Empowering Women: Inheritance Rights and Female Education in India

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Research Question

What is the impact of improving female inheritance rights on human capital investment of women?

Motivation Behind the Question

- Role of property rights in economic development well-researched
- But primarily gender-neutral with little attention to salience for women
- Also, impact of property rights on human capital investment relatively under-researched (see Besley and Ghatak, 2009)
- Attempt to fill these gaps by studying impact of female property rights, in particular inheritance rights, on female education

Potential Channels

- 2 potential channels through which greater inheritance rights can affect female education:
  - Channel 1: Greater inheritance rights increase relative "attractiveness" of women in marriage market - substitutes for the other dimension of bridal value, dowry - relaxes bridal HH budget constraint - greater investment in the daughters' education
  - Channel 2: Greater inheritance rights require women to take greater interest in HH property management - complementarity between inheritance rights and education - thus parents invest more daughters' education
- Paper tries to ascertain empirically which channel is at work here

Outline of this talk

- Related Literature
- Institutional Background of Inheritance Rights in India
- Data and Identification Strategy
- Results

Related Literature

- **On Property Rights**
  - Banerjee, Gertler and Ghatak (2002); Besley (1995); Field (2007); Johnson *et al*, 2003
- **On Marriage Markets and Dowry**
  - Field and Ambrus (2008); Banerjee *et al*, 2009; Arunachalam and Naidu (2008); LaFortunne (2009); Anderson (2004), Botticini and Siow (2003)

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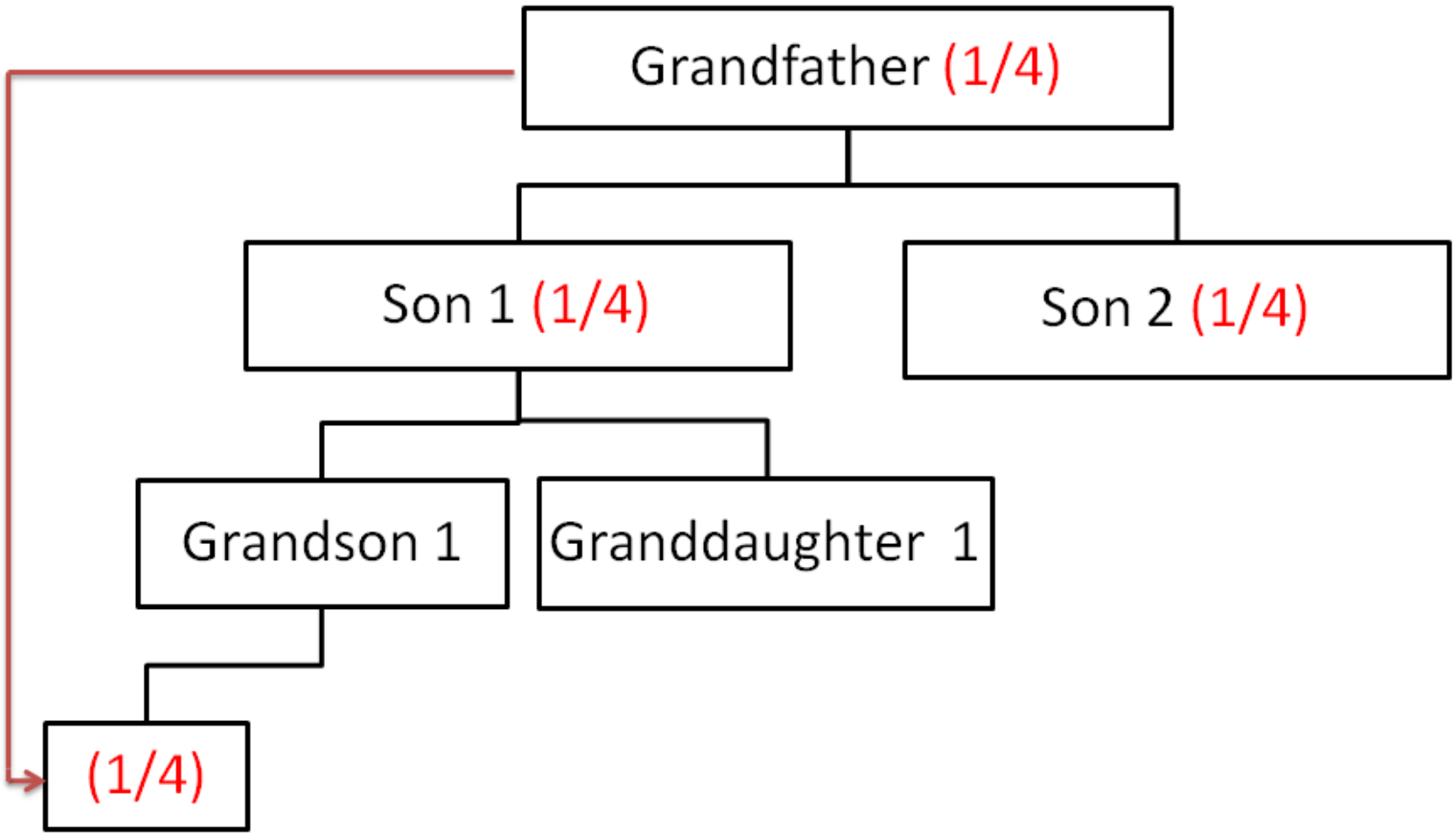
- I exploit plausibly exogenous variation created by legislative change in female inheritance rights in India to identify effect on education
- Major Inheritance law in India - Hindu Succession Act (HSA) 1956
  - Applies to Hindus, Sikhs, Buddhists and Jains. Does not apply to Muslims, Christians, Parsis and Jews
  - Gender biased - daughters had inheritance rights only to father's separate property and not to joint family property, unlike sons

