

Private and public schooling: The Indian experience

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1. Introduction

The purpose of this paper is to present an overview of the Indian experience with private and public schooling. It does four things: (i) shows how the enrolment share of different school-types has changed over time, (ii) illustrates from Indian literature on the relative effectiveness and costs of government, aided and private schools, (iii) discusses the experience of public-private partnerships in education in India and (iv) summarises issues relating to the school-choice debate in India in light of recent/current educational legislation.

Analysis of education in India in general and of private and public schools in particular is hampered by the lack of availability of data. Despite recent improvements in the educational database in India (Mehta, 2005), there is a serious paucity of reliable educational data in India. Firstly, the official data collection exercise on schools (both annually and in the periodic ‘All India Education Surveys’) collects information only on the so-called ‘recognised’ schools. Thus, large numbers of private schools are not included in the official data since they are ‘unrecognised’ (Kingdon, 1996a). Secondly, coverage of even the recognized schools is incomplete. For instance, coverage of various types of special schools is patchy across different states, such as Central Schools, Army Schools, Education Guarantee Schools, schools registered with national examination boards, etc. (Mehta, 2005). Thirdly, enrolment figures in school-returns data are unreliable because failing/unpopular publicly funded schools exaggerate their student numbers in order to justify their existence (Drèze and Kingdon, 1998). Fourthly, no national, state or district level data are collected on student learning achievement in primary and junior education in private and public schools; while exam boards do have achievement data for *secondary* school level, these are not publicly available to researchers and in any case, they are not linked to student, teacher and school characteristics.

Partly reflecting this lack of data, there is a paucity of good research on educational issues in India. Much of the extant research using achievement production functions merely establishes correlations rather than causation between student achievement and particular school inputs. The inability to deal convincingly with issues of the potential endogeneity of school inputs has been due to the ubiquitous problems of lack of credible instruments and lack of panel or experimental data, though two recent studies have used randomised experiments to study the impact of particular educational interventions (Banerjee et. al., 2003; Duflo and Hanna, 2005).

Section 2 presents evidence on the relative sizes of private, aided and government schooling sectors in India. Section 3 examines the relative effectiveness and per pupil costs of private and public schools in India. Section 4 discusses India’s experience with public private partnerships and Section 5 considers issues related to the school-choice debate in India in light of recent and forthcoming educational legislation.

2. The relative sizes of the private and public schooling sectors

The very first fact about the private and public schools in India is that even their relative enrolment shares are not known. This is mainly due to a failure to include all types of schools in official data collections but also partly due to exaggeration of enrolments in publicly funded schools in these data (Kingdon, 1996a; Drèze and Kingdon, 1998).

Table 1

School-type	Basic / Elementary education		Secondary education	
	Primary (also known as 'lower primary' (grades 1-5)	Upper Primary (also known as 'junior' or 'middle') (grades 6-8)	Secondary (also known as 'lower secondary') (grades 9-10)	Upper Secondary (grades 11-12)
Government				
Aided				
Private - recognized - unrecognized				

2.1 Typology of school-types in India

Table 1 describes school types and school levels in India. There are three main school types: government, aided, and private. Schools run by the central, state or local governments are referred to as ‘government’ schools. Schools run by private managements but funded largely by government grant-in-aid are known as private aided or just ‘aided’ schools. In the first two decades after independence, these schools were somewhat similar to the current charter schools in the US and they charge the same fee levels as government schools (which is now nil). However, following important centralising legislation in the early 1970s, their teachers are paid at government-teacher salary rates directly from the state government treasury and are recruited by a government-

appointed Education Service Commission rather than by the school. Thus, government and aided schools are now very similar and they are both publicly funded. Schools run by private managements without state aid are known as 'private unaided' schools. These run entirely on fee-revenues and have virtually no government interference in matters such as teacher recruitment. These are thus the genuinely private schools and we refer to these simply as 'private' schools rather than using their full name 'private unaided'.

Private schools in turn divide into two types: recognized schools and unrecognized schools. It turns out that for understanding the true size of the private schooling sector in India, the distinction between recognized and non-recognized schools is crucial. While government educational data collection exercises are intended to be a census of schools in the country, in fact they cover only the so called 'recognized' schools and do not cover the unrecognized schools¹.

To be eligible for government recognition, a private school is by law required to fulfil a number of conditions². However, hardly any private schools that get recognition actually fulfil all the conditions of recognition. For instance, many recognized private schools in Uttar Pradesh run in rented buildings when having an owned building is a mandated condition of recognition (Kingdon, 1994). Indeed, some of the conditions are, or have over time become, mutually inconsistent³. The main benefit of having recognition used to be that with 'recognition' a school becomes entitled to issue valid 'Transfer certificates' (TCs). TCs from a recognized primary school are mandated to be required for admission into upper primary and secondary schools. However, the

¹ School returns data are collected by three government agencies. (a) the annual school census by the Ministry of Human Resource Development (MHRD) which collects basic data on schools; (b) the more detailed but only periodic census of schools every 7-8 years by the National Council of Educational Research and Training (NCERT) and annual District Information System for Education (DISE) by the National Institute of Educational Planning and Administration (NIEPA). Coverage of schools in DISE is not yet fully comprehensive (Mehta, 2003) and the MHRD data do not provide enrolment figures by school-type (private, aided, government). Thus, the NCERT's data (known as the All India Education Survey) is the most used, even though it is dated. While its called a 'survey' it is in fact intended to be a census of all recognized schools in the country.

² In the large north Indian state of Uttar Pradesh, in order to gain government recognition, a school must be a registered society, have an owned rather than a rented building, employ only trained teachers, pay salaries to staff according to government prescribed norms, have classrooms of a specified minimum size and charge only government-set fee rates. It must also instruct in the official language of the state and deposit a sum of money in the endowment and reserve funds of the education department. Another condition added in the early 1990s was that the school seeking recognition must not be situated within 5 kilometers of a government school (Kingdon, 1994, chapter 2).

³ 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 fallen 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.

emergence of large numbers of unrecognized primary schools (as shown later) suggests this may no longer be necessary.

2.2 Private schooling share according to official and household data

Despite the data deficiencies described above, it is clear that there has been a massive growth of fee-charging private schooling in the recent past, as noted first in Kingdon (1996a). This paper challenged the prevailing notion in Indian writings, based on official published data, that the size of the private sector in primary education was ‘infinitesimally small’ or ‘negligibly small’. It drew attention to the fact that “Published educational statistics in India ignore ‘unrecognized’ private schools and include only the ‘recognized’ private schools... Moreover, enrolments in government-funded schools are greatly over-reported in education data.... as a result, official education statistics are seriously skewed: they exaggerate the size of the free, government-funded elementary school sector and greatly understate the size of the private fee-charging elementary school sector”.

Table 2 shows the enrolment share of private schools in rural and urban India, according to both official school returns data and household survey data. 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 available on enrolment by school-type are for 1993. The Seventh All India Education Survey was carried out in 2002 but its results have not been made available yet. The latest figures for the year 2003-4 from the District Information System for Education (DISE) are included in Appendix 1 because of its incomplete coverage.

Table 2 shows that according to official statistics, in 1993, only 2.8 per cent of all rural primary school students in India were studying in private schools but, according to household survey data for the same year, 10.1 per cent of all rural Indian 6-10 year old school attendees went to a private school, a figure that is more than three times as high as the official estimate.⁴ Overall, 9.8 per cent of all 6-14 year old rural Indian school-goers went to private schools (Shariff, 1999). In rural Uttar Pradesh, official estimates put the 1993 enrolment share of private primary schools at 8.8 per cent but according to the 1993-94 National Council of Applied Economic Research (NCAER) household survey, the actual share was 30.7 per cent, again more than three times as high

⁴ 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.

as 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)⁵.

Table 2
Enrolment share of private schools, 1993

Area	School level	Official published data	Household survey data
		1993	1993
ALL INDIA			
Rural	Primary	2.8	10.1
	Junior/middle	6.5	7.9
	Secondary	6.8	10.1
Urban	Primary	25.7	26.2*
	Junior/middle	18.8	15.4*
	Secondary	11.5	11.2*
UTTAR PRADESH			
Rural	Primary	8.8	30.7
	Junior/middle	28.3	23.3
	Secondary	10.9	14.4
Urban	Primary	53.3	49.7*
	Junior/middle	29.6	25.1*
	Secondary	5.3	11.3*

Source: Official data computed from the Sixth All India Education Surveys (NCERT, 1998). Rural household survey figures 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).

The reasons for the large discrepancy between household survey estimates and official estimates of the size of the private schooling sector in India are discussed in Kingdon (1996a) and Kingdon and Drèze (1998): Firstly, government and aided school teachers have an incentive to over-report their enrolments when there is low demand for such schools, and this reduces the apparent enrolment share of private schools; secondly, as stated above, all official school 'censuses' are carried out only in the government-recognized schools and in most Indian states, there is no

⁵ De et. al. (2002) compare the private sector's share in total elementary school enrolment in two different household surveys in mid-1990s and report wide discrepancies in the share according to the two surveys. E.g., in Haryana, NCERT (i.e. official) data show the private share as 2%, NCAER 1993-1994 survey shows it as 12.9% and the NSSO 1995-96 survey as 18.9%. Similarly, in Karnataka, NCAER shows a private share of 9.6% but NSSO of only 0.9%. Thus, even two large household surveys for roughly the same time period show quite different private shares. One reason for this could be genuine change in private enrolment share between 1994 and 1996, though this seems implausible. Another explanation is that data quality is poor in one or the other survey. A third, most plausible, explanation is that to many parents, the distinction between aided and private schools may not be clear, especially when aided schools do charge some fees. Moreover, since aided schools all start life as private schools, their names are like private schools', and generally quite distinct from the names of government schools.

requirement on private primary schools to be even registered, let alone be government-recognized. 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, failing which bribes are needed (Tooley and Dixon, 2003). 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.

