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Improving Human Capital Formation in India

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ABSTRACT/RÉSUMÉ

Improving human capital formation in India

The provision of high-quality education and health care to all of the population is considered a core element of public policy in most countries. In India, the government is active in both education and health but the private sector also plays an important role, notably for health, and to a lesser extent in education. At present, the quality and quantity of the outputs from education, and also from public health care, are holding back the process of economic development. Steps are being taken to draw more children into primary education and the paper considers ways to keep children in school. It also considers institutional changes that may help to improve the performance of the educational system and so boost human capital formation.

This working Paper relates to the *2007 Economic Survey of India* (www.oecd.org/eco/surveys/india).

JEL classification: I0; I21; J24.

Keywords: Education policy; literacy rates; age cohorts; returns to education; primary; secondary; tertiary education.

Améliorer la formation du capital humain en Inde

Permettre à l'ensemble de la population de bénéficier d'une éducation et de soins de santé de qualité est l'un des enjeux majeurs de la politique publique dans la plupart des pays. En Inde, les pouvoirs publics interviennent aussi bien dans l'éducation que dans les soins de santé, ce qui n'empêche pas le secteur privé de jouer un rôle important, en particulier dans le premier de ces domaines. À l'heure actuelle, les performances qualitatives et quantitatives de l'éducation et des services publics de santé constituent un frein au processus de développement économique. Des mesures ont été prises pour augmenter la fréquentation de l'enseignement primaire, et le présent document étudie les moyens de lutter contre les abandons scolaires. Il analyse également les changements institutionnels nécessaires pour contribuer à améliorer les performances du système éducatif et stimuler ainsi la formation du capital humain.

Ce document de travail se rapporte à l'Étude économique de l'Inde 2007 (www.oecd.org/eco/etudes/inde).

Classifications JEL : I0; I21; J24.

Mots clés : Politique éducative; taux d'alphabétisation; cohorte d'âge; rendement de l'enseignement; primaire; secondaire; supérieur.

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IMPROVING HUMAN CAPITAL FORMATION IN INDIA

By Sean M. Dougherty and Richard Herd¹

Endowments – especially of human capital – are fundamental to improving living standards and ensuring that the benefits of growth are enjoyed across all segments of society.² This paper argues that a range of further measures need to be undertaken to provide a stronger institutional framework for improving educational endowments, as well as public service delivery more generally. One priority is a fuller implementation of the 73rd and 74th constitutional amendments (1992) that established local governments in both urban and rural areas. In the intervening years, little has been done to implement these amendments, especially in rural areas, and local governments often lack sufficient resources and autonomy to fully carry out the tasks that should be their responsibility. At the same time, incentives are so weak in many public institutions that the private sector has taken a large role in providing services. A more forward-looking approach by all levels of government in its regulation of public and private institutions would be appropriate and would improve India's overall development potential.

Human capital needs to be improved

Investment in education has been and remains a major priority of Indian governments. A significant effort has been made to transform the educational system over the past two generations. In the period from the creation of the Union until 1990, the number of schools increased more than three-fold, outpacing the growth of the school age population (Table 1). The number of schools per child of school age rose by half. Most of this increase came in the provision of schools for children aged over 11. At the primary level provision essentially kept pace with population growth but at the secondary level (upper primary, secondary and higher secondary in Indian terms) provision rose greatly, with the number of schools rising 10-fold. During this period, public spending on education rose from 0.6% of GDP to 3.8% of GDP. During the 1990s, the expansion of the education system slowed, with the number of schools only rising in line with the school-age population, but from 2001 the expansion started once again, gaining momentum in the following years. At the tertiary level, the number of universities rose 15-fold between 1950 and 2004, while the number of undergraduate colleges rose 30-fold.

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1. This paper is largely based on Chapter 8 of the OECD Economic Survey of India (2007), on which the Government of India provided extensive comments. Special thanks to Andrew Dean, Puja Dutta, Bénédicte Larre, Joaquim Oliveira-Martins, Marina Pavan, Douglas Sutherland and Ian Whitman for helpful comments and suggestions. The support of Thomas Chalaux for statistical work and Nadine Dufour for technical preparation is gratefully acknowledged. The authors are Senior Economists in the OECD Economics Department.
 2. Lack of adequate investment in human capital can have serious and perverse consequences: simulations suggest that while increasing openness generally improves incomes, if inadequate investments in human capital are made, it can also lead to increasing poverty and informality (Gibson, 2005). There is some indication of such a phenomenon taking place in some of the laggard states in India (Topalova, 2005). Moreover, India's Human Development Index rating in 2002 was ten positions behind its rank in GDP per capita at purchasing power parity (UN, 2004).