Institutional (Inheritance Rights) Background of India



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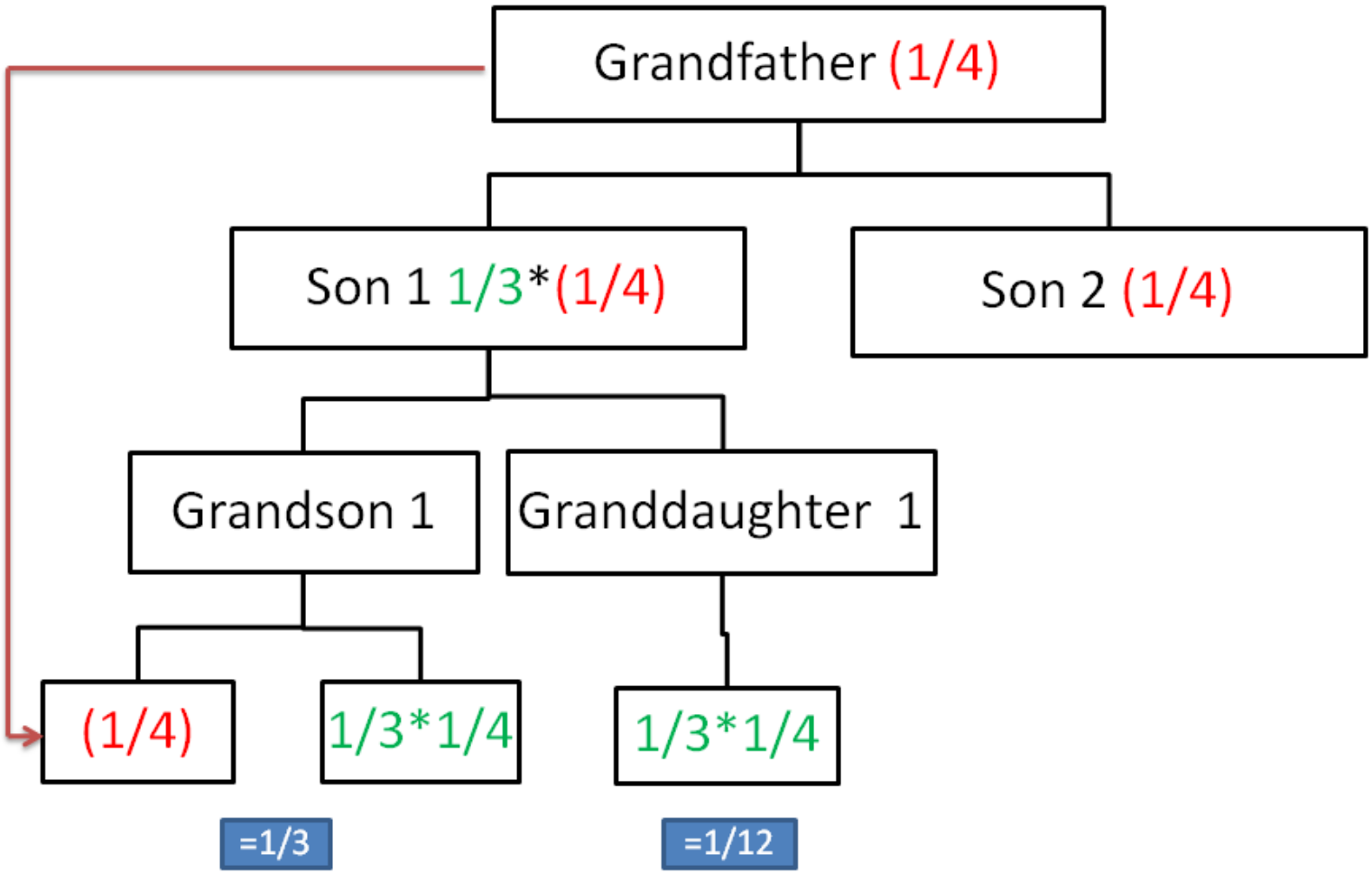

