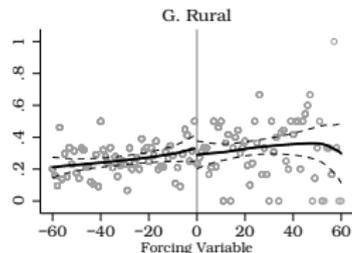
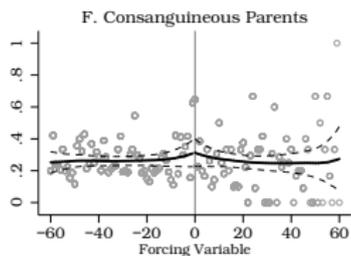
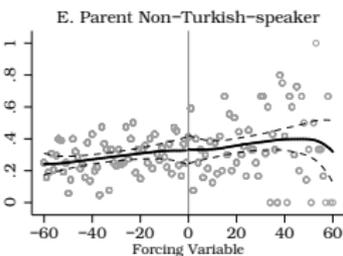
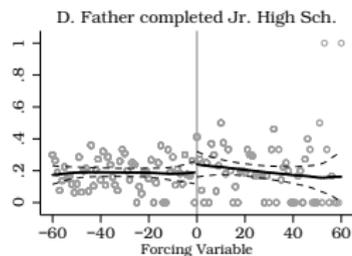
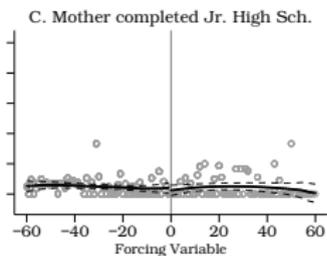
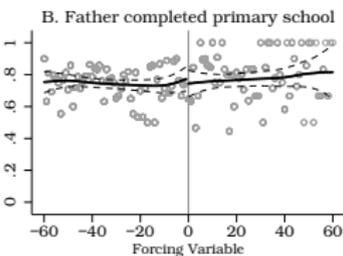
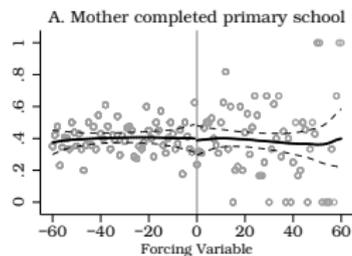
- ▶ 'Household module': representative sample of 10,500 hh's
- ▶ Few variables: hh roster, demographics and education
  - ▶ no info on income or expenditure
  - ▶ hh's wealth ranking: based on a standardized asset-ownership score (DHS)
- ▶ 'Ever married module': ever married women only, 8,000 obs, key outcome variables.
- ▶ Focus on the latter more detailed module
- ▶ Important to show treatment had no effect on selection into this sample, i.e. likelihood of being married in 2008.
  - ▶ Likelihood to be married not affected around the threshold
  - ▶ Within the ever-married women sample, pre-determined covariates are smooth around the threshold

# Data: 'Household Module' Analysis

Gender-promoting reform, no selection into detailed 'ever married' sample



# Validity - Balanced Pre-determined Covariates



# Data: 'Household Module' Analysis

	Completed Junior High School				Ever Married	
	Women		Men		Women	
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: 15-40 age bandwidth, Cubic polynomial</b>						
Mean	0.49	0.49	0.71	0.71	0.61	0.61
Treatment	0.160*** (0.036)	0.115*** (0.031)	-0.034 (0.029)	-0.025 (0.027)	0.033 (0.035)	0.042 (0.035)
p-value (1)=(3)	0.000					
p-value (2)=(4)		0.001				
Obs	9644	9639	9427	9413	9649	9643
Controls	N	Y	N	Y	N	Y
<b>Panel B: 16-27 age bandwidth, Linear polynomial</b>						
Mean	0.61	0.61	0.82	0.82	0.41	0.41
Treatment	0.144*** (0.028)	0.123*** (0.024)	0.021 (0.022)	0.029 (0.021)	-0.026 (0.028)	-0.024 (0.027)
p-value (1)=(3)	0.001					
p-value (2)=(4)		0.003				
Obs	5001	4999	4901	4890	5003	5000
Controls	N	Y	N	Y	N	Y

**Notes:** Data is from the *Household Module* of the *Turkey Demographic and Health Survey of*

# Data: 'Household Module' Analysis

Differences between 'ever married' vs 'never married' women samples

	Ever-married		Never-married		Difference
	Observations	Mean (SD)	Observations.	Mean (SD)	
	(1)	(2)	(3)	(4)	(5)
Literate mother	1614	0.485 (0.500)	2481	0.616 (0.486)	-0.131*** (0.017)
Mother never went to school	1601	0.510 (0.500)	2412	0.415 (0.493)	0.094*** (0.019)
Mother finished primary school or above	1601	0.383 (0.486)	2412	0.510 (0.500)	-0.127*** (0.018)
Mother finished secondary school or above	1601	0.046 (0.210)	2412	0.117 (0.321)	-0.070*** (0.006)
Literate father	1611	0.875 (0.331)	2269	0.926 (0.263)	-0.050*** -0.050
Father never went to school	1544	0.170 (0.376)	2088	0.132 (0.338)	0.039** (0.014)
Father finished primary school or above	1544	0.751 (0.433)	2088	0.817 (0.387)	-0.066** (0.022)
Father finished secondary school or above	1544	0.190 (0.393)	2088	0.296 (0.296)	-0.106*** (-0.106)
Nonturkish	1614	0.279 (0.449)	2855	0.269 (0.444)	0.009 (0.019)
Born in village	1614	0.449 (0.498)	2869	0.352 (0.478)	0.098*** (0.016)
Born in village or town	1614	0.705 (0.456)	2869	0.574 (0.495)	0.131*** (0.012)

