



**Consortium for Research on
Educational Access,
Transitions and Equity**

**Beyond Universal Access to Elementary Education in India:
Is it Achievable at Affordable Costs?**

Keith M Lewin

**CREATE PATHWAYS TO ACCESS
Research Monograph No. 53**

January 2011



**University of Sussex
Centre for International Education**



Consortium for Research on
Educational Access, Transitions & Equity

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Preface

India faces a crisis as a result of its success under *Sarva Shiksha Abhiyan* (SSA) in enrolling and retaining more children through the elementary school grades. Though it remains true that many who start primary school do not finish, it is also the case that demand for access to secondary schooling is growing rapidly and will continue to do so. Moreover India's economic growth is beginning to generate more and more demand for those with post basic education schooling. Access to secondary education in India remains very unequally distributed and is effectively rationed by price. Fundamental changes are needed if the next generation are to have a better chance of enrolling beyond Grade VIII, and a more equitable opportunity of attending effective and affordable secondary schools. This research is therefore timely and sets the scene for opportunities to undertake subsequent research on the impact of the initiatives that are planned under *Rastriya Madhyamic Shiksha Abhiyan* (RMSA).

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Director of CREATE
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Summary

Investment in secondary schooling in India has been neglected for many years. Since the 1990s most emphasis has been on universalising access to elementary schooling, a task that remains far from complete. Under the 11th National Plan *Rastriya Madhyamic Shiksha Abhiyan* (RMSA) has been launched to increase access to grade nine and above. This research monograph explores some of the key issues in managing the growth of secondary schooling. These include the constraints on expansion that arise from current levels of elementary school graduation, the costs and affordability of secondary schooling, the infrastructure needs, and increased teacher supply. Policy dialogue around secondary school expansion is a central concern if India is to close the gap between itself and China and other rapidly developing countries in educating most of its population beyond the elementary level.

Beyond Universal Access to Elementary Education in India: Is it Achievable at Affordable Costs?

1. Introduction

Access to education in India remains widely problematic, with great variations between and within states, and large differences in participation between identifiable sub-populations e.g. Scheduled Castes and Tribes (SCs and STs), girls, and some populations of Muslims. In India as a whole, though initial enrolments rates in the first grade are generally high, about 30% of children fail to complete Grade V (primary), about 50% drop out before completing Grade VIII (upper primary), and 60% do not finish Grade X (lower secondary). In northern India in the BIMARU states (Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh), even fewer survive to the end of upper primary, and most of the population fail to acquire any secondary schooling.

Research within the Consortium for Research on Educational Access, Transitions and Equity (CREATE) has identified various zones of exclusion. Zone 4, 5 and 6 of the general model (Lewin 2007a) relate to transitions into secondary school and progress through to completion of a cycle. In most countries lower secondary schooling is part of basic education and thus falls under commitments to universalise educational access made at the Jomtien and Dakar global education conferences on Education for All and endorsed by the Millennium Development Goals. In India the Right to Education Bill provides for universal access for 6 to 14 year olds, which covers all of elementary education up to the threshold for secondary school.

Low levels of access to secondary schooling have consequences for many aspects of development. Universal completion of the elementary school cycle (Grades I-VIII) is unlikely unless transition rates into secondary are sufficient to provide opportunities for the majority of primary school completers. Where few go to secondary school many will lack the motivation to persist to Grade VIII, and may judge the costs greater than the benefits. Universal access to primary schooling will also be difficult to sustain unless there are sufficient numbers graduating from secondary schools and willing and able to become primary teachers. Gender equity in schooling will also be elusive. Where there are disparities in enrolment between boys and girls at primary they are almost always greater at secondary school and do not diminish until enrolment includes the majority of children.

There are other compelling reasons to expand participation in secondary schooling. Many indicators of well being – health status, nutritional levels, fertility and infant mortality - have well known development related correlations with parental levels of education, especially that of mothers (Cochrane, 1979; Behrman, 1996). Household asset and food poverty is also strongly associated with educational participation (Filmer & Pritchett, 1999; Filmer, 2005; Lewin and Sabates, 2011). Social mobility out of poverty, including the kinds of household poverty which persist across generations, is more likely for those with access to secondary schooling (Rose and Dyer, 2008). Those in the poorest household income groups are widely those least likely to participate in secondary schooling. The competition between countries and within states and regions of large countries for foreign and domestic investment depends in part on the proportion of the labour force who acquire more than basic education.

South Indian states have had relatively high enrolment rates at secondary level for several decades as has neighbouring Sri Lanka indicating that poverty is not a sufficient explanation for persistent low enrolments in post primary schooling (Aturupane, 2008). The only region of the world with lower participation at secondary school level than India is Sub Saharan Africa (Lewin, 2008). India has a smaller proportion of its population enrolled at secondary levels than Brazil, Russia, China, the other BRIC countries with which it is sometimes compared. China in particular has near universal levels of enrolment in lower secondary and a majority completing upper secondary in all but the least developed parts of the country.

Since 2001 the Government of India (GoI) has committed itself to a nationwide programme to universalise access to elementary education. *Sarva Shiksha Abhiyan* (SSA) builds on the successful District level programmes of the 1990s to increase enrolments rapidly in the lower primary grades, especially in the BIMARU states (GoI, 2002; NIEPA, 2002; Prakesh and Biswal, 2007; Ward, 2010; Govinda and Bandyopadhyay, 2010). As in other countries which have increased participation at the first level, growing demand from elementary school leavers, coupled with increased demand from the labour market for more educated employees, has resulted in changing political priorities to favour investment in expanded participation above primary level (Lewin, 2007b). In 2005 the Ministry of Human Resource Development received the report of the Committee of Central Advisory Board of Education (CABE) on the universalisation of secondary education. By 2007 the new 11th Five Year Plan (FYP) (GoI, 2007) had complemented SSA with an new programme designed to universalise access to secondary schools called *Rastriya Madhyamic Shiksha Abhiyan* (RMSA).

This paper¹ explores the policy and implementation issues that surround efforts to increase participation and completion rates through to Grade X. Section 2 outlines the policy to expand participation in secondary schooling. Section 3 discusses the structure of the school system in different states and the types of schools. Section 4 analyses patterns of participation in secondary schooling comparing enrolment and drop out rates and exploring age in grade and enrolment by household income at different levels. Section 5 draws attention to two key constraints to increased participation – the numbers of qualified elementary school leavers and the affordability of enrolment at secondary level for poor households. Section 6 maps the challenges different states face and groups them into four quadrants distinguished by enrolment rates and distance to school. Section seven projects the amount of expansion needed to reach different levels of enrolment and links these to increased costs to establish the affordability of growth in participation. Concluding remarks capture key issues for policy and practice in managing expanded participation in a sustainable way.

¹ An abridged version of this paper has been accepted for publication in the International Journal of Educational Development

2. Policy to Expand Secondary Schooling

In the Prime Minister's Independence Day Speech in 2007 a new direction in national policy was adumbrated and formed the basis for developing RMSA. The commitment made was clear.

We are setting out the goal of universalising secondary education. This is clearly the next step after universalising elementary education. While the goal is laudable much work needs to be done before we are in a position to launch the Scheme for Universalisation of Access for Secondary Education. Its details need to be quickly spelt out and discussed with states so that we are fully ready to launch it from 2008-09. We must not underestimate the complexity of this task as the principles for universalising elementary education cannot be easily transferred to secondary education. The physical, financial, pedagogical and human resource needs are quite different. (Prime Minister's Department, India 2007)

The 11th Plan therefore included very substantial resource allocations to support the expansion of lower secondary schooling from current levels of coverage (about GER 52% in 2006) to an all India average of 75% by 2012. There are several sub-targets that include GER = 70% for rural areas and for populations of SCs and STs. Muslims as a group are not separately targeted but are widely recognised to have low participation. The targets also specify that schools should be provided secondary within 5 kilometres (secondary Grades IX and X) or 10 kilometres (upper secondary Grades XI and XII) of all habitations.

RMSA as currently configured plans to achieve these gains in participation through a combination of supply side investments. The main activities are to upgrade 15,000 upper primary schools to include secondary grades, expand capacity in 44,000 existing lower secondary schools, and build 3,500 girls' secondary school hostels. All these investments will be located in Educational Backward Blocks and are designed to enhance capacity where participation is low.

In addition about 6,000 new model schools (one for each Block in the country) are planned. About 1,700 of the 6,000 schools are intended to be centrally financed and managed as Kendriya Vidyalayas (KVs) and Narvodya Vidyalayas (NVs) (see below). State governments will have to be willing to invest and meet recurrent costs and a share of development costs, central government would have to be willing to support a proportion of development costs. Private sector organisations may be encouraged to develop partnerships to help finance development costs. RMSA will have to be complemented by complementary inputs from states that will continue to cover the majority of the costs of provision.

Overall the 11th Plan provides for about 150,000 classrooms, enough to enrol about 6 million new students. To reach a GER 75% would require an additional 15.5 million students at lower secondary level alone, and perhaps 8 million more if upper secondary expands to enrol half the age group.

Over 750,000 additional lower secondary school teachers are likely to be needed if pupil teacher ratios targeted at 30:1 are to be achieved, all teachers are to be qualified, and those who retire are replaced. If upper secondary expands a further 250,000 may be required. The financial implications of this are substantial and fall predominantly on state governments who

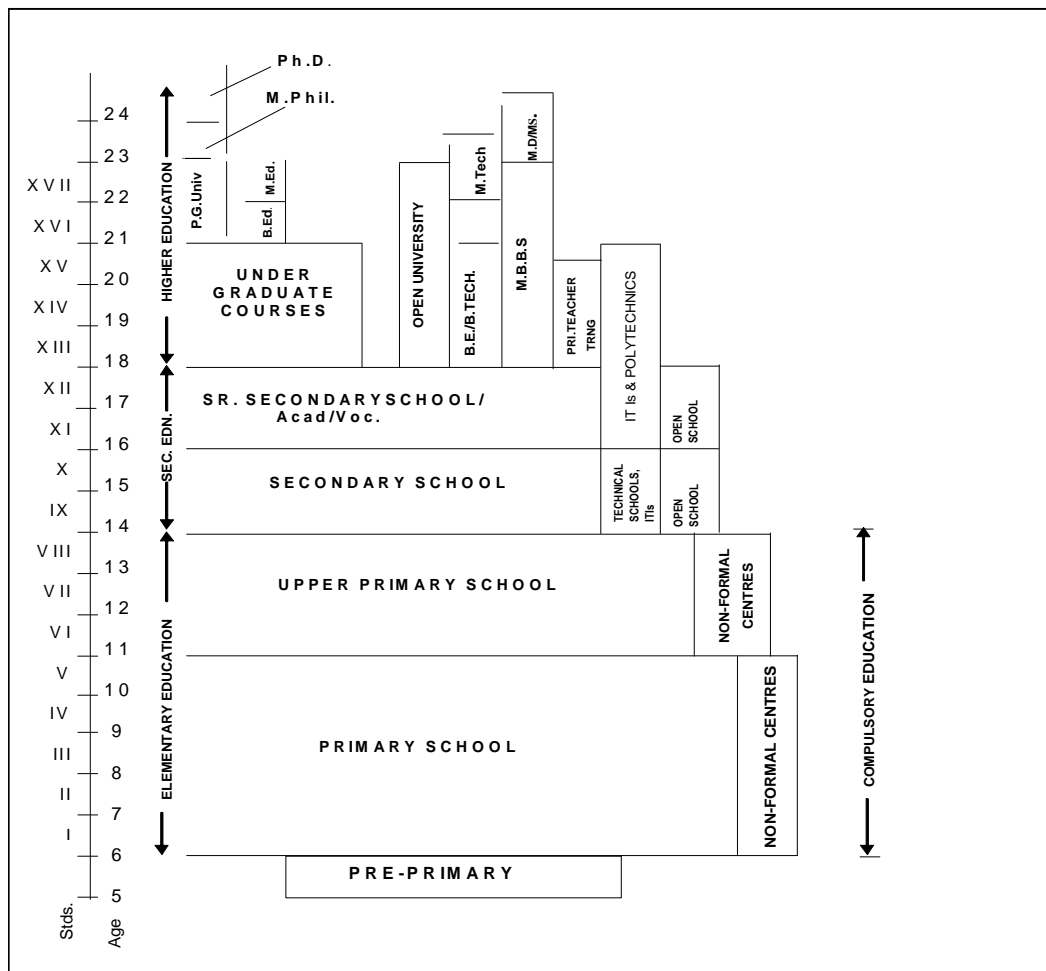
may take different approaches to meeting demand including a variety of contractual arrangements and methods of training.

