

Supplemental Table 1: State-wise variation in district-level investments in schooling: minimum and maximum district values

| STATE | Improvement grants given to schools | | School infrastructure | | Teacher quantity and quality | | Incentives given to pupils | |
|-------------------|-------------------------------------|-------|-----------------------|-------|------------------------------|-------|----------------------------|-------|
| | min | max | Min | Max | min | Max | min | Max |
| Jammu & Kashmir | -3.53 | 0.27 | -2.36 | -0.39 | -0.65 | 2.60 | -0.24 | 0.61 |
| Himachal Pradesh | 0.77 | 1.49 | -2.38 | 0.97 | 0.02 | 1.78 | 0.57 | 2.62 |
| Punjab | -0.34 | 1.48 | 0.85 | 1.98 | 0.47 | 1.50 | -1.34 | -0.62 |
| Chandigarh | -3.54 | -3.54 | 1.34 | 1.34 | 0.84 | 0.84 | 0.55 | 0.55 |
| Uttaranchal | -0.66 | 1.18 | 0.02 | 2.49 | 0.42 | 0.93 | -1.55 | -0.80 |
| Haryana | 0.20 | 1.66 | 0.05 | 2.45 | 0.33 | 1.76 | 0.98 | 3.39 |
| Delhi | -3.43 | 0.06 | 0.82 | 2.12 | -0.06 | 1.37 | 0.01 | 3.09 |
| Rajasthan | -2.41 | 0.97 | -0.53 | 1.25 | -3.76 | -0.02 | -0.55 | 0.16 |
| Uttar Pradesh | -3.41 | 1.02 | 0.08 | 2.97 | -2.58 | 0.30 | -1.62 | -0.55 |
| Bihar | -2.71 | 1.62 | -2.33 | -0.39 | -3.02 | -0.62 | -2.37 | -0.47 |
| Sikkim | -2.34 | -0.45 | -1.85 | -0.07 | 3.44 | 5.37 | 5.63 | 7.93 |
| Arunachal Pradesh | -4.59 | -0.58 | -6.00 | -1.57 | -2.36 | 2.65 | -0.71 | 1.34 |
| Nagaland | -1.55 | 1.33 | -4.03 | -2.14 | 1.08 | 4.56 | -0.56 | -0.32 |
| Mizoram | -2.49 | 1.08 | -4.41 | -2.41 | 1.74 | 3.50 | -0.56 | -0.49 |
| Tripura | -0.26 | 1.69 | -2.89 | -1.99 | 0.00 | 1.90 | -0.51 | -0.45 |
| Meghalaya | -3.03 | -0.44 | -4.69 | -2.86 | 1.05 | 3.00 | -0.56 | -0.46 |
| Assam | -4.59 | 1.65 | -5.28 | -2.99 | -0.37 | 1.70 | -0.56 | 0.39 |
| West Bengal | -4.59 | 1.62 | -3.46 | -0.66 | -0.62 | 1.17 | -0.43 | 0.81 |
| Jharkhand | -3.92 | 1.27 | -1.55 | -0.05 | -1.85 | 0.25 | -0.80 | -0.47 |
| Orissa | -3.50 | 1.45 | -3.54 | -1.22 | -0.56 | 0.95 | -0.53 | 4.06 |
| Chhatishgarh | -4.59 | 1.11 | -2.60 | -0.87 | -3.54 | -0.22 | -0.79 | 0.27 |
| Madhya Pradesh | -3.94 | 0.57 | -2.00 | 0.90 | -3.72 | 1.31 | -1.85 | 0.48 |
| Gujarat | -1.67 | 1.20 | -1.33 | 1.98 | 0.35 | 2.19 | -2.65 | -0.71 |
| Maharashtra | -2.75 | 1.54 | -0.67 | 2.90 | -0.05 | 1.88 | -0.78 | 3.17 |
| Andhra Pradesh | -1.64 | 1.35 | -1.61 | 2.00 | -0.91 | 0.30 | -0.55 | 1.07 |
| Karnataka | -0.65 | 1.21 | -1.17 | 1.87 | 0.47 | 2.41 | 0.01 | 3.49 |
| Kerala | 1.28 | 1.67 | -0.38 | 1.65 | 1.09 | 2.79 | -0.63 | -0.34 |
| Tamil Nadu | -1.37 | 1.38 | -2.08 | 2.60 | 0.39 | 1.58 | 0.50 | 4.27 |
| Pondicherry | 0.13 | 1.70 | 1.69 | 3.22 | 0.50 | 2.33 | 4.01 | 7.90 |

Supplemental Table 2: Coefficient estimates associated with the marginal effects presented in Table 4 of government investments on four measures of children's educational achievement, children aged 8 – 11 years in India, 2004-05: Results from Heckman probit and ordered probit selection correction models with district border effects.

