Oxford Review of Economic Policy, Volume 23, Number 2, 2007, pp.168–195

The progress of school education in India

Geeta Gandhi Kingdon*

Abstract This paper provides an overview of school education in India. First, it places India's educational achievements in international perspective, particularly against countries with which it is now increasingly compared, especially China. Second, 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. Third, the paper investigates the role of private schooling in India, examining the extent of growth of private schooling and surveying evidence on the relative effectiveness and unit costs of private and public schools. Last, the paper discusses some major public education initiatives. The concluding section suggests a future research agenda and appeals for rigorous evaluation of the impacts and costs of the numerous existing educational interventions, in order to learn about their relative cost-effectiveness for evidence-based policy-making.

Key words: school education, India

JEL classification: I20, I21

I. 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

*Department of Economics, University of Oxford, e-mail: geeta.kingdon@economics.ox.ac.uk
doi: 10.1093/icb/grm015

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: 2000–4 data from the Education for All Global Monitoring Report (UNESCO, 2006).

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 computer-science and other graduates. This paper provides an assessment of the current situation and recent progress of school education.

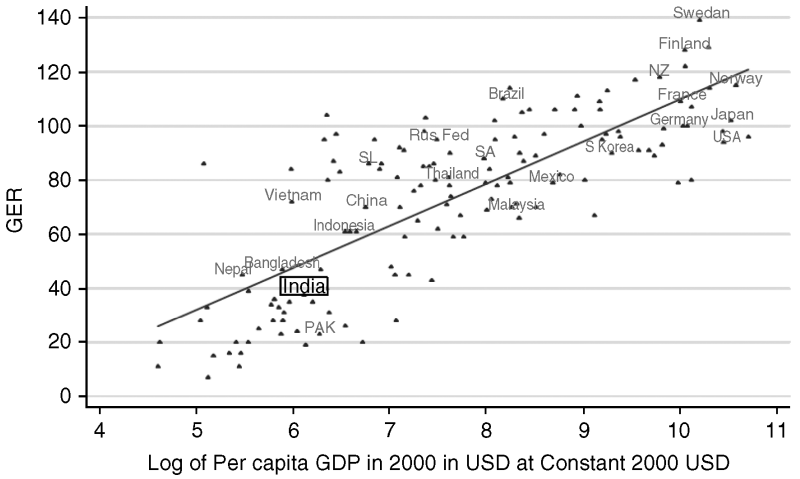
II. Indian educational achievements in international perspective

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)—countries with which India is increasingly compared. While India does well compared to Bangladesh and Pakistan, it lags substantially behind all the other BRIC countries and Sri Lanka, and is also behind the average for 'developing countries'. 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 that of China. Even focusing more narrowly on only the youth literacy rates, India's disadvantage with respect to China is a large 22.5 percentage points.

India's disadvantage *vis-à-vis* other countries in primary school participation rates is now much smaller compared to that for youth literacy rates, since 93.4 per cent of Indian elementary school age children were enrolled in school in 2006 according to the Annual Survey of Education Report (ASER) (Pratham, 2007).[1] 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

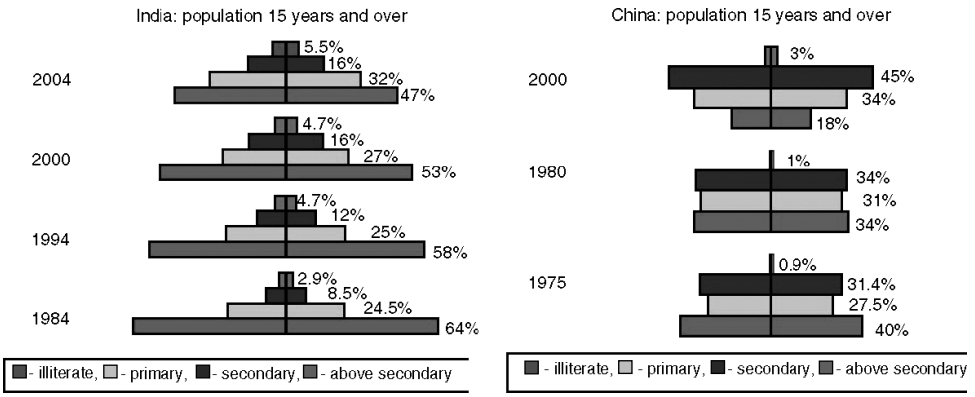
[1] Though see section III(ii) on India's current school attendance rates.

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 *et al*. (2006), based on various rounds of the National Sample Survey for India and on Barrow and Lee (2004) international data on education, for China.

are 27 percentage points higher than that of India. 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.