Table 1. Provision of schools by level of education

	Elementary Education		Secondary Education		All levels	Population	Index of schools per child
	Primary schools	Upper primary schools	Secondary schools	Higher secondary schools	Total	All types of schools	Total
	Age 6-10	Age 11-13	Age 14-15	Age 16-17	Age 14-17	Age 6-17	Age 5-19
	Thousands						1990 = 100
1950	209.7	13.6	7.4	230.7	121.0
1990	560.9	151.5	60.6	19.2	79.8	792.2	283.0
1996	603.6	180.3	74.3	28.9	103.2	887.2	321.2
1997	619.2	186.0	76.7	30.5	107.1	912.3	328.1
1998	629.0	193.1	79.4	32.7	112.1	934.1	335.1
1999	641.7	198.0	82.3	34.5	116.8	956.5	342.2
2000	638.7	206.3	87.7	38.4	126.0	971.1	349.6
2001	664.0	219.6	91.4	42.1	133.5	1 017.2	357.0
2002	651.4	245.3	90.8	46.4	137.2	1 033.8	359.8
2003	712.2	262.3	99.1	46.8	146.0	1 120.5	359.8
2004	767.5	274.7	n.a.	n.a.	152.0	1 194.3	362.5

Source: Indiatat.com and Ministry of Human Development.

The increase in education provision has been associated with a marked improved in the literacy rate, which rose from 18% in 1951 to 65% in 2001. Nonetheless, there were concerns that the performance of the educational system was not as good as might be expected given the level of expenditure. The performance of the Indian educational system has lagged that in other countries, with low levels of literacy despite a level of expenditure per pupil that is not out-of-line with that of other emerging economies and even developed OECD countries, when measured relative to GDP per capita (16%). Moreover, in 2002, total expenditure on primary and secondary education is similar to that in the OECD area and that in emerging countries when measured as a share of GDP (Table 2).

Table 2. Expenditure on education, 2002

	India	OECD	Emerging countries
<i>Expenditure as a per cent of GDP</i>			
Overall	4.8	5.8	5.6
Private only	1.4	0.7	2.0
Primary and secondary	3.8	3.8	3.9
Tertiary	0.8	1.4	1.3
<i>Expenditure per student as a per cent of GDP per capita</i>			
Primary	16	20	14
Secondary	29	25	20
Tertiary	100	40	54

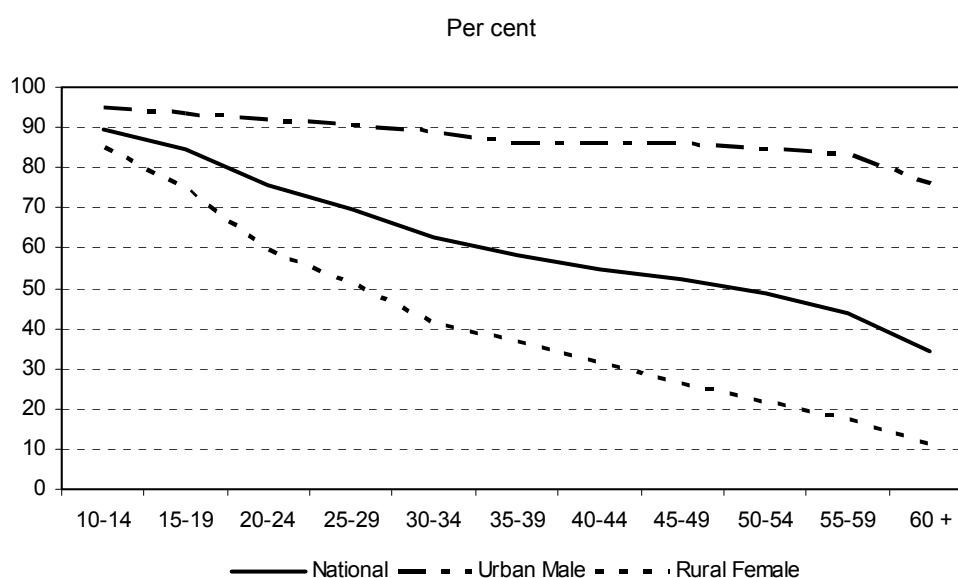
Note: Overall expenditure is greater than the sum of components due to missing data for some countries.

Source: UNESCO-OECD (2005).

There is evidence, though, that the performance of the education system has been improving this decade. The overall literacy rate is necessarily a very slowly moving indicator, as it includes people who may have left the education system more than 50 years previously. A more up-to-date indicator can be obtained by looking that the literacy rate by age group. The timeliest data can be obtained from the National Sample Survey (NSS) rather than relying on census data. The survey data has the advantage of requiring the interviewer to ask questions to determine whether a person not only reads but also

understands. On this basis in 2004, the literacy rate for the 10-14 age group (the most recent five year cohort to leave primary school) had risen to 90% in 2004 (Figure 1). Moreover, by 2004 the spatial and gender dispersion of the age-specific literacy rates has narrowed markedly, from a gap of close to 70 percentage points between that for rural females and urban males for those age 60 and over, to just 10 percentage points for those aged 10-14.