2.3 How under-estimated is the size of the private school sector?

How much is the size of the private school sector underestimated as a result of the exclusion of the unrecognized schools? Evidence suggests that the true size of the private schooling sector is massively underestimated in official data due to enumerating only the recognized schools. Household survey data give a picture 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. Thus, 1993 household survey data in Table 2 already give an indication of the extent to which the enrolment share of private schools is underestimated in official data. Some surveys do make a distinction between recognized and unrecognized schools when asking households the school-type attended by currently enrolled children. Evidence from the latest round of the National Sample Survey to include questions on school-type, in 1995-96 (Table 3) shows the enrolment share of private recognised and unrecognised schools. Haryana, Punjab, UP, AP and Bihar (shaded) have high private enrolment shares in both primary and upper primary schools. The 'all-India' row shows that 17.3% of all primary aged children attended private schools in India in 1995-96, 12.5% in recognised and 4.8% in unrecognised schools. Thus, by this survey, private school enrolment share is underestimated by 28%. It may be that the extent of under-estimation is greater in rural areas⁶. However, it is possible that some parents will not know the difference between recognized and unrecognized schools, so some caution is warranted.

⁶ Data from the rural 'Survey of Living Conditions: Uttar Pradesh and Bihar, 1997-98' show that in rural Bihar only 1% of enrolled 6-10 year olds attend recognised private schools while 11% attend unrecognised private schools, i.e. the enrolment share of unrecognised private schools was 11 times that of the recognised schools. The corresponding figures for rural UP were 7% and 15% respectively, i.e. the enrolment share of unrecognised private schools was just over double that of recognised private schools (though the implied 22% total private share is lower than the 36% private share found in the PROBE report which had data for 1996).

Table 3**Percentage of children attending private recognised and unrecognised schools (1995-96)**

	Primary			Upper Primary		
	Recognised	Unrecognised	Total private	Recognised	Unrecognised	Total private
Andhra Pradesh	21.2	5.6	26.8	21.1	4.5	25.6
Assam	1.1	3.5	4.6	0.4	0.9	1.3
Bihar	11.0	9.2	20.2	9.0	6.2	15.2
Gujarat	2.8	0.3	3.1	2.2	0.4	2.6
Haryana	29.8	18.7	48.5	15.5	6.6	22.1
Himachal Pradesh	3.5	0.1	3.6	5.9	0.9	6.8
Karnataka	5.8	0.5	6.3	6.4	0.8	7.2
Kerala	12.8	2.8	15.6	5.7	1.4	7.1
Madhya Pradesh	6.6	0.9	7.5	5.1	0.6	5.7
Maharashtra	4.2	1.0	5.2	3.5	0.7	4.2
Orissa	2.0	1.0	3.0	3.2	4.1	7.3
Punjab	21.7	15.5	37.2	14.9	8.7	23.6
Rajasthan	9.5	0.9	10.4	8.0	0.4	8.4
Tamil Nadu	7.5	0.8	8.3	5.9	0.1	6.0
Uttar Pradesh	24.8	10.0	34.8	19.8	6.5	26.3
West Bengal	3.5	1.1	4.6	1.9	0.8	2.7
All India	12.5	4.8	17.3	8.8	2.6	11.4

Source: 52nd round National Sample Survey data, as reported in Aggarwal (2000). States with higher than the national percentage are shaded.

Another way of working out the extent of under-estimation is to do a true census of all schools in an area, unlike in the official data collections. This is quite difficult since there is no register of unrecognized schools and it involves going from street to street to find such schools. Three studies so far have attempted this, though it is not known how meticulous they were, relative to each other, in seeking out unrecognized schools. Aggarwal (2000) found that in his four surveyed districts of Haryana in 1999, there were 2120 private primary schools of which 878 (or 41%) were unrecognized. Using information on the date of establishment of each school, he calculated that the number of unrecognized schools in Haryana was doubling roughly every 5 years. 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, out of which 26 (or 63%) were unrecognized. Mehta (2005) finds that in 7 districts of Punjab, there were 3058 private elementary (primary +junior) schools, of which 2640 (86%) were unrecognized. Clearly, unrecognized schools form the majority of private primary schools in the 5 north Indian PROBE states and in Punjab.

2.4 How private and aided school enrolment shares vary by level of education

It is noteworthy that according to household survey data in Table 2, the size of the private school sector is generally proportionately largest at the primary level, smaller at the junior level, and smallest at the secondary level. This is also corroborated in Table 3 which shows that in India (rural+urban) in 1995-96, among primary age enrolees 17.3% attended private school, while among junior school enrolees, only 11.4% attended private school. Since government regulations such as the requirement to be recognized and pay high prescribed-minimum salaries to teachers are progressively more stringent for higher levels of education, more private schools exist at the primary level than at the junior level and the secondary level⁷. Since the children of the poor are best represented at primary education, this pattern is clearly perverse from the point of view of equity.

The enrolment share of different school-types in the 1993 NCAER household survey for rural India only is presented in Table 4⁸. It shows that in the primary age group (ages 5-10), the importance of aided schools varies dramatically by state, with Kerala, West Bengal and Assam having very high aided school shares. It is interesting to that these states – which have tended to have left leaning governments – have chosen to deliver primary schooling predominantly via a system of aided schools rather than via government schools. In the primary age group, private school enrolment is relatively high in AP, Haryana, Punjab and UP; in the upper primary age group (11-14 years), the private enrolment share is relatively high in Punjab and UP; in the secondary age group (15-18 years), the private share is relatively high in Karnataka, Kerala, Orissa, Punjab and UP; and in the higher education age group (19-24 years), the private share is high in Karnataka, Kerala, Orissa, Punjab, Tamil Nadu and Assam. These differences at different ages (corresponding to different levels of education) presumably reflect the policy choices made by the respective state governments, for instance the choice of how many private schools to bring onto the grant-in-aid list and how much to control private schools. To our knowledge, there is no attempt – let alone any satisfactory explanation – in the political economy literature, to understand the factors underlying these very different policy choices in education by the different Indian states. While the smallness

⁷ The government of Uttar Pradesh, for instance, was reluctant to give ‘on objection’ certificates to private recognized junior schools to start secondary grades in their school because of the fear that that will increase the pressure to make the school aided and thus may increase the state government’s expenditure/fiscal burden. Once a private school becomes a secondary school, its teachers join the secondary school teachers union (the *Madhyamik Shikshak Sangh*, which is by far the strongest teacher union) and start agitating for the school to be made government aided, so that they can enjoy the much high salaries paid in aided schools compared with government schools. However, this changed in the early 1990s in Uttar Pradesh, when the state government started granting permissions for junior schools to become secondary schools on the condition that the school will agree not to apply for aided status (will be ‘*vitt viheen*’).

⁸ NSS 1995-96 data tables are not available for secondary and higher education ages.

of the private enrolment share and the largeness of the aided school share in the left-leaning states might be explained by these states' anti-private stance and their possible propensity to cave-in more easily to teacher union demands, it does not explain why they have not chosen to provide primary education primarily via government schools, as in most other states. This is something of a puzzle.

The popularity of private schooling is clear even among the poor in India. Findings from the MIMAP survey in India show that, of all school-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). Firstly this shows that private schools are used by poor families, as also found in 5 north Indian states (PROBE Team, 1999) and by Tooley and Dixon (2003) in Andhra Pradesh. Secondly, MIMAP numbers presented in Appendix Table 2 confirm, for those below the poverty line, the pattern noted earlier, namely that use of private schools is greatest at the at primary level.

2.5 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. Table 5 presents the proportion of the total enrolment increase (over time) that is absorbed by private schools. It shows the percentage of all new enrollees who choose private schooling. Due to lack of household survey data over time, unfortunately, information on enrolment can only be gleaned from official statistics (i.e. only on recognized schools), but even these are telling. They show that in urban India, 61 per cent of all the *increase* in total primary school enrolment in the period 1986-1993 was 'absorbed' by private schools and that government and aided schools together absorbed only 39 per cent of the new primary enrolment over the period. This suggests a massive growth of private primary schooling in urban India. In rural India the rate of expansion of private primary schooling was slower: only about one-fifth (18.5 per cent) of the *rural* total increase in primary students was taken up by private schools. However, there was a marked acceleration in the growth of rural private primary schooling in this period compared to the previous eight-year period of 1978-86, when only a paltry 2.8 per cent of the total increase in enrolment was absorbed by rural private schools. It is important to emphasize that these figures are all underestimates since they do not include new enrolments in the *unrecognized* private primary schools (Kingdon 1996a).