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 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

Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) study, which is a regional inter-country comparative study of achievement levels in 14 African countries.[2] However, World Bank (2006) applied the TIMSS questions to secondary school students in the Indian states of Rajasthan and Orissa, with the permission of the Indian Ministry of Human Resource Development. The findings show that the international mean achievement in the maths test was 52 per cent for grade 8 students but the average scores of Rajasthan and Orissa students on the same test were 34 and 37 per cent, respectively. Similarly, the international mean of achievement was 57 per cent for grade 12 students but the corresponding scores for Indian students were 44 and 38 per cent in Rajasthan and Orissa, respectively.[3] 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 the 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).[4]

III. 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 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.

(i) Primary and secondary enrolment rates

The ASER2006 survey (Pratham, 2007) 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

[2] For TIMSS, see http://nces.ed.gov/timss/; for PIRLS see http://timss.bc.edu/pirls2001.html; for SACMEQ see http://www.sacmeq.org/

[3] There are certain caveats about the direct comparability of the Indian and international results (see World Bank (2006, p. 58) 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.

[4] International comparison of achievement among school-going 14-year-olds across 25 high- and low-income countries, using IEA data collected in the 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, p. 8).

enrolled in school—an encouraging statistic, reflecting a good deal of progress compared to enrolments in the early 1990s.[5] Among children aged 11–14 years, enrolment was lower: 10.3 per cent of girls and 7.7 per cent 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 per cent and 20.2 per cent, respectively, for girls and boys. The distinction between enrolment and current school attendance is important and we discuss current attendance in section (ii) below. Drèze and Kingdon (2001) find that both demand- and supply-side factors are important in explaining schooling participation in India.

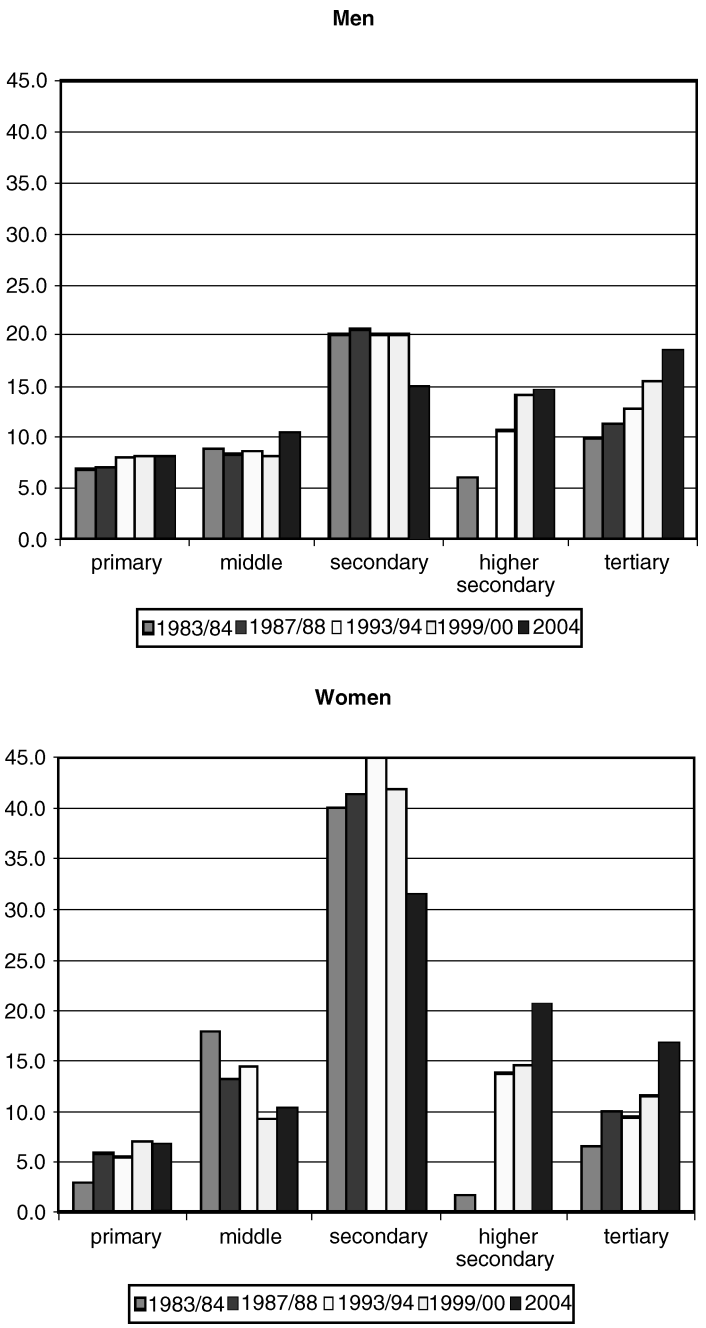
Figure 1 shows a gross enrolment rate in *secondary education* of 47 per cent. While below the level predicted for a country of India's per-capita income level, secondary enrolment rates have risen impressively in India (World Bank, 2006). Demand for secondary education has risen (partly via increase in private schooling) because it is a lucrative level of education to acquire. Kingdon (1998) and Kingdon and Unni (2001) find, using sample selectivity-corrected earnings equations, 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.[6] Estimation of wage functions using National Sample Survey data also confirms that wage returns to education increase with education level: the coefficient on the quadratic term in 'years of education' is large, positive, and statistically significant in almost every state for both genders (Kingdon, 2007). Moreover, 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 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).