# Data: 'Household Module' Analysis

Impacts on 'ever married' vs 'never married' women samples

	(1)	(2)	(3)	(4)
<b>Panel A: Dependent Variable – Years of Schooling</b>				
	<i>Sample: Ever-married Women</i>		<i>Never-married Women</i>	
Treatment	0.734*** (0.274)	0.734*** (0.274)	-0.137 (0.285)	-0.137 (0.285)
Outcome Mean	6.99	6.99	9.32	9.32
Bandwidth	5	5	5	5
Obs	1361	1361	1827	1827
<b>Panel B: Dependent Variable – Completed Junior-high School</b>				
	<i>Sample: Ever-married women</i>		<i>Never-married women</i>	
Treatment	0.210*** (0.049)	0.232*** (0.044)	0.047 (0.055)	0.082** (0.039)
Outcome Mean	0.44	0.44	0.77	0.79
Bandwidth	4	5	3	5
Obs	1131	1361	1103	1827

**Notes:** Data is from *Turkey Demographic and Health Survey of 2008*. In columns (1) and (2), the sample is restricted to women included in the Ever-Married Women Sample while in columns (3) and (4) sample includes women in the Never-Married Women Sample. Columns (1) and (3) report reduced-form RD treatment effects of being born after 1986 for an optimal bandwidth  $\hat{h}$  determined by the Imbens and Kalyanaraman [29] algorithm, with a linear control function in month-year-of-birth on each side of the discontinuity. The forcing variable is annual age cohorts. Columns (2) and (4) report results from the specification but using the optimal bandwidth from the first-stage results (where the dependent variable is years of schooling) in column (1). Outcomes variable is years of schooling in Panel A and a dummy variable equal to one if the respondent obtained a junior-high school degree in Panel B

# Data: Ever Married vs. Never Married Women

- ▶ When we compare married vs single women aged in their early 20s (around the age cutoff)
  - ▶ married women have less educated parents (mother and father)
  - ▶ married women are more likely to be born in rural areas
  - ▶ no ethnic difference
- ▶ When we estimate treatment effects of the reform for married vs single women, we find
  - ▶ No significant effect on years of schooling for single women
  - ▶ +1 year increase for married women
- ▶ Suggests reform was successful in increasing schooling among women from more conservative backgrounds, precisely the group it was intended for
- ▶ Thus, by focusing on 'ever-married' women only, we estimate a LATE that is closer to the ATT

Table: Summary Statistics for Ever Married Women

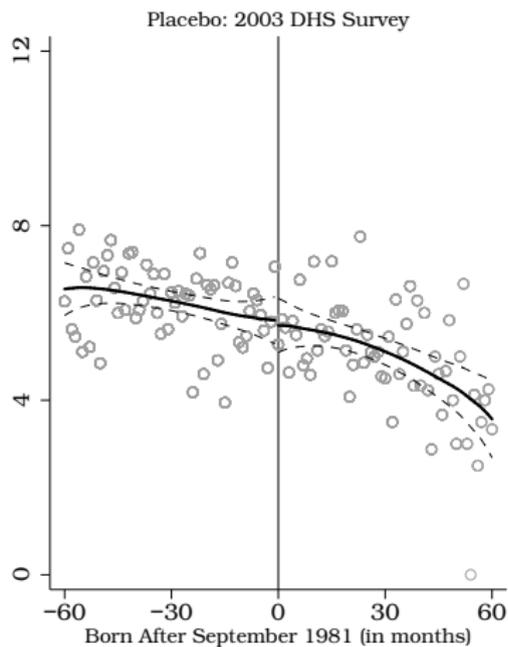
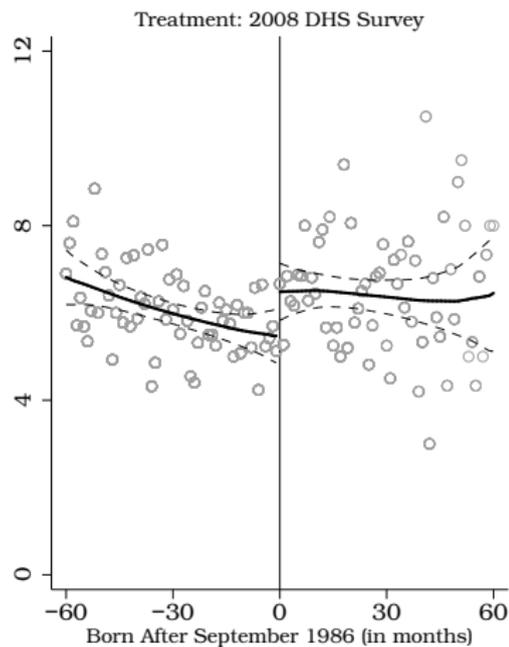
<b>Panel A: Education</b>			
	Mean	SD	Obs
Yrs. of Schooling	6.29	3.80	1557
Primary School	0.81	0.39	1557
Jr. High School	0.39	0.49	1557
High School	0.21	0.41	1557
Vocational School	0.06	0.23	1557
<b>Panel B: Religiosity</b>			
Religiosity Index	0.43	0.24	1554
Wears headscarf	0.77	0.42	1555
Attended Qur'an course	0.44	0.50	1557
Regular Prayer	0.39	0.49	1555
Irregular Prayer	0.71	0.46	1555
Fasting	0.89	0.31	1554