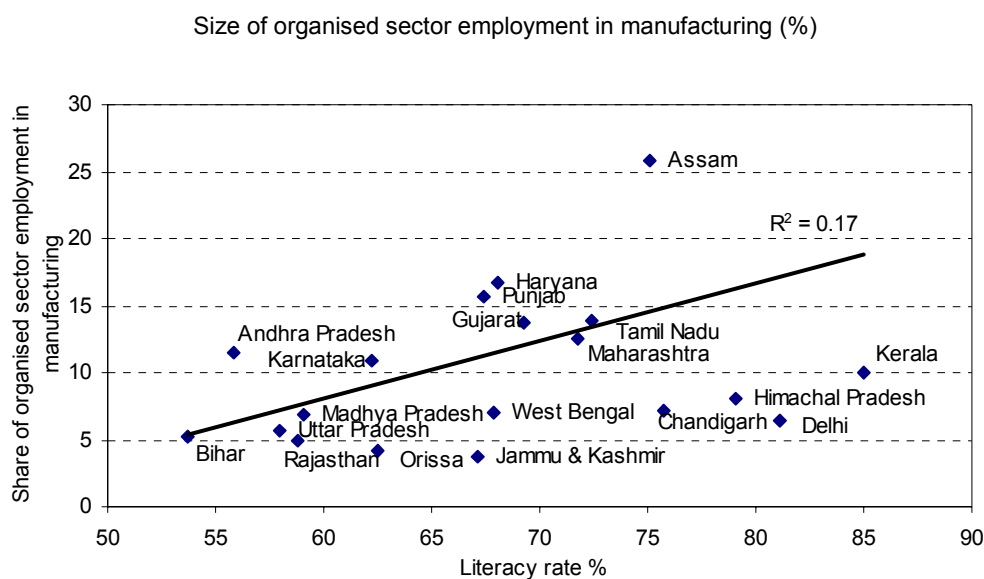
Figure 1. National literacy rates by age group, 2004



Source: National Sample Survey Organisation Report No. 517, December 2006.

The gains seen at a national level are also apparent at the state level. In 2004, 13 states and union territories had literacy rates for the 10-14 age-groups that exceeded 95%, on a state-wide basis (see Table 3). Given past differences between male and female literacy rates, it is noticeable that 19 states have managed to achieve 90% or higher literacy among girls age 10-14 living in rural areas. Illiteracy amongst children that have recently left primary school is now essentially concentrated in four states (Bihar, Uttar Pradesh, Jharkhand and Rajasthan) which account for nearly 60% of total illiterate persons in the 10-14 age group. On average, these states have a literacy rate 10 percentage points lower than in the remainder of the country and 14 points lower for rural females.

The improvement in literacy seen in the age groups that had just left primary school in 2004 should have positive impacts on India's growth, even though the low overall literacy rate may restrict the share of India's population that benefits from economic growth for some time to come. In particular, increased literacy amongst the young will open employment opportunities in the formal sector of the economy. At the moment, the large size of the unorganised and often informal sector, a large portion of which is engaged in low-wage and low-productivity casual employment, holds back income levels (discussed in Dougherty, 2008). It turns out that most casual labour is illiterate, while most regular employment is carried out by people with at least primary or lower secondary education. A positive correlation between literacy rates and the size of the formal (organised) sector is apparent across states, as shown in Figure 2.

Figure 2. Literacy rates and the size of the organised sector

Source: NSS data and OECD tabulations of ASI microdata.

Primary education needs attention

The improvement in performance is a result of concerted policy efforts. The major programme designed to raise educational outcomes is the Sarva Shiksha Abhiyan (SSA) “education for all” initiative, which represents an important step toward universalising education across states. This programme aims at increasing the number of schools, improving facilities, providing free textbooks to selected groups and spending more on teacher training. In addition, there are a number of other targeted programmes, notably a nutritional supplement programme called Mid-day Meals, supported in part by the central government. In total, the central government has spent INR 516 billion in fiscal years 2002 to 2006 on this programme alone (0.3% of GDP) and sanctioned the construction of 240 000 schools. At the same time, states have been gradually implementing the 86th constitutional amendment (2002) that *mandates* free and compulsory education for children between the ages of 6 and 14 across states, going beyond the previous *desired objective* of compulsory education originally set in the Constitution. More recently (October 2006), employment of children under the age of 14 as domestic servants or to work in hotels, restaurants and shops was banned.