The high returns to secondary education raise the puzzle of why secondary school participation is not higher in India. Schooling participation depends on both the extent of demand for and the availability of supply of schooling. It seems there are some supply-side barriers. According to the Seventh All India Education Survey (NCERT, 2006*b*), 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. A demand-side factor that likely militates against higher secondary school participation is parents' perceived futility of educating girls, since many families adhere to traditional gender roles and do not envisage daughters' participation in the labour market. Conservatism and concern for safety may also

[5] Though the figure seems high in relation to the Government of India's 'Selected Education Statistics' for 2002/3, where gross enrolment rate in middle-level education (grades 6–8) was only 61 per cent, even though it was 95.4 per cent in primary education (grades 1–5). 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, p. 19) reported a broad-based surge in educational aspirations in the 1990s. Demand for education also increased owing to the well-documented reductions in poverty since the 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 between 1993 and 2005 (National Family Health Survey, 2007). Finally, demand for education may also have increased if the perceived benefits of education—its private economic rates of return—increased.

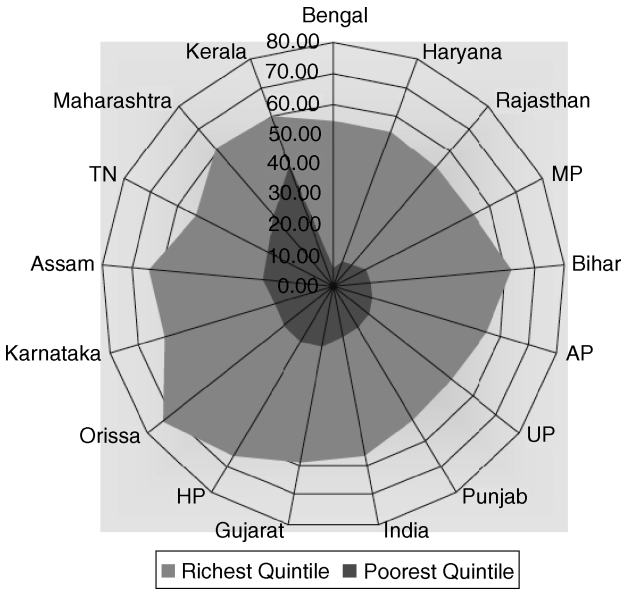
[6] While education is endogenous in an earnings function, Card (2001) finds that estimates of the coefficient on schooling made using an instrumental variable strategy are not far different from (and, indeed, typically larger than) corresponding OLS estimates.

Figure 3: Marginal returns to education, by level of education, year, and gender



Source: World Bank (2006).

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



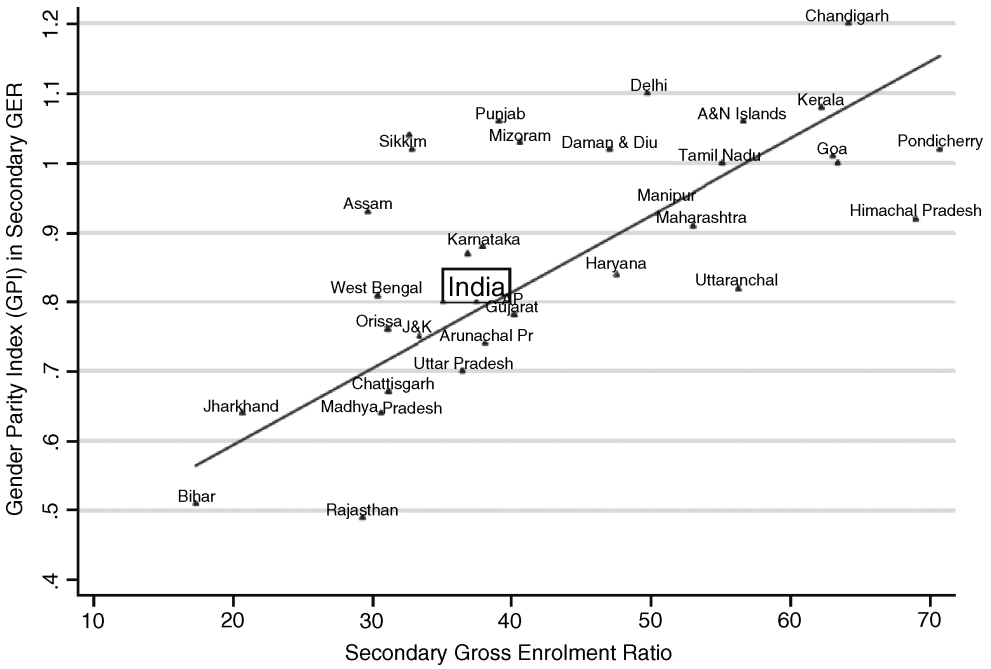
Source: World Bank (2006).

play a part in girls' attendance of distant secondary schools. Since completion of (low-wage-return) primary and junior levels of education are necessary steps for reaching the high-return secondary level of education, poor parents who cannot afford to fund education continuously for 10 years may allow children to drop out of school well before secondary level. Finally, returns to education for some groups are lower due to, for instance, discrimination in the labour market based on caste or religion. Unni (2007) estimates that wage returns to education are insignificantly different from zero for Muslim men and are significantly lower for Muslims, Christians, and Scheduled Tribe groups than for the majority Hindu group after controlling extensively for observed characteristics.