Table: Summary Statistics for All Ever Married Women

<b>Panel C: Marriage and Birth</b>			
	Mean	SD	Obs
Age of First Marriage	18.75	2.77	1557
Age at First Birth	19.67	2.57	1187
Own marriage decision	0.55	0.50	1554
Own contraception decision	0.86	0.34	908
Bridesmoney paid	0.19	0.39	1557
Number of children	1.24	1.03	1557
<b>Panel D: Labor, Household, Spousal Outcomes</b>			
Employed	0.19	0.39	1555
Employed in non-agricultural sector	0.10	0.30	1557
Husband employed	0.93	0.25	1519
Interspousal schooling difference	1.67	3.53	1511
Interspousal age difference	5.34	3.79	1519
Asset ownership index	0.42	0.16	1539

# Treatment and Placebo: Years of Schooling in DHS 2008 and 2003

## Years of Schooling



# RD Treatment Effect on Schooling

Outcome	Years of Schooling				Completed Education			
	$\hat{h}$	$\hat{h}/2$	$\hat{h}/3$	$2\hat{h}$	Jr. High	High	Primary	Vocational
Bandwidth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outcome mean	6.32	6.15	6.15	6.42	0.38	0.23	0.88	0.06
<b>Panel A: Linear control function</b>								
Treatment	1.018*** (0.213)	1.087*** (0.246)	0.901*** (0.290)	0.573** (0.226)	0.237*** (0.038)	0.079*** (0.028)	0.058** (0.026)	0.005 (0.021)
<b>Panel B: Quadratic control function</b>								
Treatment	1.004*** (0.295)	1.015*** (0.356)	0.917** (0.381)	1.227*** (0.315)	0.121*** (0.044)	0.094** (0.039)	0.099*** (0.035)	-0.004 (0.033)
<b>Panel C: Cubic control function</b>								
Treatment	1.004*** (0.357)	1.124* (0.625)	1.186* (0.611)	0.858** (0.394)	0.071 (0.053)	0.112** (0.046)	0.140*** (0.045)	-0.021 (0.046)
Bandwidth	69	34	23	137	60	95	44	71
Obs	1777	923	607	3279	1536	2412	1195	1849

# Treatment Effect on Schooling

- ▶ Reform increased average schooling by 1 year (20%) around the cutoff
- ▶ Likelihood to complete junior high school increased by 24 ppt (not very robust)
- ▶ Likelihood to complete high school also increased: by 8-11 ppt (50%)
- ▶ Shows that the reform was successful in keeping girls in school for longer and increasing their schooling

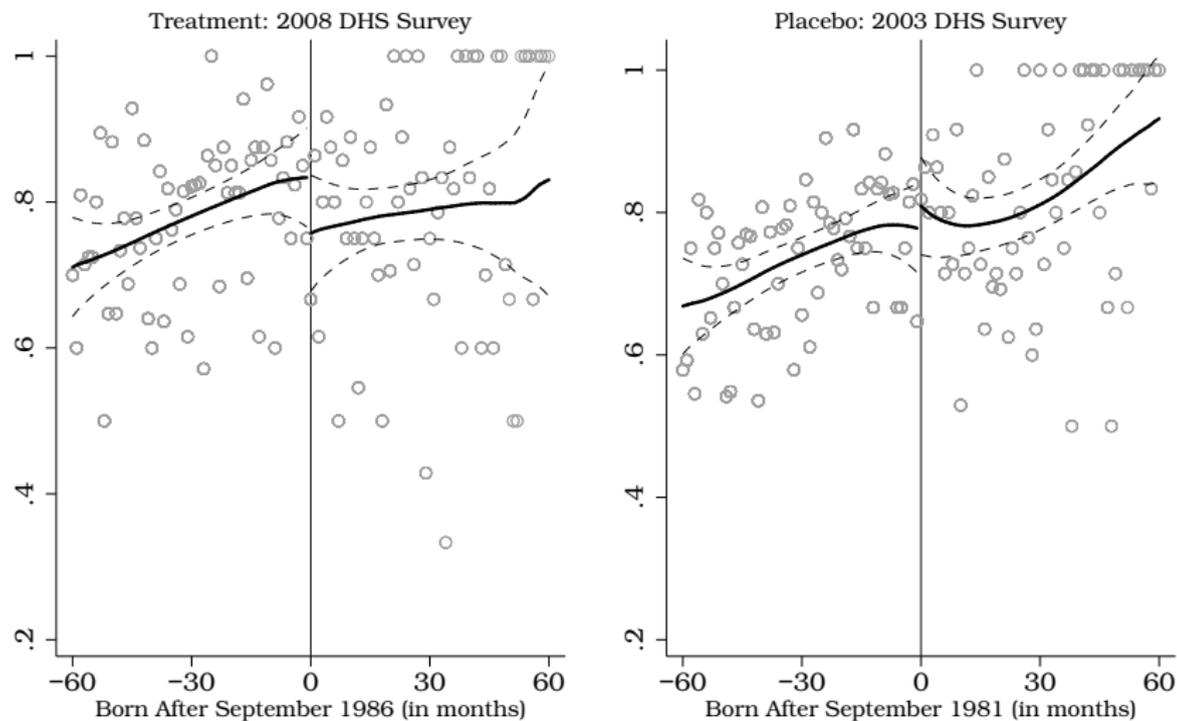
# Treatment through years of schooling or less religious schooling?

