Gender, Geography and Generations: Intergenerational Educational Mobility in Post-reform India

M. Shahe Emran

Forhad Shilpi

Liberalization, Growth and Inequality in India

- After Liberalization in 1991, India Achieved Impressive Economic Growth and Poverty Reduction
- Inequality Also Increased
- Widespread Perception of significant Increase in Inequality

26.05.2008 16:05

Perception of Inequality

- Billion Dollar Home
- Mega Wedding
- Quarter Million Dollars on Candles

- CONTRAST: Farmers Suicides

Rise in Inequality

- Top Incomes Increased substantially in last two decades after reaching a trough in mid 1980 (Banerjee and Piketty, 2005)
- Rise in Top Incomes Coincided with Economic Liberalization
- Between 1996 and 2008, the wealth holding of Indian Billionaires increased from 0.8 percent of GDP to 23 percent

Rise in Inequality

- Jean Dreze and Amartya Sen (2011):

  "Unprecedented Success" in Economic Growth

  "Extraordinary Failure" in Social Indicators and Improvements in Living Standard of General people

Sources of Inequality

- Million Dollar Question:
- Efficient Inequality?

  Returns to Hard Work and Entrepreneurial Risk Taking, OR
- Inequality Due to Unequal Economic Opportunities: Differential Access to Markets and Education
- Intergenerational mobility: inequality of opportunity => lower mobility

Focus of This Paper

- Provide Estimates of Intergenerational Educational Mobility in Post-reform Period: 1992/93 to 2006
- Absence of Reliable Income data: Attenuation Bias
- Education is an important Indicator of Economic Status

Existing Evidence

- Limited Work on Intergenerational Mobility in India in Economic Literature
- Jalan and Murgai (2008) and Maitra and Sharma (2010): Educational Mobility has Improved Substantially Over Time.
- Jalan and Murgai(2008) Use 1998-99 National Family Health Survey Data, and Maitra and Sharma (2010) : 2005 India Human Development Survey
- Intergenerational Regression Coefficients for Different Age Cohorts
- The IGRC Declined Substantially for Younger Cohorts

Existing Evidence Cont.

- Problems with relying on cohort analysis:
  - Typical household survey has information only on co-resident children
  - Life cycle change in co-residency pattern
- Hnatkovoska, Lahiri and Paul (2011)
- Focus on Caste System
- Education and Occupational Convergence Between Lower Castes and Upper Castes

Contributions of This Paper

- Use different measures of intergenerational mobility: estimate both Intergenerational Correlation and Sibling Correlation in Years of Schooling
- Explore differences across:
  - gender groups
  - Geographical areas
  - Caste

Sibling and Intergenerational Correlations

- Educational attainment: $S_{ij} = \mu + a_i + b_{ij}$
- Variance: $\sigma^2_s = \sigma^2_a + \sigma^2_b$
- Sibling Correlations: $\rho_s = \frac{\sigma^2_a}{(\sigma^2_a + \sigma^2_b)}$
- IGRC and IGC: $S_{ij} = \mu + \beta S^p_i + e_{ij}$

$$\rho_s = \frac{\sigma^2_a}{\sigma^2_s} = \beta^2 \frac{\sigma^2_{sp}}{\sigma^2_s} + \frac{\sigma^2_z}{\sigma^2_s} = (\rho_{IG})^2 + \textit{family factors orthogonal to parental eduction}$$

Interpretation

- Perfectly mobile society => correlation between siblings= correlation between 2 randomly chosen children
- Credit constraint:
  - Higher interest rate faced by the poor =>optimal investment by poor household less than by rich => difference in mean education => overall sibling correlations estimate higher but constant within each sub-population
  - Quantity rationing: choose among children to invest => link between individual ability and education becomes weaker => sib-correlations higher
- Higher SC => immobility

Why Sibling Correlations (SC)?