3. Structures and Types of School

Secondary schooling in most states is organised in two cycles (Figure 1). These are lower secondary (Grades IX-X or VIII-X) and upper secondary (Grades XI-XII) (Figure 2). Most secondary schooling takes place in schools which cover Grades I-X, VI-X, or VI-XII though practice varies across and within states. There are few secondary schools with only Grade IX – XII enrolments.

The existing structures are firmly established and have strong historical origins in different states. Though a common school system for all states has been periodically discussed this has yet to result in a consensus for change and convergence in forms. National and state planning for expanded access to secondary schooling therefore has to recognise the realities of a diverse set of arrangements in different states in developing physical infrastructure, deploying teachers, and identifying feasible targets for enrolment growth.

Figure 1: Education System – India



Source: National University of Educational Planning and Administration (NUEPA, 2008)

Figure 2: Educational Patterns in States/Union Territories

Sl. No.	State/UT	Primary Stage	Upper Primary Stage	Secondary Stage	Upper secondary Stage	Hr. Sec. Classes attached to Degree College
1	Andhra Pradesh	I -V	VI-VII	VIII-X	XI-XII	XI-XII
2	Arunachal Pradesh	I-V	VI-VIII	IX-X	XI-XII	
3	Assam	I-IV	V-VII	VIII-X	XI-XII	XI-XII
4	Bihar	I-V	VI-VIII	IX-X	XI-XII	XI-XII
5	Chhattisgarh	I-V	VI-VIII	IX-X	XI-XII	XI-XII
6	Goa	I-IV	V-VII	VIII-X	XI-XII	XI-XII
7	Gujarat	I-IV	V-VII	VIII-X	XI-XII	
8	Haryana	I-V	VI-VIII	IX-X	XI-XII	XI-XII
9	Himachal Pradesh	I-V	VI-VIII	IX-X	XI-XII	XI-XII
10	Jammu & Kashmir	I-V	VI-VIII	IX-X	XI-XII	
11	Jharkhand	I-V	VI-VIII	IX-X	XI-XII	XI-XII
12	Karnataka	I -V	VI-VII	VIII-X	XI-XII	XI-XII
13	Kerala	I-IV	V-VII	VIII-X	XI-XII	
14	Madhya Pradesh	I-V	VI-VIII	IX-X	XI-XII	
15	Maharashtra	I-IV	V-VII	VIII-X	XI-XII	XI-XII
16	Manipur	I-V	VI-VIII	IX-X	XI-XII	XI-XII
17	Meghalaya	I-IV	V-VII	VIII-X	XI-XII	XI-XII
18	Mizoram	I-IV	V-VII	VIII-X	XI-XII	XI-XII
19	Nagaland	I-IV	V-VIII	IX-X	XI-XII	XI-XII
20	Orissa	I -V	VI-VII	VIII-X	XI-XII	XI-XII
21	Punjab	I-V	VI-VIII	IX-X	XI-XII	XI-XII
22	Rajasthan	I-V	VI-VIII	IX-X	XI-XII	
23	Sikkim	I-V	VI-VIII	IX-X	XI-XII	
24	Tamil Nadu	I-V	VI-VIII	IX-X	XI-XII	
25	Tripura	I-V	VI-VIII	IX-X	XI-XII	
26	Uttar Pradesh	I-V	VI-VIII	IX-X	XI-XII	
27	Uttaranchal	I-V	VI-VIII	IX-X	XI-XII	
28	West Bengal	I-IV	V-VIII	IX-X	XI-XII	XI-XII
29	A & N Islands	I-V	VI-VIII	IX-X	XI-XII	
30	Chandigarh	I-V	VI-VIII	IX-X	XI-XII	XI-XII
31	Dadra & Nagar Haveli	I-IV	V-VII	VIII-X	XI-XII	
32	Daman & Diu	I-IV	V-VII	VIII-X	XI-XII	
33	Delhi	I-V	VI-VIII	IX-X	XI-XII	
34	Lakshadweep	I-IV	V-VII	VIII-X	XI-XII	
35	Pondicherry	I-V	VI-VIII	IX-X	XI-XII	

Source: National University of Educational Planning and Administration (NUEPA, 2008)

Elementary and secondary schooling in India are state level responsibilities within the federal system of government. Most public schools are funded through state budgets which are themselves provided by the GoI on the basis of various formulas linked to population and other relevant indicators of need. There are four main types of secondary school distinguished by how they are resourced. These are government schools, local body schools, private aided schools, and private unaided schools.

Government schools are fully funded from state budgets. Teachers are state employees and most are on permanent contracts. Learning materials are generally provided and capital costs are met from state development funds. Nationally, government schools account for about 31% of schools at lower secondary level and 36% at upper secondary.

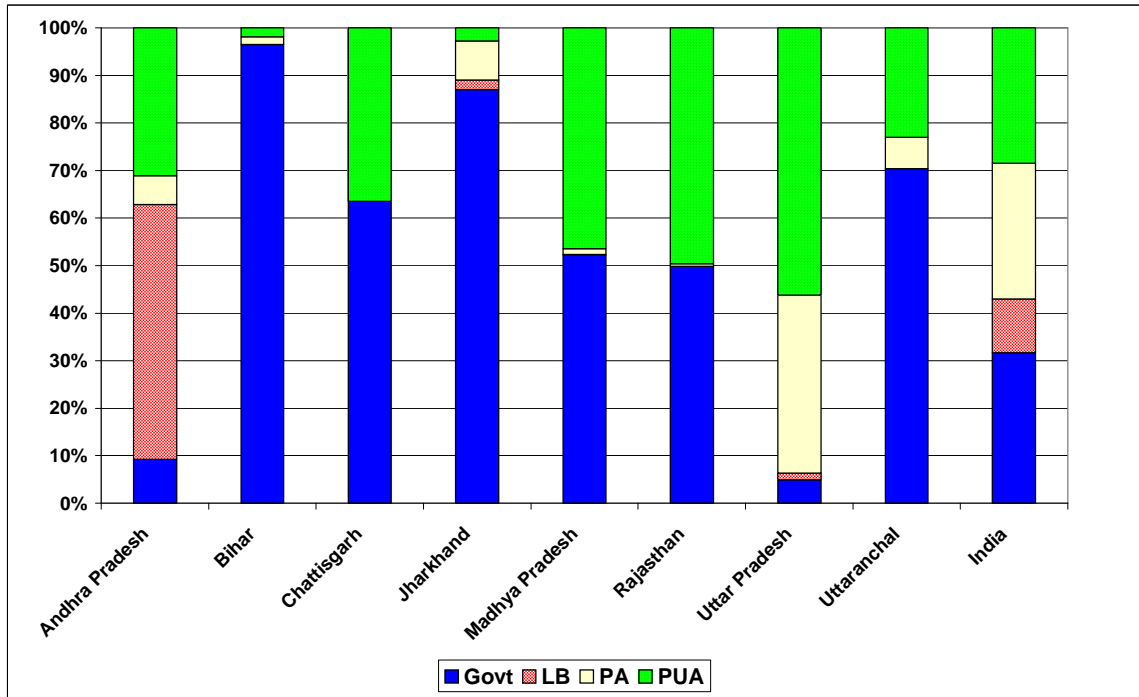
Local body schools differ from government schools in that the responsibility for running the schools rests at local level below the state with governing bodies responsible for oversight of day to day management. Most teachers are government employees and most buildings are publicly or community owned. Local bodies may raise funds to enhance school resources. These kinds of schools are in the minority in most states with the notable exception of Andhra Pradesh and account for at most about 10% of all schools.

Private aided schools are common in some states, notably Uttar Pradesh, but not in others, and account for about 25% of all schools in India. Private aided schools are similar in many respects to government schools. They teach to the same curriculum, and receive subsidy to cover teachers' salaries and some other recurrent costs. An important difference is that their facilities are privately owned and they answer to boards of governors which reflect their ownership. They thus retain a degree of autonomy over their buildings and classrooms, and some influence over their admissions policy. Their numbers appear to have been declining, especially where Private unaided schools have developed.

Private unaided schools account for about 30% of all schools. These schools are free to charge fees at levels well above the nominal fees charged in local body and private aided schools. As a result they enrol children predominantly from richer households. Growth in the number of these schools in some areas has been rapid. However, there are limits to future growth determined by the affordability of fees to poor households as has been the case at elementary level (Härmä, 2010; Lewin, 2007b). Private schools are on average smaller than government schools and thus represent a smaller proportion of enrolment than of the number of schools.

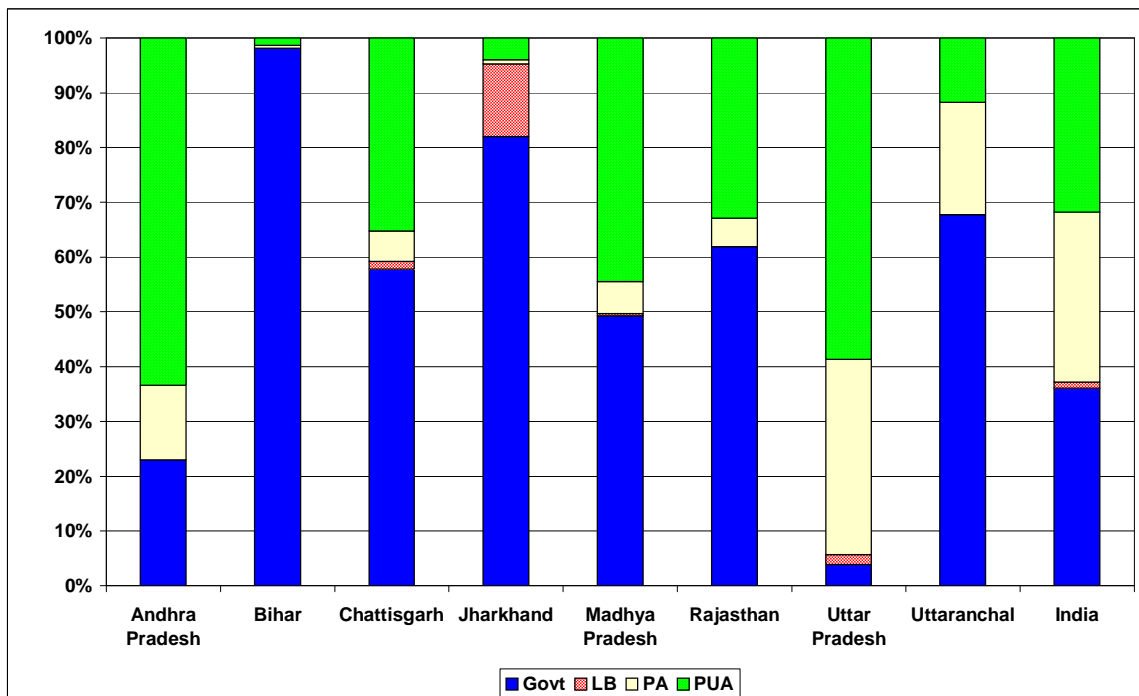
The mix of school by management type varies greatly across the states. Figures 3 and 4 illustrate some of the patterns in selected states.

