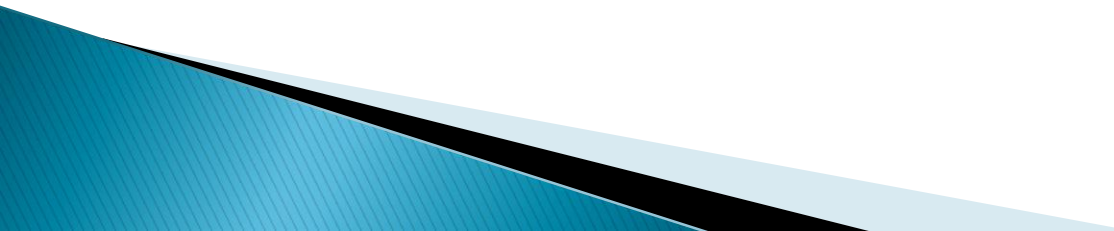


# Equity of Human Capital Accumulation and Sustained Economic Growth – Lessons from China for India

Dr. Lakshmi K. Raut  
Social Security Administration  
Washington, DC, USA

# Disclaimer

- ▶ Dr. Lakshmi K. Raut is an Economist at the Social Security Administration (SSA). This paper is prepared at his personal time, and the analysis and conclusions expressed are those of the author and not necessarily those of SSA.
- 

# Main Issues

- ▶ China in 1980 and India in 1991 began reforms and trade liberalization. Both economies started growing fast.
- ▶ While China continues its high growth more than 30 years now, India's growth rates were high for a few years but dropped dramatically in recent years. What can India learn from China's historically unprecedented sustaining high growth performance?
- ▶ China drew in large flow of Direct Foreign Investment (DFI) and invested heavily in agriculture and shifted later to labor-intensive manufacturing export sector.
- ▶ India likes to follow the same path. What can India learn from China for that to happen?

# Main issues (continued)

- ▶ China could draw-in large amounts of DFI because by the 1980 and in later periods, China had:
  - (1) A large pool of educated labor force (almost all had basic education due to cultural revolution under Mao regime and continued later to acquire more technical education needed by its industrialization process.
  - (2) Good infrastructure
  - (3) Preferential lower tax rates for direct foreign investors.
- ▶ India needs to improve in all (1)–(3) areas. I will, however, focus on (1) above, i.e.:
- ▶ How can India increase its pool of talented technically educated labor force to the global standard to achieve growth with equity in living standards?

# Main issues (continued)

- ▶ For centuries, China had equal opportunity in education, i.e., everyone had equal chance, until maybe very recently.
- ▶ India on the other hand, starting from the British Raj period, an elite education system. Education was meant for a select few elite class. It still continues to be so, at least for higher education, – not intentionally but effectively. Most of the poor, minority ethnic groups, children in the rural areas do not get to higher education.
- ▶ News media reports time and again that the multinational companies and IT companies in India cannot find technically competent workers to hire, even though there is a large pool of engineers, management students are unemployed. The IITs, IIMs and especially private Engineering and Management institutions are not producing talented skilled workers that are competent at the international skill level.

# Main issues (continued)

- ▶ The Source of this problem starts in fact at early ages: a large proportion of the population in rural area and from disadvantaged families develop cognitive or educational handicaps at the Elementary school level, as will be seen in our data.
- ▶ A better known international study (Programme for International Student Assessment, known as PISA) of 74 OECD and developing countries on test scores of 15 year old school children find that China and other Asian countries are on the top, even the US is below them, and India is at the bottom (India ranks 73, just above Kyrgyzstan).
- ▶ Let us examine what factors determine better cognitive achievements of children from various socio-economic backgrounds, using the 2005 India Human Development Survey dataset.

# Dataset

- ▶ In joint collaboration, NCAER and the University of Maryland collected a nationally representative sample of 41,554 households in 1,503 villages and 971 urban neighborhoods.
- ▶ Short assessments of reading, writing, and arithmetic skills for children aged 8–11 years were conducted. For reading it has data on
  - 1. Cannot read at all.
  - 2. Can read letters but not form words.
  - 3. Can put letters together to read words but not read whole sentences.
  - 4. Can read a short paragraph for 2–3 sentences but not fluent enough to read a whole page.
  - 5. Can read a one–page short story.
- ▶ For Math it has data on
  - 1. Cannot read numbers above 10.
  - 2. Can read numbers between 10 and 99 but not able to do more complex number manipulation.
  - 3. Can subtract a two–digit number from another.
  - 4. Can divide a number between 100 and 999 by another number between 1 and 9.
- ▶ For writing it has data on
  - Can write a paragraph with two or less mistakes.
  - Cannot write.
- ▶ Dataset has test scores on **about 11,700 children.**