Table 4
Enrolment share of different school-types in India, by age-group
(NCAER household survey data, 1993)

	Ages 5-10			Ages 11-14		
	Government	Aided	Private	Government	Aided	Private
Andhra	84.1	1.7	14.2	93.0	1.3	5.7
Bihar	80.4	9.7	9.9	80.3	12.3	7.4
Gujarat	83.9	13.9	2.2	77.7	20.1	2.3
Haryana	78.9	2.3	18.8	87.9	1.7	10.4
Himachal	94.6	0.3	5.1	94.0	0.5	5.5
Karnataka	88.5	3.3	8.2	84.2	4.6	11.2
Kerala	28.1	53.5	18.5	33.5	56.9	9.7
Maharashtra	94.4	4.9	0.7	66.4	31.0	2.7
Madhya Pradesh	83.2	10.7	6.1	84.3	13.1	2.6
Orissa	77.2	18.4	4.4	73.0	23.1	3.9
Punjab	70.0	1.3	28.7	84.3	1.3	14.4
Rajasthan	91.7	2.8	5.5	92.4	4.4	3.2
Tamil Nadu	82.4	9.3	8.4	86.1	7.6	6.3
Uttar Pradesh	55.3	14.0	30.7	55.6	18.9	25.5
West Bengal	22.5	75.3	2.2	22.1	77.3	0.6
Assam	7.3	91.7	1.0	8.7	90.9	0.4
India	72.7	16.0	11.3	72.0	19.7	8.3

	Ages 15-18			Ages 19-24		
	Government	Aided	Private	Government	Aided	Private
Andhra	87.2	4.5	8.3	80.0	10.0	10.0
Bihar	82.9	13.3	3.9	81.4	13.7	4.9
Gujarat	57.5	35.6	6.9	27.6	60.3	12.1
Haryana	86.0	2.1	11.9	77.9	11.8	10.3
Himachal	88.9	1.4	9.7	82.2	2.8	15.0
Karnataka	68.3	13.1	18.6	63.4	15.5	21.1
Kerala	24.7	43.8	31.5	17.3	25.3	57.3
Maharashtra	30.5	63.2	6.3	15.6	66.4	18.0
Madhya Pradesh	83.3	12.5	4.2	78.4	17.2	4.5
Orissa	50.8	30.8	18.4	36.1	33.7	30.1
Punjab	80.6	3.2	16.2	70.0	3.3	26.7
Rajasthan	92.8	4.8	2.4	85.3	8.8	5.9
Tamil Nadu	77.6	13.8	8.6	45.2	35.5	19.4
Uttar Pradesh	51.6	34.2	14.2	56.2	35.8	8.0
West Bengal	17.9	81.0	1.0	11.8	88.2	0.0
Assam	8.7	86.5	4.8	3.5	75.3	21.2
India	62.7	26.6	10.7	53.1	31.6	15.3

Source: Author's own calculations from the NCAER household survey, 1993-94.

Table 5
Proportion of total enrolment increase (over time) absorbed by private schools

	<u>Urban</u>		<u>Rural</u>	
	1978-86	1986-93	1978-86	1986-93
INDIA				
Primary	56.8	60.5	2.8	18.5
Upper primary	35.7	31.8	7.2	12.8
UTTAR PRADESH				
Primary	75.3	93.9	9.3	41.9
Upper primary	63.7	15.8	34.0	54.3

Source: Author's own calculations from the Fourth, Fifth and Sixth All India Education Surveys (NCERT 1982; 1992; 1998). For details of how these were calculated, see Kingdon (1996a). The Seventh All India Education Survey was carried out in 2002 but, apart from some 'flash' statistics, detailed data are not yet available.

In some states, acceleration in the growth of private schooling has been spectacular. Figures for Uttar Pradesh are included in the bottom half of Table 5 to illustrate this. In urban Uttar Pradesh, *94 per cent* of all new primary school enrolment over the period 1986-1993 occurred in private schools. Even this dramatic statistic is likely to be an underestimate since it takes no account of new enrolments in the numerous unrecognized private schools that are excluded from the official statistics. The table also shows that in *rural* UP, the percentage of total enrolment increase accounted for by private schools rose from 9 per cent in the period 1978-86 to 42 per cent in the period 1986-93 at the primary level and from 34 per cent to 54 per cent at the junior level. In other words, the pace of 'privatization' has increased over time.

The growth of private schooling offers a plausible explanation for the fact that despite falling or virtually static per capita public education expenditure in several Indian states and falling share of elementary education in state domestic product (Table 6), these states have improved their educational outcome indicators in the 1990s (Kingdon, et. al., 2004). It seems that accelerated educational progress in the 1990s was partly due to the contribution made by the rapidly growing private school sector.

Next I turn to examine evidence on the relative effectiveness of private and public schools in India, which may help to explain the rise in private schooling in India.

Table 6
Trends in Public Educational Expenditure in the 1990s and
the increase in current school attendance in the 1990s, by state

	Growth rate of real per-capita expenditure on elementary education (% per year)	Share of elementary education expenditure in state domestic product (%)		Increase in current school attendance of rural 6-10 year olds (1993-1999) (percentage points)	
	1990-1 to 1997-8*	1990-1	1997-8	male	female
Maharashtra	5.9	1.2	1.3	5.8	11.0
Orissa	4.9	2.5	2.8	9.6	18.0
Assam	4.6	2.6	3.7	--	--
Karnataka	4.3	2.0	1.9	8.4	17.1
Himachal Pradesh	3.3	4.1	-	--	--
Rajasthan	3.3	2.4	2.5	17.5	29.6
Haryana	2.8	1.2	1.1	6.6	17.4
Gujarat	2.7	1.9	1.6	5.0	10.9
Tamil Nadu	1.5	2.3	1.8	4.7	10.9
Madhya Pradesh	0.9	2.0	1.9	19.1	26.6
Andhra Pradesh	0.7	1.5	1.2	17.4	27.4
Kerala	0.7	3.3	2.1	1.8	2.7
Bihar	0.4	3.3	3.6	11.0	19.0
Uttar Pradesh	-1.8	2.5	2.0	13.5	26.0
West Bengal	-2.5	1.5	1.0	11.4	17.3
15 states combined	1.4	2.0	1.8	11.8	20.1

Source: Table 5.3 in Drèze and Sen (2002: 169) for the first two main columns. Author's own calculations from data in the NFHS-1 and NFHS-2 reports, in the third main column. *Note:* *Using wholesale price index deflator.

3. Internal efficiency of private and public schools

3.1 Relative effectiveness of private and public schools

Due to the lack of achievement data linked to school and teacher characteristics, school effectiveness studies in India are based on small surveys of schools in individual states, rather than on nationwide or even statewide data. Since schools are affiliated to different examination boards, and since curricula and examinations differ by exam board, there is no comparable measure of learning achievement in private and public schools for a given age-group/grade for India (or for any one state) as a whole⁹. However, for schools affiliated to any given examination board,

⁹ Each Indian state has its own examination board for secondary school examinations. In addition there are two *national* examination boards – the Central Board of Secondary Education (CBSE board) and the Indian Council for Secondary Examinations (ICSE board). A school in any given state has to seek a no-objection certificate from the state government in order to bypass the state examination board (which conducts examinations in the state's local language) and to affiliate to either of the two national exam boards. The CBSE board offers curricula and examinations in both state language and in English. The ICSE examination board offers these only in English. Examinations at the primary level (grade 5) and junior level (grade 8) used to be held in district level board examinations but these have been abolished in many states. E.g., in the state of Uttar Pradesh, primary and junior school board examinations were dropped in 1979.

comparative figures do in principle exist but are never published by school-type (i.e. disaggregated by private and public school) and raw data on achievement scores are not generally made available for research purposes¹⁰. While the National Council of Educational Research and Training has collected data on student learning levels at the primary level as part of the District Primary Education Project's (DPEP) baseline, mid-term and final phases, raw data from this is not available for research and, in any case, is available only for government funded schools.

Thus, studies of the relative effectiveness of public and private schools in India have had to rely on standardised achievement tests carried out by the researchers themselves in small samples of schools (Bashir, 1994; Govinda and Varghese, 1993; Kingdon, 1994, 1996; Tooley and Dixon, 2003). These studies have been carried out in different parts of India (Tamil Nadu, Madhya Pradesh, Uttar Pradesh and Andhra Pradesh, respectively) but they share the common conclusion that private school students outperform their public school counterparts even after controlling for the schools' student intakes.

While the author was fortunate to obtain data on examination results of High School (grade 10th) at all 1785 government, aided and private schools affiliated to the CBSE exam board in the Delhi Municipality area, this data does not have linked information about schools and teachers or any information about students' home background. Nevertheless it is of interest to see the achievement levels of students in this large dataset which uniquely provides comparable achievement information across school-types. Table 7 shows that both pass rates and average aggregate percentage mark are considerably higher in private than government schools. Government and aided schools are similar in their average marks but both lag behind a great deal compared with the private schools. Of course, despite the fact that some poor people also partake of private education, the student-intake in private schools is more privileged than in government and aided schools. This is shown in Appendix 3, based on simple descriptive statistics from the NCAER household survey and a multinomial logit model of choice of school-type. Thus, these raw achievement data by school type cannot be used to infer anything about the relative effectiveness of private and public schools in India.

¹⁰ In the ICSE examination board, virtually all affiliated schools are private, so this data does not permit private-public comparisons.

Table 7
Achievement levels, by school type, 2004
(Delhi Administration area)

School-type	No. of schools	Percentage of passes		Average mark	
		Mean	SD	Mean	SD
Government	839	49.9	20.7	42.0	7.7
Aided	196	56.2	24.8	45.1	10.0
Private	631	82.0	18.8	61.0	11.8
Other	38	93.6	4.9	62.5	5.4

Note: 'Other' schools are highly resourced central-government funded schools, constituting 36 'Central schools' (Kendriya vidyalaya) which serve children of employees of the Indian federal government who are in transferable jobs, and 2 Navodaya schools which have a selective merit-based intake.

As is well known, even in studies that have information on measurable student characteristics, a major problem in studying the impact of school type on student achievement is that students may choose school-type on the basis of unobserved traits such as ability/motivation. If more able or more highly motivated students choose private schools then any private school achievement advantage over public schools – after controlling for observed student characteristics – cannot be simply attributed to school-type. To have clean impact evaluation, one needs either a randomised experiment with students randomly assigned to private and public schools, or to have a convincing way of dealing with endogenous sample selection into private and public schools. There are no randomised experiments available in India and indeed, to our best knowledge, anywhere, to study the relative effectiveness of private and public schools. Kingdon (1996) is the only study for India that even attempts to control for potential endogenous selection when comparing private and public schools, though it is always possible to quibble with the validity of the identifying exclusion restrictions chosen to identify the selectivity variable lambda in cross-section data.