Improved enrolment rates are just the first step to improving outcomes, and the goal of the SSA programme is for all children to complete five years of primary schooling by 2007. This goal is unlikely to be achieved. Official figures suggest that in 2005-06, completion rates for Grade 5 had only reached 70%, with marked variations across states (Table 3), although this figure represents a continuing improvement over the past three years (rising from 63% in 2002-03). The next goal of the SSA programme, to achieve eight years of schooling by 2010, is even further behind schedule. Only slightly more than half of all 15-year-olds had completed eight years of schooling in 2004. In the 11-13 age group, enrolment exceeds 90% in all states except for Bihar, Chhattisgarh, Jharkhand, Orissa, Rajasthan and West Bengal (ASER, 2007), with completion rates in these states some 10 percentage points below the national average.

Table 3. State educational indicators, 2004

Per cent

	Literacy rates for ages 10-14			Primary school completion rates	Completion of eight years of schooling by age 15	Secondary school attendance rates
	Overall	Urban males	Rural females			
National	89.8	95.0	85.3	70.0	53.7	58.6
Andhra Pradesh	91.5	96.9	86.0	90.0	62.7	35.2
Arunachal Pradesh	92.2	96.9	88.9	35.0	59.9	34.6
Assam	95.2	98.1	95.4	64.0	63.4	47.5
Bihar	76.2	89.8	68.2	46.0	45.1	34.4
Chhattisgarh	92.0	93.9	90.6	59.0	36.7	33.8
Delhi	97.1	95.3	100.0	79.0	64.7	52.2
Goa	98.9	100.0	100.0	89.0	64.4	62.2
Gujrat	93.3	96.2	87.9	74.0	65.8	40.4
Haryana	93.9	96.0	90.2	88.0	45.2	43.2
Himachal Pradesh	98.8	100.0	98.2	100.0	67.9	66.8
Jammu & Kashmir	93.1	99.4	92.3	83.0	58.1	55.5
Jharkhand	84.2	96.9	75.8	39.0	36.8	31.3
Karnataka	93.2	98.4	88.2	99.0	67.8	49.1
Kerala	99.7	99.9	99.9	100.0	94.6	73.8
Madhya Pradesh	87.2	94.6	79.5	72.0	38.2	32.5
Maharashtra	97.1	98.4	96.2	87.0	79.1	56.7
Manipur	99.1	99.8	98.2	40.0	68.8	46.1
Meghalaya	96.0	99.5	97.7	38.0	42.9	33.0
Mizoram	99.8	99.8	99.8	71.0	82.8	63.1
Nagaland	97.4	98.8	95.6	56.0	71.2	69.1
Orissa	88.3	94.3	85.9	82.0	56.6	31.9
Punjab	93.3	90.3	93.4	94.0	54.5	44.3
Rajasthan	85.7	91.9	76.9	54.0	40.8	31.5
Sikkim	98.1	99.7	98.6	66.0	22.7	31.0
Tamil Nadu	99.3	99.5	99.1	97.0	80.1	54.8
Tripura	97.7	92.8	98.3	71.0	45.3	36.2
Uttar Pradesh	85.5	88.7	80.2	62.0	41.8	36.6
Uttaranchal	93.8	95.3	92.0	67.0	56.9	51.0
West Bengal	91.5	95.0	90.6	80.0	38.4	34.2

Note: Eight years of schooling is defined as completion of at least upper primary school education. The secondary school attendance rate is for pupils aged 14-17 relative to the population of the same age-group.

Source: Tabulation of 61st National Sample Survey and DISE (2007)

Beyond completion rates, an even more fundamental concern about the *quality* of education has been highlighted by *Pratham*, a non-governmental organisation. Pratham and its partners annually carry out a random sample survey of rural districts in each state in order to evaluate the extent to which students at different grade levels can complete basic reading and mathematics tasks. Their most recent survey suggests that about 40% of children aged 7-14 cannot read a small paragraph with short sentences, and 66% cannot divide a three-digit number by a one-digit one (ASER, 2007). While the overall quality of education cannot be reduced to these two simple tests, such findings do raise some concerns about the quality of the education that is delivered in India's schools.