Figure 3: Lower Secondary Schools by Type in Eight States and All India



Source: MHRD Statistics

Figure 4: Upper Secondary Schools by Type in Eight States and All India



Source: MHRD Statistics, 2008

Though the great majority of secondary schools are run by the states some are administered by central government. *Kendriya Vidyalayas* (KVs) fall under the Central Boards of Secondary Education and are designed to cater to the educational needs of the children of transferable central government employees (e.g. armed forces personnel and other civil servants), to promote experimentation and innovativeness in education, and develop the spirit of national integration and create a sense of "Indianness" among children. There are about 1,000 KVs and they are mostly full range Grade I-XII schools. *Narvodya Vidyalayas* (NVs) are designed to provide good quality education to capable and gifted children predominantly from rural areas, without regard to their family's socio-economic condition and create opportunities for social mobility amongst those who might otherwise be excluded. There are only about 550 NVs most of which cover Grades VI to XII. KVs and NVs influence central government thinking because they are national institutions but overall they only enrol about 2% of all secondary children.

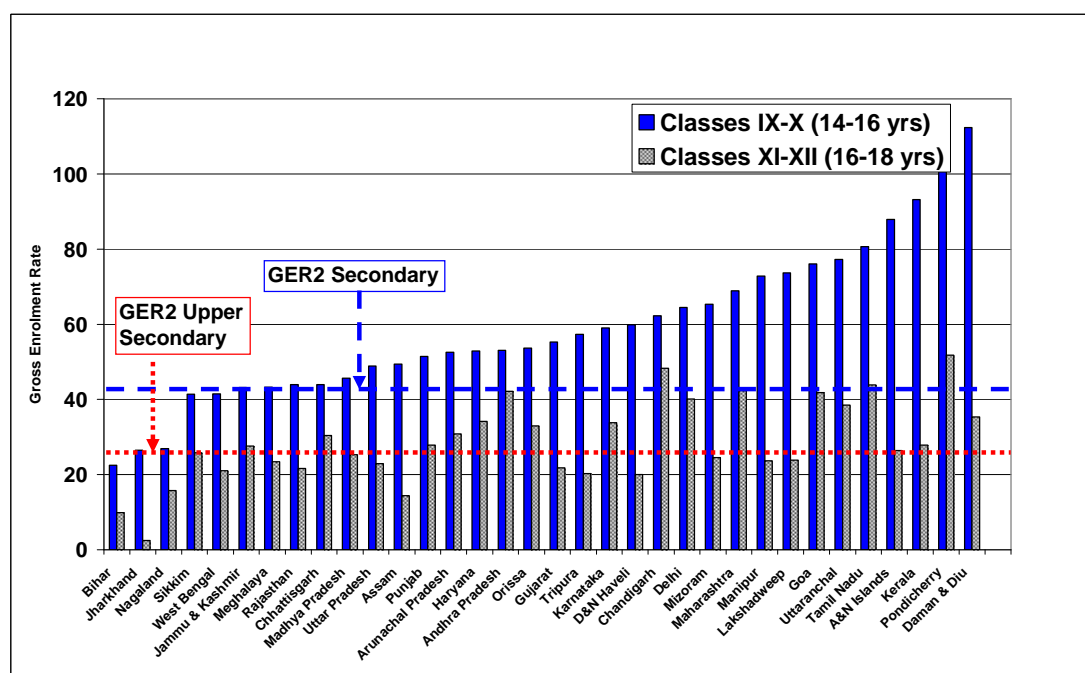
Overall there are about 100,000 lower secondary (Grade IX-X) schools in India and about 50,000 offering upper secondary schooling. There are an unknown number of unregistered private schools which are in addition to these numbers but in most states the numbers are not large. Patterns vary and many of the state secondary schools also have upper primary grades. In some states upper secondary schools are separate institutions and may be linked to higher education institutions. Most students at secondary level sit for state board secondary examinations which differ in detail from those conducted by the Central Board of Secondary Education which are taken by KV and NV students and private candidates. There are also issues about medium of instruction with private English medium schools becoming popular amongst some parents, especially in urban areas.

4. Patterns of Participation in Secondary Schooling

A wide gap remains between those states approaching near universal levels of enrolment at lower secondary level and those still some way away from this. Ministry of Human Resource Development (MHRD) administrative data capture Gross Enrolment Rates (GERs) by state at lower and upper secondary level. Figure 5 shows that Bihar, Jharkhand, and Nagaland, have GERs below 30% at lower secondary level and the furthest distance to travel to reach the targets set nationally of GER of at least 75%. Tamil Nadu and Kerala already exceed the target. Nationally the overall GER² at lower secondary in 2006 was 51.7% and was 27.8% at upper secondary.

GERs at upper secondary are correlated with those at lower secondary level but the association is not very strong (R squared = 0.37). This indicates that transition rates from Grade X to XI vary and that priorities differ in different states between levels. Figure 5 illustrates this and draws attention to needs for balanced growth between lower and upper secondary.

Figure 5: Gross Enrolment Rates at Lower and Upper Secondary by State



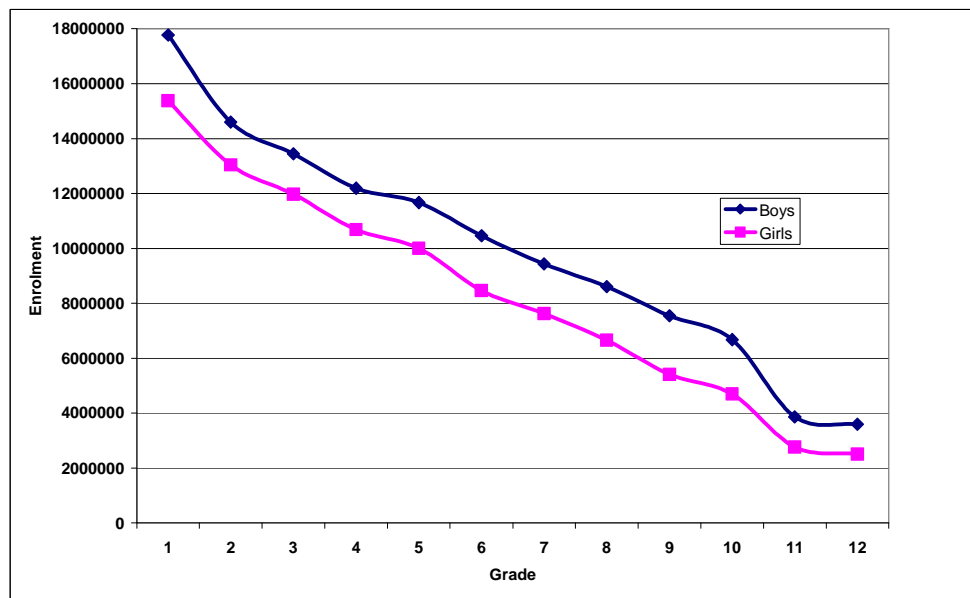
Source: MHRD Statistics, 2008

The enrolment of boys and girls in India by grade is shown in Figure 6. Enrolments in Grade 1 are about 17.8 million boys and 15.4 million girls. By Grade VIII these have fallen to 8.6 and 6.6 million respectively. Across India the population ratio of boys to girls now averages 100:93. In some parts of some states there are less than 850 girls for every 1000 boys. Girls represent about 88% of primary children enrolled, 80% in upper primary, and 71% in lower secondary. Recent data suggests that 29% of entrants fail to reach Grade V, 51% fail to reach Grade VIII and 62% drop out before Grade X. Drop out is higher amongst Scheduled Castes

² These are unweighted averages across states and therefore do not represent population based participation rates.

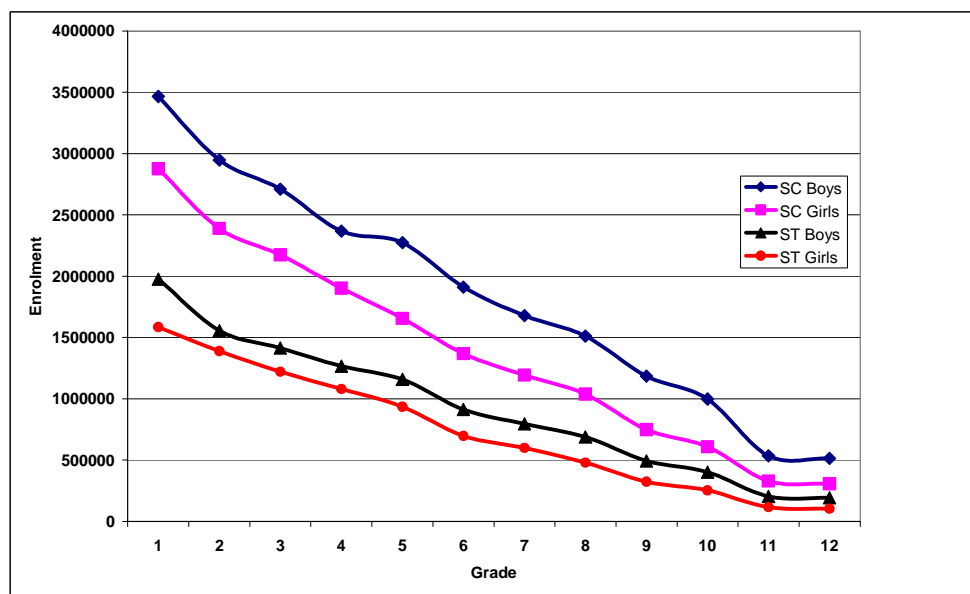
(SCs) (71% by Grade X) and STs (79% by Grade X) than for other groups. Scheduled Castes account for about 19% of enrolment in Grade I falling to only 14% in Grade X. Scheduled Tribes (STs) account for about 11 % of Grade I enrolments and 6% of those in Grade X and are widely discriminated against (Sedwal & Kamat, 2008). Girls also drop out faster than boys and represent about 47% of Grade I enrolments and only 43% of Grade X. Figures 6 and 7 illustrate the patterns of enrolment and attrition.

Figure 6: Enrolments by Grade and Sex – All India



Source: MHRD Statistics, 2008

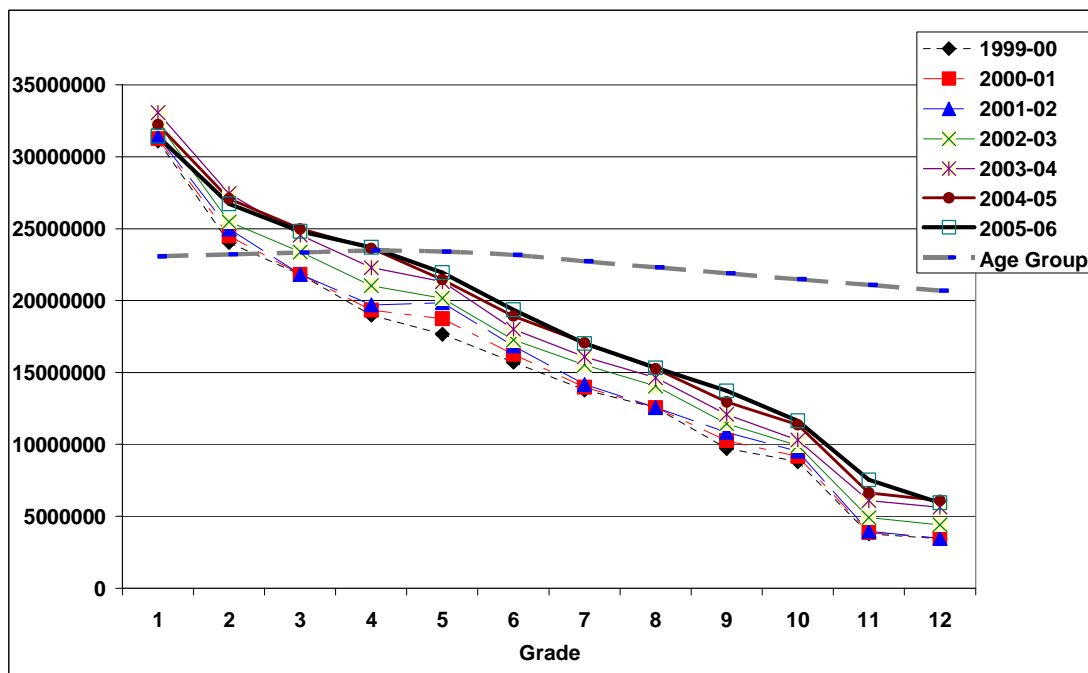
Figure 7: Enrolments by Grade and Sex - Scheduled Caste and Scheduled Tribes



Source: MHRD Statistics, 2008

Enrolments by grade have been increasing since 1999. At the beginning of this period about 30.7 million were enrolled in Grade I and about 12.2 million were in Grade VIII. By 2005 Grade I students were about 32.2 million and 15.3 million were in Grade VIII (Figure 8). The rate of growth in Grade VIII students was about 4.0% a year, with a wide variation between states. This was similar to the growth rates in all other grades except Grades I and II which averaged about 2% a year. Thus overall about 15 million students were reaching Grade VIII in 2005. Of the 50% of the age group who reached Grade VIII between 85% and 90% made the transition into lower secondary Grade IX across India as a whole. This clearly indicates that the problems of increasing participation at secondary level are partly those on the supply side. Until greater numbers succeed in completing Grade VIII successfully, growth will be constrained.