As an illustration, Table 8 summarises Kingdon's findings from Uttar Pradesh. The method of comparing the relative effectiveness of the different school-types is as follows: Choose a pupil at random from the entire student population in the district and give her the average characteristics of the full sample of pupils, say \bar{X} . Then, using the selectivity corrected achievement (*ACH*) equations for government (*G*), private aided (*PA*) and private unaided (*PUA*) schools in Appendix Table 3, predict a score for this representative student if she were to attend a *G* school, another score if it were a *PA* school, and a third score if it were a *PUA* school (unaided schools are the truly private schools). That is, predict a standardised achievement score in each school-type as:

$$ACH_G = \hat{b}_G \bar{X} \quad (i)$$

$$ACH_{PA} = \hat{b}_{PA} \bar{X} \quad (ii)$$

$$ACH_{PUA} = \hat{b}_{PUA} \bar{X} \quad (iii)$$

where the \hat{b} 's are the estimated coefficient vectors in the three different sectors and \bar{X} is a vector of mean values of the explanatory variables, averaged over the entire sample. Now *PUA* schools' achievement advantage over *G* schools, for example, can be calculated as (iii) - (i), *PA* schools' relative advantage over *G* schools as (ii) - (i), and so on¹¹. The standardised achievement scores thus calculated and the relative achievement advantages of different school-types are presented in Table 8.

Table 8, column B shows that the unadjusted (raw) mean achievement advantage of private unaided schools over government and aided schools in all subjects falls greatly when personal endowments and sample selectivity of pupils are controlled for. For example, *PUA* schools' raw mathematics-score premium over *G* schools of 8.12 points falls to just 1.42 points. This implies that, of the *PUA* schools' mathematics advantage of 8.12 points *vis a vis* *G* schools, 82 percent is to be explained by student intake and only 18 percent can be attributed to school influences. The *PUA* schools' raw mathematics advantage over *PA* schools falls from 8.73 points to 2.71 points, so that 31 percent of the observed *PUA* maths advantage is due to school-related factors and 69 percent due to student intake. The predicted mathematics score of a child in a *PUA* school (12.80 points) is 27 percent higher than her predicted maths score in a *PA* school, where it would be 10.09 points. In other words, *PUA* schools are 27 percent more effective than *PA* schools in their maths teaching.

G schools' tiny mathematics advantage over *PA* schools increases after controls, suggesting that *G* schools are more effective in imparting numeracy skills than *PA* schools. It is notable that all three school-types are roughly equally effective in imparting reading skills. The raw reading score premiums virtually disappear when student background and selectivity are controlled.

¹¹ Pairwise comparisons which are based on standardising by mean characteristics in the different sectors (\bar{X}_G , \bar{X}_{PA} , and \bar{X}_{PUA}) can also be carried out, as in Jimenez and Cox (1990). The pairwise method gives similar results to the above method based on standardising by the overall means (\bar{X}). For example, the *PUA-G* conditional advantage is 1.46 points using the method described in the main text. A pairwise comparison gives a *PUA-G* advantage of 1.82 points standardising by *PUA* means (\bar{X}_{PUA}) and of 1.86 points standardising by *G* means (\bar{X}_G).

The finding in econometric studies – that private schools are generally more effective than public schools – is corroborated by the qualitative findings of the PROBE report (PROBE Team, 1999).

Table 8
Raw and standardised achievement scores and relative advantage points
by sector and subject: *G*, *PA* and *PUA* schools

	<u>Achievement points</u>			<u>Achievement advantage points</u>		
	<i>G</i> (a)	<i>PA</i> (b)	<i>PUA</i> (c)	<i>PUA-G</i> (c-a)	<i>PUA-PA</i> (c-b)	<i>PA-G</i> (b-a)
Mathematics						
Raw	8.97	8.36	17.09	8.12	8.73	-0.61
Standardised (d)	11.38	10.09	12.80	1.42 (18)	2.71 (31)	-1.29 (-211)
Reading						
Raw	9.77	10.86	16.85	7.08	5.99	1.09
Standardised (e)	13.78	13.73	13.82	0.04 (1)	0.09 (2)	-0.05 (-5)
Achievement						
Raw	18.74	19.22	33.94	15.20	14.72	0.48
Standardised (d+e)	25.16	23.82	26.62	1.46 (10)	2.80 (19)	-1.34 (-279)
OLS standardised achievement points	20.57	22.60	27.56	6.99	4.96	2.03

Note: The maximum marks possible in the maths and reading tests were 36 and 29 respectively. Thus, the maximum achievement mark was the total of the two, i.e. 65. The figures in brackets are the standardised achievement advantages as a percentage of the raw achievement advantages. The negative signs imply achievement disadvantages.

3.2 Relative costs of private and public schools

Next I turn to the relative unit costs of private and public schools, i.e. the monthly cost of teaching each student. School expenditures in India are dominated by salaries. For example, in government funded primary schools, salary expenditure as a proportion of total recurrent expenditure was 96.7% in 1981-82 (see footnote to Table 9). Comparable expenditure breakdowns are not available for private schools since official statistics do not even collect financial data on private schools.

However, Table 10 shows a comparison of per pupil expenditures in public and private schools in my UP micro study, showing that in private schools, salaries account for a much lower proportion of total spending than in government and aided schools. Table 10 also shows that recurrent per pupil expenditure in private schools was only 41% of that in government schools and 55% of that in aided schools. The relative lowness of per pupil expenditure in private schools is

due to the fact that teacher salary levels are drastically lower in private than government schools. Table 11 shows that average teacher salary in private junior schools was only 42% of that in government schools and 43% of that in aided schools. This is consistent with findings from different parts of India in the early-mid 1990s (Table 12). More recent figures for UP (in the last column of Table 12) show that the private-public salary gap has increased greatly since the early-mid 1990s, entirely plausible given the hike in teacher salaries following the Fifth Pay Commission bargaining round settled in 2001 (Kingdon and Muzammil, 2003). Private schools pay teachers market clearing wages whereas government and aided schools, pay teachers much higher, government-prescribed, minimum wages. In other words, there are large economic rents in the salaries of teachers in government funded schools.

Table 9
Salary expenditure as a proportion of total education expenditure

YEAR	Recurrent as a % of total educational expenditure	Salary as a percentage of total recurrent educational expenditure (%)		
		Primary	Junior	Secondary
1960-61	74.7	87.9	85.1	72.3
1965-66	79.4	90.7	89.2	75.3
1969-70	85.0	92.3	90.4	85.6
1974-75	87.1	96.6	94.3	87.1
1981-82	94.8	96.7	93.8	89.9
1987-88	97.3	NA	NA	90.7

Source: Table 13.13 from Kingdon and Muzammil (2003).¹²

¹² The figures published for the year 1987-88 for primary and junior education levels are not comparable with figures published in previous years because for 1987-88, non-teaching staff salaries have been lumped together with the item 'other' giving the implausibly low figures of 94.0% and 91.6% for primary and junior education respectively. After the late 1980s, the publication of the breakdown of total educational spending into salary, consumables, and other expenditure has been discontinued, i.e. it does not appear to be published any more, perhaps because it became too embarrassing to publish such a breakdown. For instance, the 1994-95 copy of 'Education in India', published in the year 2000, had no such table. Prior to 1960-61, published expenditure information was not presented by item of expenditure (salaries, consumables, others, etc) but rather by school type (expenditure on boys' and expenditure on girls' school, etc) or by source.

Table 10**Annual per pupil expenditures by school-type (Rupees)**

School type	Recurrent expenditure per pupil			Capital expenditure per pupil
	Salary	Non-salary	Total	
Government (<i>G</i>)	1958.40	50.00	2008.40	66.93
Aided (<i>PA</i>)	1780.93	46.87	1827.80	11.97
Private (<i>PUA</i>)	735.94	262.96	998.90	72.85

Source: Kingdon (1994), chapter 6.

Table 11**Average monthly salary of teachers by school-type**

School-type (Junior schools)	Average gross salary of sample teachers (rupees per month)
Government (<i>G</i>)	2449.04
Aided (<i>PA</i>)	2429.48
Private (<i>PUA</i>)	1036.73

Source: Kingdon (1994), chapter 6.

Table 12
Evidence from Indian studies on private unaided and government school teachers' average monthly salaries

School level	PUA pay as a % of	Kingdon's study 1994	Kansal's study 1990	Govinda/Varghese 1993	Jain's study 1988	Bashir's study 1994	Singh/Sridhar 2002
		Lucknow district of Uttar Pradesh	City of New Delhi	5 districts of Madhya Pradesh	Baroda district of Gujarat	Many districts of Tamil Nadu	2 districts of Uttar Pradesh
<i>Primary/ junior level</i>	<i>G pay</i>	42	39	49	47	47	20
	<i>PA pay</i>	43	39	66	-	50	-
<i>Secondary level</i>	<i>G pay</i>	74	76	-	-	-	-
	<i>PA pay</i>	79	76	-	-	-	-

Note: The Kingdon study sampled 182 teachers, Kansal 233 teachers, Govinda and Varghese 111 teachers, Bashir 419 teachers, and Singh and Sridhar 467 teachers. We do not know the number of teachers sampled in Jain. Sources: Jain (1988); Kansal (1990); Govinda and Varghese (1993); Bashir (1994); Kingdon (1994); Singh and Sridhar (2002).