Directions for making progress at the primary level

Low educational quality can be attributed to a number of factors, among which is the relatively high level of teacher absenteeism. A representative national survey of teacher attendance suggested that on a given day, only 75% of teachers are present in the school (Kremer *et al.*, 2005). An official survey of 14 states has confirmed these low attendance rates, suggesting that absence rates were 20% in primary

schools and 13% in upper primary schools (Ministry of Human Development, 2007). Moreover, random surveys suggest that, of the teachers present, only half are teaching. In a comparison among eight large developing countries of teacher absence, India was second-to-last. While some of this non-attendance can be attributed to non-teaching duties (Ramachandran *et al.*, 2005), the low attendance of teachers has been a longstanding problem, and seems linked to weak performance incentives and poor teaching conditions. For instance, schools with more recent inspections and better infrastructure had lower absence rates.³

One solution that many state governments have used is to move toward the use of contract-based teachers and assistants referred to as *para*-teachers. Such staff is paid much less than regular teachers, yet their performance appears to be no worse.⁴ Given the need to more fundamentally address teacher absence, alternative mechanisms have been tried, including the use of controlled experiments of various incentive-improving schemes. It would appear that only a few schemes work, with the most promising among them based on automatic mechanisms to facilitate monitoring (Banerjee and Duflo, 2006). One such programme used a time and date-stamp tamper-proof camera to monitor attendance, with a portion of the teacher's wages linked to such verified attendance. This programme was shown to substantially improve teacher attendance in the small number of Indian schools where the experiment was undertaken, as well as improving student achievement (Duflo and Hanna, 2005). This programme achieved an increase of 30% in the number of days for which a child was taught at a cost of USD 6 per child per year. Costs may have fallen since, as this programme was not based on digital technology. As this study was based on 60 schools run by a non-governmental organisation, much larger pilot studies would be needed to determine whether this type of intervention could be operated on a larger scale. In any case, much better monitoring of teacher and school performance appears to be essential to improve educational quality.

The National Curriculum Framework – which will provide a comprehensive approach to child-centred education – is being introduced with the objective of moving away from rote learning and promoting understanding and the ability to solve problems. In addition, the SSA programme recognises that improving quality will require devoting more resources to teacher training. At present, a national system monitors inputs into schools and represents a major improvement in knowledge of what is happening in schools. It needs to be supplemented by a measure of educational outputs in terms of quality based on standardised measures of achievement. Improving quality could result in a significant improvement in economic growth: recent evidence suggests that the *quality* of education – and cognitive skills in particular⁵ – is more important than sheer educational achievement in supporting economic growth, and the quality of education is highly dependent on the performance of schools (Hanushek and Woessmann, 2007).

While official targets focus on achieving higher enrolment rates, it is as important to reduce student absence rates. These are high: in 2006 about 7 million children did not attend primary school, but this is down from 44 million prior to the introduction of the SSA programme, according to both official and independent estimates. When families are asked whether a child is attending school, however, the attendance rates are not as good. The National Sample Survey, for example, finds absence rates of 18% for

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3. India's expenditure per student on secondary education is practically the lowest among comparison countries, in PPP dollars, with capital expenditure the culprit (UNESCO-OECD, 2005). Expenditure appears to be focused primarily on payment of salaries, with India having by far the lowest share of expenditure on capital, explaining the lack of basic facilities in many schools.
 4. An assessment of the relationship of teacher characteristics and pupil performance finds, in a sample of private schools, that pay appears to be a good motivator for performance, except in unionised schools where there is no relationship between performance and pay (Kingdon, 2006). The productivity of teachers also appears to fall markedly with the length of teaching experience in unionised schools but not in non-unionised schools.
 5. Cognitive skills are the mental skills that are used in the process of acquiring knowledge including reasoning, perception and intuition.

primary school ages (6-11), representing a total of 37 million children. The problem appears to manifest itself especially at the end of primary education, when dropout rates peak. About two-thirds of the children who do not attend school are in five of the poorest states: Bihar, Uttar Pradesh, West Bengal, Madhya Pradesh, and Rajasthan.