Figure 8: Enrolments by Grade 1998-2005 All India



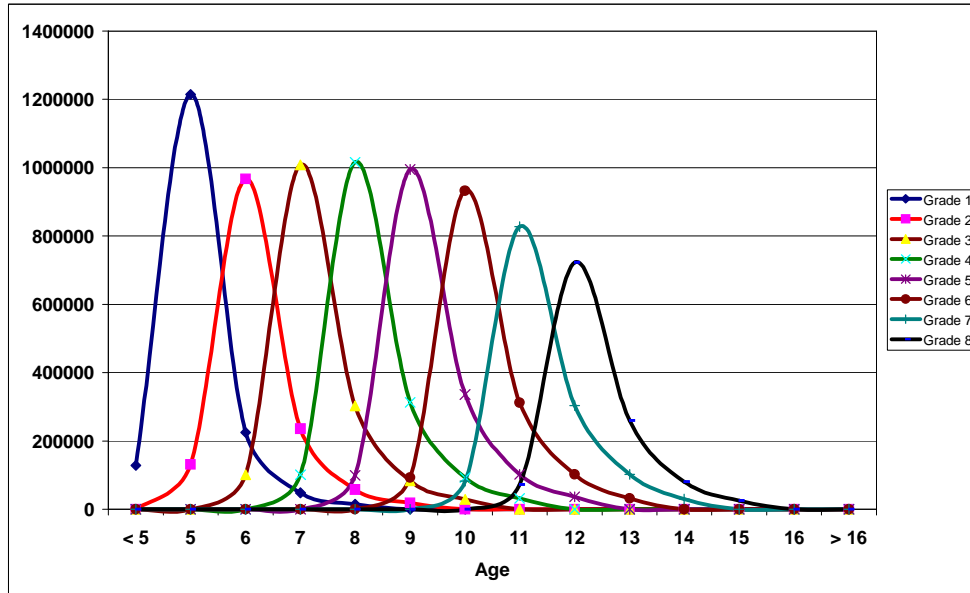
Source: MHRD Statistics, 2008

Patterns of enrolment by age also give an insight into flows students through the education system. The patterns of age in grade through to Grade VIII are as shown below for two states. There are clear differences that have implications for expanded access. Andhra Pradesh has succeeded in regularising enrolments such that most children are in the correct grade for their age (Figure 9). In contrast in Madhya Pradesh children in Grade I are between the ages of 5 and 7 but between 11 and 16 years old in Grade VIII (Figure 10).

Large age in grade spreads are important for several reasons (Lewin, 2009). First if children are grouped in class groups with wide age ranges this presents pedagogic challenges. This is especially so where the curriculum is not multi-graded. The spread of capability within the class is likely to be greater than it would be in a single age group. The cognitive capabilities of 6 year olds and 12 year olds differ for developmental reasons that may make it difficult to undertake the same learning tasks at the same time. Second, there may be social and psychological challenges if age ranges are wide. These may have different effects on boys and girls. They may also lead to adverse affects on the motivation of older children grouped

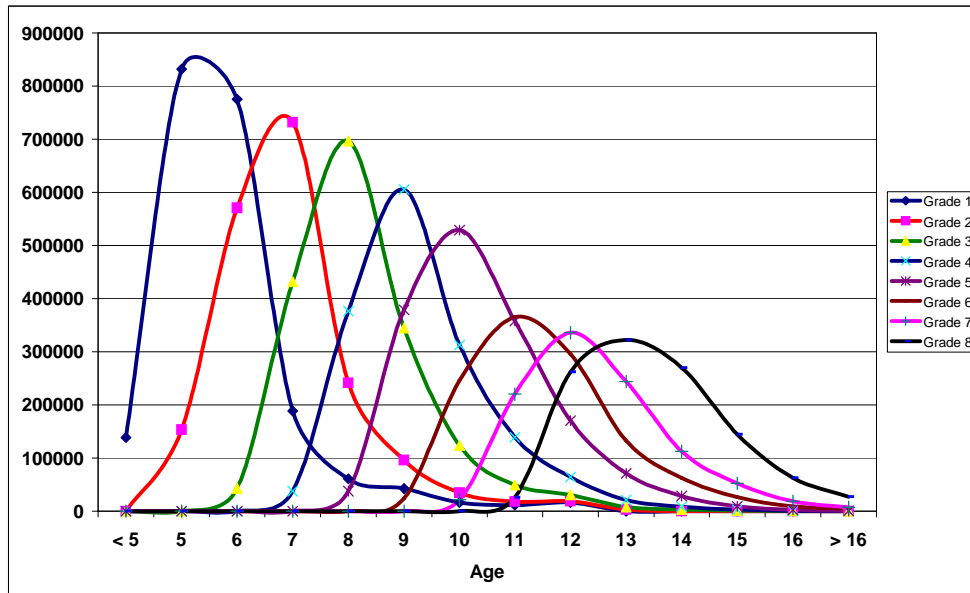
with younger children. Third girls may be particularly disadvantaged by being over age in Grade VIII since this may reduce the likelihood of them continuing into secondary school.

Figure 9: Andhra Pradesh – Enrolments by Grade and Age



Source: MHRD Statistics, 2008

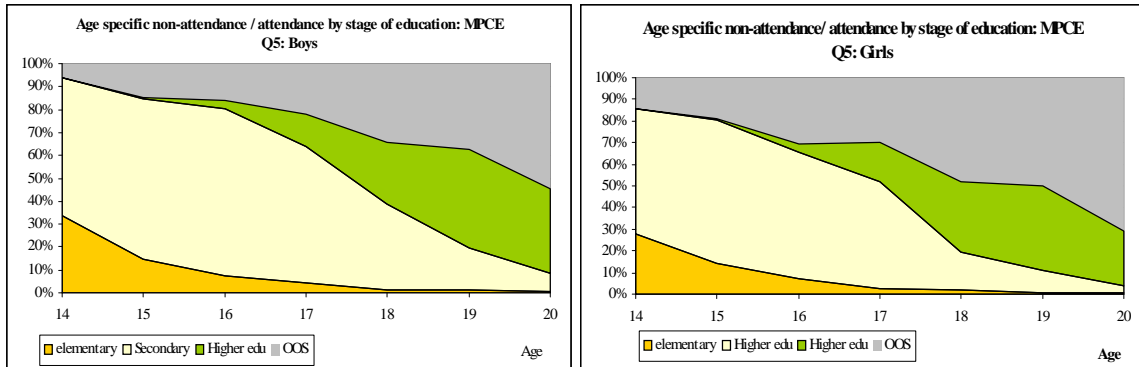
Figure 10: Madhya Pradesh– Enrolments by Grade and Age



Source: MHRD Statistics, 2008

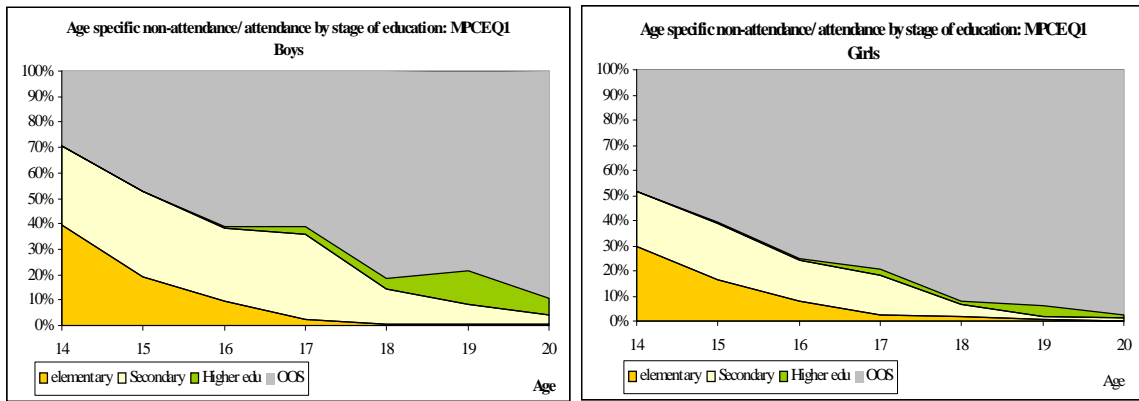
Household income strongly influences enrolment in secondary schooling and patterns of participation by income quintile are different for boys and girls. Girls seem especially disadvantaged by being over age. Differences in enrolments between boys and girls increase with age, especially for those in the lowest quintile of household income distribution. Figures 11 and 12 show this. Expanded participation thus depends on increased numbers of children from poorer households and increased participation rates by girls.

Figure 11: Age Specific Attendance Q 5 (Rich) Boys and Girls



Source: World Bank Delhi

Figure 12: Age Specific Attendance Q 1 (Poor) Boys and Girls



Source: World Bank Delhi

5. Some Limits to Growth in Participation in Lower Secondary Schooling

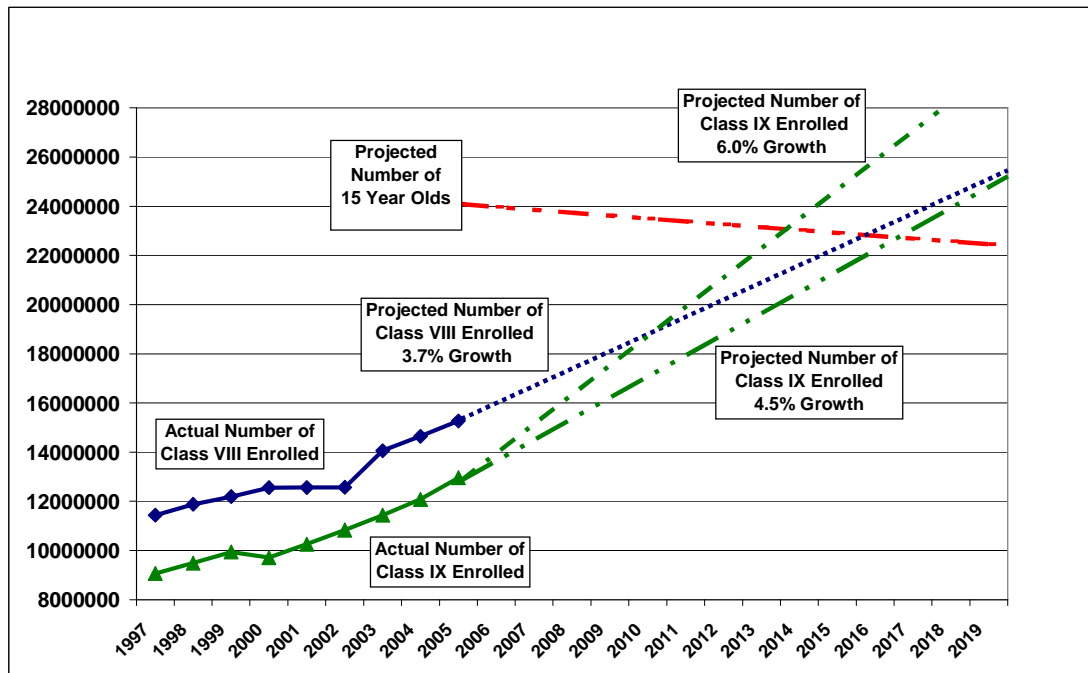
The limits to growth in participation in lower secondary schooling that arise from the supply of Grade VIII graduates can be shown quite simply. In India as a whole there are more children enrolled than there are children in the age group below Grade IV as shown in Figure 8 above. This arises as a result of repetition and overage (and some under age) enrolment. Above Grade III there are fewer children enrolled than in the age group in the population indicating that more places need to be provided if all children are to complete a full cycle of primary schooling to Grade VIII³.

