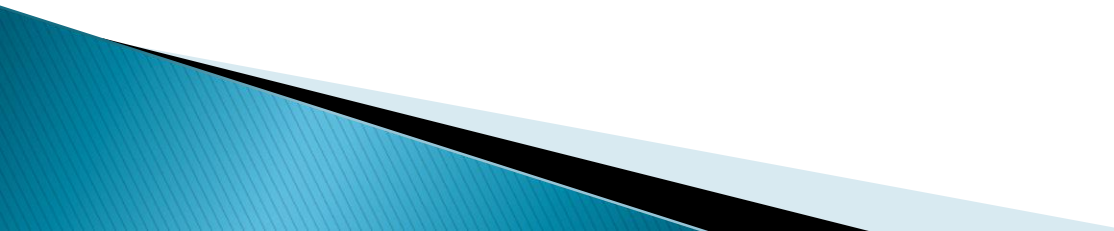# Globalization, Quality and Inequity in Education and Economic Growth – Lessons for India from China

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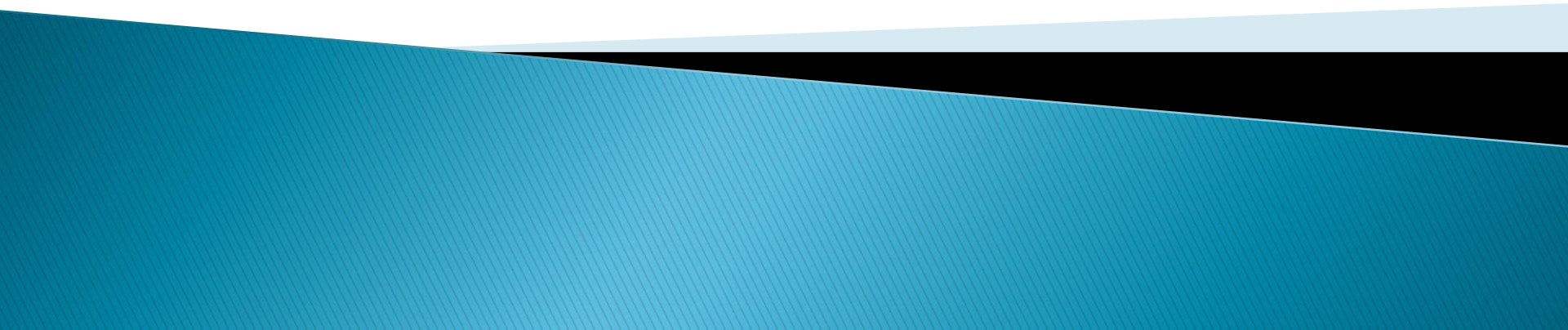Washington, DC, USA

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

- Initial Conditions in 1950 for China and India:
- China in 1980 and India in 1991 began reforms and trade liberalization. Both economies started growing fast. India stopped growing fast since 2008.
- Is India fallen into MIT (Middle Income Trap)?
- PISA (2009): Shanghai–China raced to the top, and TN-India, Himachal Pradesh – India plummet to the bottom, just above Kyrgyzstan.
- 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.

Sources of Growth and Capital Flow

- What determines sustained high growth: Trade liberalization, FDI is important.
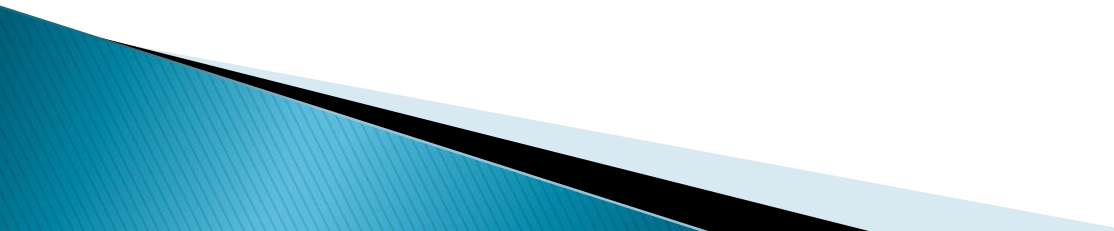- Where does FDI flow? –role of education