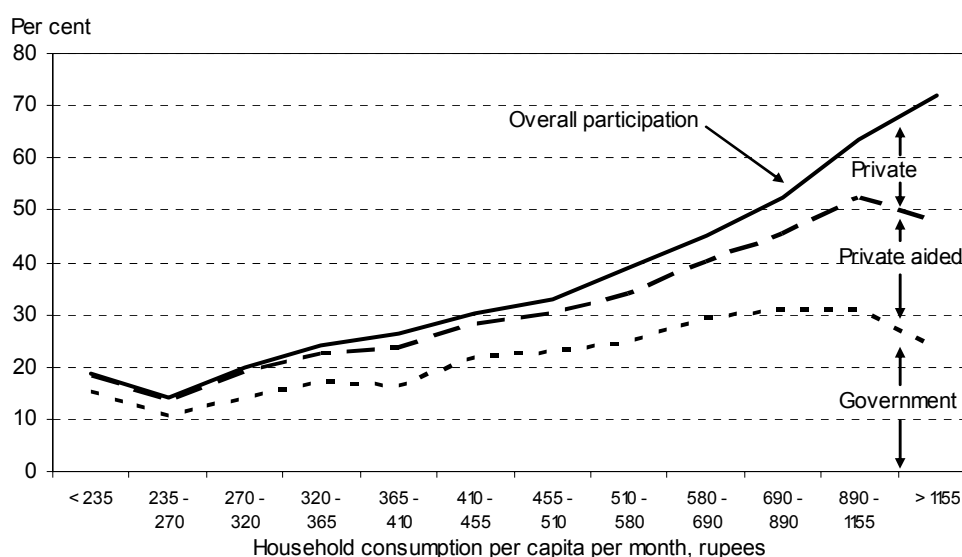
Households with illiterate parents constitute one of the largest problems of attendance and these are concentrated amongst the Muslim, Scheduled Castes or Scheduled Tribes population (SRI, 2005). In this respect, the increase in literacy amongst young girls in rural areas is a welcome development as this can have a significant positive feedback effect and generate higher levels of demand. As education levels improve, there is greater awareness of the returns to education, with evidence that literate mothers are four times more likely than illiterate mothers to send their children to school and keep them there (ASER, 2006). Such a dynamic is an important motivation behind the government's adult literacy programs, such as the National Literacy Mission, that focuses on the 15-35 age group and women in particular.

Secondary education also requires action

With the improvement in literacy rates and primary school completion rates, the focus of policy will have to increasingly move towards improving education for those aged 11 and over. Although secondary school enrolment has been increasing, those students who enrol in secondary education have high dropout rates (60% in 2003/04), resulting in lower graduation rates than in most countries for which data is available. The government's objective is that all children should receive three years of lower secondary education (upper primary in Indian terms) by 2010. There is some way to go to achieve this target as in 2004, only 53% of 15-year-olds had completed this level of education, with marked variations across states (see Table 3). Moreover, at the next level of education and especially for the highest level of secondary education, there is a major problem of equity, with better-off families more likely to educate their children to this level and much more likely to use private schools (Figure 3).

Figure 3. Participation rate in secondary education at ages 16 and 17

By consumption level of households and type of school



Source: Tabulation of 61st National Sample Survey.

The attendance rate at secondary schools of children aged 16 to 17 is 50 percentage points higher for households in the highest consumption bracket identified by the National Sample Survey than in lowest consumption bracket. Moreover, three-quarters of this difference occurs because of higher attendance in private schools for better off families. Lower attendance by the children of poorer families can in part be attributed to physical access problems, poverty and liquidity constraints that induce teenagers to work, and a particular problem of non-participation of women due to social discrimination. Central government funded programmes, which have set up special residential schools, some specifically for girls, have met with some success; yet the scale of these programmes is overall quite limited.

With lower-income and less educated households being much less likely to prolong the education of their children, one possible strategy (beyond the Mid-day Meals programme mentioned earlier) would be to use an approach that has been applied successfully in a number of Latin American countries, modelled after the *Progresa* programme in Mexico. Such programmes offer cash payments to parents of poor students – particularly girls – in exchange for their attendance, and also serve to deter child labour. Studies suggest that such payments can have significant effects on school attendance and may have their largest impact towards the end of lower secondary education (see Box 1). While the cost of such a large-scale program would be considerable in India, experience with the programme suggests that if it is expanded gradually, the benefits easily justify the costs. Moreover, to the extent that its measures would be better-targeted on poor families than subsidies or other types of welfare-related programs – like the Rural Employment Guarantee Scheme – it could represent a much better value for achieving government poverty-reduction objectives.

Box 1. The *Progresa* programme in Mexico

The *Progresa* programme in Mexico (renamed *Oportunidades* in 2002) was developed as a poverty alleviation scheme to promote education, healthcare and nutrition. The most innovative aspect of the programme is its focus on *cash* transfers and the explicit *conditionality* of the benefits on certain behaviours, such as children attending school. The programme was developed in phases, starting on a relatively small scale. At each stage, systematic evaluation was carried out. This was possible because the programme was implemented from the start as a randomized experiment, facilitating ongoing improvements in programme design, and enabling the success of the programme to strengthen its political sustainability and funding basis (see Levy, 2006).

Studies suggest that the cash payments to parents based on their children's school attendance had significant positive effects, with their largest impact observed at the end of lower secondary education (Attanasio *et al.*, 2004; Todd and Wolpin, 2005), a period of high dropouts observed in India as well. It would seem likely that such a policy could work well in India as the only group for which high returns to education are not associated with longer stays in education are boys from poorer backgrounds. For pupils in this group, income effects outweigh substitution effects, suggesting that liquidity constraints are present in poor families. In Mexico, the programme has been expanded to the extent that its income support represents as much as a quarter of a poor rural household's income.

Source: OECD (2003) and Levy (2006).

