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The progress of school education in India

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by

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Abstract

This paper provides an overview of school education in India. Firstly, it places India's educational achievements in international perspective, especially against countries with which it is now increasingly compared such as BRIC economies in general and China in particular. India does well relative to Pakistan and Bangladesh but lags seriously behind China and the other BRIC countries, especially in secondary school participation and youth literacy rates. Secondly, the paper examines schooling access in terms of enrolment and school attendance rates, and schooling quality in terms of literacy rates, learning achievement levels, school resources and teacher inputs. The substantial silver lining in the cloud of Indian education is that its primary enrolment rates are now close to universal. However, despite progress, attendance and retention rates are not close to universal, secondary enrolment rates are low, learning achievement levels are seriously low and teacher absenteeism is high, signalling poor quality of schooling. Thirdly, the paper examines the role of private schooling in India. While more modest in rural areas, the recent growth of private schooling in urban areas has been nothing short of massive, raising questions about growing inequality in educational opportunity. Evidence suggests that private schools are both more effective in imparting learning and do so at a fraction of the unit cost of government schools, their cost advantage being because they can pay market wages while government school teachers' bureaucratically set minimum wages have large rents in them which teacher unions have fought hard to secure. Lastly, the paper discusses some major public education initiatives such as *Sarva Shiksha Abhiyan*, mid-day meal and para-teacher schemes. The impacts of these massive interventions (and their sub-components) on children's schooling outcomes need to be rigorously evaluated to learn about the cost-effectiveness of alternative interventions for better future policy making. However, the existence of some of these initiatives and the introduction of the 2% education cess to fund them suggests increased public commitment to school education and, together with increased NGO education activity, gives grounds for optimism about the future, even though many challenges remain.

JEL classifications: I20, I21

Key words: School education, India

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The progress of school education in India

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1. Introduction

India's recent economic growth rates have generated much optimism about its general social and economic development. But has there been accompanying progress in indicators of educational outcomes? How good are Indian educational achievements in relation to China's, the country with which it is increasingly compared? What are the most significant developments in Indian school education and what has been the impact of various education policy initiatives? This paper presents a critical overview of the school education sector in India using newly released data and a survey of existing studies.

The story of India's educational achievements is one of mixed success. On the down side, India has 22 per cent of the world's population but 46 per cent of the world's illiterates, and is home to a high proportion of the world's out of school children and youth. On the positive side, it has made encouraging recent progress in raising schooling participation. While the base of India's education pyramid may be weak, it has emerged as an important player in the worldwide information technology revolution on the back of substantial (absolute) numbers of well educated computing and other graduates. This paper provides an assessment of the current situation and recent progress of school education.

2. Indian educational achievements in international perspective

Table 1 presents India's adult and youth literacy rates alongside equivalent figures for its regional neighbours, as well as for countries in the BRIC grouping (Brazil, Russian Federation, India and China). While India does well compared to Bangladesh and Pakistan, it lags substantially behind all the other BRIC countries and Sri Lanka. Indeed it is striking that its overall adult literacy rate is similar to and female adult literacy rate lower than that of Sub Saharan Africa. The comparison with China is of particular interest and it shows India to be at a considerable educational disadvantage: India's adult literacy in the early 2000s was wholly 30 percentage points below China's. Even

focusing more narrowly at only the youth literacy rates, India's disadvantage with respect to China is a large 22.5 percentage points.

India's disadvantage *vis a vis* other countries in primary school participation rates is much smaller compared to that for youth literacy rates, since 93.4% of Indian elementary school age children were enrolled in school in 2006 according to ASER survey (Pratham, 2007). However, as Figure 1 shows, at the secondary school level, India is again at a large disadvantage with respect to all three other BRIC countries where secondary enrolment rates are far above those predicted for countries at their levels of per capita GDP. Brazilian and Russian secondary school net enrolment rates are 27 percentage points higher than India's. Figure 2 shows that India is more than 30 years behind China in terms of the proportion of the population with completed secondary and post secondary schooling.

Table 1
Adult and youth literacy rates

	Adult Literacy rates (15+ year olds)			**Youth Literacy rates (15-24 year olds)**		
	Total	male	female	Total	male	female
Bangladesh	42.6	51.7	33.1	51.5	59.4	43.1
Pakistan	49.9	63.0	36.0	65.5	75.8	54.7
Sri Lanka	90.7	92.3	89.1	95.6	95.1	96.1
India	61.0	73.4	47.8	76.4	84.2	67.7
China	90.9	95.1	86.5	98.9	99.2	98.5
Brazil	88.6	88.4	88.8	96.8	95.8	97.9
Russian Federation	99.4	99.7	99.2	99.7	99.7	99.8
World	82.2	87.2	77.3	87.3	90.5	84.1
Developing countries	76.8	83.5	70.1	84.8	88.6	80.9
Sub-Saharan Africa	61.2	69.5	53.3	72.9	77.8	68.3

Source: 2000-2004 data from the Education for All Global Monitoring Report, UNESCO (2006).

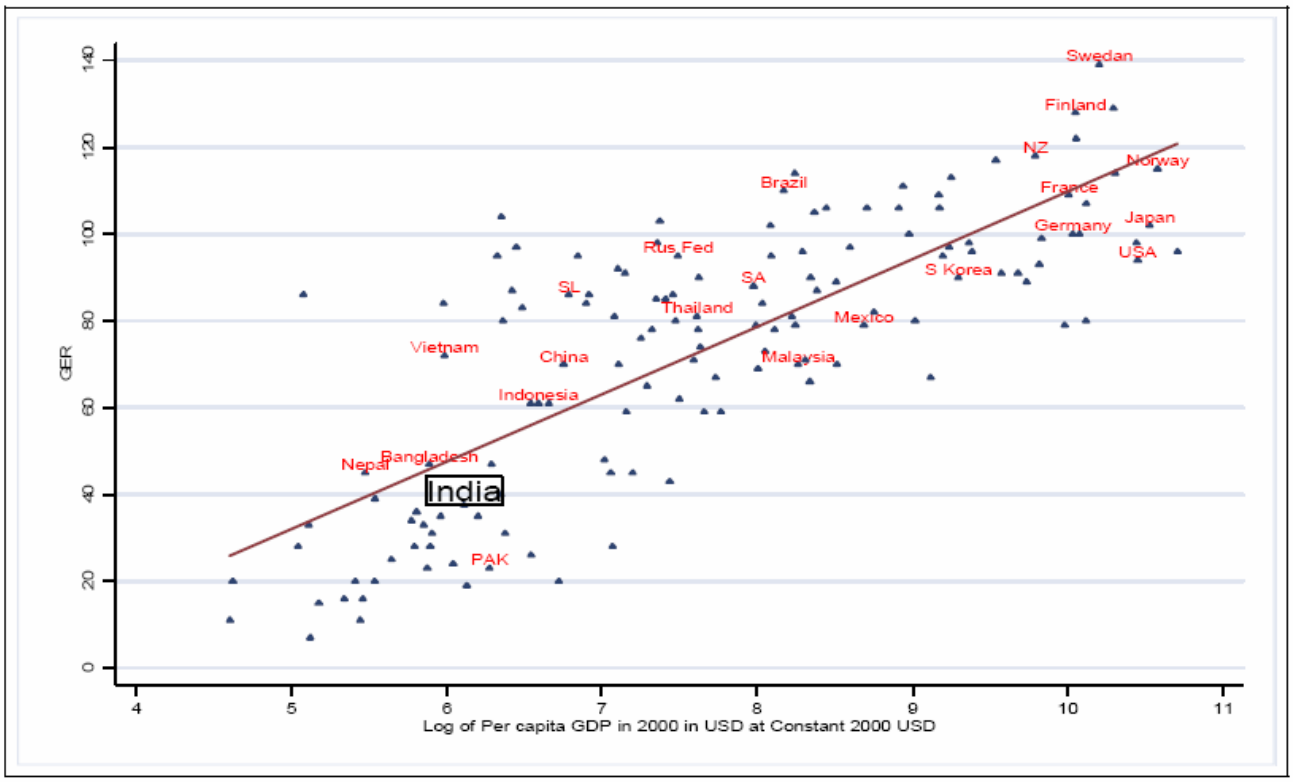


Figure 1

Cross-country comparison of gross enrolment ratios in Secondary Education and per capita GDP, 2000

Source: World Bank (2006) ; calculation is based on MHRD *Selected Education Statistics* for India and World Bank's Education Statistics Database for other countries.

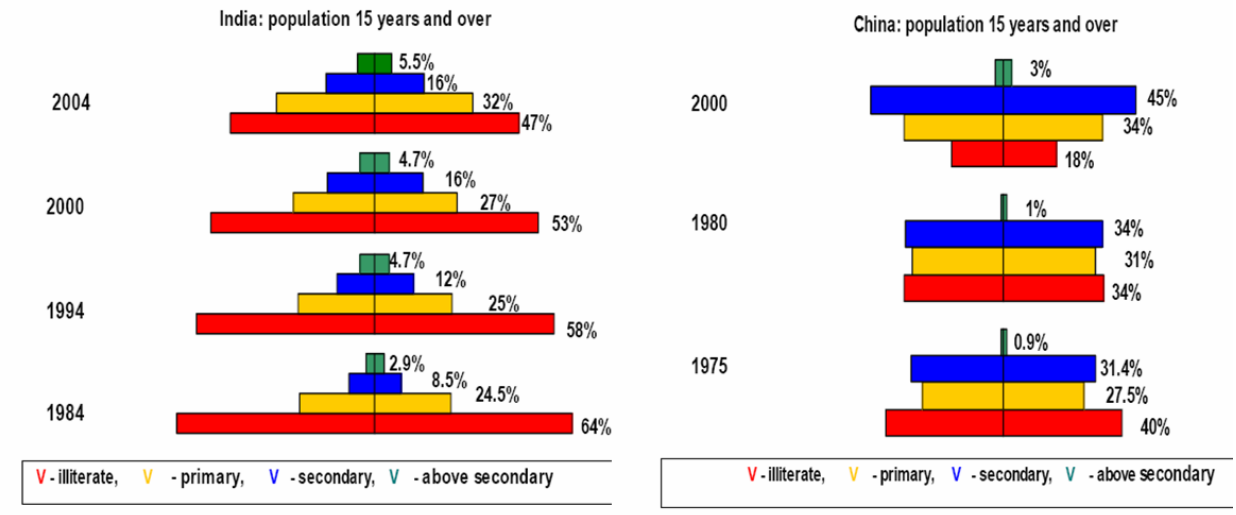


Figure 2

Educational attainment, India and China

Source: Riboud, Savchenko and Tan (2006), based on various rounds of the National Sample Survey for India and on Barrow and Lee (2004) international data on education, for China.