Main issues (contined)

- China could draw-in large amounts of FDI because by the1980 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?
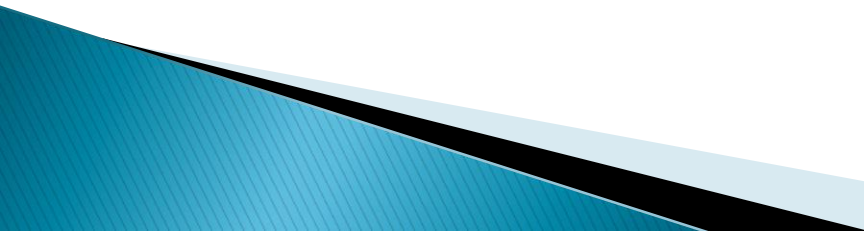
Main issues - Inequality

- For centuries, China had equal opportunity in education, i.e., everyone had equal chance, until maybe very recently.
- However, introduction of "*hukou*" (Family Registration) system which is like caste system or rural serfdom. Decentralization of school financing led to disparities.
- 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.
- E-learning/Distant learning – have not been quite successful yet.

Shanghai-China's techniques

- Teacher is the main source of student success. So they focused on careful selection of teachers, train them - High quality Teacher Training
- Teachers spend more time and resources for low performing students, NOT abandon them.
- Grouping low performing schools with high performing schools to improve teaching techniques.

Statistical learning within India

- 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. See Heckman-Raut (2013)

- 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.