- A better measure of inequality of opportunity. Includes both IGC, influences of other common family and neighborhood backgrounds.
- Change in co-residency pattern is not an issue in estimation
- SC provides lower bound estimates of family backgrounds effect
- Can be decomposed into IGC, Neighborhood effects

Estimation Methods

- Two Alternatives to Estimate SC:
- Mixed Effects Model: Iterative Generalized LS (Bjorklund and Coauthors)
- Restricted Maximum Likelihood (Mazumder)
- With large Sample Sizes: Estimates are Practically Identical
- Report Estimates from Mixed Effects Model

Data

- NFHS 1992/93 and NFHS 2006
- Focus on New Entrants in the Labor Market: (16-27) Years (alternative 16-20 years)
- Large Sample Sizes: 34585 (1992/93) and 39562 (2006)
- Gender and Geographic Partition: The Smallest Sample Size is 2208 for Women in Less Developed States

	Full Sample				Rural Sample			
	1992/93		2006		1992/93		2006	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Children's Schooling Years								
All Children	7.36	4.51	8.72	3.92	6.28	4.44	7.71	3.94
Brothers	7.63	4.32	8.76	3.77	6.77	4.31	7.97	3.75
Sisters	6.90	4.77	8.67	4.13	5.36	4.54	7.32	4.18
Parent's Schooling Years								
Father	5.33	4.94	6.43	5.09	3.91	4.26	4.90	4.56
Mother	2.63	3.91	3.75	4.58	1.46	2.82	2.17	3.41
Parent's[1]	5.54	4.93	6.82	5.03	4.07	4.27	5.19	4.54

Results 1: Full Sample

	1993 All	2006 All	1993 M	2006 M	1993 W	2006 W
SC	0.642	0.616	0.614	0.624	0.780	0.696
IGC	0.574	0.541	0.541	0.523	0.622	0.559
IGC2/ SC	0.514	0.474	0.476	0.439	0.496	0.449
SC	0.624	0.586	0.598	0.597	0.764	0.675
IGC	0.551	0.505	0.521	0.491	0.594	0.522
IGC2/S C	0.487	0.435	0.454	0.404	0.462	0.404