Comparable data on learning achievement of students are not available for most of the countries with which India is commonly compared. For instance, none of the South Asian countries nor China participated in the international studies of learning achievement such as the 'Trends in International Mathematics and Science' Study (TIMSS 2003) in which 46 countries participated, or in the 'Progress in International Reading Literacy Study' (PIRLS 2001) in which 35 countries participated. Moreover, South Asia does not have the equivalent of the SACMEQ study, which is a regional inter-country comparative study of achievement levels in 14 African countries[1]. However, World Bank (2006) applied the TIMSS questions to secondary school students in the Indian states of Rajasthan and Orissa, with permission of the Indian Ministry of Human Resource Development. The findings show that international mean achievement in maths test was 52 percent for grade 8 students but the average scores of Rajasthan and Orissa students on the same test were 34 and 37 percent respectively. Similarly, the international mean of achievement was 57 percent for Grade 12 students but the corresponding scores for Indian students were 44 and 38 percent in Rajasthan and Orissa respectively[2]. However, the high international average percentage mark from the 46 TIMSS countries included both high and low income countries. When India did participate in international studies of learning achievement in early 1970s, the performance of Indian children was poor relative to most participating developing countries, according to the International Association for the Evaluation of Educational Achievement (IEA)[3].

3. Schooling access and quality

At Independence, India inherited a legacy of large-scale illiteracy and lack of proper provision for education. At the first post-Independence Census of 1951, only 9 per cent of women and 27 per cent of men were literate. It was resolved by the framers of the constitution that the new Indian state

[1] For TIMSS, see http://nces.ed.gov/timss/. For PIRLS see http://timss.bc.edu/pirls2001.html. For SACMEQ, see Southern and Eastern Africa Consortium for Monitoring Educational Quality http://www.sacmeq.org/.

[2] There are certain caveats about the direct comparability of the Indian and international results (see World Bank, 2006, p58 for details). In particular, internationally the tests were administered to students of Grades 8 and 12 but in India, they were applied to students of Grades 9 and 11 for logistical reasons (e.g. there was a desire not to disturb students of Grade 12 who were close to their board examinations). The more difficult items in the original TIMSS intended for Grade 8 were selected for Grade 9 and the easier items originally intended for Grade 12 were applied to Grade 11. The selected items were shown to state officials, teachers, and students to ensure that they were a reasonable choice in relation to the curriculum.

[3] International comparison of achievement among school-going 14 year olds across 25 high and low-income countries, using IEA data collected in early 1970s, showed that the mean science test score of Indian students was the second lowest. Iran was behind India by a small margin. Mean scores of students in Bolivia, Thailand, Colombia, Peru, Mexico, Brazil, Chile and Paraguay were all higher than those of Indian students; the mean score of Japanese students was twice as high as that of Indian students. The results were similar in (own language) reading comprehension: median reading score was 26 points, Chile's mean was 14 points, Iran's 8 points and India's the lowest at 5 points (Kingdon, 1994, p8).

would endeavour to provide free and compulsory education to all children up to age 14 by 1960. This goal turned out to be elusive and the deadline for its achievement has been put back repeatedly in the past 55 years. While even today this goal remains unfulfilled, there has been very encouraging progress in schooling participation and other educational outcome indicators in recent times. We consider several educational access and quality indicators next.

Primary and secondary enrolment rates

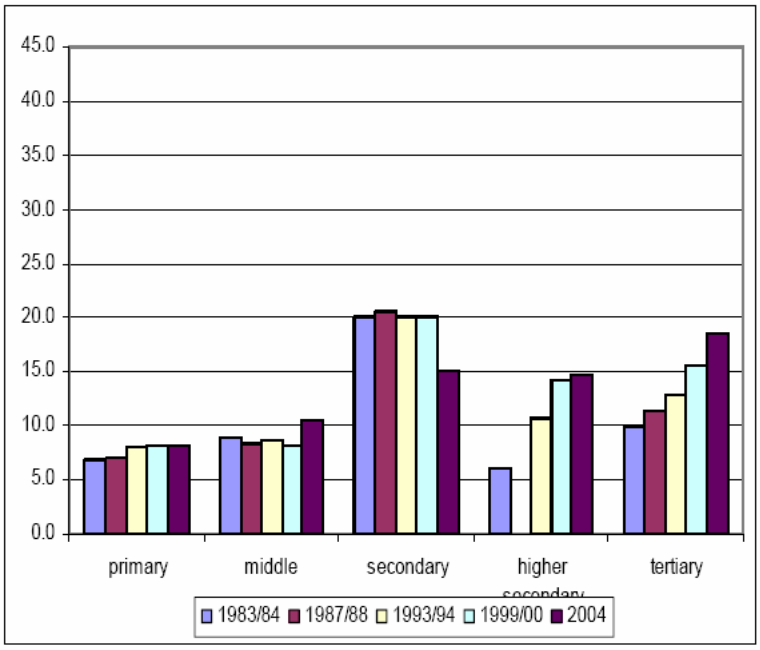
The ASER2006 survey provides the latest picture of schooling participation in India. It finds that 93.4 per cent of all elementary school age children (6-14 year olds) were enrolled in school, an encouraging statistic, reflecting a good deal of progress compared to enrolments in the early 1990s[4]. Among children 11-14 years old enrol was lower: 10.3% of girls and 7.7% of boys were out of school (either never enrolled in school or dropped out). Among 15-16 years olds, the corresponding out-of-school figures rose steeply to 22.7% and 20.2% respectively for girls and boys.

Figure 1 shows a gross enrolment rate in *secondary education* of 47%, which we noted was below the level predicted for a country of India's per capita income level. Schooling participation depends on both the extent of demand for and the availability of supply of schooling. According to Seventh All India Education Survey (NCERT, 2006), in 2002, there were only one-fifth as many secondary schools (those with grade 10 classes) as the number of primary schools. Thus, it seems likely that secondary school enrolment rates are low partly because of the lack of supply of nearby secondary schools. However, despite supply constraints, demand for secondary education has risen and is likely to rise (partly via increase in private schooling) because it is lucrative level of education to acquire. Kingdon (1998) and Kingdon and Unni (2001) find that the education-wage relationship is convex in India, i.e. returns to secondary and higher education are significantly greater than to primary and middle levels of education. Appendix Table 1, using National Sample Survey data, also shows that the economic returns to education increase with education level, i.e. since the coefficient on the quadratic term in 'years of education' is large, positive and statistically significant in almost every state for both genders. Figure 3 shows that for both men and women, the returns to higher secondary and tertiary education have *risen* consistently over time. For women, the return to primary

[4] Though the figure seems high in relation to Government of India's 'Selected Education Statistics' for 2002-03, where gross enrolment rate in middle level education (grades 6 to 8) was only 61%, even though it was 95.4% in primary education (grades 1 to 5). The great progress in basic education participation is consistent with an increase in both the demand for and supply of education. The PROBE report (Probe Team 1999: 19) reported a broad-based surge in educational aspirations in the 1990s. Demand for education also increased due to the well documented reductions in poverty since early 1990s, which made it possible for the poor to realize their educational aspirations. It may also have risen partly due to reduction in fertility levels if there is a trade-off between the number of children and the education of each child within the family: total fertility rate for India as a whole fell from 3.4 to 2.7 in the period

education has fallen but for men, it has remained static. These findings are based on National Sample Survey data analysed by Duraisamy (2002), Vasudeva-Datta (2006) and World Bank (2006).

Men



Women

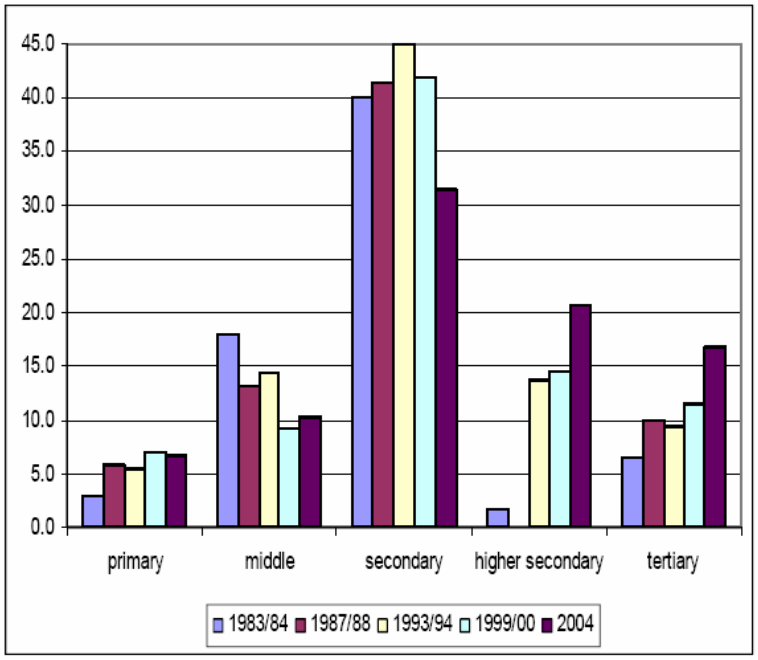


Figure 3
Marginal returns to education, by level of education, year and gender
Source: World Bank (2006).

between 1993 and 2005 (NFHS, 2007). Finally demand for education may also have increased if the perceived benefits of education – its private economic rates of return – increased.

Using National Sample Survey data for 1999-2000, there is a good deal of interstate variation in the extent of inequality in access to secondary schooling, as seen in Figure 4. The inequality (measured as the difference in access to secondary education among those in the top and bottom quintiles of the distribution of household per capita income) is greatest in Haryana, Andhra Pradesh and the so-called 'BIMARU' (sick) states – Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh – which lag behind in many other indicators of social development. The inequality is lowest in the left leaning states of Kerala and West Bengal.

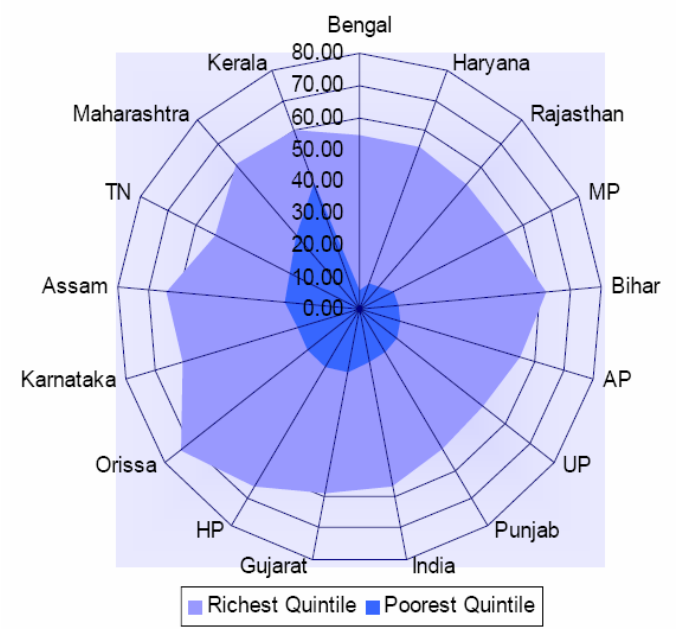


Figure 4. Differential access (to secondary schooling) between the top and bottom income quintiles

Source: World Bank (2006)

Figure 5 shows great inter-state variation in gender-disparity in secondary school enrolment rates. The gender parity index here is the male to female secondary school enrolment ratio. A ratio of 1 represents gender equality. States such as Bihar and Rajasthan have grotesque gender inequality: girls are only half as likely to enrol in secondary school as boys. Other BIMARU states – Uttar Pradesh and Madhya Pradesh, together with their split-offs (Jharkhand and Chattisgarh) – also have appalling gender inequality[5], but on the bright side, many states have gender parity or even slightly pro-female secondary enrolment rates, e.g. Kerala and Tamil Nadu. Kingdon (2005) finds that an important part of the reason for gender inequality is to be found within the household, as opposed to institutional explanations (indeed, policy promotes girls' enrolment by instituting tuition free schooling for girls). Using household fixed effects equations, she finds strong within-household bias against daughters in terms of enrolment and household educational expenditure.