Using National Sample Survey data for 1999/2000, we find 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' (literally 'sick', but meaning generally backward) 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 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 extreme 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

Figure 5: Gender parity index in secondary gross enrolment ratio



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

Chattisgarh)—also have very high gender inequality,[7] 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 school enrolment and household educational expenditure.

(ii) 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) of 1993 and 1999 (NFHS 2005 data are not available yet). 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

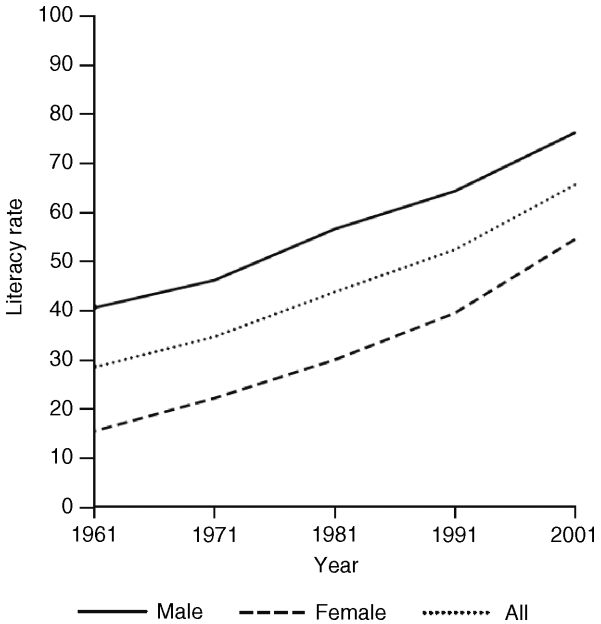
[7] Jharkhand split off from Bihar, and Chattisgarh from Madhya Pradesh in 2001 to form independent new states.

Table 2: Increase in current school attendance in rural India, by state and gender

	Males						Females					
	Age 6–10			Age 11–14			Age 6–10			Age 11–14		
	1993	1999	Increase	1993	1999	Increase	1993	1999	Increase	1993	1999	Increase
Andhra Pradesh	69	86	17	64	69	5	52	79	27	37	47	10
Bihar	57	68	11	65	72	7	34	53	19	33	49	16
Gujarat	79	84	5	79	74	−5	64	75	11	58	55	−3
Haryana	86	93	7	86	88	3	72	89	17	66	77	12
Karnataka	76	85	8	67	72	5	65	82	17	46	61	14
Kerala	95	97	2	95	96	1	95	98	3	94	96	3
Madhya Pradesh	61	80	19	70	75	6	47	74	27	45	55	10
Maharashtra	85	91	6	81	86	5	78	89	11	56	78	22
Orissa	76	85	10	73	80	7	63	81	18	53	65	12
Punjab	84	93	9	77	87	10	78	93	15	68	80	12
Rajasthan	70	87	18	75	83	8	36	66	30	29	45	16
Tamil Nadu	91	96	5	78	83	6	84	95	11	63	76	14
Uttar Pradesh	70	83	14	75	80	5	45	71	26	38	57	19
West Bengal	69	83	11	68	75	7	64	81	17	55	67	12
All India	71	83	12	73	79	5	55	75	20	48	62	14

Notes: Himachal Pradesh figures are not available from NFHS. Data on current school attendance from the 2005/6 FHS-3 survey have not been released as of spring 2007.
Sources: NFHS-1 and NFHS-2 state and all-India reports.

Figure 6: Literacy rates, by gender, 1961–2001



Source: Census of India, various years (downloadable from Census website).

increases (not shown) 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 6-year period. Overall, nearly 80 per cent of all 6–14-year-olds were attending school in 1999.[8] One of the best ways to measure school attendance rates is to observe a student's attendance in class at several points in time throughout the school year. A recent study using this method shows that attendance varied from 43 per cent in Bihar and 59 per cent in Uttar Pradesh, to very high rates (in the 90s per cent) in the more educationally progressive states (MHRD, 2007).

(iii) 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 to 65 per cent, an increase of 13 points. This is the highest absolute increase in any decade since records began in 1881.[9] Over this 10-year period, the gender gap also began to close noticeably, as seen in Figure 6. Some states experienced particularly rapid literacy increases, e.g. in Madhya

[8] National Sample Survey (NSS) data show that among 5–14-year-olds, school attendance rate in 2004–5 was 82.1 per cent. Of course this cannot be compared directly with NFHS school attendance rates, since the latter refer to ages 6–14, and the mandated school starting age is 6.

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

Table 3: Literacy rates by state, area, and gender, census data

	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

Note: The old boundaries of Bihar, Madhya Pradesh, and Uttar Pradesh have been used for 2001—i.e. including Jharkhand, Chhattisgarh, and Uttaranchal, respectively.
Sources: Census 1991; Census 2001.