The size of the secondary school age population of 15 year olds (nominal Grade IX students) is almost static nationally and is projected to shrink, although there are differences between states. Even so, it will be a massive task to increase enrolments in lower secondary. There are about 24 million children currently in an age cohort which can be compared with the 15 million (of different ages) who are in Grade VIII and this includes many who are overage. Those of the correct age in Grade VIII are unlikely to number many more than 12 million. Enrolments in Grade VIII can only be much higher if progression and retention rates improve in primary and upper primary school.

In 2006 there were about 13 million students in Grade IX, which was about 15% less than those in Grade VIII. Those who reach Grade VIII represent the maximum number that could enter secondary schooling as currently arranged. The numbers in Grade VIII remain well below the number of 15 year olds in the population. Growth in numbers enrolled in Grade IX that is much more than growth in enrolments in Grade VIII will lead to a shortage of suitable candidates. Figure 13 projects Grade VIII growth at 3.7 % a year and Grade IX at 4.5% nationally. In both cases these are the growth rates since 2000. At this rate Grade VIII numbers will reach the number of 15 year olds in the population in about 2017, and Grade IX numbers will reach the same level about a year later, assuming the age group declines in size at about 0.5% a year. If Grade IX grows at 6% a year then it will overtake Grade VIII enrolments by 2012 and lead to a shortage of available entrants to secondary schools.

³ Numbers in the age group are estimated to be falling by about 0.5% per year, a reversal of previous trends.

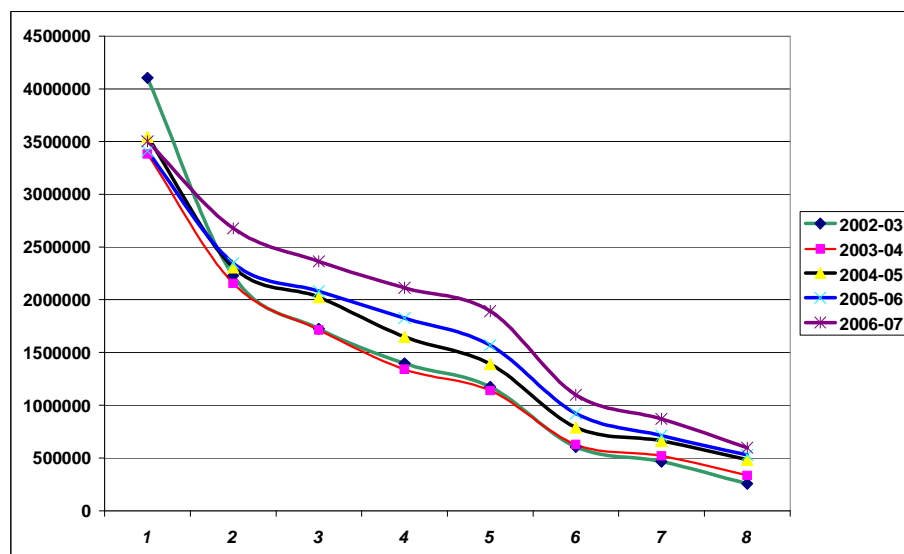
Figure 13: Projected Number of 15 Year Olds and Number of Grade VIII and IX Students



Source: Source: MHRD Statistics, 2008 and Population Census

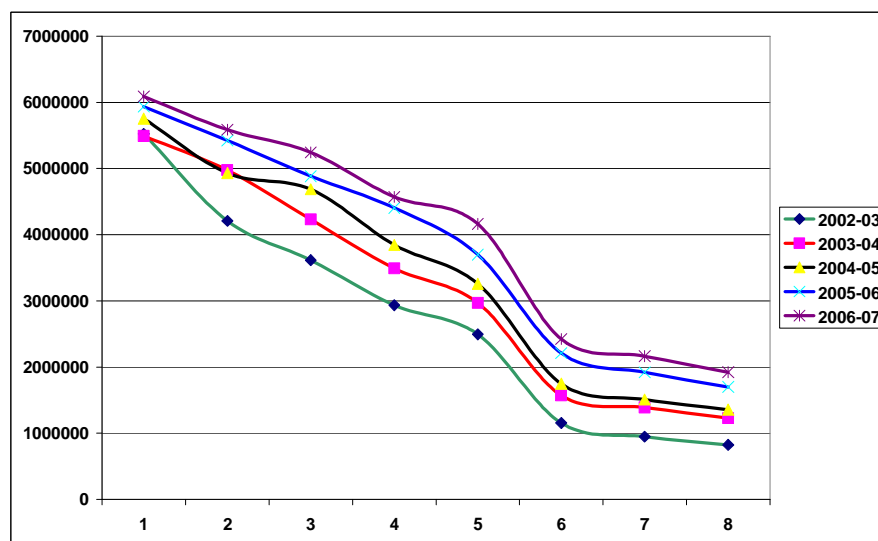
These all India observations conceal the large differences between states that mean that the challenge of expanding access to lower secondary schooling is very unevenly distributed. Thus in some states (e.g. Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu) virtually all children reach Grade VIII and most transit to lower secondary, whereas in others (e.g. Bihar, Uttar Pradesh) less than 40% complete the full elementary school cycle to Grade VIII and a majority fail to continue their schooling (Mehta, 2007). Figures 14 and 15 show how attrition is high between Grades I and II in Bihar. In both Bihar and Uttar Pradesh drop out remains large at the transition from primary to upper primary. Until the flow of students through to Grade VIII improves then there will be problems in expanding secondary participation. It cannot be assumed that providing additional places at secondary level will be sufficient to increase participation because of problems on the supply side (Govinda & Bandyopadhyay, 2008).

Figure 14: Enrolments by Grade – Bihar



Source: DISE Statistics, 2008

Figure 15: Enrolments by Grade - Uttar Pradesh

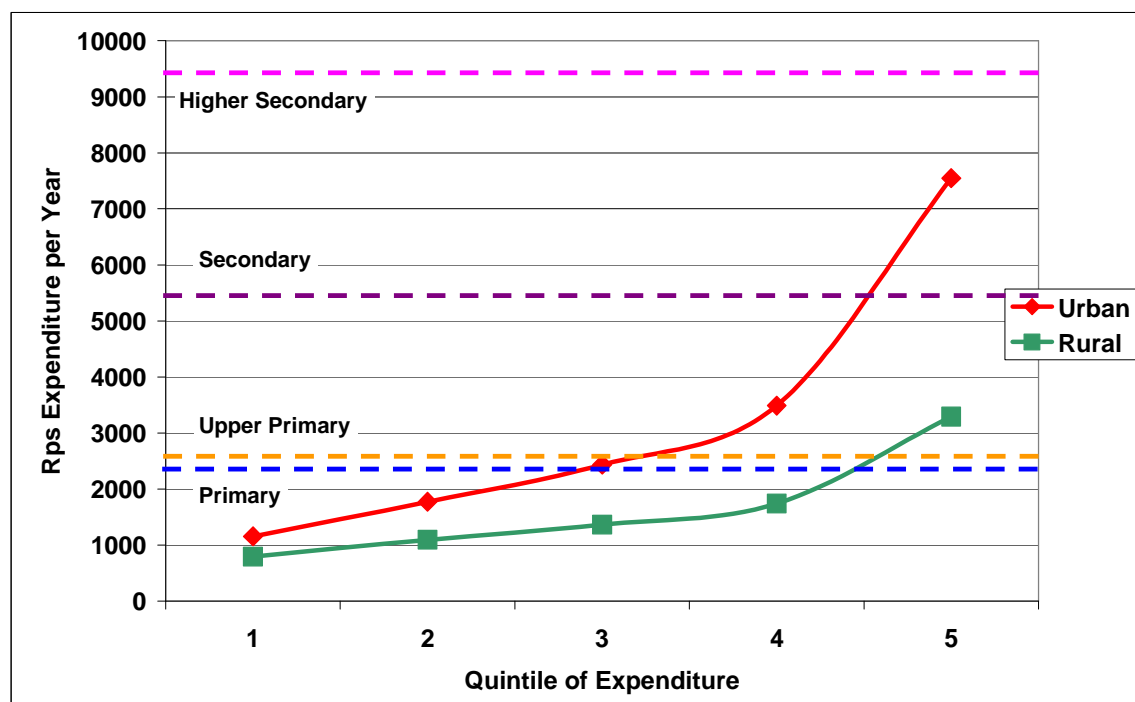


Source: DISE Statistics, 2008

Participation in secondary schooling in India is also limited by household income as the direct and indirect costs of schooling remain substantial. This is especially true for unsubsidised secondary schooling. Figure 16 shows how the cost per student in different levels of school relates to household income. The horizontal lines show annual unit costs in public schools. In most household surveys in India the poorest allocate less than 5% of total expenditure to education. If this is so then the levels indicated by quintile for urban and rural households indicate how much would be available at 5% of household expenditure. Unsubsidised secondary schooling is not available to most rural households and only to the richest urban households according to this analysis.

Even if the assumptions are varied such that 10% of expenditure is available for education it would remain the case that most would find secondary schooling unaffordable. At 10% only the top two urban quintiles and the highest rural quintile could afford the costs. In contrast unsubsidised primary schooling is available to greater proportions of households than is secondary as its costs are lower. However it almost certainly still excludes those in the lowest two quintiles of household income (Härmä, 2010; Siddhu, 2010).

Figure 16: Unit Costs and Household Resources for Education



Source: MHRD Statistics, 2008

It should be remembered that these schooling costs are for one child though there may be more than one child in the household. Also this analysis does not take account of some non-school costs which may be substantial e.g. food, learning materials, transport, private tuition.

Estimates of affordability have suggested that in rural households below the 50th percentile secondary schooling was unaffordable since it would consume more than 50% of household income for one child (World Bank, 2008:109). Affordability could be increased by subsidies directed towards poor households with children of secondary school age. However this would have to be on a large scale if it were to have an impact on participation. The alternative is that secondary schooling costs per child that fall on households will have to fall if participation is to increase.

6. Mapping Participation in Different States

In a short paper it is not possible to capture the huge diversity between states that India embraces. As noted above the issues and strategies that frame RMSA and expanded access to lower secondary schooling are strongly conditioned by state level circumstances. Each state has its own norms and parameters that govern secondary education and provide finance. Historical trends and current status differ widely. Different states have to cover varying distances to reach given enrolment targets. Analysis of national data has all the limitations of aggregation which conceal different strategic needs. It is possible to develop groupings of states within a typology that links current participation rates and geographical indicators of school availability. This can give some of the flavour of the different priorities that arise as a result of different starting points so that different policy options and broad development strategies and their resource requirements can begin to be identified for each group of states.

Two criteria were used to locate states. These were (i) the gross enrolment ratio (GER) in lower secondary education; and (ii) the percentage of habitations served by lower secondary schools within a radius of 5 kilometres. States can be located in four quadrants depending on their status⁴. Table 1 shows this.