Table 13
Unit costs, achievement and cost per achievement-point (G, PA and PUA Schools)

	<i>G</i> (a)	<i>PA</i> (b)	<i>PUA</i> (c)	<i>PUA:G</i> (c/a)	<i>PUA:PA</i> (c/b)	<i>PA:G</i> (b/a)
Cost per student (C)	2008	1827	998	0.50	0.55	0.91
Predicted mathematics score (M)	11.38	10.09	12.80	1.13	1.27	0.89
Cost per mathematics point (C/M)	176	181	78	0.44	0.43	1.03
Predicted reading score (R)	13.78	13.73	13.82	1.00	1.00	1.00
Cost per reading point (C/R)	146	133	72	0.50	0.55	0.91
Predicted total score (T =M+R)	25.16	23.82	26.62	1.06	1.12	0.95
Cost per score point (C/T)	80	77	38	0.47	0.49	0.96

Source: Kingdon (1994), Chapter 6.

Table 13 presents 'cost per unit of output' by school-type. The first row shows that, on average, *PUA* schools are about twice as *cost*-advantageous as *G* and *PA* schools. It also shows that there is in mathematics (but not in reading) an *achievement* advantage associated with attending a *PUA* school. Combining *PUA* schools' 100 percent unit cost advantage over *G* schools with their 13 percent mathematics advantage leads to the conclusion that *PUA* schools are much more cost-effective than *G* schools in their mathematics teaching. Another way of saying this is that they

produce the same level of numeracy skills as *G* schools at a mere 44% of the cost of *G* schools. They produce the same level of reading achievement as in *G* schools at half the cost. The comparison of *PUA* schools with *PA* schools is of similar magnitudes. *PA* schools' 3 percent mathematics disadvantage *vis a vis* *G* schools together with their 9 percent reading advantage implies that, overall, they are equally or very slightly more cost-effective than *G* schools.

To summarise, the results show that *PUA* schools' ability to pay market clearing wages and, thus, their far more thrifty use of teachers implies a dramatic unit cost advantage over government-funded (*G* and *PA*) schools. This reinforces their achievement advantage over the other school-types (due presumably to different input mixes and teacher incentives), so that they are unambiguously and substantially more cost-effective or internally efficient than both *G* and *PA* schools, which are roughly equally efficient.

However, teachers' objection to private school salary levels is that market wages are not commensurate with the cost of (decent) living. Whether one favours low market wages to achieve cost efficiency in education, or high minimum wages which protect teachers at the expense of cost-efficiency, is not an ideologically neutral question. However, it seems that in India, teacher salaries relative to per capita income are higher than in many other countries¹³ and that government-paid teachers' salaries have increased impressively in real terms: Drèze and Saran (1993, p32a) report that in 1993 a teacher's monthly salary in Palanpur (UP) could buy very nearly twice the amount of wheat that his monthly salary could buy in 1983. Kingdon and Muzammil (2003) calculate that in the 22 year period from 1974 to 1996, teacher salaries in Uttar Pradesh grew by about 5 per cent per annum *in real terms*.

4. Experience of public-private partnership in education in India

4.1 Why public schools function poorly and private schools well?

The sorry state of publicly funded primary education in India is well documented and provides favourable conditions for the rapid expansion of private schools noted earlier, even among groups below the poverty line. The PROBE report found that unlike government primary schools,

¹³ For example, the ratio of average teacher salaries to per capita income (admittedly only an imperfect measure of teachers' standard of living *vis-a-vis* others) in early 1990s was 2.4: 1 in Latin America and 2.6: 1 in Asia, but a much higher 3.6: 1 in India (Colcough and Lewin 1993, p52 and 143).

many of which are dysfunctional, private schools provided active teaching: when investigators visited these schools, teachers were almost always in class and teaching. It is thought that in the increase of private education, the breakdown of government schools is 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). Kremer and Muralidharan (2005) have a paper looking at this issue at this conference.

While inadequate and dilapidated facilities and infrastructure of schools are well documented in India¹⁴, the malaise of primary education is deeper, having its roots in lack of incentives and accountability for public schools and teachers. According to Drèze and Sen (1997, p76-77), “the most striking weakness of the schooling system in rural Uttar Pradesh is not so much the deficiency of physical infrastructure as the poor functioning of the existing facilities. The specific problem of endemic teacher absenteeism and shirking, which emerged again and again in the course of our investigation, plays a central part in that failure. This is by far the most important issue of education policy in Uttar Pradesh today”.

The PROBE Report (PROBE Team, 1999, p63) recognised this and linked teacher absenteeism and shirking partly with the disempowering environment in which the teachers have to work in India. However, it also says “yet, the deterioration of teaching standards has gone much too far to be explained by the disempowerment factor alone”. The PROBE survey in 242 villages across 5 north Indian states found that in about half the schools, “there was no teaching activity at the time of the investigators’ visit. It is significant that this pattern occurred even in cases where the school infrastructure (in terms of number of class rooms, teaching aids and even teacher-pupil ratio) was relatively good. 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 Report goes on to link teacher absenteeism and shirking to the lack of local accountability of teachers. Other authors too have noted lax teacher

¹⁴ For example, PROBE Team (1999) found that 42% of sample primary schools did not have at least two pucca classrooms, 60% had leaking roofs, 84% had no toilet, 54% had no drinking water, 61% had no toys, 26% did not have functioning blackboards in all classrooms etc., p40-42).

attitudes and lack of teacher accountability, e.g., Weiner (1990). This, in turn, has its roots in teachers' demands for a centralised education system (Kingdon and Muzammil, 2003).

4.2 Public private partnership in education in India

In response to the poor functioning of government run schools across many countries, in recent years there has been advocacy in favour of private public partnerships in education, i.e. publicly funded but privately produced/delivered education. Privately run charter schools are an example of PPP in US education. The main supposed advantage of PPPs is that they are a more flexible way of producing education, since the entity running the school, such as the private management of a school, has considerably more discretion about the running of the school and disciplining staff than is possible in public schools.

An extensive PPP system does operate in India at the junior, secondary and higher levels but not so much at the primary level. This is the system of government grant-in-aid to privately managed schools. Grants to aided schools account for a very substantial proportion of the education budget, for example, about 70% of the higher and 80% of the secondary education budgets in Uttar Pradesh (Muzammil 1989, p179-80). PPPs are the main mode of delivery of secondary and higher education in much of India.

At the time India inherited this system from the British at independence in 1948, aided schools shared many of the features of the current US charter schools. For instance, charter schools in the US avoid government regulations and interference (e.g. they are not obligated to hire unionized teachers, have more autonomy than public schools in determining staff disciplinary policies, and must attract students to succeed otherwise they have to close down for budgetary reasons). Aided schools in India operated on quite a similar system: any recognized private school could apply for government grant-in-aid and, once it was granted aided status, it received a per student subsidy from the state government. Its teachers were paid out of school revenues and were thus accountable to fee-paying parents and to the school manager. They could be disciplined and hired/fired at the level of the school.

Table 14**Teacher union activity in Uttar Pradesh (1965-1971)**

year	Start date	Finish date	No. of days	Activities
1965	11 Mar.	28 Mar.	18	30,000 teachers demonstrated; demands included interim relief, equal pay to G and PA teachers; hunger strike by some teachers from 22-28 March; central govt announced financial help for UP Teachers; GOUP increased salaries of PA teachers by Rs. 20 per month.
1966	5 Dec.	10 Dec.	5	5,000 teachers demonstrated in violation of prohibitory order; demand was pay parity between G and PA teachers; teacher leaders were jailed but released on 17 th December.
1968-69	25 Nov.	5 Jan.	45	Initially 3000 teachers demonstrated (600 arrested); strike intensified; 20,000 teachers sent to jail; Demands included pay parity between PA non-teaching staff and G employees and direct salary to PA teachers from the state govt treasury
1971	27 Jan.	18 Feb.	23	Total strike observed; issues were lack of implementation of agreements; 1000 teachers and their leaders arrested.

Source: Extract from Table 10.2 from Kingdon and Muzammil (2003).

However, teachers of aided schools became increasingly unionised and lobbied hard in the mid-late 1960s to be paid directly by the state government rather than via their private managements who, they claimed, engaged in unfair practices such as not paying fair wages. Their intense lobbying and strikes (as illustrated in Table 14) helped the passage of the momentous Salary Distribution Act (1971) in Uttar Pradesh and similar Acts in other states e.g. the Direct Payment Agreement (1972) in Kerala. These Acts represented a massive centralisation of school-management and they all but removed aided school teachers' accountability to their local managers (Kingdon and Muzammil, 2003). Thus, over time, aided schools in India have become increasingly indistinguishable from public schools because their *modus operandi* has become more and more like that of public schools. In particular, their teachers' salaries are paid directly by the state government rather than by their school managers, and their teacher appointments are made by the Education Service Commission of the state government, as for public school teacher appointments. Given the similarities in the institutional arrangements and teacher incentives in aided and government schools, perhaps it is not surprising that, as seen earlier, there is little difference between government and aided schools in terms of either their effectiveness in imparting learning or in terms of their per pupil salary and total expenditures.

The lax attitudes of government paid (i.e. government and aided school) teachers towards their schools and students stem not only from their loss of local accountability, but also from the strength and influence of their unions. Union-backed teachers do not fear adverse repercussions on slackness in their work. The National Commission on Teachers notes that "some of the Principals

deposing before it [*i.e. before the Commission*] lamented that they had no powers over teachers and were not in a position to enforce order and discipline. Nor did the District Inspectors of Schools and other officials exercise any authority over them as the erring teachers were often supported by powerful teachers' associations. We were told that that there was no assessment of a teacher's academic and other work and that teachers were virtually unaccountable to anybody" (National Commission on Teachers, 1986, p68).