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- Potential to use law to disinherit daughters
  1. if the father renounced his rights in the coparcenary (joint) property
  2. if the father willed his share in the coparcenary to his sons
  3. if the father converted his self-acquired property to coparcenary property

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  3. if the father converted his self-acquired property to coparcenary property
- In India, a lot of property is held in the form of immovables like land which is family owned - hence gender bias significant

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- Following these amendments, daughters were given *independent* inheritance rights, equal with sons, in joint family property if they were unmarried at the time of reform
- Following the amendment, proportion of women inheriting property increased from 3.5% to 9.1% in reforming states, while for those married after the reform or unmarried, proportion increases from 1.4% to 13.5% (Rosenblum, 2008)

Data

- Repeated cross-section dataset constructed from 3 waves of National Family and Health Survey of India - 1992, 1998 and 2005
- Sample (representative at the state level) consists of 0.26 million women between the age of 13-49 in 29 states of India
- For dowry, I use the Rural Economic and Demographic Survey (REDS) 1999, which contains information on around 11,000 women in 16 major states

Descriptive Statistics

	Reform States	Non-Reform States	Diff
Panel A: Cohort-level Means (NFHS)			
Education (years)	4.83	3.40	1.43***
Age at marriage	17.67	18.04	-0.37***
Proportion of Hindu HHs	0.50	0.50	0.00
Panel B: Individual-level Means (NFHS)			
Father's education (years)	6.60	6.65	-0.05
HH wealth(13 assets)	3.03	3.17	-0.14***
Proportion of HHs owning land	0.39	0.52	-0.13***
No. of HH members	6.97	7.45	-0.48***
Proportion of urban HHs	0.43	0.38	0.05***
Panel C: Cohort-level Means (REDS)			
Dowry payments (1966 Rs)	6026.75	3907.34	2119.41***
Panel D: Individual-level Means (REDS)			
HH income (1966 Rs)	11.00	16.80	-5.8***
No. of daughters in HH	3.09	3.22	-0.13**
Proportion of Brahmin HHs	0.02	0.12	-0.10***
Proportion of non-Brahmin UC HHs	0.22	0.36	-0.14***
Proportion of SC HHs	0.11	0.13	-0.02*
Proportion of ST HHs	0.05	0.06	-0.01
Proportion of OBC HHs	0.59	0.28	0.31***
Proportion of NC Hindus	0.009	0.041	-0.032***

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- In India, primary school age: 5-10, middle school age: 11-13, high/secondary school age: 14-15

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- In India, primary school age: 5-10, middle school age: 11-13, high/secondary school age: 14-15
- Treated group: cohorts aged 10 or less at time of reform; Control group: cohorts aged 21 or more at time of reform

Simple Diff-in-Diff for Kerala

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- Kerala reformed in 1976

Table 1: Years of Education

Panel A: Experiment of interest			
	Kerala	ROI	Difference
	(1)	(2)	(3)
Aged 5 or less in 1976	9.37	4.48	4.89
	(0.22)	(0.12)	(0.64)
Aged 21 or more in 1976	5.70	2.68	3.02
	(0.19)	(0.09)	(0.47)
Difference	3.67	1.80	1.87
	(0.30)	(0.14)	(0.78)
Panel B: Control Experiment			
	Kerala	ROI	Difference
	(1)	(2)	(3)
Aged 16 to 20 in 1976	6.10	3.54	2.56
	(0.63)	(0.15)	(0.84)
Aged 21 or more in 1976	5.70	2.68	3.02
	(0.19)	(0.09)	(0.47)
Difference	0.40	0.86	-0.46
	(0.49)	(0.16)	(0.91)