[5] Jharkhand split off from Bihar and Chattisgarh from Madhya Pradesh in 2001 to form independent new states.

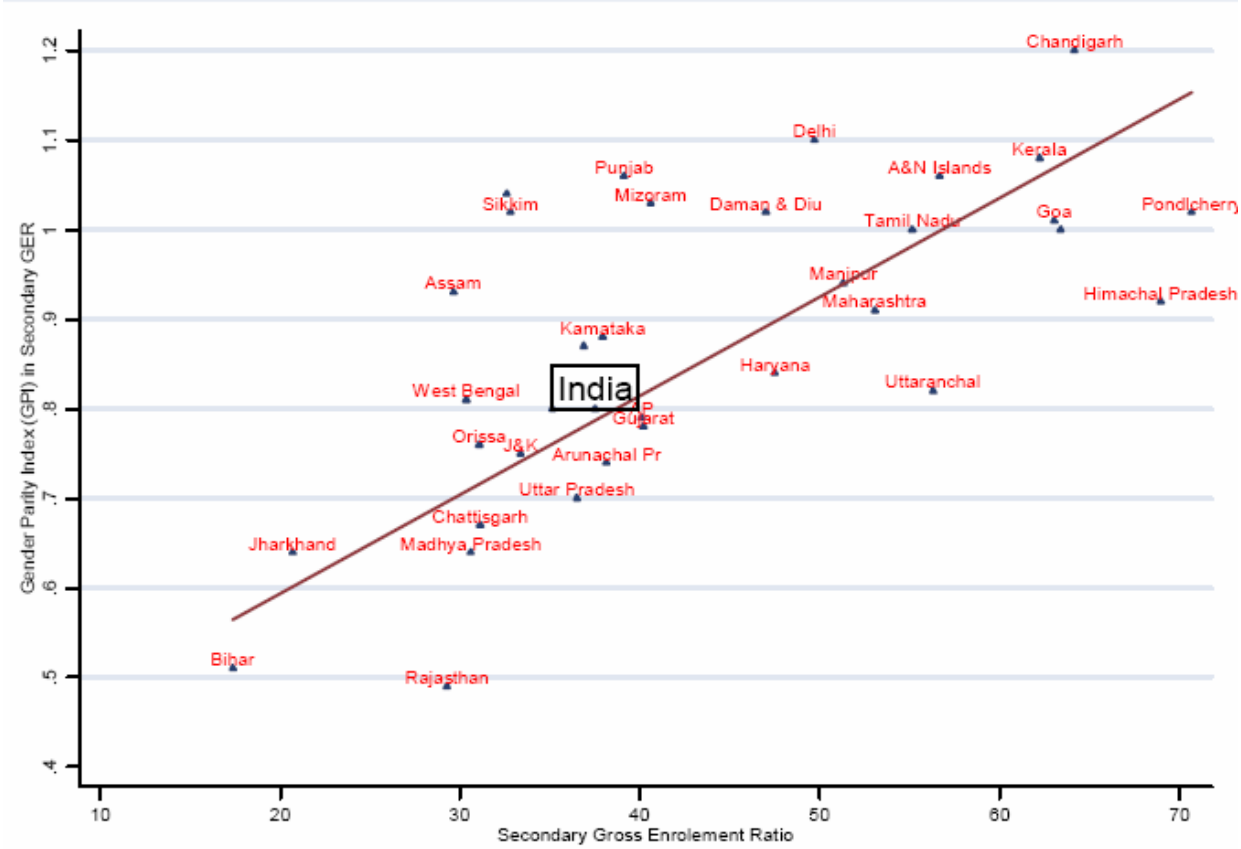


Figure 5. Gender parity index in secondary Gross Enrolment Ratio.

Source: World Bank (2006), based enrolment figures in MHRD (2003).

School attendance rates

Current attendance rates are a more reliable indicator of schooling participation than enrolment rates, since large enrolment rates measured at the start of the school year can mask non-attendance and/or drop-out later in the school year. Table 2 shows current school attendance rates from the National Family Health Surveys (NFHS) 1993 and 1999. In this short 6-year period, school attendance among rural 6-10 year old girls and boys increased by 20 and 12 percentage points respectively; these are very substantial increases. In the rural 11-14 year age group, increases were more modest but still large, especially for girls, at 13.7 per cent. Urban increases were smaller. Andhra Pradesh, Madhya Pradesh, Rajasthan, and Uttar Pradesh made very large improvements in their current school attendance rates, particularly in rural areas where, in each of these four states, attendance rates rose by over 25 percentage points in the six-year period. Overall, nearly 80 per cent of all 6-14 year olds were attending school in 1999. As Kingdon et. al. (2004) notes, while attendance rates themselves are not a guarantee of grade completion or of achieving minimum levels of learning, these are nevertheless highly encouraging trends.

Table 2
Increase in current school attendance, by state, gender and residence

	Rural						Urban					
	Age 6-10			Age 11-14			Age 6-10			Age 11-14		
	1993	1999	Increase	1993	1999	Increase	1993	1999	Increase	1993	1999	Increase
MALE												
Andhra Pradesh	68.9	86.3	17.4	63.5	68.8	5.3	86.0	94.4	8.4	83.4	77.0	-6.4
Bihar	57.0	68.0	11.0	64.9	71.6	6.7	83.0	81.0	-2.0	86.2	78.6	-7.6
Gujarat	78.9	83.9	5.0	78.7	73.9	-4.8	89.8	91.4	1.6	88.4	87.2	-1.2
Haryana	85.9	92.5	6.6	85.8	88.3	2.5	91.9	92.7	0.8	89.3	90.9	1.6
Karnataka	76.4	84.8	8.4	67.2	72.2	5.0	87.6	94.3	6.7	80.1	81.3	1.2
Kerala	94.9	96.7	1.8	94.8	96.2	1.4	95.8	98.3	2.5	93.0	99.4	6.4
Madhya Pradesh	61.0	80.1	19.1	69.7	75.4	5.7	83.9	92.8	8.9	85.9	86.6	0.7
Maharashtra	84.9	90.7	5.8	80.8	86.0	5.2	91.9	96.2	4.3	89.2	88.5	-0.7
Orissa	75.8	85.4	9.6	72.9	79.9	7.0	89.7	85.2	-4.5	86.2	78.3	-7.9
Punjab	83.8	92.7	8.9	77.4	87.0	9.6	90.2	97.5	7.3	87.1	93.7	6.6
Rajasthan	69.9	87.4	17.5	75.2	82.8	7.6	82.5	88.5	6.0	87.0	88.9	1.9
Tamil Nadu	90.8	95.5	4.7	77.7	83.3	5.6	94.4	96.4	2.0	78.5	87.6	9.1
Uttar Pradesh	69.5	83.0	13.5	75.1	80.4	5.3	77.3	87.1	9.8	76.8	81.3	4.5
West Bengal	68.9	82.8	11.4	68.1	74.6	6.5	83.3	88.2	4.9	83.4	78.5	-4.9
All India	71.4	83.2	11.8	73.4	78.5	5.1	86.2	91.7	5.5	84.2	85.1	0.9
Females												
Andhra Pradesh	51.9	79.3	27.4	37.1	47.0	9.9	82.0	93.8	11.8	67.7	79.1	11.4
Bihar	34.0	53.0	19.0	33.0	48.7	15.7	69.3	72.1	2.8	65.6	78.2	12.6
Gujarat	64.0	74.9	10.9	57.9	54.8	-3.1	84.4	90.0	5.6	78.4	76.5	-1.9
Haryana	71.9	89.3	17.4	65.8	77.3	11.5	89.9	92.0	2.1	87.3	86.8	-0.5
Karnataka	64.8	81.9	17.1	46.4	60.7	14.3	85.4	93.0	7.6	72.5	82.9	10.4
Kerala	95.0	97.7	2.7	93.6	96.3	2.7	97.1	98.8	1.7	95.4	98.8	3.4
Madhya Pradesh	47.3	73.9	26.6	44.5	54.9	10.4	81.7	87.8	6.1	81.4	80.0	-1.4
Maharashtra	77.5	88.5	11.0	56.2	78.3	22.1	89.8	93.3	3.5	85.1	89.9	4.8
Orissa	63.0	81.0	18.0	52.5	64.8	12.3	78.8	82.7	3.9	78.2	77.0	-1.2
Punjab	77.5	92.7	15.2	67.5	79.6	12.1	91.4	97.7	6.3	85.9	95.5	9.6
Rajasthan	36.4	66.0	29.6	28.6	44.9	16.3	72.4	82.7	10.3	71.2	75.5	4.3
Tamil Nadu	83.6	94.5	10.9	62.8	76.3	13.5	94.7	98.0	3.3	75.7	87.1	11.4
Uttar Pradesh	45.4	71.4	26.0	38.2	57.1	18.9	70.3	83.3	13.0	68.4	80.0	11.6
West Bengal	63.5	80.8	17.3	55.0	66.9	11.9	77.5	87.9	10.4	65.0	74.9	9.9
All India	55.0	75.1	20.1	47.9	61.6	13.7	81.8	89.1	7.3	75.7	82.8	7.1

Source: NFHS-1 and NFHS-2 state and all-India reports (IIPS and ORC Macro 1995; 2000).
Note: Himachal Pradesh figures are not available from NFHS. Data on current school attendance from the 2005-06 NFHS-3 survey have not been released as of spring 2007.

Literacy rates

Data from the 1991 and 2001 Indian censuses in Table 3 show that in the population aged 7 years and older, literacy rates rose substantially in the 1990s from 52 per cent to 65 per cent, an increase of 13 points. This is the highest absolute increase in any decade since records began in 1881[6]. Over this 10 year period, the gender gap also began to close noticeably, as seen in Figure 2. Some states experienced particularly rapid literacy increases, e.g. in Madhya Pradesh and Rajasthan, literacy rates rose by 20 and 22 percentage points respectively. The increase in female literacy was

[6] Literacy rates increased by 6.2 percentage points in the 1960s, 9.2 points in the 1970s, and 8.5 points in the 1980s.

also large in these states as well as in Uttar Pradesh and Andhra Pradesh. However, Bihar and Gujarat made poor progress.