The lax attitude of aided school teachers is also strengthened by the fact that many of their number (mostly teacher union leaders) are also legislators in the state parliament, both as MLAs and MLCs¹⁵, i.e. they have their sympathisers in the corridors of power, who tend to protect and shelter them in case any disciplinary issues arise. Aided school teachers are in a politically particularly advantageous position: although they are publicly paid workers, they are not debarred from contesting political elections because they are not deemed to hold an office of profit under the government (unlike public school teachers). As a result of this, aided school teachers contest elections in large numbers. The National Commission on Teachers (1986) stated that "the most important factor responsible for vitiating the atmosphere in schools, we were told, has been the role of teacher politicians and teachers' organisations." (National Commission on Teachers, 1986, p. 68).

Lastly, a further reason why aided schools perform no better than government schools is that the government grant to aided schools is devoid of any performance incentives. Despite the existence of certain rules and conditions, the system of grants-in-aid in UP is not strongly linked to the qualitative performance of schools. Even when the criterion of examination performance of the schools was included, the pass rate was fixed at a paltry 45 percent (and the pass mark is already a low 33%)! The same is true with regard to the number of working days. On the whole the system still leaves much to be desired and it is not surprising because in practice, political manoeuvres often overrule the 'strict provisions' laid down by the state Government to sanction and regulate recurring grants and non-recurring grants. The following observation of Rudolph and Rudolph (1972, p.105) with regard to the flouting of conditions of grants-in-aid still holds good: "these grants in aid are technically conditioned upon the maintenance of certain academic and administrative standards, but in reality an educational entrepreneur who enjoys political favour has little difficulty in establishing his institution's qualification".

¹⁵ Members of the Legislative Council (MLC) in the Upper House of the state legislature, elected from a teacher constituency, and as Members of the Legislative Assembly (MLA) in the Lower House of the state legislature.

While the number of aided schools has expanded tremendously in size in India, the system of grants-in-aid has remained essentially the same as when introduced by the British 150 years ago. By contrast, the British system of grants itself underwent revolutionary changes and became more objective, particularly from the 1920s. The present system of parliamentary grants to local authorities in the UK is based on a number of educational indicators and the formula for the distribution of 'needs element' incorporates over a dozen factors. Thus, in the UK system, educational grant to a school-area is based on a number of objective criteria. This type of a rational approach to educational grants to local bodies has been absent in India.

The Japanese experience with grants-in-aid is instructive because of the interesting incentive-structure built into their grant formula: Japan imposed restrictions on enrolment as the state subsidy to private schools was linked to the number of enrolments. The sanctioned grant to be available to any school was such that more enrolment was a penalty. Yet most schools continued to accept more students than the allowed quota because the marginal costs were small and additional tuition fee far exceeded the loss of subsidy (James and Benjamin, 1988).

If aided Indian schools are to increase their efficiency, the formula for grant to them needs major revision. What incentives/penalties can be built into grants is an area that deserves detailed study. A grant system may be desirable which relates grant to various school performance indicators such as percentage of total expenses spent on non-salary costs (to encourage quality improvements), percentage of total funds raised from non-fee sources such as parental donations (to encourage equitable resource-generation), percentage of parents who are satisfied with the school (to encourage accountability), and average number of students per class (to encourage cost-consciousness), *etc.* A more rational grant structure could be a policy correction that has potentially the biggest pay-offs in terms of improved cost-efficiency in UP education.

In summary, the main reason why private aided schools mostly function no better than public schools (at least at the junior and secondary levels in Uttar Pradesh where the author has done most of her research) is that they have become very like public schools. Publicly funded schools function poorly because schools and teachers do not have incentives for performance and there is a lack of local level accountability. Governments have lacked the courage to increase local accountability of teachers who constitute a well organized group with powerful political representation and militant unions bent on protecting teachers' interests.

5. School-choice issues and education reform legislation in India

5.1 School-choice issues in India

In India, school quality clearly matters to children's schooling participation decisions and to their learning achievement (Drèze and Kingdon, 2001; Kingdon, 1994), both of which are lamentably low¹⁶. The PROBE report, commentators in the media, and many education officials (the latter privately) lament the parlous state of public schools and mostly agree on the reasons for their failure: decrepit, woefully under-resourced schools and frequently absentee teachers¹⁷. The recommended solutions have revolved around improving the public school system:

- (i) Improving school infrastructure and facilities, provision of books and 'para' teachers, and in-service training of teachers. This has been attempted as part of the DPEP projects from the mid-1990s and continues now under the 'Education for All' campaign (*Sarva Shiksha Abhiyan*);
- (ii) Improving teacher accountability via decentralising measures such as bringing schools under management of village local governments (by *Panchayati raj* legislation). This has met with uneven success as teacher unions have opposed the transfer of financial powers to panchayats in some states);
- (iii) increasing parental and community involvement in schools by creating parent-teacher associations, village education committees, village women's groups, etc.

The recommendations for reform have never seriously included consideration of the possibility of providing school choice via vouchers as a way of improving accountability of schools and teachers towards students and parents, unlike the US and some other countries where there has been vigorous debate about and experimentation with alternatives to public schools, such as school choice through school vouchers¹⁸.

¹⁶ At the turn of the century, 19% of Indian children aged 6-10 (26% of those aged 11-14) were not in school. In the few dated but comparable tests available of reading and science skills, Indian children have one of the lowest achievement levels internationally. Using International Association for the Evaluation of Educational Achievement (IEA) data collected in early 1970s, Comber and Keeves (1973) and Thorndike (1973) 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. India has not been part of more recent studies of international comparisons of learning achievement. For example, it has not been part of the 1995, 1999 or 2002 (third) International Mathematics and Science Studies (TIMSS). When the cheating that routinely occurs in various board examinations in UP was banned under an anti-cheating order enforced by the government of UP in 1992, the pass rate (the proportion of takers who pass the exam) in the High School examination fell from an average of 60% in the previous four years to a mere 14.7% in 1992 (Kingdon, 1994). This is when the average pass-mark is very low, a mere 33% being needed to pass High School.

¹⁷ Kremer et. al. (2005) report that in their 8 country survey, the absence rate among teachers in India was 25%, only surpassed by Uganda (27%).

¹⁸ While a few recent voices have discussed voucher schemes, these do not represent widespread popular debate or serious thought to the implementation of such schemes (Centre for Civil Society, 2005; Anklesaria-Aiyar, 2004; Kumar, et. al., 2003; Singh, 2003; Weidrich, 2005).

There are several plausible explanations for this difference. Firstly, in India (and other poor countries), the most obvious failure of public schools is their very visible lack of resources, infrastructure, facilities, books and teaching materials. This is justifiably seen as de-motivating for teachers and is used to explain/understand their frequent absenteeism. The obvious remedy is seen to be for government to fix these physical deficiencies with greater financial commitment. In more advanced countries, the focus of school improvement has moved to improving management incentives, structures and processes.

A second plausible reason for Indian governments' lack of consideration of a far-reaching reform such as school vouchers is their strong fear of upsetting powerful vested interests such as teacher unions who are likely to vehemently oppose any proposals to increase their accountability. Kingdon and Muzammil (2003) find that the most important pieces of educational legislation in Uttar Pradesh in the post-independence period came about immediately after periods of intense teacher lobbying and that no state government in India has had the courage to touch legislation that might upset teacher unions. Thus, it is possible that teacher unions are a stronger force in India than in other countries.

Thirdly, lack of enthusiasm for a public-private partnership in education – such as a voucher scheme – may also be due to the lack of obvious superiority of Indian 'aided' schools over public schools in terms of their effectiveness. As a result of demands by aided school teachers, these schools have, over time, become more and more like public schools in terms of centralised administrative and managerial arrangements such as direct payment of salaries by the state government and appointment of their teachers by state-appointed bodies (Kingdon and Muzammil, 2003). The lack of enthusiasm for future private sector involvement may arise from this disappointing past experience and future expectation that, as soon as a school starts receiving government funds, its teachers will inevitably start demanding equal/similar treatment to that received by public school teachers, and lobby-appeasing Indian state governments will concede their demands.

Lastly, other reasons why voucher schemes may not been taken seriously in India include the non-acceptability of a profit-based approach to education among influential commentators; the potential adverse equity impact of such schools (e.g. Hsieh and Urquiola, 2003; Elacqua, 2005); and serious concerns about implementation of school choice schemes in the Indian context, such as: (a) how real choice/competition can be achieved in small villages, short of providing transport to

nearby villages, which has its own attendant administrative and cost implications; (b) weak regulatory systems to ensure compliance with standards; (c) difficulty of uneducated/illiterate parents being able to make informed school choice; and (d) the scope for corruption in the presence of weak monitoring and high costs of verification, e.g. schools taking vouchers from poor parents in return for a small amount of cash, rather than in return for teaching their children, but certifying that the children are attending school. This difficulty will not surprise anyone familiar with the widespread corruption in aided schools, such as financial mismanagement, abuse of subsidy, abuse or mismanagement of scholarship funds, and non-compliance with regulations (Dixon, 2005).

Nevertheless, school choice and voucher schemes are worthy of wide and robust discussion and debate in India as the Indian government legislates schooling reform.

5.2 Legislation for educational reform in India

Education has never been an election issue in India (Drèze and Sen, 2002) and until the mid-1990s or so, there was little public debate about it. Partly due to the ‘New Education Policy’ amended in 1992, and partly spurred by the 1990 Jomtien Education conference, by the mid-1990s there grew a popular concern about the lack of universal enrolment. This and a famous 1993 Supreme Court (Unnikrishnan) judgement led to a growing demand, by 1997, to make education a fundamental right under the constitution which would make it legally binding on the state to provide education to all upto age 14.