The Law (1) extended compulsory schooling and (2) shut down vocational junior high school as an option.

- ▶ Part I: Finding a treatment effect on less vocational schooling overall would be consistent with dual interpretation of the reform's effects.
- ▶ Yet the reform, if anything, *increased* attainment of vocational schooling (i.e. vocational high school).
- ▶ Part II: Treatment effects on outcomes are robust to examining areas where religious schooling was known to be very low.
- ▶ In short, our interpretation of the 1997 reform is one of affecting *years* – as opposed to *type* – of schooling.

# Headscarf Use

## Propensity to wear Headscarf



# RD Treatment Effects on Measures of Religiosity

	Religiosity Index	Wears Headscarf	Quran study	Prays 5/day	Prays At All	Fasts Regularly
	(1)	(2)	(3)	(4)	(5)	(6)
Outcome mean	0.43	0.77	0.44	0.39	0.72	0.88
<b>Panel A: OLS</b>						
Years of Schooling	-0.011*** (0.002)	-0.035*** (0.003)	0.001 (0.004)	-0.011** (0.004)	-0.015*** (0.003)	-0.009*** (0.002)
Bandwidth	66	71	62	65	90	101
Obs	1679	1847	1591	1680	2294	2499
<b>Panel B: Local linear RD with optimal bandwidth</b>						
Treatment	-0.058*** (0.022)	-0.076** (0.037)	-0.096** (0.045)	-0.073 (0.045)	0.006 (0.036)	-0.014 (0.027)
Joint p-value		0.039				
Bandwidth	66	71	62	65	90	101
Obs	1679	1847	1591	1680	2294	2499
<b>Panel C: Local linear RD with static bandwidth</b>						
Treatment	-0.052** (0.021)	-0.070* (0.037)	-0.078* (0.042)	-0.054 (0.044)	0.001 (0.039)	-0.007 (0.027)
Joint p-value		0.101				
Bandwidth	69	69	69	69	69	69
Obs	1798	1799	1801	1799	1799	1798

# Treatment Effect on Religiosity

- ▶ Religiosity index lower by 14% as a result of the reform
- ▶ Treated women are (relative to the sample mean)
  - ▶ 8ppt less likely to wear headscarf,
  - ▶ 10ppt less likely to go to quran course,
  - ▶ 7ppt less likely to pray 5-times a day
  - ▶ equally likely to pray at all or fast
- ▶ Shows that the reform had a causal (negative) impact on the religiosity of women

# RD Treatment Effects on Marriage Characteristics

	Age at first marriage	Age at first birth	Number of children	Own decision on marriage	Own decision on contracep.	Brideprice paid
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: OLS</b>						
Outcome mean	18.63	19.65	1.18	0.54	0.86	0.20
Years of Schooling	0.207*** (0.023)	0.165*** (0.028)	-0.077*** (0.008)	0.036*** (0.003)	0.006* (0.003)	-0.015*** (0.004)
Bandwidth	52	60	52	94	73	53
Obs	1343	1169	1343	2352	1157	1371
<b>Panel B: Local linear RD with optimal bandwidth</b>						
Treatment	-0.094 (0.265)	-0.179 (0.234)	0.053 (0.097)	0.113*** (0.041)	0.101*** (0.036)	-0.080** (0.032)
Joint p-value	0.001					
Bandwidth	52	60	52	94	73	53
Obs	1343	1169	1343	2352	1157	1371
<b>Panel C: Local linear RD with static bandwidth</b>						
Treatment	-0.190 (0.239)	-0.149 (0.218)	0.071 (0.088)	0.137*** (0.046)	0.108*** (0.037)	-0.052* (0.030)
Joint p-value	0.001					
Bandwidth	69	69	69	69	69	69
Obs	1801	1396	1801	1798	1082	1801

# Treatment Effect on Marriage Outcomes

- ▶ Average age at marriage or first birth unaffected

Reform enabled women to have more decision-making power in choice of partner (and timing of marriage)

- ▶ 11ppt more likely to decide on who/when to get married (mean: 54%)
- ▶ 10ppt more likely to influence choice of contraceptive method (mean: 86%)
- ▶ 8ppt less likely to receive brideprice from husband's family (mean: 20%)
- ▶ 4.4ppt more likely to have a civil wedding (gives them greater bargaining power)

# Channels

## **Labor Market:**

- ▶ Schooling may increase women's earnings in the labor market by
  - ▶ increasing their labor force participation
  - ▶ changing type of occupation
  - ▶ increasing returns within same type of job
- ▶ we have data on first 2 but not the last mechanism

## **Marriage Market:**

- ▶ Women with higher schooling may marry more educated husbands
  - ▶ a spouse with higher schooling may have better labor market outcomes (similar mechanisms to above)