Pradesh and Rajasthan, literacy rates rose by 20 and 22 percentage points, respectively. The increase in female literacy was also large in these states, as well as in Uttar Pradesh and Andhra Pradesh. However, Bihar and Gujarat made poor progress. Latest NSS data show that in the population aged 7 years and older, in 2004–5, the literacy rate was 77 per cent among males, 57 per cent among females, and 67.3 per cent overall (NSS, 2006).

Unfortunately, age-specific literacy data were not available from the 2001 Indian census even in early 2007. However, such data from the NFHS of 1993 and 1999 show encouraging trends.[10] Table 4 shows that during the short 6-year period from 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 BIMARU 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 young increased by only 6 percentage points in each of the two decades, the 1960s and 1970s, it increased by 14 points in the 1980s and by 18 points in the 1990s.

[10] Corresponding data from NFHS 2005/6 are not available yet.

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

Sources: 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 2005/6 have not been released as of early 2007.

Table 5: Literacy rates in the 10–14 age group, 1961–99 (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

Notes: The figures for 1961–91 are calculations from census data; 1999 figures are from state reports of the NFHS-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.
Source: Kingdon *et al*. (2004).

(iv) 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 summarized in Hanushek (2005). He cites three US studies as showing quite consistently that a one-standard-deviation increase in mathematics test performance at the end of high school in the USA 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

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**
1	38.4	38.3	16.8	4.0	2.6
2	14.2	30.1	32.5	15.0	8.3
3	6.3	16.5	29.3	28.0	19.9
4	3.2	8.9	18.7	31.7	37.6
5	2.1	4.9	11.9	28.1	53.0
6	1.3	2.5	6.7	22.9	66.6
7	0.8	1.5	4.1	17.5	76.1
8	0.6	0.9	2.3	12.6	83.7
Total	9.9	14.8	16.5	19.8	39.0

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

Source: ASER 2006 (Pratham, 2007).

countries for 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 non-governmental organization (NGO), Pratham, carried out a survey of learning achievement in 2005 and repeated the survey with a bigger sample of about 330,000 households in 2006. It visited 20 homes in each of 30 randomly selected villages in each one of 549 Indian districts, and interacted with all children aged 6–16 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, 47 per cent 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, nearly 55 per cent of grade 5 and nearly 25 per cent of grade 8 children could not solve a simple division problem (three digits divided by one 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 fewer than 50 per cent of children were unable to do the simple division problems. In the bottom five states, 62–75 per cent of grade 5 children could not solve the same division problems.

The National Council of Educational Research and Training (NCERT), India's apex research institution on education, administered its own learning achievement tests in 2002, the

results of which were published in 2006, soon after the release of the ASER survey. This first official effort to collect national achievement level data tested 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. The average percentage mark for India as a whole was 50.3 per cent in science, 46.5 per cent in maths, and 58.6 per cent in language (Kingdon, 2007). While it is not clear how to interpret these data, they appear to confirm ASER's findings of low learning levels.

(v) Learning achievement levels in secondary education

Given the weak base of learning at the primary level, it is to be expected that learning levels in secondary education will also be poor. We have already seen that, in cross-country comparisons, achievement levels of Indian students appear to be well below the international average, though the latter category 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 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 per cent in Manipur to 80 per cent 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 owing to the phenomenon of widespread cheating, if we can generalize from the experience of Uttar Pradesh. 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 per cent in 1991 to a pitiful 14.7 per cent in 1992 (17 per cent among regular candidates and 9 per cent 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 per cent 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 in other states. Moreover, students rely on 'guess papers' which are sold a few weeks

Table 7: Pass rates in exams of the Uttar Pradesh 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), 15 July 1992, p. 3.

before the exams. These attempt to anticipate exam questions and are often remarkably close to them. There is frequent leaking of papers in advance of examinations.

(vi) 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, 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 per cent of schools did not have a blackboard in every classroom, 52 per cent had no playground, 59 per cent no drinking water, 89 per cent no toilet, 59 per cent no maps or charts, 75 per cent no toys, 77 per cent no library, and 85 per cent no musical instruments (Probe Team, 1999, p. 42). Nine years later, the ASER 2005 report (Pratham, 2006) found that 66 per cent of primary schools had water (up from 41 per cent in 1996) and 42 per cent had functioning toilets (up from only 11 per cent in the Probe survey of 1996). These improvements in school infrastructure are explained at least in part by the massive educational intervention '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 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, playgrounds, musical instruments, computers, etc.

While inputs are clearly low, arguably a factor that matters more is incentives (Hanushek, 2003). There is clear evidence of teacher negligence in schools. First, 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 of 3,700 schools in 20 major states of India. They found that, on average, 25 per cent of teachers in government primary schools were absent from school on a given day.[11] Second, 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 levels of teaching activity in schools. The 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 per cent, as in Kremer *et al*. (2005).

[11] Absence rates varied from 15 per cent in Maharashtra to 42 per cent 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.

IV. Role of private schooling

Poorly resourced public schools which suffer from high rates of teacher absenteeism may have encouraged the rapid growth of private (unaided) schooling in India, particularly in urban areas. Private schools divide into two types:[12] recognized and unrecognized 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 conditions of recognition.[13] The emergence of large numbers of unrecognized primary schools suggests that schools and parents do not take government recognition as a stamp of quality.