After a 5 year period of charged national debate, the 86th amendment of the Indian constitution in 2002 made elementary education a ‘fundamental right’. This momentous amendment places a legal obligation on the Indian state to provide free and compulsory education to all children aged 6-14, and the ensuing draft ‘Right to Education Bill 2005’ is potentially powerful new legislation.

However, this legislation is motivated by the concern to ensure that all children aged 6-14 attend school, and is not focused on the effective functioning of schools which would be the means of ensuring that school attendance was seen by parents as a high return activity. Attention to the issue of the quality, functioning and governance of schools was drawn only very late in the day in the right to education debate. In deference to this quality concern, the Bill talks about the child’s right to free and compulsory education “of equitable quality” but the inclusion of the word ‘quality’

seems merely a token, as seen from the following evasive/obtuse definition provided in the draft bill: “‘Equitable Quality’ in relation to Elementary Education means providing all children opportunities of access to, participation in, and completion of elementary education in accordance with the provisions of this Act”. Thus, this important juncture has not been taken as an opportunity to address the issue of school functioning and quality or what Drèze and Sen (1997) have called the “most important issue of education policy”, namely teacher absenteeism and shirking. As stated in the introduction, any far-reaching reform that affects teachers – including the introduction of school choice - stands to upset powerful teacher unions that have fought hard, over time, to win legislation that shelters teachers from local-level accountability (Kingdon and Muzammil, 2003). Successive Indian governments have judged it politically infeasible to upset this group¹⁹ through any bold legislative measures, and this continues to be the case with the current ‘Right to Education’ Bill, 2005.

One of the provisions of the draft ‘Right to Education’ Bill is to oblige private schools to give 25% of school places to randomly selected students from ‘the weaker sections of society’ (which means mainly persons from low and backward castes) and the government promises to reimburse the schools for these places. This scheme does not give all students an equal choice of access to private schools and it can be expected to lead to long queues at private schools by hopeful poor parents that their child will be chosen. As the Centre for Civil Society in Delhi states “if passed into law, this bill will do terrible damage to the cause of quality and affordable education for all the children in our society. It does not address in any way the rot that exists in government run schools and to make matters worse, puts the same government officials, in charge of a large portion of private schools” (CCS, 2005).

The draft bill could have a number of implications for the number of private schools and for their fee levels. Firstly, it is unclear whether private schools’ response to the Bill will be to create new places to accommodate students from the ‘weaker sections’ or to replace 25% of existing students or a bit of both. If existing students are replaced, the departure of fee-paying students is likely to lead to demand for the establishment of new private schools for their accommodation, which will themselves allocate 25% of their places to students from the weaker sections. Overall,

¹⁹ One way in which the state governments have sought, in recent years, to circumvent the difficulties associated with making regular public teachers more accountable is by greatly reducing the appointment of regular teachers and, instead, appointing contract (or ‘para’) teachers in insecure (mostly annually renewable) contracts, in order to lower pupil-teacher ratios and relieve multi-grade teaching in single-teacher schools. However, a less charitable interpretation is that the main motivation for para-teacher schemes is the much lower costs of para-teachers vis a vis regular teachers. The quality implications of this policy measure are not yet known.

the number of private schools is likely to increase. Moreover, the government intends to compensate schools at the lower of the private school's fee rate and per pupil expenditure in public schools²⁰. Since per pupil expenditure in public schools is much larger than fee levels in most private schools (which pay teachers a fraction of the salary levels of public schools, as seen in Table 8), the bill's stipulations could well affect (e.g. generally increase) private school fee levels, in a bid by such schools to claw higher revenues from the government.

6. Conclusions

Private schooling has mushroomed in India at levels where the government does not control it. According to qualitative accounts, this growth is greatest in areas where public schools do not function well. Evidence suggests that private schools are more than twice as cost-effective as government schools in the large northern state of Uttar Pradesh. While aided schools – a form of public-private partnership in education – are no more cost-effective than government schools, this appears to be because they have over time become more and more like government schools owing to aided school teachers' demand for comparability with public school teachers. Issues of school choice and competition have not seriously been considered in India as a means of improving schooling. It is very desirable for there to be both a popular and scholarly debate in India about the likely merits and problems of school choice, learning from the experience of other countries.

²⁰ “For every child admitted and educated in [private unaided schools], the appropriate government shall reimburse to the school at a rate equal to the per child expenditure in state schools/fully aided schools and state funded preschools, or the actual amount charged per student by such school, whichever is less, in such manner as may be prescribed” (Clause 14.2, Chapter 4, Right to Education Bill, 2005)

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Appendix Table 1
Enrolment in recognised private schools as a proportion of total enrolment in all recognised schools,
by education level and state, 2003, from official data

State	Primary (Grades 1-5)			Upper Primary (Grades 6-8)		
	boys	girls	total	boys	girls	total
Andhra Pradesh	15.7	12.4	14.1	20.7	18.0	19.4
Assam	0.0	0.0	0.0	0.2	0.2	0.2
Bihar	0.1	0.0	0.1	0.1	0.1	0.1
Chandigarh	32.6	29.5	31.2	30.3	29.3	29.8
Chattisgarh	8.7	7.1	7.9	11.1	10.2	10.7
Gujarat	9.2	7.1	8.2	11.4	9.6	10.7
Haryana	2.9	2.1	2.5	7.0	4.8	5.9
Himachal Pradesh	11.8	8.4	10.2	8.2	5.7	7.0
Jharkhand	0.4	0.3	0.3	0.3	0.3	0.3
Karnataka	16.6	14.0	15.4	15.4	13.2	14.4
Kerala	3.6	3.6	3.6	3.0	2.9	2.9
Madhya Pradesh	18.4	16.1	17.3	19.3	19.3	19.3
Maharashtra	10.2	8.5	9.4	7.6	6.2	6.9
Orissa	1.9	1.4	1.7	6.6	6.4	6.5
Punjab	0.0	0.0	0.0	0.2	0.1	0.2
Rajasthan	17.9	11.8	15.1	25.5	20.3	23.7
Tamil Nadu	17.4	15.1	16.3	12.4	10.0	11.3
Uttar Pradesh	18.0	14.4	16.3	29.8	27.9	29.0
Uttaranchal	22.2	15.5	18.9	16.7	11.3	14.2
West Bengal	0.2	0.2	0.2	1.3	1.4	1.3
All India	11.0	8.9	10.0	13.7	11.7	12.8

Source: Compiled from raw school-returns data in the Indian District Information System for Education (DISE).

Notes: All government and aided schools are recognised. Thus, the only enrolled children excluded both from the numerator and the denominator are those studying in the private *unrecognised* schools. Caution is warranted in interpreting these figures since coverage of schools was patchy in

the DISE 2003-04. For instance, the zero enrolment share of private schools in Punjab is clearly wrong here and this is corrected in DISE 2004-5 figures in Mehta (2005).

Appendix Table 2
Distribution of students living in households below the poverty line,
by school-type, All India (1996 MIMPA data)

	Age group	Govt.	Aided	Private	All
Rural India	5-10	86.0	6.0	8.0	100.0
	11-14	86.2	6.9	6.9	100.0
	15-17	85.9	6.2	7.9	100.0
Urban India	5-10	53.9	9.8	36.3	100.0
	11-14	45.6	19.0	35.4	100.0
	15-17	85.8	10.1	4.2	100.0
All India	5-10	78.5	6.7	14.8	100.0
	11-14	76.5	9.8	13.8	100.0
	15-17	85.9	7.1	7.0	100.0

Source: Data from the MIMAP survey by the National Council of Applied Economic Research (NCAER): taken from Pradhan and Subramaniam (2000).

Appendix 3

Characteristics of students in government, aided and private schools

What observed characteristics are associated with a person being more likely to choose a private school or an aided school as opposed to a government school? The average characteristics of students by age group and school-type are presented in Table 'A' below. This shows, for rural India, that while government and aided school students are from relatively similar backgrounds, private school choosers are substantially more privileged. For instance, among students aged 5-10, private students' average per capita expenditure, pce, (Rs. 3145) is about 32% higher than government school students' mean pce (Rs. 2386) and 23% higher than aided school students' (Rs. 2553). In the 5-10 age group, while 33-34% of government and aided school students are of low caste, only 16% of students in private schools are of low caste. There is also a statistically significant greater pro-male gender skew in private schools, with 63% of private students being males compared with only 55 and 57% in government and aided schools. Finally, the bottom panel of Table 'A' shows mean educational expenditure by school type. In the total education expenditure row, in the 5-10 age group, the ratio of mean expenditure in private school to mean expenditure in government school is 3.2.

All the private/non-private contrasts are less stark in age groups above the primary level. For instance, while in the 5-10 age group, the ratio of private school mean education expenditure to government school mean expenditure is 3.2, in the 11-14, 15-18 and 19-24 age groups, the ratio is 2.1, 1.6 and 1.3 respectively. While in the age group 5-10, private students' mean household per capita expenditure (pce) is 32% higher than government students' pce, in the age-groups 11-14, 15-18 and 19-24, it is 21%, 14% and 12% higher, respectively, than mean pce of students in government schools. Similarly the private/non-private caste and gender skews are generally less stark at post-primary education levels. This suggests that some well-off families that chose private schools at the primary level, send their children to government or aided school at the post-primary levels. This could be because of two possible reasons. Firstly, supply side reasons, i.e. due to there being far fewer private schools at the post primary than at the primary level, which seems to be largely due to lack of government restrictions on private primary schools but the presence of restrictions on private post-primary schools. Secondly, it could be because the private/non-private school quality gap is not as great at the post primary level as at the primary. While there may be some truth in both these explanations, the first reason seems more plausible than the second. Either way, the effect is the same, namely that government subsidy to education at the post-primary levels

is not well targeted towards the poor since many of those who were willing and able to pay for primary education partake of free (government/aided) post-primary education.