Health care is an interrelated problem

On a related note, children's health is an important issue that can also affect learning capacity. Child health has been improving both in the 1990s and this decade. Infant mortality has declined as has the proportion of children that are not fully immunised. In addition, maternal mortality has declined and the proportion of underweight young children has also fallen. All of these measures of health remain high and vary markedly across states but, in terms of international rankings, these indicators reflect the ranking of India in terms of its GDP per capita. Health care provision in general remains a serious problem in India.

There does appear to be evidence that increased spending on health care can reduce the extent of infant mortality (Bhalotra, 2007), and perhaps other health outcomes as well.

The failure of the public health system is evident through the choices that individuals make: the number of babies delivered in private institutions doubled between 1998 and 2002 (World Bank, 2006a). Nevertheless, the typical quality of health care services appears to be low for both public and private providers (Das and Hammer, 2007), although some top-end high quality health service providers exist. There is also wide variation in outcomes across districts, suggesting considerable inequality in access (Amrith, 2007). Although the health system is public in principle, of the 195 countries covered by the World Health Organisation, only five have a higher *private* health provision rate compared with India, and many countries that have privatized their health systems still have much higher public contribution rates.

The prevalence of private spending appears to be a reaction to low and poor quality public health services. In particular, Health Centres appear to suffer from many of the same problems as public schools. Random survey evidence suggests that there is an average absence rate of 43% for primary health care workers across all Indian states, with a peak rate of 58% in Bihar. The National Rural Health Mission, introduced by the government for the period 2005 to 2012 may result in some changes in this area as it provides for decentralisation of management of some primary health care facilities to the local level.

Deeper institutional changes are the best hope

Private sector is expanding as the quality of public services is questioned

The failure of public providers to deliver on education as well as health has forced those who can afford private providers to turn to them. Among primary school students in rural areas, over 20% (and rising) are enrolled in private schools (Figure 4). The motivation to choose private providers at the primary level is apparent from a reading of the *Pratham* study findings that shows test scores that are more than 10 percentage points higher on reading and math benchmarks (although this could be a result of more motivated parents choosing these schools). In urban areas, the newest NSS estimates suggest that the private share is three times higher. At the upper secondary level (higher secondary in Indian terms), almost 60% of schools are in the private sector – almost equally split between completely private school and grant-aided schools.

One factor that makes private schools more attractive is that their students typically also learn English, a skill that is of increasing relevance in India's service sector. Learning English well may only be possible with a firm knowledge of the mother language, but the National Knowledge Commission has recommended that this gap between public and private provision should be closed by the teaching of English in public schools from first grade. The Commission found that command over this language is perhaps the most important determinant of access to higher education, employment possibilities and social opportunities. It recommended that education policy should have the objective of achieving proficiency in two languages after twelve years of schooling.

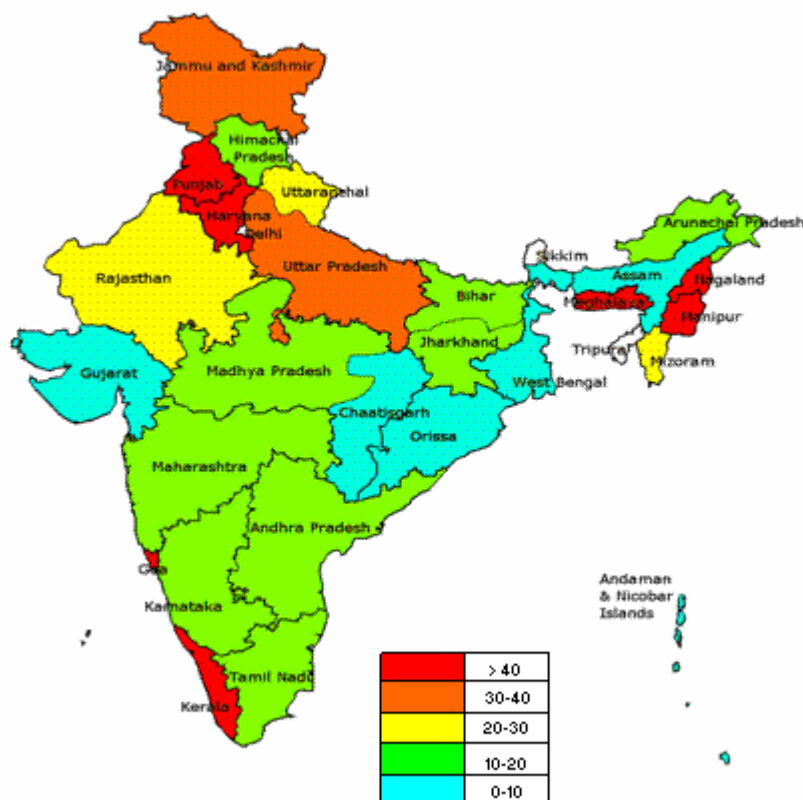
With the public system's failure to deliver quality educational services, the rise of a significant private sector in education could have a beneficial effect on outcomes by increasing competition. However, since the more privileged students may be the only ones who can afford to attend private schools (although some private schools receive government aid), the current setup aggravates inequalities. Some type of portability of public funding, such as through vouchers or scholarships for low-income students, should be considered and experimented with on a trial basis. Such a measure was successfully introduced in Colombia where low-income students were given credits (vouchers) that could be used to purchase private education. The programme for low income students was successful in increasing their participation in secondary education and raising their completion rates (Bettinger et al., 2006). Broader voucher schemes have been introduced