(i) 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.[14] 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, India's largest 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.[15]

Table 8 shows that the true size of the private sector in India is more than three times that shown in official statistics. 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.[16] In rural Uttar Pradesh the corresponding figures were 8.8 and 30.7 per cent—again, the survey estimate being more than three times

[12] We do not include the so-called 'private aided' schools in the category of private schools. Aided schools are run by private management but funded largely by government grants-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 centralizing 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 management *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'.

[13] 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, ch. 13) estimate that average teacher salary rates rose by a remarkably high rate of 5 per cent per annum in *real* terms in the 22-year period between 1974 and 1996.

[14] See Kingdon (1996*a*) 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'.

[15] Only national figures are available in spring 2007. The latest figures for the year 2004/5 from the District Information System for Education (DISE) are not shown because of its incomplete coverage. Similarly, findings from the ASER household survey are not shown as it does not distinguish between aided and unaided schools, and merges them together into a single 'private' category.

[16] 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).

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[a]	28.9	NA
	Junior/middle	18.8	15.4[a]	39.1	NA
	Secondary	11.5	11.2[a]	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[a]	NA	NA
	Junior/middle	29.6	25.1[a]	NA	NA
	Secondary	5.3	11.3[a]	NA	NA

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 per cent of all children aged 7–10 were in private school and 4.6 per cent were not in school, thus private school share of total school enrolment is taken to be (18.6/(100 − 4.6) x 100 = 19.5 per cent) and similar calculations were performed for middle- and secondary-school ages.
Sources: 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 as of spring 2007. Rural household survey figures for 1993 are based on the author's calculations from the 1993/4 NCAER survey. [a]The urban household survey figures are taken from 1995/6 *National Sample Survey*. Household survey figures for 2006 for rural India are taken from ASER 2006 (Pratham, 2007).

the official estimate. Table 8 also shows that the official enrolment share of private schools at primary level rose from 2.8 per cent in 1993 to 5.8 per cent in 2002. If the extent of under-estimation in 2002 was the same as in 1993, then the true private school share of total primary enrolments in rural India in 2002 must have been three times as high as 5.8 per cent, i.e. 17.4 per cent. This is close to the only recent national estimate available for 2006, as seen in the last column of Table 8: according to the ASER 2006 national household survey (Pratham, 2007, p. 32), 18.6 per cent of all and 19.5 per cent of *school-going* rural primary age children (7–10 year olds) attended private schools.[17] In *urban* India, recognized private schools' share of total enrolment in 2002 was between about 30 and 40 per cent at different levels of education.

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, 1996*a*; Drèze and Kingdon, 1998). First, teachers in government and aided schools 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

[17] 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.

share of private schools. Second, all official school 'censuses' are carried out only in the government-recognized schools and a high proportion of private primary schools are unrecognized.[18]

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 suggest the extent to which the enrolment share of private schools in primary education is underestimated in official data—i.e. under-estimation by about 67 per cent in rural areas. Muralidharan and Kremer (2006) find that in their national survey of 20 states, 51 per cent of all private rural primary schools were unrecognized. This accords with evidence from individual states in other studies. These find that between 41 and 86 per cent of all primary private schools were unrecognized in different parts of India.[19]

Private schooling is used even among the poor in India. Findings from the national MIMAP survey, reported in Pradhan and Subramaniam (2000), show that, of all enrolled children aged 5–10 living below the poverty line, 14.8 per cent attended private schools (8 per cent in rural and 36 per cent in urban India). The corresponding figures for ages 11–14 (junior school age) and 15–17 (secondary school age) were 13.8 and 7 per cent, respectively. That private schools are used by poor families is also found in five north Indian states (Probe Team, 1999) and by Tooley and Dixon (2005) in Delhi.

(ii) 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, its share in the total recent *increase* in school enrolment. This shows the growth of private schooling in India, 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 that are presented in Kingdon (2007). Even though official statistics exclude unrecognized schools, even recognized private school growth numbers are telling. We learn two things from Table 9: first, that growth of private schooling has dramatically accelerated over time, particularly in urban areas; second, that in urban areas, the growth of 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 shows that the recent growth of private primary schooling in urban India has been nothing short of massive and that the pace of privatization has accelerated over time in both urban and rural India. In urban India, 56.8 per cent of all the *increase* in total primary school

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

[19] Aggarwal (2000) found that in his four surveyed districts of Haryana in 1999, there were 2,120 private primary schools, of which 41 per cent were unrecognized. The Probe survey of 1996 in five north-Indian states did a complete census of all schools in 188 sample villages. It found 41 private schools, of which 63 per cent were unrecognized. Mehta (2005) found that in seven districts of Punjab, there were 3,058 private elementary (primary plus junior) schools, of which 86 per cent were unrecognized. For more detailed evidence on this based on various data sources, see Kingdon (2006).

enrolment in the period 1978–86 was absorbed by private schools; the corresponding figure for 1986–93 was 60.5 per cent and for the period 1993–2002 was 95.7 per cent. In the 9-year period 1993–2002, government and aided primary schools together absorbed only 4.3 per cent of the total urban increase in primary school enrolments, i.e. their numbers or enrolments grew very slowly. Nearly 96 per cent of the total increase in urban primary enrolment was due to the growth of private schooling! It bears emphasizing that even this dramatic statistic is an underestimate since it takes no account of enrolment growth in the numerous unrecognized private schools that are excluded from official statistics. While in *rural* India the rate of expansion of private primary schooling has been much slower, even here the pace of privatisation picked up over time: only 2.8 per cent 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 per cent and for the 1993–2002 period 24.4 per cent. The ASER survey (Pratham, 2007) 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.