# RD Treatment Effects on Labor Market Outcomes

	<i>Type of employment</i>						
	Any	Non- Agriculture	Agriculture	Self- employed	Unpaid family-labor	Regular wage-job	Daily wage-job
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Outcome mean	0.21	0.14	0.09	0.03	0.08	0.09	0.03
<b>Panel A: OLS</b>							
Years of Schooling	0.010*** (0.003)	0.023*** (0.003)	-0.008*** (0.002)	-0.003** (0.001)	-0.007*** (0.002)	0.028*** (0.002)	-0.002*** (0.001)
Bandwidth	75	109	63	85	76	116	103
Obs	1956	2695	1625	2178	1980	2853	2549
<b>Panel B: Local linear RD with optimal bandwidth</b>							
Treatment	0.035 (0.034)	0.019 (0.021)	-0.009 (0.027)	0.025* (0.014)	-0.012 (0.021)	-0.001 (0.013)	0.013 (0.014)
Joint p-value	0.469						
Bandwidth	75	109	63	85	76	116	103
Obs	1956	2695	1625	2178	1980	2853	2549
<b>Panel C: Local linear RD with static bandwidth</b>							
Treatment	0.043 (0.034)	0.048** (0.022)	-0.005 (0.026)	0.031** (0.015)	-0.011 (0.020)	0.017 (0.014)	0.002 (0.014)
Joint p-value	0.338						
Bandwidth	69	69	69	69	69	69	69
Obs	1799	1801	1799	1799	1799	1799	1799

# Labor Market Outcomes

Women who acquired more schooling due to the reform were:

- ▶ 3.5ppt more likely to work, but this is imprecisely estimated
- ▶ 1.9 ppt more likely to work in non-agricultural sector
- ▶ 2.5 ppt more likely to be self-employed

# RD Treatment Effects on Household Wealth and Spouse Characteristics

	Household Wealth		<i>Husband's schooling</i>				<i>Type of husband's job</i>				
	Index	House Owner	Age of husband	Years of schooling	Jr. High	High	University	Non-agricultural	Self-employed	Regular wage-job	Daily wage-job
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Outcome mean	0.48	0.66	28.59	8.01	0.54	0.37	0.09	0.86	0.26	0.54	0.11
<b>Panel A: OLS</b>											
Years of Schooling	0.015*** (0.001)	-0.009*** (0.003)	-0.115*** (0.036)	0.452*** (0.020)	0.041*** (0.003)	0.041*** (0.005)	0.026*** (0.003)	0.012*** (0.003)	-0.010*** (0.004)	0.025*** (0.004)	-0.008*** (0.002)
Bandwidth	87	103	74	122	98	61	70	63	80	78	88
Obs	2197	2577	1858	2944	2375	1539	1741	1570	2038	1952	2188
<b>Panel B: Local Linear RD, optimal bandwidth</b>											
Treatment	0.024** (0.012)	0.082** (0.038)	0.108 (0.281)	0.165 (0.267)	-0.039 (0.041)	0.085* (0.044)	0.033 (0.025)	0.049 (0.030)	-0.029 (0.037)	0.048 (0.035)	-0.014 (0.027)
Joint p-value	0.001										
Bandwidth	87	103	74	122	98	61	70	63	80	78	88
Obs	2197	2577	1858	2944	2375	1539	1741	1570	2038	1952	2188
<b>Panel C: Local linear RD with static bandwidth</b>											
Treatment	0.022* (0.012)	0.076* (0.040)	0.148 (0.283)	0.199 (0.285)	-0.020 (0.042)	0.058 (0.042)	0.033 (0.025)	0.041 (0.029)	-0.025 (0.040)	0.038 (0.037)	-0.009 (0.028)
Joint p-value	0.009										
Bandwidth	69	69	69	69	69	69	69	69	69	69	69
Obs	1782	1801	1757	1790	1741	1741	1741	1757	1757	1757	1757

# Household Wealth and Spouse Characteristics

Women who acquired more schooling due to the reform live in wealthier households:

- ▶ household assets index higher by 5%
  - ▶ coming mainly from “*female*” assets
  - ▶ consistent with a change in bargaining power
- ▶ house ownership higher by 8.2 ppt

Weak evidence of assortative mating

- ▶ age of husband is not affected, neither is the age gap (5 years) so husbands’ cohorts are far from the threshold
- ▶ husband’s yrs of schooling is the same but they are more likely to have *graduated* from high school
- ▶ no significant impact on husbands’ labor market outcomes, although they all point in the right direction

# Heterogenous Treatment Effects by Mother's Schooling

	Years of school	Primary school	Secondary school	High school	Vocational
	(1)	(2)	(3)	(4)	(5)
<b>Panel A: Local linear RD, Full sample</b>					
<i>Mean</i>	6.34	0.89	0.38	0.21	0.06
Treatment	1.017***	0.031	0.216***	0.090***	0.007
	(0.213)	(0.022)	(0.036)	(0.029)	(0.022)
Bandwidth	69	69	69	69	69
Obs	1801	1801	1801	1801	1801
<b>Panel B: Local linear RD, Low mother's education sample</b>					
<i>Mean</i>	4.62	0.80	0.20	0.07	0.03
Treatment	0.684**	0.068*	0.152***	0.030	0.022
	(0.293)	(0.041)	(0.044)	(0.027)	(0.022)
Bandwidth	69	69	69	69	69
Obs	887	887	887	887	887
<b>Panel C: Local linear RD, High Mother's Education sample</b>					
<i>Mean</i>	8.00	0.98	0.55	0.34	0.09
Treatment	1.300***	0.001	0.263***	0.129***	-0.012
	(0.284)	(0.018)	(0.046)	(0.048)	(0.040)
Bandwidth	69	69	69	69	69
Obs	914	914	914	914	914
<b>Panel D: Test of difference in coefficients between panel B and C</b>					
p-value	0.118	0.131	0.048	0.054	0.474