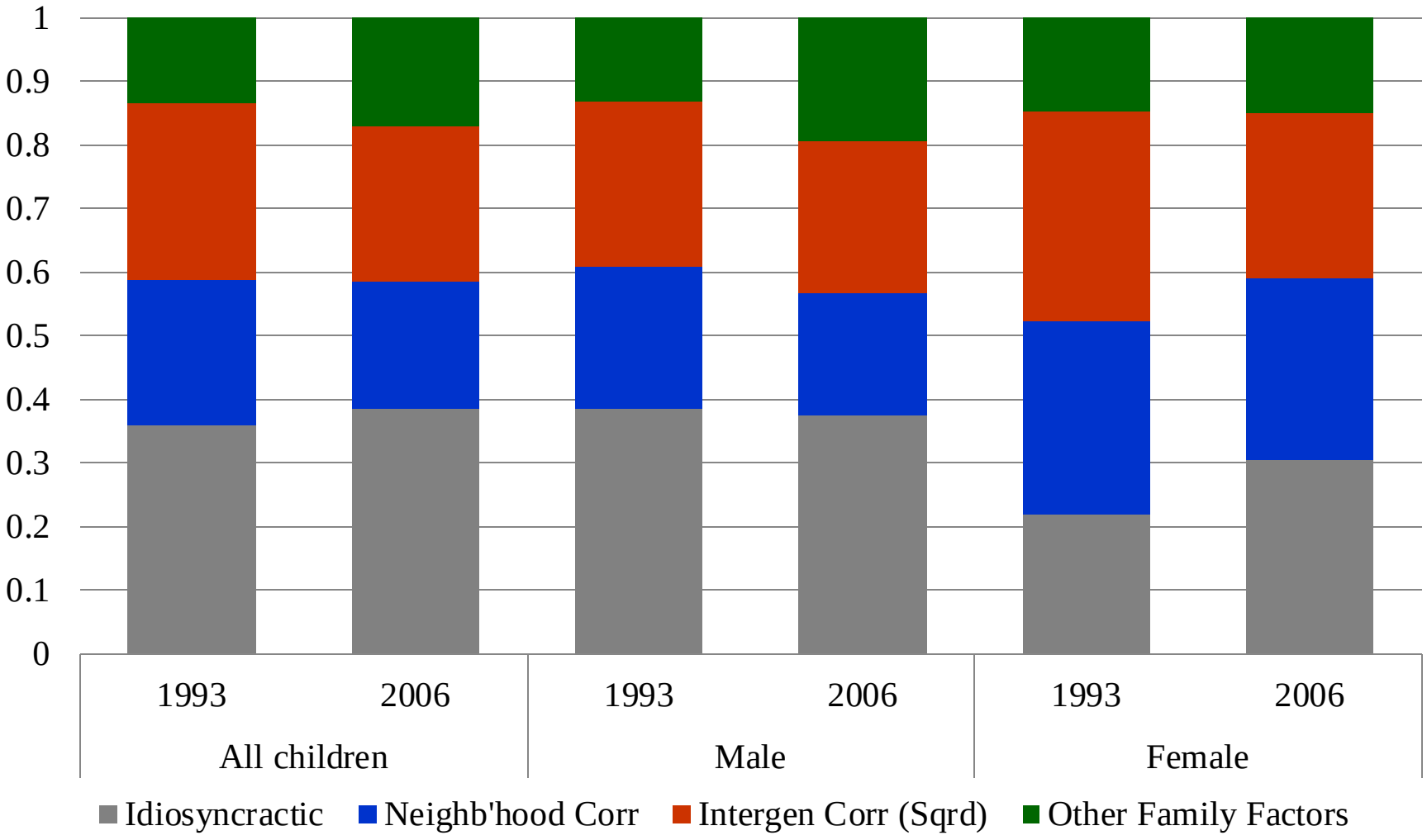
Evidence on Sib Correlations

- Estimates in the range: [0.2-0.6]
- No gender difference
- No neighborhood effect
- Small role of parental education (IGC): less than 20% of variations in children's education

Results Full Sample: Neighborhood FE

	1993 All	2006 All	1993 M	2006 M	1993 W	2006 W
SC	0.395	0.385	0.375	0.406	0.460	0.389
IGC	0.479	0.443	0.474	0.452	0.519	0.455
IGC2/ SC	0.580	0.509	0.599	0.503	0.585	0.532

Figure 1: Decomposition of Variance of Siblings' Years of Schooling: Full sample



Conclusions From The Full Sample

- Overall SC and IGC Declined Marginally from 1993 to 2006
- For Women the Decline is More Substantial
- But the Absolute Magnitudes are Higher for Women
- Even in 2006, the SCs are Very High,

  Comparable or higher the Estimates for Latin American Countries

Conclusions From The Full Sample Cont.

- The Common Family and Neighborhood factors Account for More than 60 percent of Variations in Schooling Attainment
- Caste and Religion Do not Play a Significant Role
- Geographic Location as Measured by Neighborhood Fixed Effects is Very Important; Explains 40 percent of SC for Women and 33 percent for Men
- Parent's education explains about half of SC