Quadrant I

Karnataka, Tamil Nadu, Maharashtra, Himachal Pradesh, Kerala and Goa. These states have a GER greater than 56% in lower secondary education and more than 67% of habitations have a secondary school within a radius of 5 kilometres.

Quadrant II

Mizoram, Manipur, Andhra Pradesh, Uttaranchal, Assam, Jammu and Kashmir and Nagaland. These states have a lower secondary GER above 56% but fewer than 67% of habitations with a secondary school within a radius of 5 kilometres. Many of the states are north-eastern and hilly states.

Quadrant III

Uttar Pradesh, West Bengal, Sikkim, Tripura, Haryana and Punjab. These states have lower secondary GERs less than 56% and have more than 67% of habitations with a secondary school within a radius of 5 kilometres.

Quadrant IV

Arunachal Pradesh, Meghalaya, Jharkhand, Bihar, Chhattisgarh, Orissa, Madhya Pradesh, Rajasthan and Gujarat. These states have GERs less than 56% and less than 67% of habitations with a lower secondary school within a radius of 5 kilometres.

⁴ This analysis was developed with K. Biswal, Geetha Rani and N. K. Mohanty, of the National University of Educational Planning and Administration (NUEPA), New Delhi, and I am grateful for their contributions and insights.

Table 1: Selection of Sample States into Quadrants

I (H,H: High GER and High Access) GER>56% ; Distance>67% Karnataka, Tamil Nadu, Maharashtra, Himachal Pradesh, Kerala, Goa	II (H,L: High GER and Low Access) GER>56; Distance≤67% Mizoram, Manipur, Andhra Pradesh, Uttaranchal. Assam, Jammu and Kashmir, Nagaland
III (L,H: Low GER and High Access) GER≤56%; Distance>67% Uttar Pradesh, West Bengal, Sikkim, Tripura, Haryana, Punjab	IV (L,L: Low GER and Low Access) GER≤ 56; Distance≤ 67% Arunachal Pradesh, Meghalaya, Jharkhand, Bihar, Chhattisgarh , Orissa, Madhya Pradesh, Rajasthan, Gujarat

Source of Data: NSSO (61st Round) 2004-05

Some policy issues emerge from this analysis. First, choices are needed between expanding the capacity of existing schools, and building new schools. Capacity can be increased and higher levels of participation supported by increasing school size and adding grades and classrooms and/or by building new schools in new places. The mix of buildings will need to vary between and within states and will require planning through state level analysis linked to excluded populations. Some possibilities are indicated below which need confirmation through school mapping.

In the first quadrant it is likely that the emphasis should be most on expanding the quality of existing schools with some increase in capacity. New schools on new sites are unlikely to be needed on a substantial scale. Access to elementary education is not a major problem in these states and most children reach Grade VIII e.g. in Maharashtra. By expanding school size within upper limits economies of scale should be available. The building of additional schools is likely to be small scale and designed to meet particular needs of marginalised groups. There is scope for improvement in the efficiency and utilisation of existing schools. Some rationalisation of inputs may be possible and the quality of inputs to the existing schools could be strengthened.

With the exception of Andhra Pradesh most of the states in the second quadrant are located in north India and are hilly states. In this group the most attractive path for expansion may also be to develop existing schools. These states typically have geo-physical features characterised by hilly terrains where finding land for establishing new schools is a major constraint. Distance norms have limited relevance in most of these states since there is need to provide residential facilities both for students and teachers. Though more schools will be needed, maximum use must be made of the existing stock and opportunities to reduce the costs of boarding must be taken. There may be scope to develop efficient small secondary schools suitable for geographically difficult areas and avoid some of the problems associated with small schools (Blum & Diwan, 2008; Little, 2008).

In the third quadrant, some states, especially Uttar Pradesh, have a high score on access to secondary schooling facilities because population density is high. Distance norms are met and exceeded. But enrolment rates are relatively low and the number of schools per 100,000 is well below the national average (Siddhu 2010). Physical access is not a major issue in this group of states, but efficiency is a problem with large numbers of small schools. Expansion should lead to larger school sizes with greater efficiency and lower costs per student.

In the fourth quadrant, most states e.g. Madhya Pradesh and Bihar, have had to prioritise expanding enrolment in the elementary education sector since access and participation in secondary have lagged behind other states partly due to a shortage of schools within reasonable distance of households. In other places there will also be a need to expand schools where there is excess demand and this is most common in and around cities.

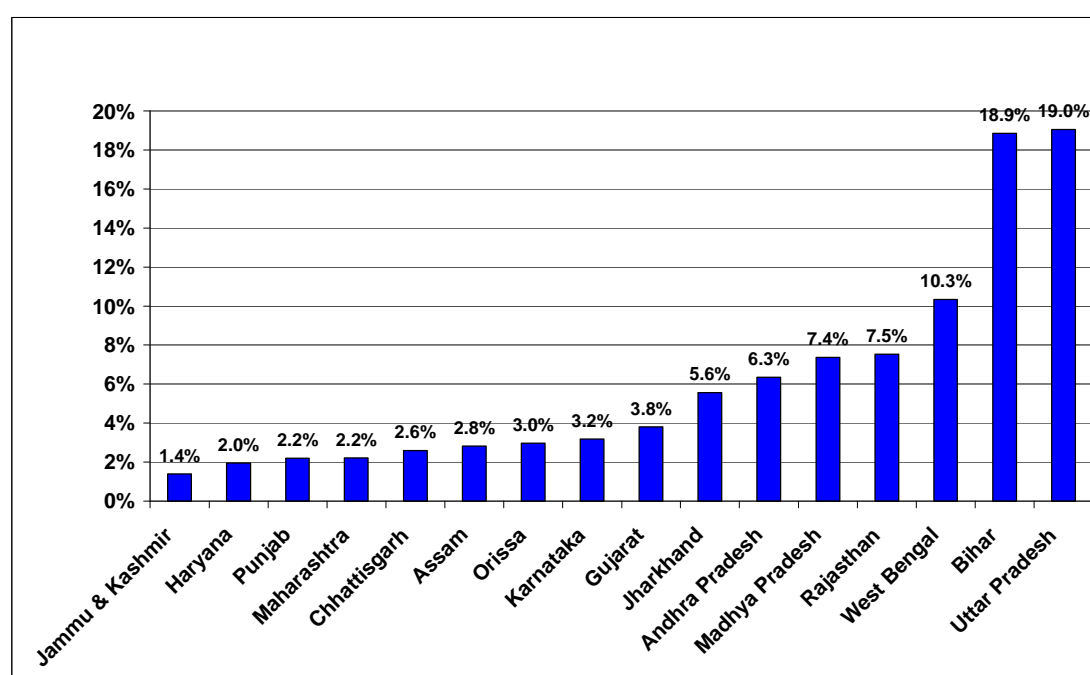
In all states across the four quadrants expansion of access to secondary education through new building will remain necessary in backward and under-served areas. Expansion of secondary education facilities in the form of integrated secondary schools (i.e. Grades VI-XII) may be more efficient than separate and smaller part range secondary schools. Given the low internal efficiency of education in most states, priority may be given to rationalisation of basic infrastructure, teaching-learning facilities, and staffing in the existing schools.

Currently, there is no institutional arrangement in most states for capacity building of secondary teachers and providing pedagogic support services, particularly at the district and the sub-district levels. Though NVs are intended to function as “model” schools they are too few in number to have much impact. More investment is needed at administrative block level to develop facilities for teacher training, professional development courses, collecting school data, and other support services. Small scale pilots of such centres are desirable before embarking on large scale implementation.

7. Projecting Expansion and the Costs of Increased Participation

If 2006 is taken as a baseline, the number of secondary students at Grades IX and X needs to increase by about 15.5 million, from 24 million to nearly 40 million by 2012 to achieve an average GER greater than 75% by 2012 across all states. This is a massive 66% increase. Fully 48% of the new places needed are in only three states – West Bengal, Bihar and Uttar Pradesh. This clearly has implications for the patterns of investment that would be needed to reach a GER of 75% in all states⁵. Figure 17 shows the states where the most enrolment gains would be needed if the GER at secondary was to reach or exceed 75% in all states.

Figure 17: Percentage Growth Needed to Reach GER 75% at Secondary as % of Total by State

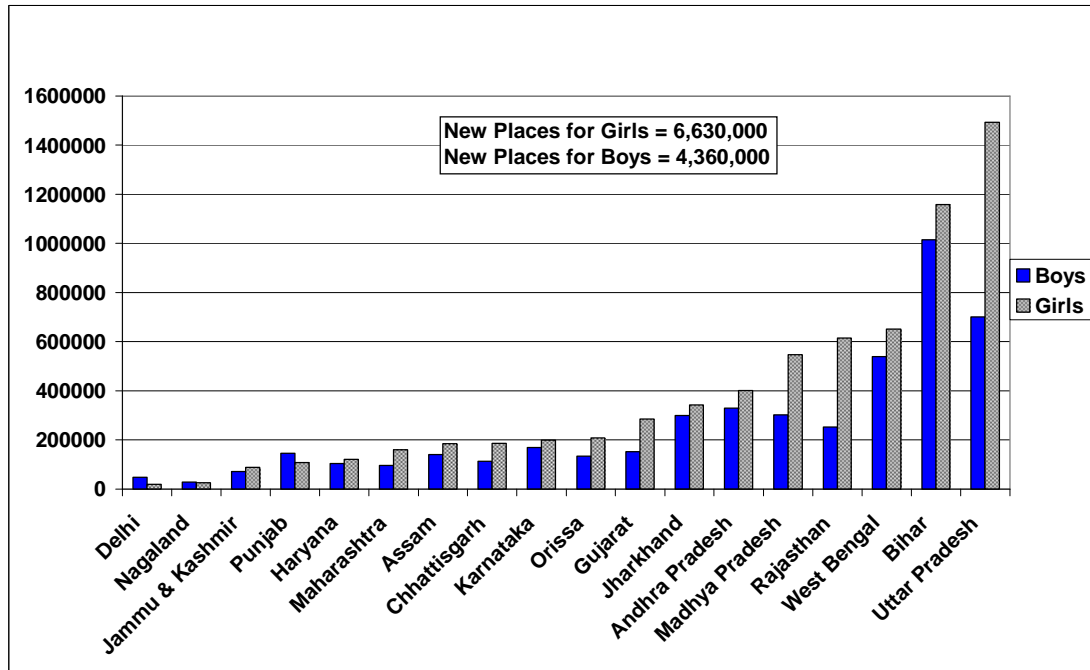


Source: Author's Projection

The number of new places needed differs between boys and girls. To reach a GER of 75% at secondary level would require an additional 6.63 million places for girls and 4.36 million places for boys. Thus the number of new places needed for girls is more than twice those for boys if gender parity is to be achieved (Figure 18). There are clear implications of this for balanced growth towards the gender equity targets and these need to address the known causes of gendered exclusion (Bandyopadhyay & Subrahmanian, 2007).

⁵ Based on current enrolments without factoring in different population growth rates between states. If these different population growth rates are factored in the polarisation is likely to be greater.

Figure 18: Number of New Places Needed for Boys and Girls by States



Source: Author's Projection

At least 2.3 million of the new enrolments would be needed for SCs and at least 1.5 million for STs. These places are concentrated in the states with the largest SC and ST populations as shown in Figure 19 and 20. The numbers would be larger than this if GER = 75% is targeted for these groups separately, and not GER = 70%.