# Heterogenous Treatment Effects by Mother's Schooling

	Religiosity Index	Marriage age	Decision	Brideprice Paid	Employment Non-agr	Self	Husband's Age	Yrs of Sch.	Wealth Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>Panel A: Local linear RD, Full sample</b>									
Mean	0.43	18.92	0.54	0.18	0.11	0.03	28.45	7.96	0.42
Treatment	-0.052** (0.021)	-0.190 (0.239)	0.137*** (0.046)	-0.052* (0.030)	0.048** (0.022)	0.031** (0.015)	0.148 (0.283)	0.199 (0.285)	0.024** (0.012)
Bandwidth	69	69	69	69	69	69	69	69	69
Obs	1798	1801	1798	1801	1801	1799	1757	1790	1782
<b>Panel B: Low mother's education sample</b>									
Mean	0.48	18.50	0.46	0.30	0.06	0.03	28.46	6.87	0.36
<i>1. Local Linear Sharp RD</i>									
Treatment	-0.031 (0.028)	-0.650* (0.384)	0.142** (0.071)	-0.045 (0.050)	0.071** (0.033)	0.057** (0.025)	-0.084 (0.485)	-0.611 (0.390)	0.004 (0.017)
Bandwidth	69	69	69	69	69	69	69	69	69
Obs	885	887	885	887	887	886	872	877	876
<i>2. Local Linear Fuzzy RD</i>									
Schooling	-0.046 (0.046)	-0.951 (0.783)	0.211* (0.124)	-0.065 (0.075)	0.103 (0.063)	0.083 (0.051)	-0.125 (0.728)	-0.863 (0.691)	0.006 (0.022)
F-stat	5.3	5.4	5.3	5.4	5.4	5.4	5.2	5.9	7.1
Bandwidth	69	69	69	69	69	69	69	69	69
Obs	885	887	885	887	887	886	872	877	876
<b>Panel C: High Mother's Education sample</b>									
Mean	0.38	19.33	0.63	0.07	0.15	0.03	28.45	9.01	0.49
<i>1. Local Linear Sharp RD</i>									
Treatment	-0.066** (0.032)	0.281 (0.227)	0.113 (0.070)	-0.057* (0.031)	0.018 (0.033)	-0.001 (0.021)	0.355 (0.394)	0.914** (0.461)	0.041*** (0.016)
Bandwidth	69	69	69	69	69	69	69	69	69
Obs	913	914	913	914	914	913	885	913	906
<i>2. Local Linear Fuzzy RD</i>									
Schooling	-0.050** (0.025)	0.216 (0.175)	0.087* (0.052)	-0.044* (0.025)	0.014 (0.025)	-0.001 (0.016)	0.271 (0.308)	0.704** (0.341)	0.031*** (0.012)
F-stat	21.6	21.0	20.3	21.0	21.0	21.3	19.9	20.9	22.5
Bandwidth	69	69	69	69	69	69	69	69	69
Obs	913	914	913	914	914	913	885	913	906
<b>Panel D: Test of difference in coefficients between panel B and C</b>									
p-value	0.398	0.019	0.779	0.826	0.295	0.082	0.511	0.019	0.096

# Concluding Remarks

Education reform that increased compulsory schooling from 5 to 8 years in Turkey led to:

- ▶ 1 extra year of schooling for women, no effect on men's schooling on average
- ▶ Lower religiosity, more progressive marriage characteristics and higher consumption (durables) for affected women.
- ▶ Transfer of decision rights on key actions to women.
- ▶ Higher labor force participation for women with low mother's schooling
- ▶ Higher husband quality for women with high mother's schooling

Overall, the reform increased women's social mobility out of religiously conservative communities

# Future work

- ▶ Child health outcomes
- ▶ Domestic Violence
- ▶ Inter-generational spill-over effects of schooling
  - ▶ Given the age group we are focusing on, we have a large sample of mothers whose children may be affected by the reform
  - ▶ Question: Does a child's (daughter's) schooling affect her mother's attitudes towards:
    - ▶ domestic violence
    - ▶ gender norms

Table: RD Treatment Effects on Child Health

	Children's height Z-score (1)	Children's weight Z-score (2)	weight-for -height Z-score (3)
<b>Panel A: OLS</b>			
Mean	-0.522	0.171	0.636
Years of Schooling	0.054*** (0.017)	0.047*** (0.014)	0.006 (0.013)
Obs	815	828	821
<b>Panel B: Reduced-form RD</b>			
Treatment	0.349* (0.181)	0.195 (0.124)	0.054 (0.138)
Obs	815	828	821
<b>Panel C: IV-RD</b>			
Years of Schooling	0.291* (0.166)	0.155 (0.106)	0.042 (0.109)
F-stat	16.1	17.9	18.8
Obs	815	828	821