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$$e_{sk} = \alpha_s + \beta_k + \gamma_s k + \delta_1 D_{s,(k \geq k'-5)} + \delta_2 D_{s,(k'-10 \leq k \leq k'-6)} + \delta_3 D_{s,(k'-15 \leq k \leq k'-11)} + \delta_4 D_{s,(k'-20 \leq k \leq k'-16)} + \epsilon_{sk}$$

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- δ_1, δ_2 - effect on "younger" cohorts; δ_3, δ_4 - effect on "older" cohorts
- Oldest (16-20) cohort included as falsification test
- Sample restricted to women who are 28 years or older at the time of survey (to minimize downward bias from women who marry early)

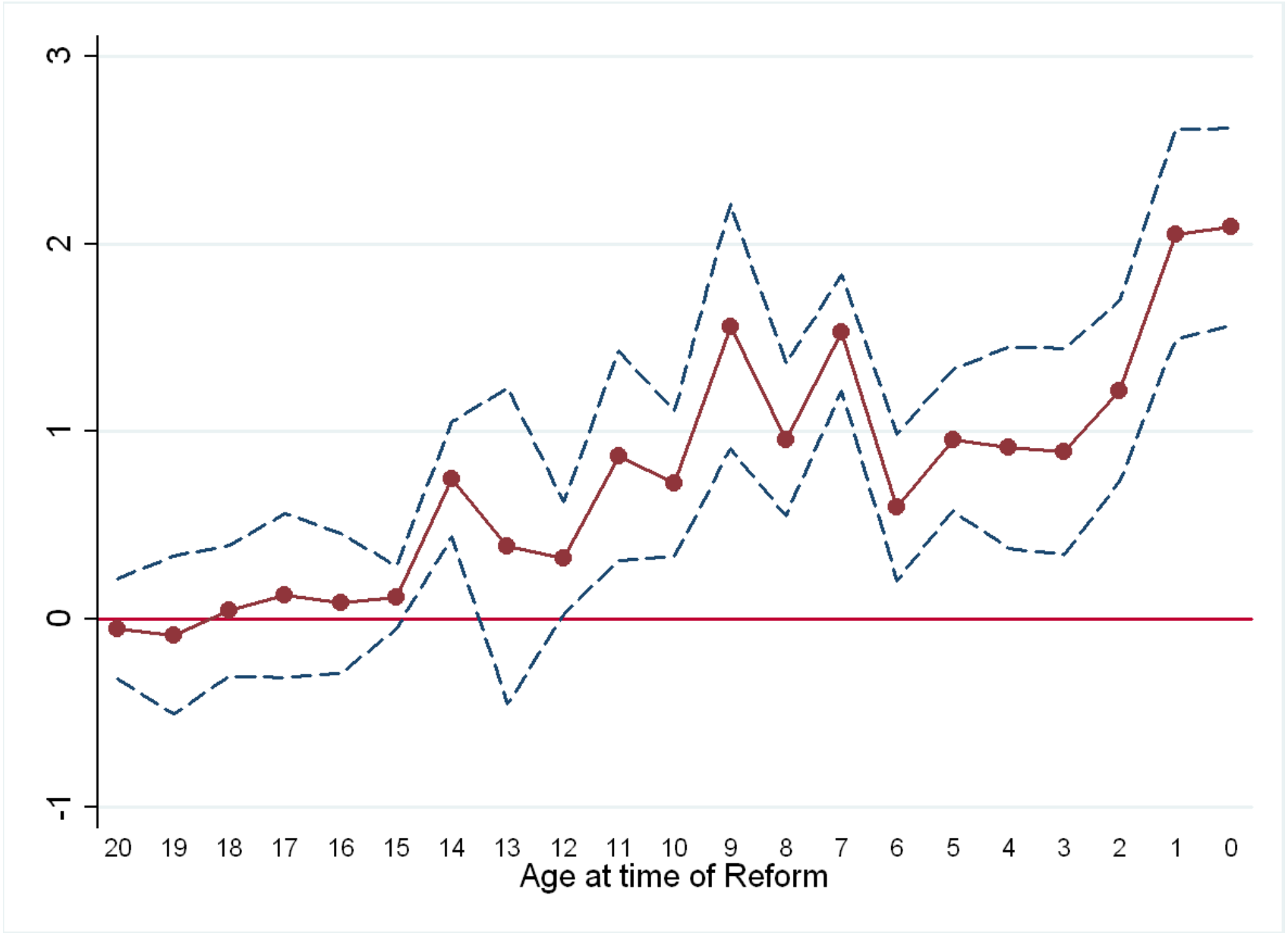
Education

Table 2: Effect of Inheritance Rights Reform on Female Education: Cohort level Results: No HH Controls

	All	All	All	Hindu	Non-Hindu
	(1)	(2)	(3)	(4)	(5)
Aged 5 or less	5.593***	1.617***	1.345***	1.557***	0.339
	(0.296)	(0.202)	(0.337)	(0.483)	(0.485)
Aged 6 to 10	3.246**	1.328***	1.117***	0.995*	0.813
	(1.266)	(0.216)	(0.291)	(0.500)	(0.506)
Aged 11 to 15	2.589***	0.735***	0.487***	0.572***	-0.144
	(0.723)	(0.185)	(0.129)	(0.166)	(0.231)
Aged 16 to 20	1.676**	0.200*	0.0456	0.0691	-0.140
	(0.613)	(0.110)	(0.0640)	(0.0818)	(0.125)
No. of observations	2276	2276	2276	931	916
State FE	NO	YES	YES	YES	YES
Cohort of birth FE	NO	YES	YES	YES	YES
State cohort trend	NO	NO	YES	YES	YES
Adj. R-sq	0.131	0.751	0.775	0.908	0.868

Note: Standard errors in parentheses, clustered at the state level

Education


3
2
1
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20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Age at time of Reform

Education