Figure 19: Number of New Places Needed for SCs by State

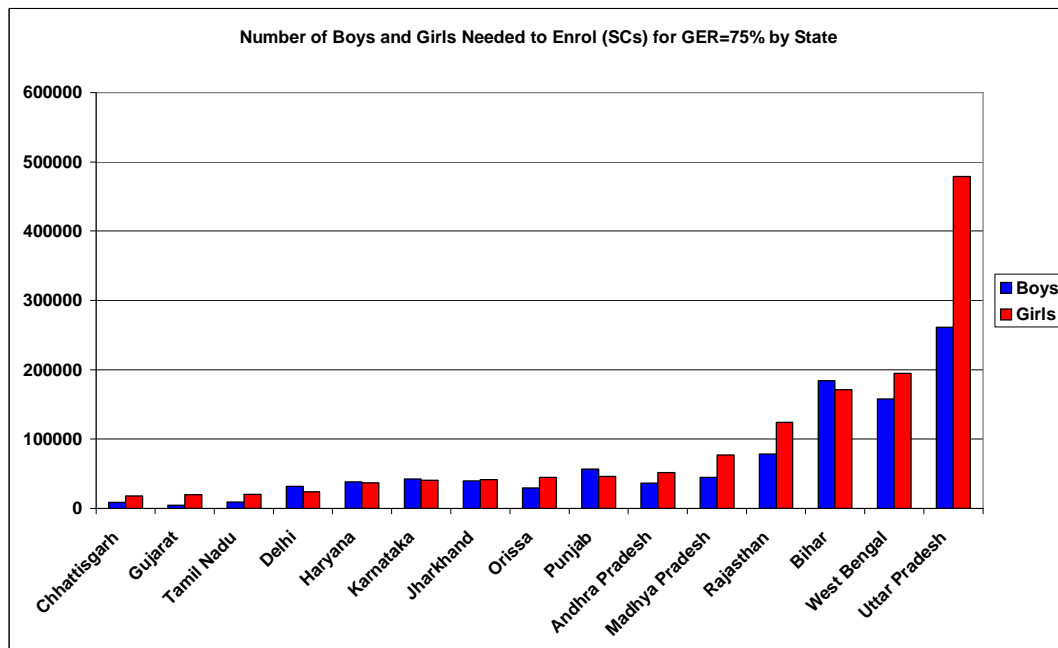
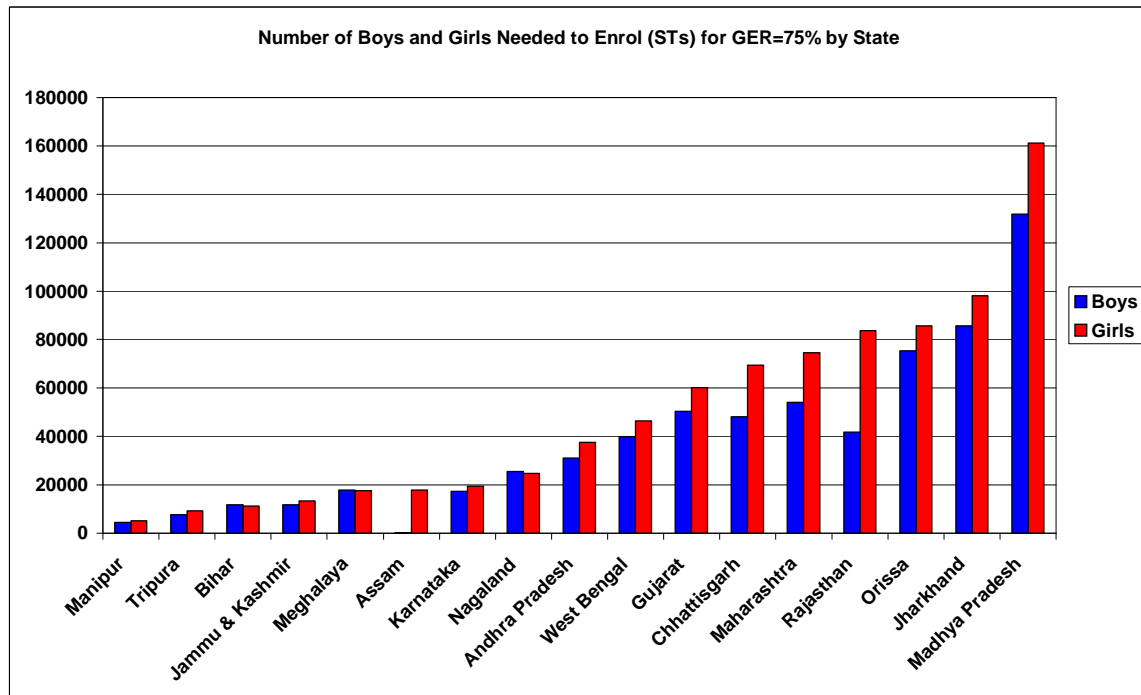


Figure 20: Number of New Places Needed for STs by State



A key question is whether the cost implications of this kind of expansion sustainable within realistic budget allocations in the future? Some indication of the magnitude of the financial demands of expanded access to secondary schooling in India can be derived from using national aggregate data to profile different cost scenarios. Three scenarios are illustrative.

Scenario 1 models an education system with inputs derived from national data available in 2008. In this system the primary pupil teacher ratio (PTR) is 45:1, and secondary 33:1. Costs per student are about 10% of GDP per capita at primary, and rise to 24% at secondary and 44% at upper secondary. The school age population tracks national projections. Higher education and other sub sectors are allocated 20% of the education budget.

With these parameters salary costs are about 87% of the total recurrent costs at primary, and 75% at secondary. With current GERs the system requires 3.7% of GDP to finance. Primary and upper primary need 54% of the total, and all of secondary requires 26% of the total (Table 2). These results reflect national averages.

Table 2: Scenario 1

Scenario 1 - Typical Data							
		Primary	U. Prim	Sec	U. Sec	Other	Total
Pupil Teacher Ratio		45	34	33	26		
Teacher salaries /GDP/capita		4	4.5	6	7.5		
Non teaching sals/GDP/capita		0.3	0.4	1	2		
Non salary exp/GDP/capita		0.3	0.4	1	2		
Teacher sals as % of tot. rec.		87%	85%	75%	65%		
Total unit cost % GDP /cap		10%	16%	24%	44%		
School age pop as % total pop		11.0%	6.1%	3.9%	3.8%		
GER		115%	75%	51%	27%		
%GDP Needed	0.04	1.29%	0.71%	0.48%	0.45%	0.74%	3.68%
% Ed Expenditure	1.00	35.2%	19.4%	13.1%	12.3%	20.0%	100.0%
			Elementary		All Secondary	Other	
% GDP			2.0%		0.94%	0.7%	
% on Elementary/Secondary/Other			54.6%		25.4%	20.0%	

If the model is adjusted to increase average participation rates to 75% at secondary and 50% at upper secondary the result is to increase the expenditure needed to 4.5% of GDP. All secondary now takes 35% of the total, and all primary takes 46% assuming higher education and other expenditure remains at 20% of the total (Table 3). In all 4.8% of GDP is required to finance this system.

Table 3: Scenario 2

Scenario 2 - GER Lower Secondary 75%; Upper Secondary 50%							
		Primary	U. Prim	Sec	U. Sec	Other	Total
Pupil Teacher Ratio		45	34	30	25		
Teacher salaries /GDP/capita		4	4.5	6	7.5		
Non teaching sals/GDP/capita		0.3	0.4	1	2		
Non salary exp/GDP/capita		0.3	0.4	1	2		
Teacher sals as % of tot. rec.		87%	85%	75%	65%		
Total unit cost % GDP /cap		10%	16%	27%	46%		
School age pop as % total pop		11.0%	6.1%	3.9%	3.8%		
GER		105%	105%	75%	50%		
%GDP Needed	0.05	1.18%	1.00%	0.78%	0.87%	0.96%	4.79%
% Ed Expenditure	1.00	24.6%	20.8%	16.3%	18.2%	20.0%	100.0%
			Elementary		All Secondary	Other	
% GDP			2.2%		1.65%	1.0%	
% on Elementary/Secondary/Other			45.5%		34.5%	20.0%	

If the participation rates are increased to a GER of 100% at lower secondary and 75% at upper secondary, which are levels seen in the most developed states in India, then secondary as a whole takes over 40% of the education budget and over 2.3% of GDP. The whole system needs 5.8% of GDP to finance (Table 4).

Table 4: Scenario 3

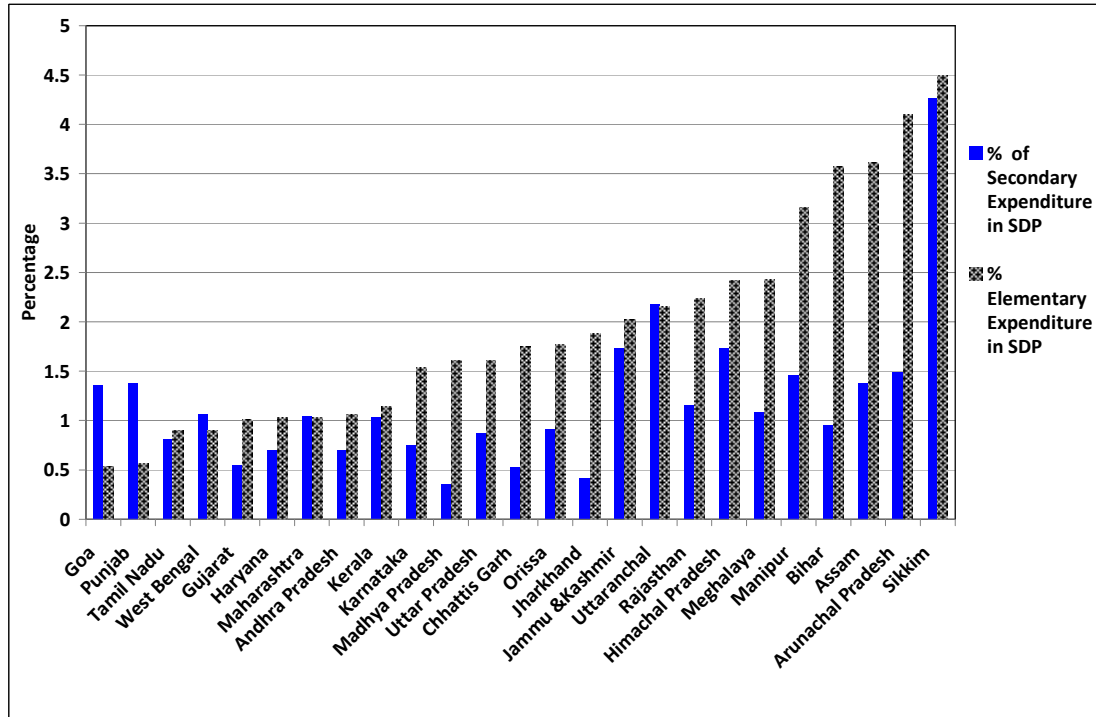
Scenario 3 - GER Lower Secondary 100%; Upper Secondary 75%							
		Primary	U. Prim	Sec	U. Sec	Other	Total
Pupil Teacher Ratio		45	34	30	25		
Teacher salaries /GDP/capita		4	4.5	6	7.5		
Non teaching sals/GDP/capita		0.3	0.4	1	2		
Non salary exp/GDP/capita		0.3	0.4	1	2		
Teacher sals as % of tot. rec.		87%	85%	75%	65%		
Total unit cost % GDP /cap		10%	16%	27%	46%		
School age pop as % total pop		11.0%	6.1%	3.9%	3.8%		
GER		115%	105%	100%	75%		
%GDP Needed	0.06	1.29%	1.00%	1.04%	1.31%	1.16%	5.80%
% Ed Expenditure	1.00	22.3%	17.2%	17.9%	22.6%	20.0%	100.0%
			Elementary		All Secondary	Other	
% GDP			2.3%		2.35%	1.2%	
% on Elementary/Secondary/Other			39.5%		40.5%	20.0%	

This overall picture gives some idea of the room to manoeuvre in terms of public finance. An overall national target for educational expenditure of 6% of GDP has existed at national level since the 10th FYP. If this level were to be realised then near universal levels of access to secondary, and a GER of 75% for upper secondary could be afforded with current cost structures. However, plans to increase the share of GDP allocated to education to 6% have not been implemented in the past. It will require a new impetus to translate ambition into a financial reality.