Variables

- 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:
  - <u>family characteristics</u> – log of MPC, highest grade attained by adults in the household, amount spent on school fees, books, private tuition of the child)
  - <u>school characteristics</u> – 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)<u>Family reources</u>: 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)<u>**Free mid-day lunch**</u> 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) <u>**Public school**</u> 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
Reading: Can read					
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
Math: Can do					
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
Writing skills: Writes with					
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	-3.890	-4.153	-3.952	-1.911
	(16.92)	(14.89)	(7.63)	(7.27)	(2.05)
Intercept (Paragraph)	-2.946	-2.930	-3.015	-2.939	-0.873
	(12.72)	(11.28)	(5.57)	(5.42)	(0.94)
Intercept (Word)	-1.890	-1.876	-1.929	-1.847	0.230
	(8.19)	(7.25)	(3.57)	(3.42)	(0.25)
Intercept(Letter)	-0.787	-0.780	-0.757	-0.797	1.469
	(3.41)	(3.02)	(1.39)	(1.47)	(1.57)
Family: log of MPC	0.416	0.380	0.470	0.293	0.174
	(11.82)	(9.60)	(5.64)	(3.25)	(1.36)
Family: Highest Education level of adults (21+)	0.087	0.087	0.086	0.085	0.096
	(20.71)	(18.37)	(9.22)	(11.65)	(8.61)
School: English Medium	-0.217	-0.337	-0.024	-0.067	-0.208
	(2.77)	(3.15)	(0.20)	(0.31)	(1.46)
School: Public	0.075	0.086	0.237	0.511	-0.483
	(1.05)	(0.97)	(1.84)	(4.14)	(2.52)
School Cost (total)*1000	0.148	0.244	0.085	0.493	0.032
	(9.25)	(9.76)	(4.25)	(8.22)	(1.78)
School: Student-Teacher Ratio	-0.005	-0.006	-0.001	-0.005	-0.004
	(7.67)	(7.67)	(0.30)	(4.94)	(1.83)
School: Free Mid-Day Lunch	0.239	0.285	0.115	0.278	0.319
	(3.62)	(3.62)	(0.91)	(2.49)	(1.77)
School: Formally Evaluates Teachers	0.109	0.147	-0.060	0.210	0.171
	(2.69)	(3.20)	(0.68)	(3.11)	(1.52)
School Infrastructure: Principal Component 1	5.051	3.501	9.788	4.872	4.864
	(4.47)	(2.70)	(3.91)	(2.44)	(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	-5.337	-4.690	-6.512	-2.186
	(22.56)	(20.02)	(8.74)	(11.28)	(2.44)
Intercept (Subtraction)	-3.954	-4.022	-3.094	-5.172	-0.650
	(16.90)	(15.24)	(5.82)	(9.01)	(0.73)
Intercept(Number)	-2.231	-2.275	-1.429	-3.470	1.180
	(9.62)	(8.71)	(2.69)	(6.09)	(1.31)
Family: log of MPC	0.533	0.510	0.461	0.639	0.111
	(15.05)	(12.76)	(5.64)	(6.70)	(0.91)
Family: Highest Education level of adults (21+)	0.083	0.081	0.086	0.073	0.096
	(19.55)	(17.06)	(9.23)	(9.83)	(8.75)
School: English Medium	-0.077	-0.221	0.141	0.139	-0.270
	(1.01)	(2.09)	(1.24)	(0.63)	(1.96)
School: Public	0.234	0.232	0.411	0.658	-0.360
	(3.24)	(2.62)	(3.21)	(5.17)	(1.95)
School Cost (total)*1000	0.141	0.225	0.099	0.547	0.060
	(9.40)	(9.78)	(5.21)	(9.12)	(3.16)
School: Student-Teacher Ratio	-0.002	-0.002	-0.002	-0.001	0.000
	(2.91)	(2.17)	(1.21)	(1.21)	(0.03)
School: Free Mid-Day Lunch	-0.053	-0.049	-0.005	0.005	-0.017
	(0.80)	(0.62)	(0.04)	(0.04)	(0.10)
School: Formally Evaluates Teachers	0.121	0.188	-0.144	0.236	0.082
	(2.93)	(4.02)	(1.63)	(3.38)	(0.74)
School Infrastructure: Principal Component 1	6.247	5.234	9.368	8.159	3.968
	(5.50)	(4.01)	(3.75)	(3.98)	(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	-2.937	-2.165	-4.482	-0.995
	(9.83)	(9.15)	(2.83)	(6.77)	(0.72)
Family: log of MPC	0.471	0.461	0.432	0.684	0.233
	(10.42)	(9.35)	(3.61)	(6.18)	(1.22)
Family: Highest Education level of adults (21+)	0.076	0.074	0.083	0.070	0.092
	(14.72)	(13.00)	(6.66)	(8.05)	(6.22)
School: English Medium	0.187	0.155	0.215	0.075	0.071
	(1.60)	(1.03)	(1.12)	(0.25)	(0.30)
School: Public	0.027	-0.076	0.363	0.316	-0.816
	(0.30)	(0.71)	(2.04)	(2.14)	(2.93)
School Cost (total)*1000	0.186	0.182	0.176	0.502	0.074
	(6.89)	(5.20)	(4.09)	(5.98)	(1.90)
School: Student-Teacher Ratio	-0.001	0.000	-0.006	-0.002	-0.001
	(1.19)	(0.05)	(2.54)	(1.76)	(0.31)
School: Free Mid-Day Lunch	0.277	0.322	0.267	0.388	0.517
	(3.34)	(3.37)	(1.51)	(2.91)	(2.00)
School: Formally Evaluates Teachers	0.187	0.228	-0.026	0.260	0.088
	(3.74)	(4.14)	(0.22)	(3.28)	(0.56)
School Infrastructure: Principal Component 1	5.412	3.756	10.724	6.735	0.453
	(3.82)	(2.37)	(3.14)	(2.83)	(0.11)

Notes: Absolute value of t-statistics are in parentheses