# Results

- ▶ In the next slide you can see that children from rural area and from the bottom 25 percent of the household monthly per capita consumption (MPC) perform very poorly in all three tests.
- ▶ As determinants of Test scores, I used an ordered Logit model with covariates:
  - family characteristics – log of MPC, highest grade attained by adults in the household, amount spent on school fees, books, private tuition of the child)
  - school characteristics – Teacher–Student Ratio, school’s infrastructure, provision of free mid–day lunch, public vs private and English Medium vs local language school.



## Main Findings and Policy Suggestions

- ▶ **(1) Family resources:** Family income and education level of the adults in the family and the amount spent on a child's education are, as expected, have always significant positive effects for all test scores with few exceptions for the children from the top 25 percent income group.
- ▶ **(2) Free mid-day lunch** has positive effects for reading and writing test scores for the children in rural and poor families but it has no effect on Math scores.
- ▶ **(3) Public school** has positive effects on test scores of the disadvantaged kids from the rural and bottom 25 percent income group for most test scores, but it has mostly negative effects on the test scores of the children from top 25 percent incomes group.
- ▶ **(4) School Quality:** Children going to schools of lower class sizes, better infrastructure and where teachers are formally evaluated for their teaching effectiveness have significantly positive effects on almost all test scores for the disadvantaged children.
- ▶ **Policy Implication:** Improve schools along the lines in (4) above.

**Table1 :Reading, writing and math score distributions of Elementary school children of ages 6–11 for various groups (percent)**

	Overall	Rural	Urban	Bottom 25 percent	Top 25 percent
<u>Reading: Can read</u>					
Story	35.10	32.51	43.53	23.33	51.86
Paragraph	21.63	20.81	24.28	20.37	21.91
Word	20.47	21.51	17.12	24.21	15.00
Letter	13.27	14.42	9.54	17.06	7.56
Cannot Read	9.52	10.75	5.53	15.03	3.66
<u>Math: Can do</u>					
Division	23.09	20.47	31.62	14.08	36.66
Subtraction	27.02	25.13	33.18	21.64	33.63
Number	32.19	34.61	24.34	36.68	22.64
Cannot	17.70	19.80	10.86	27.61	7.07
<u>Writing skills: Writes with</u>					
2 or less mistakes	68.77	65.54	79.25	57.43	82.05
Cannot write	31.23	34.46	20.75	42.57	17.95

**Table 2: Determinants of Reading scores of Elementary school children of ages 6–11 for various groups (ordered Logit Model)**

Variables	Overall	Rural	Urban	Households MPC	
				Bottom 25%	Top 25%
Intercept (Story)	-3.944 (16.92)	-3.890 (14.89)	-4.153 (7.63)	-3.952 (7.27)	-1.911 (2.05)
Intercept (Paragraph)	-2.946 (12.72)	-2.930 (11.28)	-3.015 (5.57)	-2.939 (5.42)	-0.873 (0.94)
Intercept (Word)	-1.890 (8.19)	-1.876 (7.25)	-1.929 (3.57)	-1.847 (3.42)	0.230 (0.25)
Intercept(Letter)	-0.787 (3.41)	-0.780 (3.02)	-0.757 (1.39)	-0.797 (1.47)	1.469 (1.57)
Family: log of MPC	0.416 (11.82)	0.380 (9.60)	0.470 (5.64)	0.293 (3.25)	0.174 (1.36)
Family: Highest Education level of adults (21+)	0.087 (20.71)	0.087 (18.37)	0.086 (9.22)	0.085 (11.65)	0.096 (8.61)
School: English Medium	-0.217 (2.77)	-0.337 (3.15)	-0.024 (0.20)	-0.067 (0.31)	-0.208 (1.46)
School: Public	0.075 (1.05)	0.086 (0.97)	0.237 (1.84)	0.511 (4.14)	-0.483 (2.52)
School Cost (total)*1000	0.148 (9.25)	0.244 (9.76)	0.085 (4.25)	0.493 (8.22)	0.032 (1.78)
School: Student-Teacher Ratio	-0.005 (7.67)	-0.006 (7.67)	-0.001 (0.30)	-0.005 (4.94)	-0.004 (1.83)
School: Free Mid-Day Lunch	0.239 (3.62)	0.285 (3.62)	0.115 (0.91)	0.278 (2.49)	0.319 (1.77)
School: Formally Evaluates Teachers	0.109 (2.69)	0.147 (3.20)	-0.060 (0.68)	0.210 (3.11)	0.171 (1.52)
School Infrastructure: Principal Component 1	5.051 (4.47)	3.501 (2.70)	9.788 (3.91)	4.872 (2.44)	4.864 (1.72)