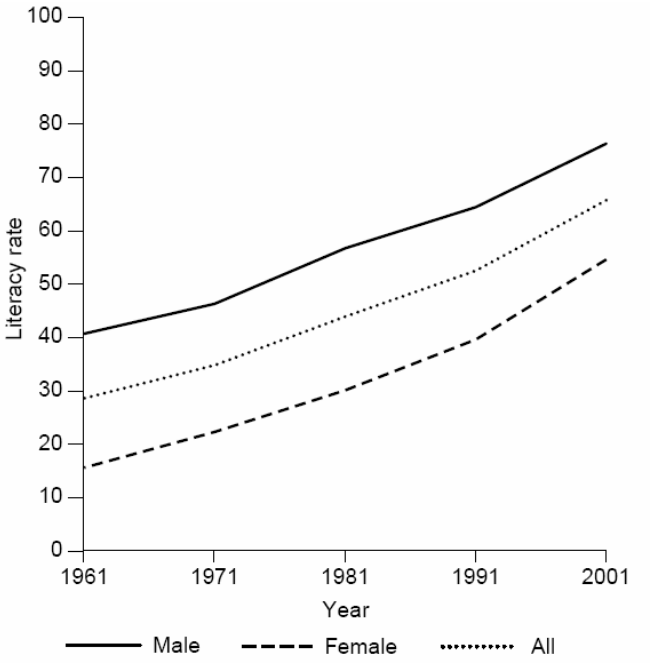


Figure 6. Literacy rates, by gender, 1961-2001
Source: Census of India.

Unfortunately, age-specific literacy data were not available from the 2001 Indian census even in early 2007. However, such data from the National Family Health Survey (NFHS) of 1993 and 1999 show encouraging trends[7]. Table 4 shows that during the short 6 year period between 1993 to 1999, literacy rates in the young age groups rose rapidly for girls: taking rural and urban areas together, female literacy in the youngest age group 6-10 rose by nearly 14 percentage points. For rural girls aged 6-19, literacy rates rose by about 15 points. Overall, the national literacy rate for males and females aged 6-19 years increased by about 10 percentage points.

Any major improvement in national literacy in the future will depend crucially on its progress among young persons in the four large north Indian states of Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh (the so-called BIMARU or 'sick' states) which have lagged behind particularly seriously in the past. Examining recent progress in these states is perhaps the most informative statistic when attempting to foresee the future of literacy in India. Table 5 shows marked acceleration over time in literacy rates among 10-14 year olds in these states. Whereas the literacy rate among the

[7] Corresponding data from NFHS 2005-06 are not available yet.

young increased by only 6 percentage points in each of the two decades of the 1960s and 1970s, it increased by 14 points in the 1980s and by 18 points in the 1990s.

Table 3
Literacy rates by state, area and gender

	Male			Female			Persons		
	1991	2001	Increase	1991	2001	Increase	1991	2001	Increase
Andhra Pradesh	55.1	70.9	15.8	32.7	51.2	18.5	44.1	61.1	17.0
Bihar	52.5	62.2	9.7	22.9	35.2	12.3	38.5	49.2	10.7
Gujarat	73.1	76.5	3.4	48.6	55.6	7.0	61.3	66.4	5.1
Haryana	69.1	79.3	10.2	40.5	56.3	15.8	55.9	68.6	12.7
Himachal Pradesh	75.4	84.6	9.2	52.1	67.1	15.0	63.9	75.9	12.0
Karnataka	67.3	76.3	9.0	44.3	57.5	13.2	56.0	67.0	11.0
Kerala	93.6	94.2	0.6	86.1	87.9	1.8	89.8	90.9	1.1
Madhya Pradesh	58.4	77.0	18.6	28.9	51.0	22.1	44.2	64.4	20.2
Maharashtra	76.6	86.3	9.7	52.3	67.5	15.2	64.9	77.3	12.4
Orissa	63.1	76.0	12.9	34.7	51.0	16.3	49.1	63.6	14.5
Punjab	65.7	75.6	9.9	50.4	63.6	13.2	58.5	70.0	11.5
Rajasthan	55.0	76.5	21.5	20.4	44.3	23.9	38.6	61.0	22.4
Tamil Nadu	73.8	82.3	8.5	51.3	64.6	13.3	62.7	73.5	10.8
Uttar Pradesh	55.7	70.9	15.2	25.3	43.9	18.6	41.6	58.1	16.5
West Bengal	67.8	77.6	9.8	46.6	60.2	13.6	57.7	69.2	11.5
India	64.1	75.6	11.5	39.3	54.0	14.7	52.2	65.2	13.0

Source: Census 1991; Census 2001, both taken from Table 4.1 (Planning Commission 2002*a*: 186).
Note: The old boundaries of Bihar, Madhya Pradesh and Uttar Pradesh have been used for 2001, i.e., including Jharkhand, Chhattisgarh and Uttaranchal, respectively.

Table 4
Increase in age-specific literacy rates, by area and gender

	Rural			Urban			Total		
	1993	1999	Increase	1993	1999	Increase	1993	1999	Increase
Males									
Age 6-9	59.8	70.0	10.2	77.5	83.8	6.3	64.0	73.1	9.1
Age 10-14	79.1	85.0	5.9	90.5	93.0	2.5	82.1	87.0	4.9
Age 15-19	77.0	83.0	6.0	89.7	91.2	1.5	80.5	85.3	4.8
Females									
Age 6-9	47.1	63.6	16.5	74.9	80.3	5.4	53.6	67.4	13.8
Age 10-14	57.1	71.4	14.3	84.3	90.7	6.4	64.1	76.1	12.0
Age 15-19	47.2	61.3	14.1	80.8	86.6	5.8	56.2	68.2	12.0
Total									
Age 6-9	53.7	66.9	13.2	76.2	82.1	5.9	59.0	70.4	11.4
Age 10-14	68.5	78.5	10.0	87.5	91.8	4.3	73.4	81.8	8.4
Age 15-19	61.8	72.2	10.4	85.2	89.0	3.8	68.1	76.9	8.8

Source: Compiled from NFHS-1 (Table 3.8) and NFHS-2 (Table 2.7), National Final Reports (IIPS and ORC Macro 1995; 2000). Figures for NFHS-3 data from 2005-06 are not released as of early 2007.

Table 5
Literacy rates in the 10-14 age group, 1961-1999
(Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh)

Year	Average literacy rate (10-14 year olds)	Percentage point increase over previous decade	Annual percentage increase over previous decade (%)
1961	31	-	-
1971	37	6	1.8
1981	43	6	1.5
1991	57	14	2.9
1999	75	18	3.5

Source: Kingdon et. al. (2004).
Notes: The figures for 1961-1991 are calculations from census data; 1999 figures are from State reports of the National Family Health Survey-2, (IIPS and ORC Macro 2000). For any given year, the literacy rate figure in the first column is the simple mean of the literacy rates for the four states in that year. It is not weighted by the respective populations of the states.

Learning achievement levels in primary education

A large body of evidence suggests that workers' productivity and earnings depend not only on years of education acquired but also on what is learnt at school. This literature is summarised in Hanushek (2005). He cites 3 US studies as showing quite consistently that a one standard deviation increase in mathematics test performance at the end of high school in the US translates into 12 per cent higher annual earnings. He also cites three studies from the UK and Canada showing strong productivity returns to both numeracy and literacy skills. Substantial returns to cognitive skills also hold across the developing countries for which studies have been carried out, i.e. in Ghana, Kenya, Tanzania, Morocco, Pakistan and South Africa. Hanushek and Zhang (2006) confirm significant economic returns to literacy for 13 countries on which literacy data were available. This evidence underlines the importance of ensuring that what schools do leads to learning achievement.

Unfortunately, no national data on learning achievement levels were available in India until 2006. India's largest educational NGO, *Pratham*, carried out a survey of learning achievement in 2005 and repeated the survey with a bigger sample of about 330,000 household in 2006. It visited 20 homes each in 30 randomly selected villages in each one of 549 Indian districts, and interacted with all children aged 6 to 16 years old in the sample homes. The ASER 2005 and 2006 reports are published by Pratham (2006; 2007). The findings make grim reading. In 2006, nearly 47% of children who were in school and studying in grade 5 could not read the story text at grade 2 level of difficulty (Table 6). In arithmetic, 55% of grade 5 and 25% of grade 8 children could not solve a simple division

problem (3 digits divided by 1 digit). In both reading and arithmetic, there was significant inter-state variation in student performance. For example, in 2005 based on the sample of grade 5 children, in West Bengal, Haryana, Bihar, Uttaranchal and Chhattisgarh less than 50% children were unable to do the simple division problems. In the bottom five states, 62-75% of grade 5 children could not solve the same division problems.

Table 6
Learning levels, by grade, level of difficulty of question, and subject

			Reading			
Grade	Nothing	Letter	Word	Para at Grade 1 level	Story at Grade 2 level	Total
1	38.4	38.3	16.8	4.0	2.6	100
2	14.2	30.1	32.5	15.0	8.3	100
3	6.3	16.5	29.3	28.0	19.9	100
4	3.2	8.9	18.7	31.7	37.6	100
5	2.1	4.9	11.9	28.1	53.0	100
6	1.3	2.5	6.7	22.9	66.6	100
7	0.8	1.5	4.1	17.5	76.1	100
8	0.6	0.9	2.3	12.6	83.7	100
Total	9.9	14.8	16.5	19.8	39.0	100

			Arithmetic		
Grade	Nothing	Number recognition	Subtraction	Division	Total
1	53.8	38.5	5.7	2.1	100
2	26.1	49.0	18.9	6.0	100
3	13.5	38.0	33.3	15.2	100
4	7.5	24.6	37.4	30.6	100
5	4.7	16.0	34.0	45.3	100
6	2.9	10.1	28.5	58.5	100
7	1.9	7.5	23.3	67.4	100
8	1.2	5.0	18.0	75.8	100
Total	16.1	25.7	24.6	33.6	100

Source: ASER 2006 (Pratham, 2007).

Appendix Table 2 shows the first officially collected national achievement level figures for about 90,000 students of grade 5 (age 10-11). Standardized tests of competency in language, mathematics and environmental science were administered and each student's marks were recorded in percentage terms. These tests were administered by the National Council of Educational Research and Training (NCERT) in 2002 and the results published in 2006, soon after the release of the ASER survey. The average percentage mark for India as a whole is 50.3 per cent in science, 46.5 per cent in maths and 58.6% in language. While it is not clear how to interpret these, they appear to confirm ASER's findings of low learning levels[8].

[8] Comparison by state suggests that certain states that have high levels of educational access also have low average achievement levels. For instance, Himachal Pradesh has an average mark of only about 34% in science and maths

Learning achievement levels in secondary education

Given the weak base of learning at the primary level, it is expected that learning levels at the secondary level of education will also be poor. We already saw that in cross-country comparison, achievement levels of Indian students appear to be well below the international average, though the latter does include developed countries. While each Indian state examination board sets its own curricula and examinations and there are no national level data based on a common standardized achievement test in India, the Council of Boards of Secondary Education (COBSE, 2004) provides pass rates in the High School and Intermediate (senior secondary) examinations in different states. 2004 pass rates in the High School exam varied from 37% in Manipur to 80% in Andhra Pradesh but such inter-state comparison is meaningless since curricula, exam papers, passing requirements, etc. all differ from state to state.