In reality the affordability of higher levels of participation is really a state level issue since it is states that formally have responsibility for delivering most secondary schooling (Tilak, 2008; Reddy, 2008). The proportion of State Domestic Product (SDP) allocated to elementary and secondary schooling is illustrated in Figure 21. This shows wide variations between states. Most spend more on elementary than on secondary but Kerala, Maharashtra, West Bengal and Tamil Nadu spend nearly as much on secondary as on elementary. Goa and the Punjab appear to spend more.

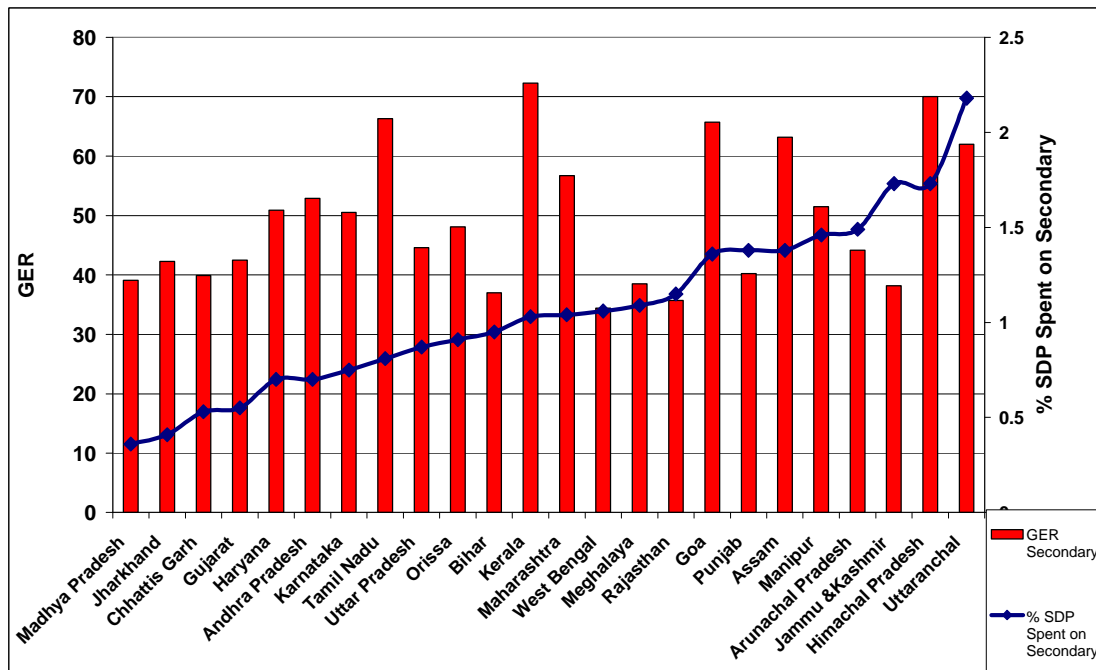
Figure 22 shows that there is no simple relationship of recurrent spending to gross enrolment rates at secondary. Some states achieve GERs above 50% with less than 1% of SDP, and others commit well over 1% and have GERs below 40%. On average states spend about 1% of SDP on all secondary recurrent expenditure with a range of 0.5% to over 2%.

Figure 21: Recurrent Expenditure on Elementary and Secondary as % of State Domestic Product



Source: MHRD Statistics

Figure 22: GER at Secondary and Recurrent Expenditure on Secondary as a % of SDP



Source: MHRD Statistics 2008

If secondary schooling is to reach out to a larger proportion of the population then state allocations to secondary will have to rise. Spending on secondary will need to approach or exceed that on elementary schooling. Though the situation clearly differs greatly between states, the analysis suggests that spending on lower and upper secondary will need to be over 2% of SDP in most low enrolment states and this represents a substantial increase in most. Even this will not be sufficient unless costs per student are no more than about 25% of SDP per capita. To reach these cost levels may require reforms that make more efficient use of teachers and actions that limit elective boarding, high costs associated with small secondary schools, and distribute subsidies to schools more evenly across school types.

8. Concluding Remarks

Rastriya Madhyamic Shiksha Abhiyan (RMSA) is a bold initiative designed to address the low rates of participation at lower secondary level, especially in the BIMARU states. India's performance in providing access to secondary schools has fallen considerably behind that of the other BRIC countries with which it is competing and with which it is often compared. The analysis of the current status, patterns of provision and constraints on growth leads to a range of conclusions.

First, the current plans to expand lower secondary participation to a GER of 75% or better are ambitious and will require sustained political will, persistent implementation and substantial investment. Enrolments in lower secondary (Grades IX-X in most states) would have to increase from about 24 million in 2005 to nearly 40 million in 2012. If average school size remained constant then this would require as many as 65,000 additional schools or their equivalent at this level. Upper secondary enrolments would need to increase from about 13 million to over 21 million assuming transition rates remained the same. The 11th FYP provides for an increase in capacity of about 6 million places. This is less than 25% of the places likely to be needed and hence RMSA will need to be expanded and continued into the 12th FYP and beyond.

Second, the sub-targets associated with RMSA increase the challenge for the lowest enrolment states. Thus achieving a GER of 70% in rural areas implies urban GERs will need to exceed 85%. If the enrolment rates for SCs and STs are to exceed 70% then those for non SCs and STs will have to exceed 75%. Enrolment rates for Muslims are difficult to target since this group are widely distributed and mixed with others in educational statistics. Targets to provide secondary schools within 5-10 km of all habitations are ambitious and may lead to excessive numbers of small schools with high costs. As transport infrastructure improves accessibility should become easier within larger travel distances.

Third, India's diversity means that a plurality of approaches is likely to be necessary in different states given the variation in starting points and school cycle structures. Most obviously to reach a GER of 75% nationally requires a special focus on large under enrolled states. Nearly half of all the new enrolments that would be necessary are located in only three states. Three states have GERs at secondary below 30% and three already exceed the target of 75% GER.

Fourth, increased capacity will need to be provided at least in the ratio of 3:2 in favour of girls to approach gender parity. Similar preferences will have to be given to SCs and STs and other marginalised groups to achieve participation at levels that reflect their share of the population.

Fifth, in low enrolment states Grade VIII output is a constraint on secondary expansion. On average nationally about 50% of entrants to Grade I fail to graduate from Grade VIII. Expanded secondary participation requires reductions in Grade I-VIII drop out. Numbers entering Grade IX are typically 85-90% of those in Grade VIII. Grade VIII enrolments have been growing at a little over 4% on average. However the range across states is from -3% to more than 15% a year. If Grade IX expands much faster than Grade VIII it will become difficult to fill Grade IX. The magnitude of this problem is very different in different states.

Sixth, drop outs are disproportionately from lower quintiles of household income. Expanded participation requires that costs to the households of new entrants are reduced. More expansion will be possible by directing subsidies to the poorest and retaining fees at levels that recover a significant part of the costs for those in higher income quintiles. Fees in government schools are a small proportion of total recurrent costs but make useful contributions to non-salary expenditure. Expanding access to poorer households may mean that even modest fees are unaffordable. Fees should be retained for those who can afford to pay.

Seventh, private unaided schools are unlikely to grow to provide secondary education to most outside the top two quintiles of household income. Most growth will therefore be in government or government aided schools. The numbers of local body and government aided schools can grow if there is sufficient capacity amongst suitable stakeholders to take on the responsibilities and meet regulatory and supervision requirements. Where such capacity does not exist government will remain the provider of last resort.

Eighth, capacity (classrooms, schools, teachers, learning materials etc.) needs to be expanded at high rates that will challenge existing procurement and infrastructure, especially in low enrolment states. Rapid expansion without effective management could damage quality.

Ninth, the number of teachers needed at the secondary level will more than double if the goal of 75% GER is to be achieved along with targets for lower pupil teacher ratios. The number of secondary teachers would have to increase by as many as 750,000 from 2007 to 2012, and upper secondary teachers by a further 250,000.

Tenth, teacher supply is problematic because of lags in appointing new teachers, unwillingness of states to finance new salaries and pay awards, and attempts to increase the numbers of teachers on contracts. Teacher supply for secondary schools depends on the output of initial training which at college level is largely privately financed through student fees. This may inhibit growth in training output. It may also prove difficult to attract greater number of university graduates into secondary teaching, especially in the most under enrolled states. Lags are likely between increasing enrolments and posting newly qualified teachers. With high rates of expansion this could lead to shortages and excessive pupil teacher ratios.

Eleventh, lower rather than higher cost options to expand capacity would provide more access to greater numbers e.g. adding space and teachers to existing schools wherever possible; day schools in preference to boarding, minimum sufficient design of buildings and low cost learning materials. Reforms that result in efficiency gains are needed to lower costs per graduate and to increase time on task, reduce absenteeism, improve teacher productivity and achievement of learning outcomes, and generate clearer accountability to stakeholders (Lewin and Caillods, 2001).

Finally the expansion planned under the 11th FYP is affordable with increased national budget allocation and appropriate state level financial management, though it is unlikely to be achieved within the timescale originally envisaged. It would require budget allocations to rise to 5% of GDP on average and more in some states. It would also need increases in the share given to secondary schooling to about 2% of GDP or more in low enrolment states. Recurrent expenditure on secondary schooling will have to increase by about 15% per annum over the 11th FYP; development expenditure will have to reach 30% of total secondary expenditure from a low base. Secondary education will have to increase its share of the education budget

towards 40%. Lesser increases with current costs structures will not be sufficient to reach enrolment targets.

It is clear that education policy in India is shifting, albeit slowly, to place more emphasis on the development of secondary schooling and close the gap between itself and other BRIC countries in the educational level of its labour force. It is also responding to social demand for more opportunity to progress beyond elementary education, and for reductions in the disparities between states in participation. RMSA is an appropriate vehicle to start this process but is yet to bear fruit on the scale necessary to reach its goals. Since most provision at secondary level is a state responsibility the central RMSA plans must complement state initiatives which will need to be supported by commitments to sustain the recurrent costs generated by investment in expanded capacity.

RMSA will provide more educational access to secondary schooling to populations that are currently excluded. This is essential for India's future growth and to improve equity and enhance the opportunities that exist for social mobility out of poverty. Lessons can and should be learned from SSA, not least the importance of managing expanded access in ways that preserve and enhance quality, and which sequence inputs to support greater participation so that what is required to deliver educational services effectively is available when and where it is needed. As the largest programme of investment in secondary schooling in the developing world RMSA and its sequels hold the promise of contributing to social transformation on a very large scale. It is a promise too important to break.

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Report summary:

Investment in secondary schooling in India has been neglected for many years. Since the 1990s most emphasis has been on universalising access to elementary schooling, a task that remains far from complete. Under the 11th National Plan *Rastriya Madhyamic Shiksha Abhiyan* (RMSA) has been launched to increase access to grade nine and above. This research monograph explores some of the key issues in managing the growth of secondary schooling. These include the constraints on expansion that arise from current levels of elementary school graduation, the costs and affordability of secondary schooling, the infrastructure needs, and increased teacher supply. Policy dialogue around secondary school expansion is a central concern if India is to close the gap between itself and China and other rapidly developing countries in educating most of its population beyond the elementary level.

Author notes:

Professor Keith Lewin is Director of the Centre for International Education at the University of Sussex and Director of the CREATE research partnership. He has extensive experience of school systems in Sub-Saharan Africa, South and South East Asia, and China, has published 18 books and over 100 scholarly articles and chapters, and has supervised 40 D Phil students. He has worked extensively with the International Institute of Educational Planning, and with the World Bank, DFID, DSE/GTZ, UNICEF, and UNESCO and with many national governments. Keith made invited contributions to the world education conferences at Jomtien and Dakar, and has subsequently been directly involved in national sector development planning in Uganda, Tanzania and Rwanda, and in India supporting DFID's bilateral programmes. His research interests include the economics of education and educational financing, educational policy and planning for EFA, teacher education, educational innovation and implementation, science education policy, assessment, and aid to education.

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