The growth of private schooling, particularly at primary and middle levels of education, signals growing inequality of educational opportunity. Figure 4 showed the extent of economic inequality in access to secondary schooling, by income quintile. The expansion of private schooling and its use by the poor suggests, at least in part, that parents perceive its quality to be better than that of public education. The growth of private schooling also suggests growing inequality in terms of access to quality education.

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, ch. 5), these states have improved their educational outcome indicators in the 1990s (Kingdon *et al*., 2004).

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

	1978–86	1986–93	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).

(iii) 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. 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 a 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 asserts that, in explaining the increased popularity of private education, the breakdown of government schools is often more decisive than parental ability to pay.

National data on learning achievement levels in ASER 2005 (Pratham, 2006) found that private school students of grades 2–5 were 37.4 per cent more likely than government school students to be able to read a text of grade 2 standard. They were also 50 per cent more likely to be able to solve a division problem (three digits divided by one 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. 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 (Govinda and Varghese, 1993; Bashir, 1994; Kingdon, 1994, 1996*b*; Tooley and Dixon, 2003). These studies have been carried out in different parts of India (Tamil Nadu, Madhya Pradesh, Uttar Pradesh, and Andhra Pradesh) and differ in several respects,[20] 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 deviations 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, i.e. more-able or more-motivated students systematically selecting into private schools, Kingdon (1996*b*) corrected for sample selectivity bias which greatly reduced, but did not eliminate, the private-school advantage over government and aided schools in the teaching of numeracy skills.

(iv) Relative costs of private and public schools

Apart from being more effective according to the cited studies, private schools also have much lower unit costs than publicly funded (i.e. government and aided) schools. This is

[20] 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 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.

due largely to teacher salaries in private schools being only a fraction of those in publicly funded schools. Findings from five different states summarized in Kingdon (2006) show that in the early to mid-1990s, private-school teachers' monthly pay was about 40–50 per cent of government teachers' pay, but that, by 2002, this ratio had fallen to only about 20 per cent. 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 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, ch. 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 per cent and assistant teachers' pay by between 26 and 55 per cent, depending on teacher category. The authors show the central role of teacher unions in securing these salary increases.[21]

V. Government and NGO education initiatives

While the data presented above on student learning levels, teacher absenteeism, and school facilities paint a somewhat grim picture of the state of schooling quality in India, there are several reasons for more optimism about the progress of school education in the future. First, a number of recent fiscally demanding public initiatives suggest that India has begun in earnest to give greater priority to improving school education. Second, a number of educational NGOs have emerged—such as Pratham, Digantar, Azim Premji, the 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.

(i) Sarva Shiksha Abhiyan

The *Sarva Shiksha Abhiyan* (SSA)—literally 'Campaign for Universal Education'—is India's flagship programme to universalize elementary education (grades 1–8) by the year 2010. It is a scheme sponsored by the central government and funded out of revenues from a new cess, equal to 2 per cent of all taxes, introduced in 2004 (increased to 3 per cent in March 2007). SSA provides additional funding to states to enrol out-of-school children and to improve school quality. It funds civil works, salaries of additional teachers to reduce the pupil–teacher ratio to 40:1, establishment of alternative schools and education guarantee

[21] See the section entitled 'Fifth Pay Commission related strikes (1997–2001)' in ch. 10 and also see ch. 13, of Kingdon and Muzammil (2003). The pay increase came into effect retrospectively from 1 January 1996.

scheme (EGS) schools in small habitations, establishment of block and cluster level resource centres, establishment of 'bridge courses' for drop-outs, in-service training for teachers, and grants for teaching 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 (DPEP)—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 at 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.

(ii) Mid-day meal scheme

In late 2001, the Indian Supreme Court directed all states 'to implement the Mid-Day Meal [MDM] 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 120m 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 1–7 rather than only in the primary grades (1–5).

Although there are no rigorous evaluations (such as 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 MDMs, e.g. 23 per cent in Barmer district of Rajasthan, 36 per cent in Madhya Pradesh, and other large increases in Karnataka. However, Deaton and Drèze (2006) note that the consumption of MDMs 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.

(iii) Para-teacher schemes

From the mid-1990s, several states began using low-cost untrained teachers known variously as s*hiksha karmis, shiksha mitras, vidya volunteers*, etc. 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). 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 (i) to 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 10 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 out that para-teachers may exhibit greater accountability owing 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 children taught by para-teachers and regular teachers are no different (Leclercq, 2002; Pratichi Trust, 2002; Govinda and Josephine, 2004).