# RD Treatment Effects on Labor Market Outcomes

	<i>Type of employment</i>						
	Any	Non- Agriculture	Agriculture	Self- employed	Unpaid family-labor	Regular wage-job	Daily wage-job
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Outcome mean	0.21	0.14	0.09	0.03	0.08	0.09	0.03
<b>Panel A: OLS</b>							
Years of Schooling	0.010*** (0.003)	0.023*** (0.003)	-0.008*** (0.002)	-0.003** (0.001)	-0.007*** (0.002)	0.028*** (0.002)	-0.002*** (0.001)
Bandwidth	75	109	63	85	76	116	103
Obs	1956	2695	1625	2178	1980	2853	2549
<b>Panel B: Local linear RD with optimal bandwidth</b>							
Treatment	0.035 (0.034)	0.019 (0.021)	-0.009 (0.027)	0.025* (0.014)	-0.012 (0.021)	-0.001 (0.013)	0.013 (0.014)
Joint p-value	0.469						
Bandwidth	75	109	63	85	76	116	103
Obs	1956	2695	1625	2178	1980	2853	2549
<b>Panel C: Local linear RD with static bandwidth</b>							
Treatment	0.043 (0.034)	0.048** (0.022)	-0.005 (0.026)	0.031** (0.015)	-0.011 (0.020)	0.017 (0.014)	0.002 (0.014)
Joint p-value	0.338						
Bandwidth	69	69	69	69	69	69	69
Obs	1799	1801	1799	1799	1799	1799	1799

# RD Treatment Effects on Household Wealth and Spouse Characteristics

	Household Wealth		<i>Husband's schooling</i>				<i>Type of husband's job</i>				
	Index	House Owner	Age of husband	Years of schooling	Jr. High	High	University	Non-agricultural	Self-employed	Regular wage-job	Daily wage-job
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Outcome mean	0.48	0.66	28.59	8.01	0.54	0.37	0.09	0.86	0.26	0.54	0.11
<b>Panel A: OLS</b>											
Years of Schooling	0.015*** (0.001)	-0.009*** (0.003)	-0.115*** (0.036)	0.452*** (0.020)	0.041*** (0.003)	0.041*** (0.005)	0.026*** (0.003)	0.012*** (0.003)	-0.010*** (0.004)	0.025*** (0.004)	-0.008*** (0.002)
Bandwidth	87	103	74	122	98	61	70	63	80	78	88
Obs	2197	2577	1858	2944	2375	1539	1741	1570	2038	1952	2188
<b>Panel B: Local Linear RD, optimal bandwidth</b>											
Treatment	0.024** (0.012)	0.082** (0.038)	0.108 (0.281)	0.165 (0.267)	-0.039 (0.041)	0.085* (0.044)	0.033 (0.025)	0.049 (0.030)	-0.029 (0.037)	0.048 (0.035)	-0.014 (0.027)
Joint p-value	0.001										
Bandwidth	87	103	74	122	98	61	70	63	80	78	88
Obs	2197	2577	1858	2944	2375	1539	1741	1570	2038	1952	2188
<b>Panel C: Local linear RD with static bandwidth</b>											
Treatment	0.022* (0.012)	0.076* (0.040)	0.148 (0.283)	0.199 (0.285)	-0.020 (0.042)	0.058 (0.042)	0.033 (0.025)	0.041 (0.029)	-0.025 (0.040)	0.038 (0.037)	-0.009 (0.028)
Joint p-value	0.009										
Bandwidth	69	69	69	69	69	69	69	69	69	69	69
Obs	1782	1801	1757	1790	1741	1741	1741	1757	1757	1757	1757

# Decomposing the Wealth Index: Effects on Asset Ownership I

	fridge	oven	micro wave	blender	dish- washer	washing machine	iron	vacuum cleaner	AC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>Panel A: OLS</b>									
Outcome mean	0.96	0.76	0.11	0.49	0.25	0.89	0.88	0.84	0.09
Years of Schooling	0.006*** (0.001)	0.018*** (0.003)	0.011*** (0.002)	0.036*** (0.002)	0.031*** (0.003)	0.011*** (0.002)	0.015*** (0.002)	0.014*** (0.003)	0.004*** (0.001)
Bandwidth	85	66	147	146	86	75	70	55	114
Obs	2162	1712	3480	3454	2198	1958	1823	1442	2787
<b>Panel B: Local Linear RD with optimal bandwidth</b>									
Treatment	-0.008 (0.020)	-0.008 (0.036)	0.002 (0.025)	-0.035 (0.038)	0.060** (0.029)	0.052** (0.025)	0.031 (0.029)	0.082** (0.040)	0.043* (0.022)
Joint p-value	0.002								
Bandwidth	85	66	147	146	86	75	70	55	114
Obs	2162	1712	3480	3454	2198	1958	1823	1442	2787
<b>Panel C: Local linear RD with static bandwidth</b>									
Treatment	-0.011 (0.022)	-0.004 (0.035)	0.013 (0.026)	0.018 (0.039)	0.065** (0.030)	0.047* (0.025)	0.027 (0.029)	0.065* (0.035)	0.042* (0.023)
Joint p-value	0.031								
Bandwidth	69	69	69	69	69	69	69	69	69
Obs	1800	1800	1800	1800	1800	1800	1800	1800	1799