In any case, the high school pass rates cannot be taken at face value as they are much inflated due to the phenomenon of wide-spread cheating, if the experience of Uttar Pradesh can be generalized. While the true levels of learning achievements in secondary education are generally hidden, fortuitously they became visible one year in Uttar Pradesh. Table 7 shows that when the Kalyan Singh government brought in an anti-cheating rule and installed police at all examination centres in 1992 to prevent the mass-cheating that routinely takes place at board examinations in Uttar Pradesh, the pass rate in the High School exam fell from 57% in 1991 to a pitiful 14.7% in 1992 (17% among regular candidates and 9% among candidates who appear for exams 'privately' i.e. through self-study, without attending any school). This is when the bar for passing is set very low, i.e. a student only needs on average 33% marks in their various subjects in order to pass High School. This suggests the true extent of the problem of low achievement levels in secondary education, though it is possible that achievement levels in Uttar Pradesh are lower than those in other states. Moreover, students rely on 'guess papers' which are prepared and sold a few weeks before the exams. These attempt to anticipate exam question and are often remarkably close to them. There is frequent leaking of papers in advance of examinations.

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and in Kerala the corresponding figures are 35% and 41% respectively, way below the national average in both cases. By contrast, the state with the lowest level of participation in education (poorest access indicators, according to Table 2), namely Bihar, has the highest level of achievement, about 16 percentage points above the national average. This apparently negative relationship between access and achievement could be explained by the fact that states with high access indicators have a higher proportion of first-generation learners and poorer students in their schools. However, not all states conform to this pattern. For instance, Tamil Nadu, a state with high access indicators, also performs quite well on achievement levels.

Table 7
Pass rates in exams of the UP High School Exam Board

Year	Percentage of exam-takers who passed		
	Regular candidates	Private candidates	Total
1988	49.6	40.6	46.6
1989	47.6	39.4	44.8
1990	46.4	40.4	44.2
1991	61.2	52.2	57.0
1992	17.3	9.0	14.7

Source: Kingdon and Muzammil (2003). Taken from Swatantra Bharat (High School Exam Results Supplement) Wed 15th July 1992, p3.

School quality

The impact of cognitive achievement on earnings, productivity and economic growth highlights the importance of school quality. How is India doing in terms of the common measures of schooling quality, namely school facilities and teacher effort? The Public Report on Basic Education (PROBE Team, 1999) was the first serious evidence-based study of the state of primary schooling quality in India. It is based on a survey of schooling facilities in 242 villages across five north Indian states – Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh and Himachal Pradesh in 1996. PROBE found very poor school infrastructure, e.g. 26% of schools did not have a blackboard in every classroom, 52% had no playground, 59% no drinking water, 89% no toilet, 59% no maps or charts, 75% no toys, 77% no library and 85% no musical instruments (PROBE Team, 1999, p. 42). Nine years later, the ASER report found that in 2005, 66% of primary schools had water (up from 41% in 1996) and 42% had functioning toilets (up from only 11% in the PROBE survey of 1996). These improvements in school infrastructure are explained at least in part by the massive educational intervention called the 'District Primary Education Project' (DPEP) which started with donor assistance in the mid-1990s in districts with below national mean literacy rates. One of the explicit objectives of the DPEP was to construct schooling facilities and upgrade school infrastructures. While DPEP and its successor programme *Sarva Shiksha Abhiyan* (Campaign for Education for All) have obviously helped, the current state of school facilities is nevertheless clearly far from satisfactory, with substantial proportions of primary schools still without the most basic essentials

such as drinking water, toilets, furniture, teaching aids and books, let alone more advanced resources such as fans, playground, musical instruments, computers etc.

Equally worrying perhaps is evidence of teacher negligence in schools. Firstly, teacher absence rates are high. Kremer et. al.'s (2005) survey of teacher absence in rural India in 2003 made three unannounced visits to each one of 3700 schools in 20 major states of India. They found that, on average, 25 percent of teachers in government primary schools were absent from school on a given day[9]. Secondly, and more disturbingly, even among teachers who were present, only about half were found engaged in teaching (Kremer et. al., 2005). The PROBE survey had similar findings of low level of teaching activity in schools. PROBE Team (1999) states that the extreme cases of teacher negligence were "less devastating than the quiet inertia of the majority of teachers…In half of the sample schools, there was no teaching activity at the time of the investigators' visit…. Inactive teachers were found engaged in a variety of pastimes such as sipping tea, reading comics, or eating peanuts, when they were not just sitting idle. Generally speaking, teaching activity has been reduced to a minimum in terms of both time and effort. And this pattern is not confined to a minority of irresponsible teachers - it has become a way of life in the profession" (PROBE Team, 1999, p 63). The ASER2005 report also found a teacher absence rate of 25%, as in Kremer et. al. (2005).

4. Role of private schooling

Poorly resourced public schools which suffer from high rates of teacher absenteeism can have encouraged the rapid growth of private (unaided) schooling in India, particularly in urban areas. Private schools divide into two types[10]: recognised schools and unrecognised schools. Government 'recognition' is an official stamp of approval and for this a private school is required to fulfil a number of conditions, though hardly any private schools that get 'recognition' actually fulfil all the

[9] Absence rates varied from 15 percent in Maharashtra to 42 percent in Jharkhand, with higher rates concentrated in the poorer states. They also found that in a village fixed effects equation of teacher absence, private-school teachers were 8 percentage points less likely to be absent than public-school teachers in the same village.

[10] We do not include the so-called private *aided* schools in the category of private schools. Aided schools are run by private managements but funded largely by government grant-in-aid and are very similar to government schools in many respects. They charge the same fee levels as government schools (now mandated to be nil) and, following centralising legislation in the early 1970s, their teachers are paid directly from the state government treasury at the state teacher salary rates. Schools run by private managements *without* state aid are 'private unaided'. These run entirely on fee-revenues and have virtually no state involvement. Unaided schools are thus the genuinely private schools and henceforth we refer to these simply as 'private' and refer to private aided schools simply as 'aided'.

conditions of recognition[11]. The emergence of large numbers of unrecognized primary schools suggests that schools and parents do not take government recognition as a stamp of quality.

Private schooling share according to official and household data

Despite data deficiencies, it is clear that there is a substantial fee-charging private schooling sector in India[12]. Table 8 shows the enrolment share of private schools in rural and urban India, according to both official school returns data from 1993 and 2002 and household survey data from 1993 and 2006. The bottom half of the table shows corresponding figures for Uttar Pradesh, a state with high levels of private school participation. The latest official data on enrolment by school-type are for 2002 from the Seventh All India Education Survey, though only the national figures are available (in early 2007)[13].

Table 8 shows that the true size of the private sector in India is more than three times that shown in official statistics. For example, according to official statistics for 1993, only 2.8 per cent of all rural primary school students were attending private schools but according to household survey data for the same year, 10.1 per cent were.[14] In rural Uttar Pradesh the corresponding figures were 8.8 per cent and 30.7%, again the survey estimate being more than three times the official estimate. By the time of the PROBE survey in 1996, 36 per cent of all primary-age students (6-11 year olds) in rural UP attended private schools (Probe Team, 1999). Table 8 also shows that the official enrolment share of private schools at primary level rose from 2.8% in 1993 to 5.8% in 2002. If the extent of under-estimation in 2002 is the same as in 1993, then the true private school share of total primary enrolments in rural India in 2002 was three times as high as 5.8%, i.e. 17.4%. This is close to the only recent national estimate available, as seen in the last column of Table 8: the ASER2006 (Pratham, 2007, p. 32) national sample survey of about 330,000 households across 16500 villages finds that 18.6 percent of all (and 19.5% of *school-going*) rural primary age children (7-10 year olds) attended private

[11] Indeed, some of the conditions are, or have over time become, mutually inconsistent. For instance, the condition to charge only government-school tuition-fee rates is now incompatible with the condition to pay the government-prescribed salary rates to teachers, since government school fee rates have been cut consistently since the 1960s and were abolished altogether in the early 1990s in all elementary schools and since government-prescribed minimum salaries to teachers have risen inexorably over time: Kingdon and Muzammil (2003, chapter 13) estimate that average teacher salary rates rose by a remarkably high rate of 5.0% per annum in *real* terms in the 22 year period between 1974 and 1996.

[12] See Kingdon (1996a) for an early challenge to the notion, based on official published data, that the size of the private sector in primary education was 'infinitesimally small' or 'negligibly small'.

[13] The latest figures for the year 2004-05 from the District Information System for Education (DISE) are not shown because of its incomplete coverage. Similarly, findings from the ASER (2006) household survey are not shown as it does not distinguish between aided and unaided schools, and merges them together into a single 'private' category.

[14] The two sources are not exactly comparable since it is possible that some school-going 6-10 year olds may attend pre-primary or upper primary classes. However, it is unlikely that many 6-10 year olds would be in upper primary classes. Overall, 9.8 per cent of all 6-14 year old rural Indian school-goers went to private schools (Shariff, 1999).

schools in 2006[15]. Table 8 shows that in *urban* India, private schools' share of total enrolment in 2002 was between about 30 and 40 percent at different levels of education.

Table 8
Enrolment share of private schools, 1993 - 2006

Area	School level	Official published data 1993	Household survey data 1993	Official published data 2002	Household survey data 2006
ALL INDIA					
Rural	Primary	2.8	10.1	5.8	19.5
	Junior/middle	6.5	7.9	11.1	20.4
	Secondary	6.8	10.1	14.3	22.8
Urban	Primary	25.7	26.2*	28.9	NA
	Junior/middle	18.8	15.4*	39.1	NA
	Secondary	11.5	11.2*	32.4	NA
UTTAR PRADESH					
Rural	Primary	8.8	30.7	NA	30.5
	Junior/middle	28.3	23.3	NA	35.0
	Secondary	10.9	14.4	NA	37.8
Urban	Primary	53.3	49.7*	NA	NA
	Junior/middle	29.6	25.1*	NA	NA
	Secondary	5.3	11.3*	NA	NA

Source: 1993 Official data computed from the *Sixth All India Education Survey* (NCERT, 1998). 2002 Official data computed from the *Seventh All India Education Survey*, http://gov.ua.nic.in/NScheduleData/main3.aspx. The state-wise figures have not been posted by Spring 2007. Rural *household* survey figures for 1993 are based on the author's calculations from 1993-94 NCAER survey. The urban household survey figures marked * are taken from 1995-96 *National Sample Survey* published in NSSO (1998: A69-82). Household survey figures for 2006 for rural India taken from ASER2006 (Pratham, 2007)
Note: In the ASER data, children aged 7-10, 11-14 and 15-16 are assumed to be in primary, middle and secondary school respectively. 18.6% of all children aged 7-10 were in private school and 4.6% were not in school, thus private school share of total school enrolment is taken to be (18.6 / (100 - 4.6) * 100 = 19.5%) and similar calculations were performed for middle and secondary school ages.

The reasons for the large discrepancy between household survey estimates and official estimates of the size of the private schooling sector in India are twofold (Kingdon, 1996a; Drèze and Kingdon, 1998). First, government and aided school teachers have incentives to over-report their enrolments when there is low demand for their services (since a school with falling rolls would lose teachers), and this reduces the apparent enrolment share of private schools; Second, all official school 'censuses' are carried out only in the government-recognized schools and in most Indian states, there

[15] Although ASER merged aided and unaided private schools into a single category 'private', at the primary level of education, there are very few aided schools so that the 'private' enrolment rates in ASER can be taken to mean mostly private unaided school enrolments.

is no requirement on private primary schools to be even registered, let alone be government-recognized[16].