Table 3: Effect of Inheritance Rights Reform on Female Education: Individual level Results - With HH Controls

	All	All	All	All	Hindu	Non-Hindu
	(1)	(2)	(3)	(4)	(5)	(6)
Aged 5 or less	2.497***	2.983***	1.077***	0.479*	0.912**	1.368
	(0.395)	(0.269)	(0.203)	(0.259)	(0.403)	(0.951)
Aged 6 to 10	1.689***	1.294*	0.559**	0.357**	0.335	0.967
	(0.570)	(0.682)	(0.230)	(0.136)	(0.388)	(0.591)
Aged 11 to 15	0.663	0.600*	0.400***	0.178	-0.0108	1.112
	(0.839)	(0.341)	(0.124)	(0.124)	(0.285)	(0.719)
Aged 16 to 20	0.152	0.468	0.252*	0.0927	-0.00665	0.576
	(0.679)	(0.311)	(0.133)	(0.0881)	(0.191)	(0.564)
Father's education		0.269***	0.265***	0.265***	0.325***	0.309***
		(0.0317)	(0.0326)	(0.0326)	(0.0132)	(0.0134)
Father's age		-0.00513	-0.00348	-0.00344	-0.00860**	-0.00220
		(0.00329)	(0.00234)	(0.00230)	(0.00404)	(0.00718)
HH wealth		0.781***	0.775***	0.775***	0.750***	0.646***
		(0.0327)	(0.0243)	(0.0241)	(0.0301)	(0.0581)
Owns land		0.137	0.173	0.173	0.0433	0.248*
		(0.154)	(0.102)	(0.101)	(0.156)	(0.138)
No. of HH members		-0.217***	-0.180***	-0.180***	-0.178***	-0.144***
		(0.0158)	(0.0183)	(0.0180)	(0.0198)	(0.0295)
Urban		0.888***	0.977***	0.982***	1.143***	1.088***
		(0.168)	(0.127)	(0.125)	(0.153)	(0.257)
No. of observations	57523	30674	30674	30674	12286	3218
State FE	NO	NO	YES	YES	YES	YES
Cohort of birth FE	NO	NO	YES	YES	YES	YES
State cohort trend	NO	NO	NO	YES	YES	YES
Adj. R-sq	0.019	0.528	0.570	0.571	0.588	0.530

Note: Standard errors in parentheses, clustered at the state level

Dowry Payments

Table 4: Effect of Inheritance Rights Reform on Real Dowry Paid by Bridal HH: Cohort level Results: No HH Controls