# Decomposing the Wealth Index: Effects on Asset Ownership II

	cellphone	computer	internet	LCD	cable-tv	antenna	DVD	camera	car	taxi/minibus	tractor
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<b>Panel A: OLS</b>											
Years of Schooling	0.002*** (0.001)	0.021*** (0.004)	0.017*** (0.003)	0.006*** (0.001)	0.009*** (0.002)	0.006* (0.003)	0.026*** (0.003)	0.027*** (0.004)	0.015*** (0.003)	0.001 (0.002)	-0.004** (0.002)
Bandwidth	84	48	76	122	77	105	110	75	79	62	67
Obs	2134	1267	1958	2952	1982	2613	2692	1930	2030	1585	1739
<b>Panel B: Local Linear RD with optimal bandwidth</b>											
Treatment	0.015 (0.011)	0.031 (0.039)	0.022 (0.027)	-0.012 (0.011)	-0.024 (0.018)	0.030 (0.037)	0.023 (0.036)	0.010 (0.040)	0.054 (0.034)	0.040* (0.022)	-0.029 (0.026)
Joint p-value	0.180										
Bandwidth	84	48	76	122	77	105	110	75	79	62	67
Obs	2134	1267	1958	2952	1982	2613	2692	1930	2030	1585	1739
<b>Panel C: Local Linear RD with static bandwidth</b>											
Treatment	0.015 (0.012)	0.033 (0.036)	0.011 (0.028)	-0.006 (0.014)	-0.027 (0.019)	0.023 (0.041)	0.025 (0.039)	0.011 (0.041)	0.055 (0.035)	0.044** (0.020)	-0.026 (0.025)
Joint p-value	0.086										
Bandwidth	69	69	69	69	69	69	69	69	69	69	69
Obs	1794	1801	1800	1799	1800	1800	1799	1801	1797	1795	1796

# Appendix: RD Treatment Effects on Attitudes I

## Attitudes towards Domestic Violence

	Respondent thinks physical violence towards a woman by her husband is justified if she...						
	neglects her kids	answers back her husband	refuses to have intercourse	burns the food	wastes money	doesn't cook	neglects hh chores
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Panel A: OLS</b>							
Mean	0.147	0.127	0.049	0.023	0.147	0.045	0.106
Bandwidth	69	68	116	73	93	113	153
Years of Schooling	-0.016*** (0.003)	-0.015*** (0.003)	-0.007*** (0.001)	-0.004*** (0.001)	-0.015*** (0.002)	-0.009*** (0.001)	-0.014*** (0.002)
Bandwidth	69	68	116	73	93	113	153
Obs	1765	1722	2829	1901	2313	2782	3628
<b>Panel B: Local Linear RD with optimal bandwidth</b>							
Treatment	0.002 (0.038)	-0.066** (0.033)	-0.001 (0.017)	-0.003 (0.013)	0.040 (0.033)	-0.016 (0.018)	0.014 (0.029)
Joint p-value	0.046						
Bandwidth	69	68	116	73	93	113	153
Obs	1765	1722	2829	1901	2313	2782	3628
<b>Panel C: Local Linear RD with static bandwidth</b>							
Treatment	0.004 (0.038)	-0.065** (0.033)	-0.022 (0.018)	-0.006 (0.013)	0.009 (0.035)	-0.021 (0.020)	-0.004 (0.031)
Joint p-value	0.183						
Bandwidth	69	69	69	69	69	69	69
Obs	1789	1779	1781	1797	1785	1795	1794

# Appendix: RD Treatment Effects on Attitudes II

	Men should help with hh chores	Women should work if they wish to	A woman may go anywhere w/o husband's permission	Women are as smart as men	Women should be more active in politics	Women don't need to be virgins on wedding night	Women can take important decisions	Women can argue with their spouse if they disagree	Educating daughters is as important as sons
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>Panel A: OLS</b>									
Outcome mean	0.63	0.90	0.26	0.87	0.69	0.18	0.81	0.54	0.90
Years of Schooling	0.022*** (0.003)	0.008*** (0.002)	0.008** (0.003)	0.019*** (0.002)	-0.003 (0.004)	0.015*** (0.003)	0.024*** (0.002)	0.021*** (0.004)	0.012*** (0.002)
Bandwidth	93	141	76	80	58	95	81	62	118
Obs	2348	3341	1959	2005	1316	2321	2089	1589	2865
<b>Panel B: Local Linear RD with optimal bandwidth</b>									
Treatment	-0.025 (0.045)	0.053** (0.024)	-0.013 (0.040)	0.029 (0.032)	0.033 (0.056)	0.052* (0.031)	0.014 (0.033)	-0.034 (0.050)	-0.016 (0.029)
Joint p-value	0.088								
Bandwidth	93	141	76	80	58	95	81	62	118
Obs	2348	3341	1959	2005	1316	2321	2089	1589	2865
<b>Panel C: Local Linear RD with static bandwidth</b>									
Treatment	-0.024 (0.049)	0.066** (0.027)	-0.023 (0.042)	0.051 (0.033)	0.022 (0.053)	0.071** (0.035)	0.025 (0.036)	-0.039 (0.045)	0.001 (0.029)
Joint p-value	0.017								
Bandwidth	69	69	69	69	69	69	69	69	69
Obs	1790	1779	1779	1752	1584	1751	1792	1780	1796