Evidence suggests that the true size of the private schooling sector is greatly underestimated in official data due to enumerating only the recognized schools. Household survey data give a picture far closer to the truth than official statistics since parents have no incentives to over-report enrolment in publicly funded schools or to report enrolment in recognized schools only. Household survey data in Table 8 already give an indication of the extent to which the enrolment share of private schools in primary education is underestimated in official data – namely by about 67% in rural areas. Muralidharan and Kremer (2006) find that in their national survey of 20 states, 51% of all private rural primary schools were unrecognized. This accords with evidence from individual states in other studies[17].

Private schooling is utilized even among the poor in India. Findings from the MIMAP survey show that, of all enrolled children aged 5-10 years old living below the poverty line, 14.8% attended private schools (8% in rural and 36% in urban India). The corresponding figures for ages 11-14 (junior school age) and 15-17 (secondary school age) were 13.8% and 7.0% respectively (Pradhan and Subramaniam, 2000). That private schools are used by poor families is also found in 5 north Indian states (PROBE Team, 1999) and by Tooley and Dixon (2005) in Delhi.

Growth in private schooling

The most telling statistic, however, is not the share of private schooling in the *stock* of total school enrolment but, rather, the share of private schooling in the total recent *increase* in school enrolment at different levels. This shows the relative growth of private schooling in India (i.e. relative to the growth of government and aided schooling). Table 9 presents the proportion of the total enrolment increase (over time) that is absorbed by private schools. It is constructed from underlying numbers in Appendix Tables 3a and 3b. Even though information on enrolment by school management-type can only be gleaned from official statistics (i.e. it excludes unrecognized schools), even recognized private school growth numbers are telling. We learn two things from Table 9: firstly that growth of private schooling has accelerated over time; secondly that in urban areas, the growth of

[16] It seems that rural private schools in particular do not easily get government recognition, for which many conditions need to be shown to be satisfied. As Kingdon (1996a) says, given the exacting conditions for and scant rewards of recognition, it is not surprising that most private primary schools remain unrecognized.

[17] Aggarwal (2000) found that in his four surveyed districts of Haryana in 1999, there were 2120 private primary schools of which 41% were unrecognized. The PROBE survey of 1996 in 5 north Indian states did a complete census of all schools in 188 sample villages. It found 41 private schools of which 63% were unrecognized. Mehta (2005)

private schooling has consistently been the greatest at the primary level and progressively smaller at the middle and secondary school levels, something perverse from the equity point of view since children of the poor are most well represented at the primary schooling level.

Table 9
Share of recognised private schools in total enrolment increase, by region, level of education and time period

	1978 - 1986	1986 - 1993	1993-2002
Rural			
Primary	2.8	18.5	24.4
Middle	7.2	12.8	23.2
Secondary	5.8	15.8	30.9
Urban			
Primary	56.8	60.5	95.7
Middle	35.7	31.8	71.7
Secondary	17.7	17.7	46.7
Rural + Urban			
Primary	13.5	35.3	38.9
Middle	15.0	21.4	37.8
Secondary	10.7	16.8	38.4

Source: Author's own calculations based on enrolment by school management-type in the All India Education Surveys for various years (NCERT, 1982; 1992; 1998; 2006). See Appendix Tables 3a and 3b.

Table 9 shows that in *urban* India, 56.8% of all the *increase* in total primary school enrolment in the period 1978-1986 was absorbed by private schools; the corresponding figure for 1986-1993 was 60.5% and for the period 1993-2002 was 95.7%. Clearly, the pace of 'privatisation' increased greatly in the 1993-2002 period. In this nine year period, government and aided primary schools together absorbed only 4.3% of the total increase in primary school enrolments, i.e. their numbers or enrolments grew very slowly. Nearly 96% of the total increase in urban primary enrolment was due to the growth of private schooling! It bears emphasising that even this dramatic statistic is likely to be an underestimate since it takes no account of enrolment growth in the numerous unrecognized private schools that are excluded from the official statistics. The recent growth of private primary schooling in urban India has been nothing short of massive.

In *rural* India the rate of expansion of private primary schooling has been much slower but even here the pace of privatisation picked up over time: only 2.8% of total rural growth in primary enrolment in the 1978-86 period was absorbed by private schools, but the corresponding figure for the 1986-93 period was 18.5% and for the 1993-02 period 24.4%. The ASER survey (Pratham, 2007)

found that in 7 districts of Punjab, there were 3058 private elementary (primary +junior) schools, of which 86% were unrecognized. For more detailed evidence on this based on various data sources, see Kingdon (2006).

shows that among the major Indian states, in Punjab, Haryana and Kerala the percentage of children attending private school increased by more than 10 percentage points between 2005 and 2006.

It bears emphasising that these figures are all underestimates since they do not include growth in enrolments in the *unrecognized* private primary schools (Kingdon 1996*a*). It is also worth stating that any increase in aided school enrolments - shown in Appendix Tables 3a and 3b - (if it comes from the establishment of new aided schools rather than merely from expansion in enrolment size in existing aided schools) represents in fact an increase in private schools since aided schools are private schools that start receiving government grant-in-aid. In some states, acceleration in the growth of private schooling was spectacular even in the 1986-1993 period. For instance, in urban Uttar Pradesh, 94 per cent of all new primary school enrolment over the period 1986-1993 occurred in private schools. Data by state for 2002 are not yet available. The growth of private schooling, particularly at primary and middle levels of education, signals growing inequality of educational opportunity.

The growth of private schooling offers a possible explanation for why, despite falling or virtually static per capita public education expenditure in several Indian states and falling share of basic education expenditure in state domestic product (Drèze and Sen, 2002, Chapter 5), these states have improved their educational outcome indicators in the 1990s (Kingdon, et. al., 2004).

Relative effectiveness of private and public schools

Why has private schooling been growing rapidly in recent times? Muralidharan and Kremer (2006) present an OLS regression of the presence of a private school (in a village) on village level predictors. Controlling for village population, village per capita income, pupil-teacher ratio in public schools in the village, and state fixed effects, they find that private schools are significantly more likely to exist in villages with high mean level of teacher absence in the public schools. Their finding that private schools are disproportionately located in areas with poorly performing public schools supports the qualitative reflections of the PROBE Report which believes that in explaining the increased popularity of private education, the breakdown of government schools is often more decisive than parental ability to pay. "In rural Himachal Pradesh, for instance, there is a good deal of purchasing power but the government schools function well, so that there are few private schools. In central Bihar, by contrast, poverty is endemic, yet private schools can be found in many villages due to the dysfunctional state of government schools" (PROBE Team, 1999, p 102).

National data on learning achievement levels in ASER2005 (Pratham, 2006) found that private school students of grades 2 to 5 were 37.4% more likely than government school students to be able to read a text of grade 2 standard. They were also 50% more likely to be able to solve a

division problem (3 digits divided by 1 digit). Of course these are raw figures and private school students typically come from more privileged homes. There is a small literature examining the relative effectiveness of private and public schooling after controlling for the differing student intakes of private and government schools. Due to the lack of achievement data linked to school and teacher characteristics, studies of the relative effectiveness of public and private schools in India have had to rely on achievement tests carried out by the researchers themselves, typically in small samples of schools (Bashir, 1994, 1997; Govinda and Varghese, 1993; Kingdon, 1994, 1996b)[18]. These studies have been carried out in different parts of India (Tamil Nadu, Madhya Pradesh and Uttar Pradesh respectively) and differ in several respects[19] but they share the common conclusion that private school students generally outperform their public school counterparts in learning achievement even after controlling for schools' student intakes. Muralidharan and Kremer (2006) corroborate the findings of earlier studies but with nationally representative data on rural primary schools. In their study private school students' achievement was 0.41 standard deviation higher than that of government school students in the same village (i.e. using a village fixed effects achievement production function), after controlling for observed school characteristics and pupils' home background. While most of these studies did not test the possibility that the private school 'effect' may be driven by unobserved heterogeneity (more able or more motivated students systematically selecting into private schools), Kingdon's study for Uttar Pradesh did correct for sample selectivity bias and while this correction greatly reduced the private school advantage, there remained a substantial private school advantage over government and aided schools in the teaching of numeracy skills.

Relative costs of private and public schools

Available evidence suggests not only that private schools are more effective than public schools in imparting cognitive skills in India but also that they have much lower unit costs than publicly funded (i.e. government and aided) schools. This is due largely to teacher salaries in private schools being only a fraction of those in publicly funded schools. Findings from five different states summarised in Kingdon (2006) show that in the early to mid-1990s, private school teachers' pay was about 40-50 % of government teachers' pay but that by 2002, this had fallen to only about 20%. Muralidharan and Kremer (2006), based on their 2003 national survey of rural schools in 20 Indian states conclude: "even conservatively, rural private school teacher salaries are typically around one

[18] More recently, Tooley and Dixon (2003) also compare the relative performance of students in government and private schools but theirs is a descriptive statistic study.

[19] While Kingdon's study is based on students in the final year of upper primary education (grade 8), the other studies are based on students in the final year of lower primary schooling (grades 4 or 5). The methods used differed too. Bashir used hierarchical linear modelling, Govinda and Varghese used OLS regression and Kingdon used sample selectivity correction models. The extent of controls for home background differed across the studies too, as well as

fifth that of regular government teacher salaries and they are often as low as one tenth the salaries of regular government teachers". Such massive private-public segmentation in the teacher labour market can exist because of excess supply of educated individuals and because while the private sector pays market wages, government and aided school salaries are bureaucratically set minimum wages. Clearly there are huge economic rents in the salaries of government school teachers. Kingdon and Muzammil (2003, chapter 13) estimate that the impact of the Government of India's 'Fifth Pay Commission' in Uttar Pradesh in the late 1990s was to hike, overnight, a high school Principal's monthly pay by 43% and assistant teachers' pay by between 26% and 55% depending on teacher category. The authors show the central role of teacher unions in securing these salary increases[20].

5. Government and NGO education initiatives

While the data presented above on student learning levels, teacher absenteeism and school facilities paints quite a grim picture of the state of schooling quality in India, there are several reasons for more optimism about progress of school education in the future. Firstly, a number of recent fiscally-demanding public education initiatives suggest that India has begun in earnest to give greater priority to improving school education. Secondly, a number of educational NGOs have emerged – such as Pratham, Digantar, Azim Premji, MV Foundation and others – and some have acquired substantial stature both in terms of their contributions to educational improvements in a number of dimensions, as well as in terms of their influence, advocacy voice, public/media profile, research capacity and ability to mobilize funds for education both from individual donors in India and abroad and from the Indian corporate sector. Below we consider some of the important initiatives and their impact on educational outcomes.

Sarva Shiksha Abhiyan

The *Sarva Shiksha Abhiyan* (SSA) – literally 'Campaign for Universal Education' – is India's flagship programme to universalize elementary education (grades 1 to 8) by the year 2010. It is a scheme sponsored by the Central government that is funded out of a revenues from a new cess, equal to 2 percent of all taxes, which was introduced in 2004 (increased to 3% in March 2007). SSA provides additional funding to states to enrol out-of-school children and to improve school quality. SSA funds civil works (capped at 33 percent of total cost); salaries of additional teachers to reduce

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whether school and teacher characteristics were included in the achievement equations. Finally the costs of private and public schooling were calculated differently in the different studies.