The ratio of government to private mean home-tuitions expenditure rises monotonically from the youngest to oldest age group, being 0.19, 0.45, 0.53 and 0.79. Similarly, the ratio of aided to private mean home-tuitions expenditure rises monotonically from the youngest to the oldest age group, being 0.60, 1.0, 1.01 and 1.31. As home tuitions are entirely discretionary, their use suggests parental desire to ‘purchase’ more instruction for their child. The fact that government and aided school students make relatively greater use of private tuitions in post-primary than primary levels of education could suggest that relatively well-off parents who are constrained to use the government/aided school sector for post-primary education, desire to supplement the amount/quality of schooling their children get in the free school sector. Section 6 examines the equity effects of the free availability of private schooling at the primary level and restricted availability at the post-primary levels.

A multinomial logit model of the choice of school-type was fitted for each of the four age groups that correspond roughly to primary, junior, secondary and higher education. We do not present the results here since one cannot draw any firm conclusions about the causal effect of household per capita expenditure, household size and head’s occupation on choice of school-type since these variables are potentially correlated with parents’ unobserved preferences and tastes which are also likely to determine choice of school type. Nevertheless the results were interesting. For instance, the elasticity of choice of private school to household per capita expenditure was very precisely determined and was significantly higher in the primary than in the junior school age group. In the primary and junior age groups, Muslims and Christians are more likely than the omitted group – Hindus – to choose private school relative to a government school, but low caste persons are less likely to do so than general caste persons.

To test for the effect of gender in a consistent manner, we estimated a household fixed effects model of the choice of school type for each age group. It was clear that gender is not a determinant of the choice between government and aided schools. Thus, we estimated a fixed effects binary linear probability model of the choice between non-private and private school, by age group, separately for each state. The results show that pro-male gender bias in choice of private school exists only in the primary school age group and only in the states of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh and in Haryana, Himachal and Punjab. It is strongest in Punjab,

Haryana and Himachal Pradesh, with boys being about 7 to 11 percentage points more likely to attend private school than girls in these states. These findings are very similar to those in Kingdon (2005) who is concerned with gender bias in the within-household allocation of educational expenditure. However, since there are far fewer private school choices at the junior and secondary school stages in rural India, gender bias in education expenditure at these levels can take the form not of private schools for boys and non-private ones for girls but, rather, of higher private tuition expenditure on boys than on girls. This remains a topic of investigation for future research.

Table A
Average characteristics of students, by age group and school type, rural India

	Age 5-10			Age 11-14		
	Govt.	Aided	Private	Govt.	Aided	Private
male %	55.2	57.0	63.3	59.3	58.0	63.2
age	8.00	8.08	7.65	12.47	12.57	12.51
lowcaste%	0.337	0.328	0.161	0.310	0.265	0.184
pce	2386.34	2552.79	3145.46	2673.06	2629.84	3226.77
lnhhsz	1.947	1.911	1.998	1.921	1.881	1.970
hedys	2.794	3.701	3.707	2.972	3.740	3.897
sc %	23.2	18.0	12.7	21.8	16.6	14.5
st %	10.4	14.8	3.4	9.3	9.9	3.9
muslim %	7.7	19.3	16.9	7.7	14.9	15.1
christn %	1.0	8.2	2.5	1.3	7.1	2.6
sikh %	3.2	0.3	8.0	4.0	0.4	4.2
wagelab %	20.3	19.7	12.7	18.2	19.3	10.9
Education expenditure (rupees)						
Fees	31	61	319	57	74	318
Books	218	209	408	356	326	522
Tuitions	12	37	62	29	65	65
Transport	3	18	59	9	19	49
Boarding	7	12	19	7	10	28
Total	270	338	866	459	492	981
N	13198	2894	1967	8043	2368	889

	Age 15-18			Age 19-24		
	Govt.	Aided	Private	Govt.	Aided	Private
male %	72.9	67.0	62.6	84.5	79.4	68.8
age	16.20	16.30	16.40	20.51	20.76	20.60
lowcaste %	0.288	0.249	0.188	0.286	0.293	0.169
pce	2993.00	2911.29	3397.14	3368.02	3190.09	3764.77
lnhhsz	1.911	1.848	1.895	1.945	1.881	1.811
hedys	3.310	4.044	4.066	3.877	4.499	4.357
sc %	21.4	16.3	13.7	21.3	19.9	12.7
st %	7.3	8.6	5.2	7.3	9.4	4.2
muslim %	7.2	10.7	10.6	6.9	6.4	6.2
christn %	1.2	6.5	6.6	1.5	5.2	7.5
sikh %	4.0	0.6	4.2	2.6	0.3	4.2
wagelab %	14.8	13.2	13.8	10.8	9.9	10.4
Education expenditure (rupees)						
Fees	155	157	436	367	378	681
Books	575	480	664	818	676	897
Tuitions	75	143	141	118	195	149
Transport	49	69	107	149	164	244
Boarding	39	20	102	209	112	269
Total*	893	869	1450	1662	1525	2240
N	3894	1629	621	1039	593	308

Note: lnhsz = log of household size; hedys = education of the household head, in years; sc and st are binary 0/1 variables for scheduled caste and scheduled tribe; muslim, christn and sikh are 0/1 religion dummy variables; wagelab = 0/1 for whether occupation of head is wage labour; male = gender dummy variable; age = age in years; lowcaste is the total of sc and st; and pce is household per capita expenditure.

Source: Author's calculations from the NCAER household survey of 1993-94.

Appendix Table 4
Binary probit of choice of school-type

Variable	PA-G		PUA-G	
	Coefficient	Marginal effect	Coefficient	Marginal effect
<i>SRAVEN</i>	0.02 (2.28)	-0.005	0.07 (6.04)	0.013
<i>LOWCASTE</i>	-0.22 (-0.86)	0.1159	-1.19 (-3.17)	-0.252
<i>MEDYRSI</i>	1.12 (1.84)	0.511	-1.81 (-2.46)	-0.586
<i>MEDYRSQ</i>	-0.76 (-1.71)	-0.320	1.03 (2.07)	0.351
<i>NUMSIB</i>	0.08 (1.44)	0.037	-0.13 (-1.69)	-0.043
<i>WEALTHI</i>	0.29 (2.86)	-0.073	1.00 (9.38)	0.197
<i>MALE</i>	-0.62 (-2.86)	-0.314	1.23 (5.05)	0.379
<i>MUSLIM</i>	0.84 (3.66)	0.302	-0.79 (-2.53)	-0.303
<i>SIKHCHR</i>	-0.58 (-0.62)	-0.328	1.40 (2.01)	0.412
Constant	-1.33 (-3.04)		-3.37 (-5.84)	
Log likelihood				-682.87
Restricted log likelihood				-981.08
Pseudo R^2 (McFadden's)				0.304

Note: McFadden's R^2 measure is used where Likelihood ratio index or pseudo $R^2 = 1 - \ln(L)/\ln(L_0)$ where $\ln(L)$ is the log likelihood and $\ln(L_0)$ is the restricted log likelihood, ie log likelihood with just the constant term. The figures in parentheses are t-statistics.

Source: Table 4.3 Kingdon (1994).

Appendix Table 4 (continued)
Selectivity-corrected achievement equations

Variable	<i>G</i>	<i>PA</i>	<i>PUA</i>
Constant	21.184 (3.27)	14.696 (2.25)	21.905 (2.72)
<i>SRAVEN</i>	0.373 (4.73)	0.256 (6.18)	0.454 (9.54)
<i>CHAGE</i>	-0.093 (-2.88)	-0.020 (-0.64)	-0.129 (-3.51)
<i>CEDASP</i>	0.063 (0.18)	0.534 (1.56)	1.216 (3.32)
<i>TAKESTU</i>	-1.124 (-1.20)	0.148 (0.17)	-2.205 (-2.44)
<i>HSTUDY</i>	0.097 (2.18)	0.015 (0.34)	0.116 (3.16)
<i>BOOKHOM2</i>	0.594 (0.58)	-0.415 (-0.43)	0.598 (0.57)
<i>BOOKHOM3</i>	3.487 2.80	1.065 (1.02)	1.008 (1.04)
<i>TRTIME</i>	0.077 (2.03)	0.119 (8.05)	0.010 (1.41)
<i>VACWRK</i>	0.177 (0.16)	-3.859 (-3.21)	-2.309 (-1.72)
<i>NUMSIB</i>	-0.076 (-0.26)	-0.629 (-2.21)	-1.502 (-4.89)
<i>MALE</i>	2.635 (2.80)	4.385 (3.25)	2.896 (2.70)
<i>WEALTHI</i>	6.988 (3.55)	0.564 (0.45)	3.802 (3.85)
<i>WEALTHSQ</i>	-0.832 (-2.00)	0.184 (0.75)	-0.272 (-3.14)
<i>LOWCASTE</i>	-4.308 (-3.06)	-1.102 (-0.93)	-1.451 (-0.69)
<i>MUSLIM</i>	1.646 (1.19)	-3.307 (-2.43)	0.346 (0.25)
λ	-7.766 (-1.80)	-2.944 (-1.18)	3.250 (1.79)
\bar{R}^2	0.364	0.311	0.493

Source: Table 4.6 from Kingdon (1994).