| | (1) | (2) | (3) | (4) |
|--|---------|---------|---------|-------------|
| | Math | Reading | Writing | Grade level |
| <i>District-level investments in schooling</i> | | | | |
| School infrastructure | 0.01 | 0.00 | 0.09** | -0.05 |
| Improvement grants given to schools | 0.05 | 0.09** | 0.07+ | -0.03 |
| Teacher quantity and quality | 0.04+ | 0.03 | 0.08** | 0.04 |
| Incentives given to pupils | 0.08** | 0.08** | 0.04+ | 0.09** |
| <i>Child characteristics</i> | | | | |
| Age | 0.28** | 0.27** | 0.21** | -0.35** |
| Girl | -0.17** | -0.11** | -0.13** | -0.07+ |
| Age order among household children | -0.02+ | -0.03** | -0.00 | -0.04** |
| <i>Household economic situation</i> | | | | |
| Household assets count | 0.04** | 0.03** | 0.03** | 0.03** |
| Living in poverty | -0.15** | -0.15** | -0.15* | -0.00 |
| Caste/Religion (Ref= Brahmin or High Caste) | | | | |
| OBC (other backward classes) | -0.10** | -0.07 | -0.09 | -0.04 |
| Dalit (scheduled castes) or Adivasi (scheduled tribes) | -0.21** | -0.15** | -0.11+ | -0.09 |
| Muslim | -0.35** | -0.26** | -0.30** | -0.35** |
| Sikh, Jain, or Christian | -0.22** | -0.11 | 0.03 | -0.01 |
| <i>Parents education</i> | | | | |
| Highest years completed by men >age 21 (grades) | 0.02** | 0.02** | 0.01* | 0.02** |
| Highest years completed by women >age 21 (grades) | 0.03** | 0.03** | 0.03** | 0.03** |

Supplemental Table 2 (continued)

School characteristics

School type (Ref= Government)

| | | | | |
|-------------------------|--------|--------|--------|---------|
| Government-aided | 0.29** | 0.05 | -0.06 | -0.12 |
| Private | 0.29** | 0.24** | 0.31** | -0.38** |
| Other | 0.11 | 0.07 | 0.16 | -0.30+ |
| Distance to school (km) | 0.00 | 0.01** | 0.00 | 0.04* |

District characteristics

| | | | | |
|--|-------|--------|-------|-------|
| Share urban | -0.00 | 0.00* | 0.00 | 0.00 |
| Sex ratio, females to males | -0.00 | 0.00** | 0.00 | 0.00* |
| % of population scheduled caste or scheduled tribe | -0.17 | 0.29+ | -0.09 | -0.01 |
| Decadal population growth (log) | 0.00 | 0.00 | 0.00* | 0.00 |

Region (Ref=North)

| | | | | |
|-----------|--------|---------|--------|---------|
| Central | -0.12 | 0.01 | -0.01 | -0.10 |
| East | 0.32** | 0.01 | 0.56** | -0.44** |
| Northeast | 0.39* | 0.13 | 6.24** | 0.43 |
| West | -0.16 | -0.07 | 0.07 | 0.47** |
| South | -0.13 | -0.39** | 0.13 | 0.31* |

Note: Data Source IHDS, 2005 and DISE 2004-05 Each column presents the coefficient estimates for different determinants of academic achievement. Columns 1 and 2 are from Heckman ordered probit models of reading and math skills and columns 3 and 4 are from Heckman probits models of being able to write and being at or above grade level. The sample is limited to districts adjacent to state borders. The specifications include a full set of border pair fixed effects as well as latitude and longitude and region dummies. Additional control variables include the share of the district that is urban, age, gender, parental education, poverty, student's birth order, caste of the students and dummies for whether the student attends an independent private school or publicly-funded private schools.

+,*,** indicate Z-scores for a two-sided test of the underlying parameter estimates are significantly different from zero at the 10, 5 and 1 percent level respectively when using standard errors calculated by clustering at the district level. Tables with all covariates and standard errors available from the authors upon request.

Supplemental Table 3: Only children enrolled in government schools, aged 8 – 11 years in India, 2004-2005 from Heckman probit and ordered probit selection correction models with district border effects (n=6,982) coefficient estimates

| | (1) | (2) | (3) | (4) |
|---|--------|---------|---------|-------------|
| District-level investments in schooling | Math | Reading | Writing | Grade level |
| School infrastructure | 0.01 | -0.01 | 0.06+ | -0.07* |
| Improvement grants given to schools | 0.06 | 0.10** | 0.10* | -0.01 |
| Teachers | 0.03 | 0.04 | 0.10** | 0.06 |
| Incentives given to pupils | 0.10** | 0.11** | 0.05 | 0.06+ |

Note: Data Source IHDS, 2005 and DISE 2004-2005. Models include border fixed effects, latitude and longitude, region dummies, the share of the district that is urban, and controls for age, gender, parental education, poverty, birth order, caste of the students and dummies for whether the student attends an independent private school or publicly-funded private schools, and missing value dummies. + p < 0.1; *p < 0.05; **p < 0.01 Tables with all covariates and standard errors available from the authors upon request.

Supplemental Table 4: Coefficient estimates of children's achievement and district-level investments in schooling, children aged 8 – 11 years in India, 2004-2005: Results from survey-adjusted ordered logistic (for math and reading) and logistic regressions (for writing and grade level) without Heckman selection correction with border fixed effects. (n=7,338)

| | (1) | (2) | (3) | (4) |
|---|--------|---------|---------|-------------|
| District-level investments in schooling | Math | Reading | Writing | Grade level |
| School infrastructure | -0.01 | -0.04 | 0.09 | -0.06 |
| Improvement grants given to schools | 0.10* | 0.12** | 0.16** | -0.05 |
| Teacher quantity and quality | 0.11* | 0.04 | 0.13* | 0.05 |
| Incentives given to pupils | 0.15** | 0.12** | 0.07 | 0.21** |

Note: Data Source IHDS, 2005 and DISE 2004-05. *p < .05; **p < .01
 Statistics are adjusted for survey design. Models control for individual, household, school, and other district variables region and missing values.