[20] See section titled 'Fifth Pay Commission related strikes (1997-2001)' in Chapter 10 and also see chapter 13, of Kingdon and Muzammil (2003). The pay increase came into effect retrospectively from 1st January 1996.

pupil-teacher ratio to 40:1; establishment of alternative schools and education guarantee scheme (EGS) schools in small habitations; establishment of block or cluster level resource centers; establishment of 'bridge courses' for dropouts; in-service training for teachers; and grants for teaching-learning materials. As well as these supply-side interventions, SSA includes demand side measures to close caste and gender gaps in education. These include free textbooks to all female and low caste students, special facilities for girls and grants to districts to support students with disabilities. SSA also funds a national component covering capacity building, technical support, financial management, monitoring and evaluation, etc.

To this author's knowledge, there is no rigorous evaluation of the impact of this massive intervention or its individual components so far. Two recent impact evaluations of the District Primary Education Project – the predecessor to SSA and quite similar to it – are by Schmid (2006) who uses a treatment intensity approach, and Jalan and Glinskaya (1999) who use a propensity score matching approach. The treatment intensity of a certain age group in a specific district depended on the years DPEP was in place and on the number of years that the group was in school-going age during this time period. While both studies find substantial programme impacts and find that impacts were greater for low caste children, Schmid finds that effects were stronger for girls but Jalan and Glinskaya find they were negligible, although the latter evaluated the impact of only the first phase of the DPEP while Schmid evaluated the impact of all three phases.

Mid day meal scheme

In late 2001, the Indian Supreme Court directed all states "to implement the Mid-Day Meal Scheme by providing every child in every government and government assisted primary school with a prepared mid-day meal with a minimum content of 300 calories and 8- 12 grams of protein each day of school for a minimum of 200 days". By 2006, the MDM scheme was near universal in all states, following public mobilization efforts to encourage states to act. This is a centrally funded scheme in that the central government provides grains, funds transportation and also pays food preparation costs, though the state government is responsible for providing the physical infrastructure for cooking the meals. Though it is not yet free of problems of quality and corruption, "the fact that mid-day meals have become a part of the daily routine in most primary schools across the country is a major achievement" (Khera, 2006). The scheme provides lunch to about 120 million children every school day and, as such, is the largest school meal scheme in the world. Certain states have gone beyond the mandated scope of the scheme, for instance in Kerala and Tamil Nadu the destitute and the aged are allowed to take the MDM and in Gujarat the scheme covers children from Grades 1 to 7 rather than only in the primary grades (1 to 5).

Although there are no rigorous evaluations (e.g. randomized experiment studies) of the impact of this scheme on children's school enrolment and attendance and on nutritional and health status, several micro studies suggest major increases in enrolment immediately after the introduction of mid-day meals, e.g., 23% in Barmer district of Rajasthan, 36% in Madhya Pradesh, and other large increases in Karnataka. However, Deaton and Drèze (2006) note that the consumption of mid-day meals in primary schools appears to be heavily under-recorded in the National Sample Survey (NSS) data, making it hard to verify the impact of MDMs on school attendance from NSS surveys.

Para teacher schemes

From the mid 1990s, several states began using low-cost untrained teachers known variously as *Shiksha karmis, Shiksha mitras, Vidya Volunteers,* etc.[21] By 2002, about 220,000 such 'para-teachers' had been appointed and by 2004, their number had risen to about 500,000 (Govinda and Josephine, 2004)[22]. The schemes have been expanding rapidly since 2002 because from that year states could appoint contract teachers with central government grants. Under these schemes, persons with educational qualification requirements below those of government primary school regular teachers are employed on salaries that are one-fifth to one-half of government teacher salaries, in order to (i) expand schooling in a low cost way to small hamlets which are unserved by regular government schools, (ii) to increase the number of instructors in single-teacher schools and (iii) to reduce high pupil-teacher ratios. Although the model varies from state to state, the para-teacher jobs are typically tenable for ten months per year, but are annually renewable.

Para teacher schemes have raised a number of concerns about the ethical, legal, and political difficulties of sustaining two different standards of employment between regular teachers and contract teachers. Some authors have also raised concerns about the quality of teaching provided by these less-qualified instructors. Others have pointed that para-teachers may exhibit greater accountability due to closer community involvement in their recruitment and dismissal and because of the impermanence of their job-contracts. Drèze and Sen (2002) believe that the contribution of these low-cost schemes so far is uncertain and that it is premature either to applaud or dismiss them. We are not aware of any serious evaluations of these schemes though several micro studies find that learning achievements of

[21] Rajasthan had already initiated the *Shiksha Karmi* (education worker) project in 1987. Several states devised their own versions of *Shiksha Karmis* in the 1990s. For example, under its Education Guarantee Scheme, Madhya Pradesh utilised such 'para-teachers' called *guruji*, building on the Alternative School Programme initiated in 1994-95 by an NGO, the Rajiv Gandhi Prathmic Shiksha Mission (Govinda 2002: 52). Uttar Pradesh had a *shiksha mitra* project. Other states that utilized para-teachers on a large scale in the 1990s were Andhra Pradesh, Gujarat, Himachal Pradesh, and West Bengal.

children taught by para-teachers and regular teachers are no different (Leclercq, 2005; Govinda and Josephine, 2004; Pratichi Trust, 2003).

Public private partnerships in education

A substantial public private partnership (PPP) system does operate in India, at least at the secondary and higher levels of education. This is the system of government grant-in-aid to privately managed schools known as 'aided' schools. In 1995-96 the percentage share of aided schools in total schools was 34.0% and 44.3% respectively at the secondary and higher secondary levels, though at the primary and middle levels, it was only 3.4% and 10.1% respectively (Bashir, 2005). However, over time, largely due to successive governments conceding teacher union demands, aided schools have become more and more like government schools: their teachers are now paid directly by the state government treasury at the same uniform salary rates as for government school teachers, and are recruited by a government-appointed selection committee rather than by the school. Aided schools also have the same fee policy as in government schools. Perhaps not surprisingly, learning achievements in aided schools are similar to those in government schools and significantly lower than in private schools after controlling for student intake and selection bias (Kingdon, 1996b).

The current draft 'Right to Education' Bill under consideration at the Indian Parliament proposes to establish a new form of PPP in education, requiring all private schools to give 25% of their places to government-paid students from disadvantaged homes. This measure does not propose to give money to the disadvantaged students to attend a school of their choice but rather proposes to give money directly to the private schools that accept the students. In recent years, increased advocacy in favour of PPPs in education in various countries has been associated with introduction of school choice by parents, typically by means of school vouchers. The recommendations for decentralising reform in India, including the current draft 'Right to Education' bill, have never seriously included consideration of the possibility of providing school vouchers, as a way of empowering (especially poor) students/parents and improving accountability of schools and teachers towards students and parents. This is unlike the situation in Chile, Colombia, New Zealand, US, UK and some other countries where there has been vigorous debate about and experimentation with alternatives to public schools, such as school choice and other forms of PPPs. There are several potential explanations for this difference and also some concerns about school vouchers schemes (Kingdon, 2006). Vouchers

[22] DISE (2006, Table 5.13) puts 2005 para-teacher numbers at 379,385. However, this is likely to be an underestimate as DISE's coverage excludes Education Guarantee Scheme schools which are staffed exclusively by

would be a radical reform of teacher and school incentives, and one reason why they have not been debated in India could be because of their perceived political infeasibility as they would be resisted by powerful vested interest groups.

NGO education work

Widespread education-related work by a large number of NGOs in India is a relatively new phenomenon but one which has grown rapidly. Their important contribution has been not only in grassroots educational work but also in terms of successful advocacy for education at the macro level by contributing to national educational debates and helping to make education access and quality prominent public issues. For instance, the role of the NGO *Right to Food Campaign* at both the micro and macro levels was critical in mobilizing public opinion and building pressure for the rapid implementation of the school Mid-Day-Meal scheme in Indian states. Similarly, *Pratham* – whose aim is to have "Every child in school…and learning well" did pioneering work in testing the learning achievements of elementary school age children in 509 Indian districts in 2005 and producing a public report in February 2006. This brought the whole issue of low learning levels and low schooling quality to the fore in public and media discussion in India and also encouraged greater openness in the government's premier educational research institution (National Council for Educational Research and Training, NCERT), which immediately put its own report of learning tests in the public domain – tests which had been carried out in 2002. Finally field experiments in education are typically more readily facilitated by educational NGOs on a small scale rather than by governments and, as such, provide invaluable opportunities to test the cost-effectiveness of particular educational interventions. They can thus inform education policy as to what types of educational innovations and policies give the greatest impacts at lowest costs (Duflo, 2006). NGOs' other education activities are far too numerous to summarise but include delivering bridge courses that prepare children who dropped out of schooling earlier to re-join school; arranging for street children to settle with foster parents and attend schools; organising learning camps for girl children and for working children; and many other educational innovations.

Some of the latter have received prominent attention in recent times. For instance, *Pratham* runs a large scale 'Bal Sakhi' programme which provides an assistant teacher for remedial teaching of weak children in government schools. A randomised evaluation of this scheme in Gujarat and Mumbai by MIT's Poverty Action Lab (Banerjee et. al., 2003) showed that it dramatically increased learning by focusing on improving basic literacy and numeracy skills and that it was very cost-

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para-teachers.

effective. Another NGO, *Seva Mandir*, runs primary single-teacher non-formal education centres in tribal villages in Rajasthan and faces the problem of high teacher absenteeism. *Seva Mandir* tried to incentivize teachers by introducing an attendance-contingent bonus which was a function of the number of days the teacher was present in school. It selected 120 schools to participate in an experiment where teachers in 60 schools were given a camera with a tamper-proof date and time function and instructed him to take pictures of himself with his students every day at school opening and closing time, to provide proof of presence. Duflo and Hanna (2005) found that the intervention resulted in an immediate and long-lasting improvement in teacher attendance: the absence rate was cut from 42 to 22 percent. Due to fewer absences, treatment schools taught the equivalent of 88 child-days more per month than comparator schools, resulting in a 0.17 standard deviation increase in test scores after one year.

6. Conclusions

This paper has sought to build a picture of school education in India. Section 2 placed India's educational achievements in international perspective, noting that while it does relatively better than its South Asian neighbours Pakistan and Bangladesh in certain educational indicators, it lags seriously behind the other countries with which it is increasingly compared, such as BRIC economies in general and China in particular, especially in terms of secondary school participation and youth literacy rates.

Section 3 examined schooling access and quality, finding that there are several positive sides in India's educational development. Its primary school enrolment has come close to being universal and current attendance rates as well as literacy rates have risen encouragingly in recent times. However, Indian achievements in other respects leave much to be desired. Firstly, secondary school participation is still low and unequally distributed. Since economic incentives for acquiring secondary schooling are very high, demand for secondary schooling is likely strong suggesting that greater participation is hindered by a combination of constrained supply of secondary schools and household credit-constraints. Secondly, learning achievements in both primary and secondary schooling are very low, signalling poor quality schooling. Thirdly, and relatedly, school facilities/inputs are low and teacher absenteeism is high.