Figure 2: Variance Decomposition of Siblings Years of Schooling: Rural Sample

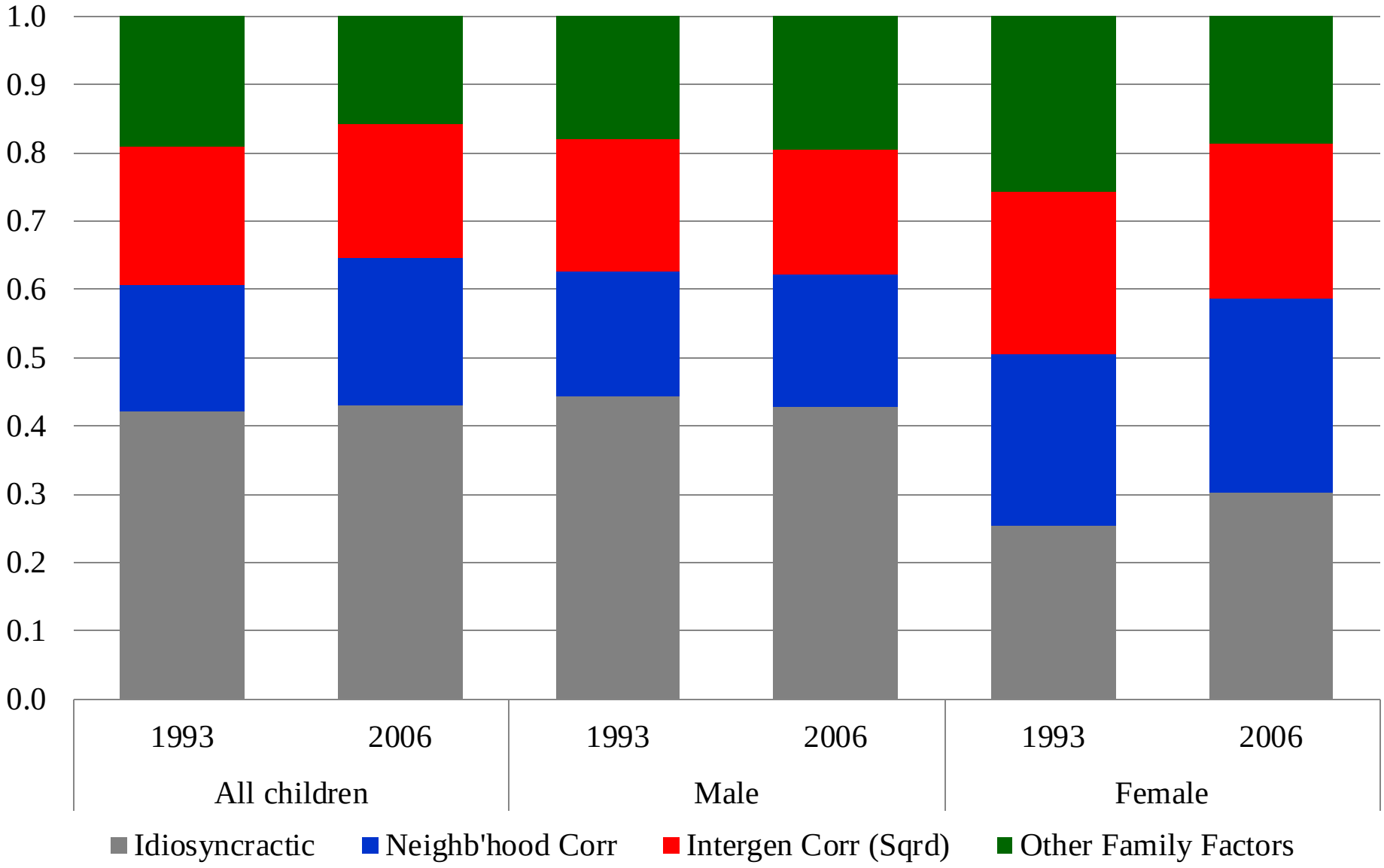
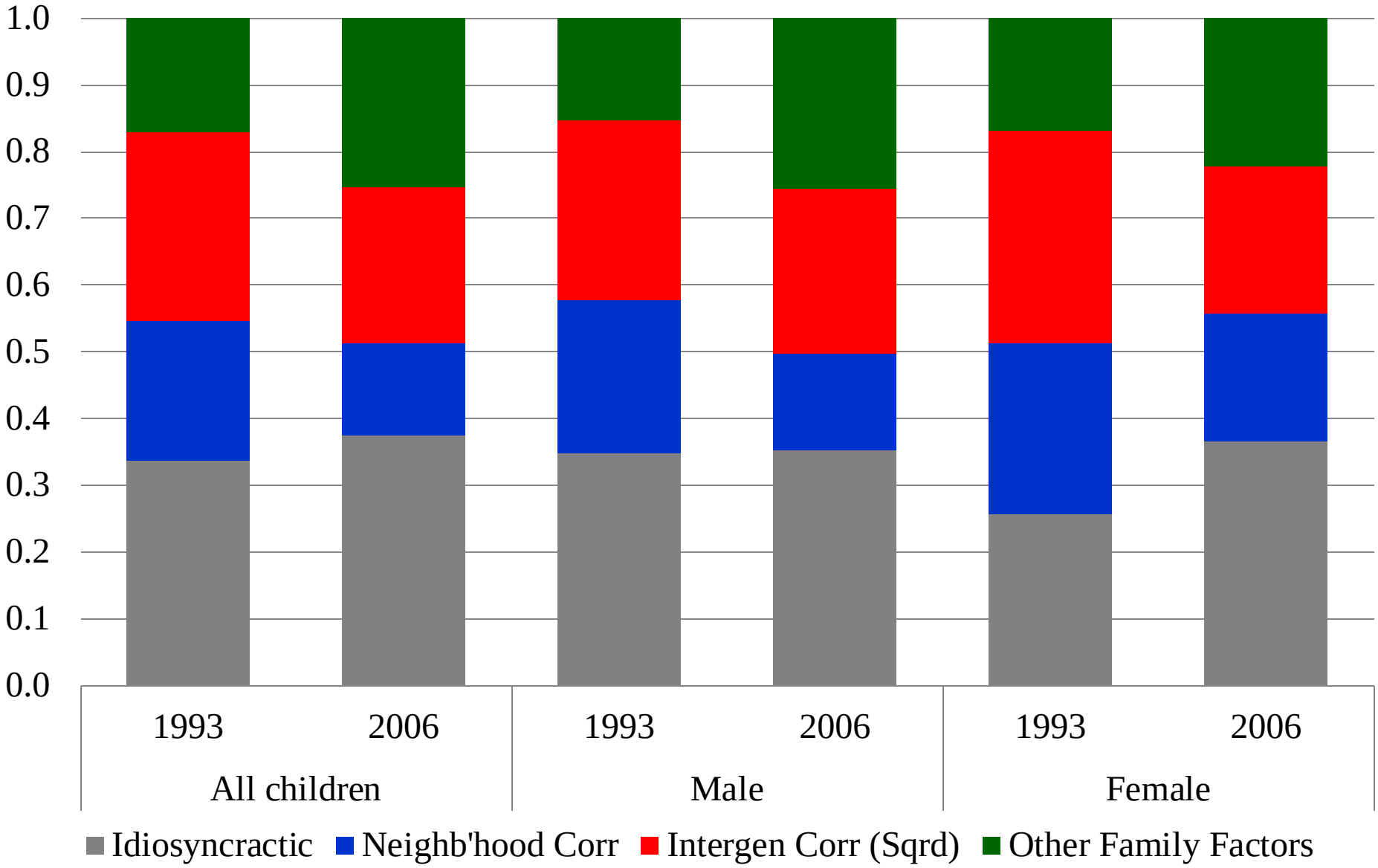