	Hindu	Hindu	Hindu
	(1)	(2)	(3)
Aged 5 or less	1806.9***	-5150.1***	-14749.2***
	(508.1)	(1205.8)	(3691.3)
Aged 6 to 10	5806.8***	-1577.4	-9381.9***
	(508.1)	(1220.1)	(3075.2)
Aged 11 to 15	11478.2***	5037.5**	652.1
	(2193.6)	(1811.3)	(2094.0)
Aged 16 to 20	3585.2	590.5	-431.1
	(2502.3)	(1286.4)	(1214.0)
No. of observations	328	328	328
State FE	NO	YES	YES
Cohort of birth FE	NO	YES	YES
State cohort trend	NO	NO	YES
Adj. R-sq	0.212	0.504	0.538

Note: Standard errors in parentheses, clustered at the state level

Dowry Payments

Table 5: Effect of Inheritance Rights Reform on Real Dowry Paid by Bridal HH: Individual level Results: With HH Controls

	Hindu	Hindu	Hindu
	(1)	(2)	(3)
Aged 5 or less	2102.6***	-6771.8***	-16832.9***
	(519.5)	(1098.8)	(2898.4)
Aged 6 to 10	5925.0***	-3322.0***	-11414.1***
	(578.8)	(1011.9)	(2338.6)
Aged 11 to 15	10597.1***	3289.0*	-808.3
	(3162.6)	(1678.6)	(1369.4)
Aged 16 to 20	4093.2	-1.341	-690.0
	(2527.6)	(893.1)	(716.5)
No. of daughters	-317.8	-299.1	-301.7
	(209.3)	(201.9)	(203.9)
HH income	55.09	61.03	62.22
	(43.75)	(47.46)	(48.27)
Non-Brahmin upper caste	699.9	113.9	153.9
	(642.6)	(676.4)	(670.4)
SC	-756.0	-1110.8	-1239.6
	(615.4)	(756.9)	(749.3)
ST	-1193.8*	-1124.8*	-1235.1*
	(667.1)	(631.2)	(628.4)
OBC	-445.7	-1256.1***	-1330.5***
	(678.1)	(403.7)	(443.1)
Non-classified Hindus	-506.1	-1070.9***	-963.1***
	(621.1)	(305.8)	(280.2)
N	2214	2214	2214
State FE	NO	YES	YES
Cohort of birth FE	NO	YES	YES
State cohort trend	NO	NO	YES
Adj. R-sq	0.108	0.207	0.216

Note: Standard errors in parentheses, clustered at the state level

Age at Marriage

Table 6: Effect of Inheritance Rights Reform on Female Age at Marriage: Cohort level Results: No HH Controls

	All	All	All	Hindu	Non-Hindu
	(1)	(2)	(3)	(4)	(5)
Aged 5 or less	2.862***	0.605**	0.713*	0.817*	-0.174
	(0.272)	(0.230)	(0.392)	(0.451)	(0.312)
Aged 6 to 10	0.830	0.658**	0.398*	0.621**	-0.387**
	(1.352)	(0.258)	(0.224)	(0.294)	(0.176)
Aged 11 to 15	0.947	0.389	0.0636	0.243	-0.653***
	(0.819)	(0.319)	(0.217)	(0.219)	(0.162)
Aged 16 to 20	0.408	0.299**	0.0184	0.0496	-0.173**
	(0.685)	(0.135)	(0.0894)	(0.110)	(0.0805)
No. of observations	2276	2276	2276	931	916
State FE	NO	YES	YES	YES	YES
Cohort of birth FE	NO	YES	YES	YES	YES
State cohort trend	NO	NO	YES	YES	YES
Adj. R-sq	0.022	0.812	0.839	0.919	0.855

Note: Standard errors in parentheses, clustered at the state level

Conclusion

- Greater female inheritance rights may improve female education either through a substitution effect on dowry payments in the marriage market or due to their complementarity with education
- I find that an improvement in female inheritance rights is associated with an average increase of 0.5-1.3 years (11-25%) in the educational attainment of the "younger" cohorts of women who were "exposed" to the reform
- Dowry payments made at time of marriage also declined, but only for these "younger" cohorts of women
- This provides suggestive evidence in favour of the complementarity hypothesis
- I also find that mean age of marriage increased by 0.4-0.7 years (2-4%) for the cohorts exposed to the reform