(iv) 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 1995/6 the percentage share of aided schools in total schools was 34 and 44.3 per cent, respectively, at the secondary and higher secondary levels, though at the primary and middle levels, it was only 3.4 and 10.1 per cent, 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. Learning achievements in aided schools are often close to those in government schools and significantly lower than in private schools.

The current draft 'Right to Education' Bill under consideration in India proposes to establish a new form of PPP in education, requiring all private schools to give 25 per cent of their places to government-funded 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 decentralizing reform in India, including the current draft 'Right to Education' Bill, have not included consideration of the possibility of providing school vouchers as a way of improving the accountability of schools and teachers towards students and parents. This is unlike the situation in Chile, Colombia, New Zealand, the USA, the 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 voucher schemes, such as their potentially adverse equity effects (Kingdon, 2006). Vouchers 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 powerfully resisted by vested-interest groups.

(v) 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 MDM 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 rapidly 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 own educational research institutions. 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 valuable opportunities to test the cost-effectiveness of particular educational interventions. They can thus inform education policy as to what types of educational innovations give the greatest impacts at the lowest costs (Duflo, 2006). NGOs' other education activities are far too numerous to summarize, but include delivering bridge courses that prepare drop-out children to re-join school; arranging for street children to settle with foster parents and attend schools; organizing learning camps for girls 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 randomized evaluation of this scheme in Gujarat and Mumbai by MIT's Poverty Action Lab (Banerjee *et al*., 2005) showed that it dramatically increased learning by focusing on improving basic literacy and numeracy skills, and that it was very cost-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 of the schools were given a camera with a tamper-proof date and time function and were instructed to take pictures of themselves with their 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 per cent. Owing 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 1 year. NGO education activity is increasing, assisted by corporate and donor funding.

VI. Conclusions

This paper has sought to build a picture of school education in India. Section II 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 III examined schooling access and quality, finding that there are several positive sides to India's educational development. Its primary school enrolment has come close to being universal and literacy rates have risen encouragingly in recent times. However, Indian achievements in other respects leave much to be desired. First, primary school attendance rates are very low in the populous northern states of Bihar and Uttar Pradesh. Second, secondary school participation is still low and unequally distributed. Since economic incentives for acquiring secondary schooling are high, demand for secondary schooling is likely to be strong, suggesting that greater participation is hindered by a combination of constrained supply of secondary schools, household credit-constraints, and conservatism about gender roles. Third, learning achievements in both primary and secondary schooling are very low, signalling poor-quality schooling. Last, and relatedly, school facilities/inputs are low and teacher absenteeism is high.

Section IV 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, owing to excluding 'unrecognized' schools, given that more than 50 per cent of all private primary schools are unrecognized. Even if we ignore the numerous unrecognized schools and look instead at recognized schools only, it is clear that the private schooling sector is growing extremely rapidly in urban areas and more slowly in rural areas. Household data offer a truer picture, and they show that private schooling has grown rapidly over time. 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, controlling for student background, private schools are more effective in imparting learning and do so at a fraction of the unit cost of government schools. The major reason for private schools' massive cost advantage over public schools is that 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 and secondary levels) 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 V looked at some public education initiatives. The *Sarva Shiksha Abhiyan*, MDM 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 the 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 interests. While the existence of fiscally demanding education initiatives and the introduction of the 3 per cent 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.

The evidence available for India is mostly of a descriptive nature and rigorous analyses of educational issues are sparse. Though increasing very recently with the onset of randomized evaluations, few studies so far have used methods that permit causal inferences. Although data are becoming more readily available (Mehta, 2005), many expensively collected education data sets are not shared with researchers and there are inordinate delays in the compilation and release of official education data.

What should be the research and policy agendas for the future? The two are clearly related if policy-making is to be evidence based. A policy research agenda for the future can usefully include systematic and methodologically sound analyses of the following.

(i) The impact, on children's educational outcomes, of a variety of incentive-based educational interventions for teachers and schools, such as the impact of performance-related pay and of performance-related tenure-conferment for teachers, the impact of public–private partnerships of different kinds, such as supply-side (per-student aid) and demand-side (voucher) funded schools. The lack of good incentives for schools and teachers are issues that need to be addressed head-on by scholars and policy-makers.

(ii) Trends in inequality in access to and quality of education. Given the rapid spread of private schooling, it is expected that economic inequality in education has risen over time and education policy-makers need to be aware of the extent of this phenomenon.

(iii) The influence of political-economy factors in shaping public education policies and processes, so that attempts might be made to bring more rationality into educational decision-making.

(iv) Identifying the barriers to children's learning. For example, is learning low because of lack of physical inputs (teacher absence, lack of learning materials), poor processes (lack of school timetable, lack of homework setting/marking policy), or teacher incompetence to deliver the curriculum, or a combination of these, and, if the last, which factors contribute the most?

(v) Evaluating the relative costs and relative impact, on educational outcomes, of the numerous existing public education interventions under *Sarva Shiksha Abhiyan*, since there is little point in having initiatives to improve quantity or quality of education if there is no knowledge of their likely impacts and costs.

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