Section 4 examined the role of the private schooling sector in India. The size of this sector is greatly under-estimated in official published statistics particularly at the primary level due to excluding 'unrecognised' schools, given that more than 50% of all private primary schools are unrecognised. While household data offer a truer picture, no recent household surveys are available

with data on enrolment by school-type to show how private schooling has grown over time. Even if we ignore the numerous unrecognised schools and look instead at recognised schools only, it is clear that the private schooling sector is growing extremely rapidly in urban areas and more slowly in rural areas. It is clear that private schooling is used by poor families too. The literature on the relative effectiveness of private and public schools in India suggests that private schools are both more effective in imparting learning and do so at a fraction of the unit cost of government schools. The major reason for private schools' huge cost advantage over public schools is because they can pay market wages while government school teachers' bureaucratically set salaries have large rents in them which teacher unions have fought hard to secure. The spread of fee-charging private schooling represents growing inequality of opportunity in education. Also the pattern of growth of private schooling in urban areas (fastest at the primary level, slower at the middle level and slowest at secondary level) gives cause for equity concerns since the children of the poor are best represented at the primary level of education and progressively less well represented at further levels.

Lastly, section 5 looked at some public education initiatives. The *Sarva Shiksha Abhiyan*, mid-day meal scheme and the para-teacher scheme were each discussed briefly. Unfortunately, the impacts of these massive interventions (or of their sub-components) on children's school attendance and learning outcomes have not been rigorously evaluated. This is necessary if decision makers are to hone future education policy making in light of knowledge about the cost-effectiveness of alternative interventions. Moreover, radical measures to improve teacher and school incentives have not been considered in India, perhaps because they stand to upset powerful vested interest. While the existence of fiscally-demanding education initiatives and the introduction of the two percent education cess to fund them testifies to the Indian government's increased commitment to school education and gives grounds for optimism about the future, serious challenges remain.

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Appendix Table 1
Coefficient on Edyrs and Edyrs-square in a OLS Mincerian Earnings function, by State and Gender

		MEN		WOMEN	
		coeff	t-value	coeff	t-value
ANDHRA PRADESH	Edyrs	-0.0008	-0.2	0.0037	0.4
	Edyrsq	0.0053	14.5	0.0057	8.0
ASSAM	Edyrs	0.0322	4.6	0.0260	1.6
	Edyrsq	0.0042	8.3	0.0051	4.1
BIHAR	Edyrs	-0.0023	-0.4	0.0598	3.0
	Edyrsq	0.0060	14.1	0.0044	2.9
GUJARAT	Edyrs	0.0020	0.3	0.0308	2.2
	Edyrsq	0.0046	10.4	0.0030	2.9
HARYANA	Edyrs	0.0173	1.5	0.0803	1.5
	Edyrsq	0.0039	5.1	-0.0001	0.0
HIMACHAL	Edyrs	0.0278	2.6	0.0810	2.2
	Edyrsq	0.0037	5.6	-0.0010	-0.5
KARNATAKA	Edyrs	0.0100	1.6	0.0582	4.9
	Edyrsq	0.0051	11.6	0.0031	3.6
KERALA	Edyrs	-0.0252	-2.7	-0.0085	-0.5
	Edyrsq	0.0050	9.2	0.0067	7.0
MADHYA PRADESH	Edyrs	0.0255	4.2	-0.0245	-2.1
	Edyrsq	0.0037	9.0	0.0078	9.0
MAHARASHTRA	Edyrs	0.0246	5.4	-0.0021	-0.3
	Edyrsq	0.0038	13.1	0.0075	13.3
ORISSA	Edyrs	0.0668	9.1	0.0892	5.1
	Edyrsq	0.0020	3.9	0.0002	0.1
PUNJAB	Edyrs	-0.0106	-1.6	0.0219	0.7
	Edyrsq	0.0059	12.1	0.0048	2.5
RAJASTHAN	Edyrs	-0.0035	-0.5	-0.0512	-1.5
	Edyrsq	0.0047	9.4	0.0078	3.6
TAMIL NADU	Edyrs	-0.0084	-1.6	-0.0212	-2.5
	Edyrsq	0.0050	14.6	0.0080	12.9
UTTAR PRADESH	Edyrs	-0.0099	-1.8	0.0453	2.0
	Edyrsq	0.0053	14.2	0.0019	1.2
WEST BENGAL	Edyrs	0.0147	2.7	0.0253	1.5
	Edyrsq	0.0047	13.1	0.0054	4.5

Source: Author's own calculations using National Sample Survey 1999-2000 data

Appendix Table 2
Learning achievement in grade 5, by subject and state, 2002
(Mean percentage mark)

State/U.T	Number of pupils	Environmental Science: mean % mark	Environmental Science: Diff. with nat. mean	Mathematics: mean % mark	Mathematics: Diff. with nat. mean	Language: mean % mark	Language: Diff. with nat. mean
AP	2,333	44.6	-5.7	43.5	-3.0	54.8	-3.7
Assam	3,689	42.9	-7.4	40.0	-6.5	49.2	9.4
Bihar	2,239	66.0	15.7	62.6	16.1	65.2	6.7
Chattisgarh	2,597	43.2	-7.2	38.4	-8.2	49.7	-8.9
Delhi	5,876	50.0	-0.3	48.2	1.7	63.2	4.6
Gujarat	2,453	52.4	2.1	48.4	1.9	56.2	-2.4
Harayana	4,604	53.2	2.9	53.3	6.8	60.5	1.9
HP	4,553	34.9	-15.4	34.4	-12.1	50.0	8.6
Karnataka	3,853	51.5	1.2	46.0	-0.5	58.6	0.1
Kerala	4,342	41.4	-8.9	35.9	-10.6	55.0	-3.6
MP	3,791	54.1	3.8	49.0	2.5	58.3	-0.3
Maharashtra	4,981	52.8	2.5	44.3	-2.2	62.1	3.6
Orissa	2,979	56.0	5.7	47.0	0.4	60.7	2.2
Punjab	3,143	50.2	-0.1	49.6	3.1	58.1	-0.5
Rajasthan	2,357	50.8	0.5	49.4	2.9	60.7	2.1
Tamil Nadu	4,768	66.0	15.7	58.4	11.9	71.1	12.5
UP	5,098	41.5	-8.9	37.8	-8.7	50.2	-8.4
Uttaranchal	2,741	43.3	-7.0	38.8	-7.7	56.4	-2.2
WB	4,739	58.7	8.4	60.1	13.6	70.7	12.1
Total	88,271	50.3	---	46.5	---	58.6	---

Source: NCERT (2006a).

Appendix Table 3a
Growth in enrolments by level and school-type in India, 1978-2002 (recognised schools only)
India (Rural only)

Level	School-type	Number of students enrolled				1978-1986		1986-1993		1993-2002	
		1978	1986	1993	2002	Absolute increase	% share of the total increase	Absolute increase	% share of the total increase	Absolute increase	% share of the total increase
		(a)	(b)	(c)	(d)	(e) = b-a	(f)=e/x	(g) = c-b	(h) = g/x	(i) = d-c	(j) = i/x
Primary											
	G	47,633,585	60,139,917	65,599,157	80,661,291	12,506,332	90.2	5,459,240	81.8	15,062,134	73.0
	PA	3,903,235	4,874,590	4,856,130	5,392,967	971,355	7.0	-18,460	-0.3	536,837	2.6
	PUA	394,880	786,292	2,017,695	7,043,702	391,412	2.8	1,231,403	18.5	5,026,007	24.4
	Total increase										
	(x)					13,869,099		6,672,183		20,624,978	
Junior	*G*	6,424,096	11,634,203	14,540,951	19,623,404	5,210,107	77.0	2,906,748	77.6	5,082,453	55.9
	PA	4,111,685	5,184,113	5,541,912	7,442,493	1,072,428	15.8	357,799	9.6	1,900,581	20.9
	PUA	424,423	911,402	1,392,249	3,501,053	486,979	7.2	480,847	12.8	2,108,804	23.2
	Total increase										
	(x)					6,769,514		3,745,394		9,091,838	
Secondary	*G*	1,414,646	3,480,489	5,194,979	7,515,634	2,065,843	57.1	1,714,490	63.4	2,320,655	35.1
	PA	2,683,326	4,026,012	4,590,984	6,843,467	1,342,686	37.1	564,972	20.9	2,252,483	34.0
	PUA	82,182	290,975	717,975	2,763,644	208,793	5.8	427,000	15.8	2,045,669	30.9
	Total increase										
	(x)					3,617,322		2,706,462		6,618,807	

Source: NCERT (1982) *Fourth All India Education Survey of 1978-79*, NCERT (1992) *Fifth All India Education Survey of 1986-87*, p. 1116-1138; NCERT(1998) *Sixth All India Education Survey of 1993-94*; Figures from the *Seventh All India Education Survey of 2002-03* obtained from http://gov.ua.nic.in/NScheduleData/main3.aspx.

Appendix Table 3b
Growth in enrolments by level and school-type in India, 1978-2002 (recognised schools only)
India (Urban only)

Level	School-type	Number of students enrolled				1978-1986		1986-1993		1993-2002	
		1978	**1986**	**1993**	**2002**	**Absolute increase**	**% share of the total increase**	**Absolute increase**	**% share of the total increase**	**Absolute increase**	**% share of the total increase**
		(a)	**(b)**	**(c)**	**(d)**	**(e) = b-a**	**(f)=e/x**	**(g) = c-b**	**(h) = g/x**	**(i) = d-c**	**(j) = i/x**
Primary	*G*	10,270,760	11,189,956	12,836,933	12,766,950	9,19,196	26.7	1,646,977	37.1	-69,983	-1.3
	PA	4,735,795	5,304,932	5,414,067	5,710,967	5,69,137	16.5	109,135	2.5	296,400	5.6
	PUA	1,663,969	3,617,791	6,305,253	11,339,424	19,53,822	56.8	2,687,462	60.5	5,034,171	95.7
	Total increase										
	(x)					34,42,155	100.0	4443574	100.0	5,261,088	100.0
Junior	*G*	3,173,594	4,272,930	5,229,084	5,581,666	10,99,336	43.2	956,154	31.3	352,582	10.3
	PA	3,336,413	3,874,078	4,999,795	5,612,649	5,37,665	21.1	1,125,717	36.9	612,854	18.0
	PUA	488,266	1,395,610	2,367,067	5,084,580	9,07,344	35.7	971,457	31.8	2,447,513	71.7
	Total increase										
	(x)					25,44,345	100.0	3053328	100.0	3,412,949	100.0
Secondary	*G*	1,808,870	2,679,760	3,996,181	5,282,214	8,70,890	34.3	1,316,421	44.6	1,286,033	21.6
	PA	2,687,164	3,906,889	5,016,267	6,905,070	12,19,725	48.0	1,109,378	37.6	1,888,803	31.7
	PUA	195,969	645,442	1,168,160	3,944,952	4,49,473	17.7	522,718	17.7	2,776,792	46.7
	Total increase										
	(x)					25,40,088	100.0	2,948,517	100.0	5,951,628	100.0

Source: NCERT (1982) *Fourth All India Education Survey of 1978-79*, NCERT (1992) *Fifth All India Education Survey of 1986-87*, p. 1116-1138; NCERT(1998) *Sixth All India Education Survey of 1993-94*; Figures from the *Seventh All India Education Survey of 2002-03* obtained from http://gov.ua.nic.in/NScheduleData/main3.aspx.