Notes: Absolute value of t-statistics are in parentheses

# Table 3: Determinants of Math scores of Elementary school children of ages 6–11 for various groups

Variables	Overall	Rural	Urban	Households MPC	
				Bottom 25%	Top 25%
Intercept (Division)	-5.336 (22.56)	-5.337 (20.02)	-4.690 (8.74)	-6.512 (11.28)	-2.186 (2.44)
Intercept (Subtraction)	-3.954 (16.90)	-4.022 (15.24)	-3.094 (5.82)	-5.172 (9.01)	-0.650 (0.73)
Intercept(Number)	-2.231 (9.62)	-2.275 (8.71)	-1.429 (2.69)	-3.470 (6.09)	1.180 (1.31)
Family: log of MPC	0.533 (15.05)	0.510 (12.76)	0.461 (5.64)	0.639 (6.70)	0.111 (0.91)
Family: Highest Education level of adults (21+)	0.083 (19.55)	0.081 (17.06)	0.086 (9.23)	0.073 (9.83)	0.096 (8.75)
School: English Medium	-0.077 (1.01)	-0.221 (2.09)	0.141 (1.24)	0.139 (0.63)	-0.270 (1.96)
School: Public	0.234 (3.24)	0.232 (2.62)	0.411 (3.21)	0.658 (5.17)	-0.360 (1.95)
School Cost (total)*1000	0.141 (9.40)	0.225 (9.78)	0.099 (5.21)	0.547 (9.12)	0.060 (3.16)
School: Student-Teacher Ratio	-0.002 (2.91)	-0.002 (2.17)	-0.002 (1.21)	-0.001 (1.21)	0.000 (0.03)
School: Free Mid-Day Lunch	-0.053 (0.80)	-0.049 (0.62)	-0.005 (0.04)	0.005 (0.04)	-0.017 (0.10)
School: Formally Evaluates Teachers	0.121 (2.93)	0.188 (4.02)	-0.144 (1.63)	0.236 (3.38)	0.082 (0.74)
School Infrastructure: Principal Component 1	6.247 (5.50)	5.234 (4.01)	9.368 (3.75)	8.159 (3.98)	3.968 (1.43)

Notes: Absolute value of t-statistics are in parentheses

**Table 3: Determinants of Writing scores of Elementary school children of ages 6–11 for various groups**

Variables	Overall	Rural	Urban	Households MPC	
				Bottom 25%	Top 25%
Intercept	-2.882 (9.83)	-2.937 (9.15)	-2.165 (2.83)	-4.482 (6.77)	-0.995 (0.72)
Family: log of MPC	0.471 (10.42)	0.461 (9.35)	0.432 (3.61)	0.684 (6.18)	0.233 (1.22)
Family: Highest Education level of adults (21+)	0.076 (14.72)	0.074 (13.00)	0.083 (6.66)	0.070 (8.05)	0.092 (6.22)
School: English Medium	0.187 (1.60)	0.155 (1.03)	0.215 (1.12)	0.075 (0.25)	0.071 (0.30)
School: Public	0.027 (0.30)	-0.076 (0.71)	0.363 (2.04)	0.316 (2.14)	-0.816 (2.93)
School Cost (total)*1000	0.186 (6.89)	0.182 (5.20)	0.176 (4.09)	0.502 (5.98)	0.074 (1.90)
School: Student-Teacher Ratio	-0.001 (1.19)	0.000 (0.05)	-0.006 (2.54)	-0.002 (1.76)	-0.001 (0.31)
School: Free Mid-Day Lunch	0.277 (3.34)	0.322 (3.37)	0.267 (1.51)	0.388 (2.91)	0.517 (2.00)
School: Formally Evaluates Teachers	0.187 (3.74)	0.228 (4.14)	-0.026 (0.22)	0.260 (3.28)	0.088 (0.56)
School Infrastructure: Principal Component 1	5.412 (3.82)	3.756 (2.37)	10.724 (3.14)	6.735 (2.83)	0.453 (0.11)

Notes: Absolute value of t-statistics are in parentheses

▶ Thank You