Figure 3: Variance Decomposition of Sibling's Years of Schooling: Urban Sample



Rural-Urban Differences

- SC and IGC Larger in Urban Areas in Both 1992/93 and 2006

- Urban: 1992/93- 2006
  For Men, Both SC and IGC Remained Unchanged
  For Women, Both SC and IGC Declined Substantially

- Rural: 1992/93- 2006
  IGC Remained Nearly Unchanged for Men and Women
  SC Increased for Men, but Declined Moderately for Women

Less Developed Vs. More Developed States

- Large Inter-State Differences in Growth, Poverty and Inequality (World Bank, 2011)
- Less Developed: Bihar, Madhya Pradesh, Rajsthan, Uttar Pradesh, and West Bengal
- SC Similar Across LDS and DS, but IGC Higher in LDS
- 1992/93 – 2006

Men in LDS, Both SC and IGC Increased

Men in DS, SC and IGC Remained Stable

Women in LDS and DS, Both SC and IGC Declined

Caste and Educational Mobility: Does Geography Matter?

- SC Slightly Smaller for Lower Caste Men and Women, Except for Urban Areas in 1992/93
- 1992/93 - 2006
- SC among Upper and Lower Caste Women Declined, but for Men Remained Stable
- Women in Urban Areas Experienced Substantial Decline in SC.

  The Decline is Especially Large for Lower Caste Urban Women (from 0.77 to 0.56) Compared to Upper Caste Urban Women (from 0.72 to 0.66)

Toward An Understanding of the Trends and Patterns

- Puzzle 1: Why Urban Correlations Higher?
- Public Vs. Private Schools
- Differences in Returns to Education
- Dynamic Interactions Between Liberalization, Income and Educational Attainment

Puzzle 2: Curious Case of Urban Women

- Income Effect and Son Preference
- Age at Marriage Higher for Girls in Urban Areas
- Women's Labor Market Participation More Acceptable in Urban Areas
- Toilets in urban schools
- Contraction of public sector jobs for rural women

Puzzle 3: The Doubly Curious Case of Lower Caste Urban Women

- Munshi and Rosenzweig (2006)
- Lower Caste Women Had More Freedom in Occupation Choices
- Lower Caste Men Followed Father's Foot Print and Went to Local Language Schools and Were Channeled into Traditional Occupations
- Lower Caste Women Went into English Medium Schools and Got the Call Center Jobs

Conclusions

- Mixed news:
  - Improvements in average education
  - Improvements for women (low caste urban women)
  - No change for men
- Consistent with trends observed in China and Malaysia during post liberalization period
- Considerable inequality of opportunities
- Likely to be greater if we consider schooling quality as well

Future Work

- Neighborhood correlations
- Causal role of parents