in only a few countries (Chile and Sweden) and a number of US states and school districts (Hoxby, 2003). They appear to improve school efficiency and disproportionately benefit the students who were performing badly in regular public schools.

An education voucher scheme could be considered in order to improve access to secondary education. Given that the private sector is already the predominate supplier of higher secondary education in India, a complete voucher system would incur considerable deadweight costs. However, a voucher scheme for low-income households would seem feasible given that the typical cost per student in Indian private schools is significantly lower than in public schools, principally a result of more market-based teacher salaries in private schools and better attendance by teachers. Such a scheme could have very positive results for equity. It might also mean that spending on government schools might have to be reduced if numbers fell markedly, though this outcome seems unlikely in the context of a rapidly growing demand for secondary education. Such a scheme could draw on the experience of the two newly introduced programmes. The first is the “National Means cum Merit Scholarship Scheme” that will provide 100 000 grants per year for children to attend secondary education. Given that secondary education has a four-year duration, this programme will fund 25 000 students, against a population of around 14 million that could potentially enter into secondary education each year. The second provides a grant of INR 3 000 for every girl that enrolls into secondary education but which is only payable at the end of secondary education.

Figure 4. Participation in private grade schools

Per cent of children in grades 1 to 8 in private schools (2006)



Source: Pratham’s Annual Status of Education Report 2006 (ASER, 2007).

Tertiary education

Tertiary education is a fundamental requirement for an economy that aspires to be competitive in the global economy. In the public sector, tertiary education is largely provided by state governments, which accounted for 80% of current public expenditure in this area in 2003. The structure of tertiary education is based on a two-tier system. There are a limited number of universities (371) and a large number of colleges (17 265) of which 14 000 are under the purview of the University Grants Commission. The colleges are not autonomous but are affiliated to a university that grants the degree. Non-profit private sector institutions have made increasing headway, notably in “professional” education. The share of engineers educated in private colleges has risen from 15% in 1960 to 86% in 2003, for medicine it has risen to 40% and may be as high as 90% for management and business courses (Kapu and Mehta, 2004). Overall, three-quarters of technical education is already being provided by institutions that are not aided by the government.

Table 4 Participation in higher education by type of study, institution and age

	Gross enrolment rate	Net enrolment rate		Type of institution			
	Age groups			Government	Local body	Private aided	Private unaided
	All students	18-23	24-29				
	Per cent of population			Per cent			
Degree students	9.5	8.7	1.5	54.1	1.5	29.4	15.0
Agriculture	1.3	1.2	0.2	58.4	2.3	30.2	9.1
Engineering/technology	0.7	0.6	0.1	26.2	0.7	32.1	41.0
Medicine	0.1	0.1	0.0	38.1	4.0	27.9	30.1
Other subjects	7.4	6.8	1.2	56.1	1.4	29.1	13.4
Diploma student (below degree)	1.9	1.7	0.4	40.8	1.6	25.0	32.5
Agriculture	0.0	0.0	0.0	37.2	3.8	35.0	24.1
Engineering/technology	0.8	0.7	0.1	35.8	0.4	29.5	34.3
Medicine	0.2	0.1	0.0	13.1	0.5	36.5	49.9
Crafts	0.0	0.0	0.0	33.2	0.0	31.4	35.3
Other subjects	1.0	0.8	0.2	49.6	2.8	19.0	28.6
Diploma student (above graduate level)	1.5	1.1	0.6	43.3	1.4	28.2	27.1
Agriculture	0.0	0.0	0.0	22.1	6.6	71.3	0.0
Engineering/technology	0.2	0.2	0.1	22.1	2.4	28.3	47.2
Medicine	0.0	0.0	0.0	40.9	0.0	34.7	24.4
Crafts	0.0	0.0	0.0	58.2	0.0	5.0	36.8
Other subjects	1.2	0.9	0.5	47.7	1.1	27.8	23.4
All students	13.0	11.6	2.5	50.8	1.5	28.6	19.1

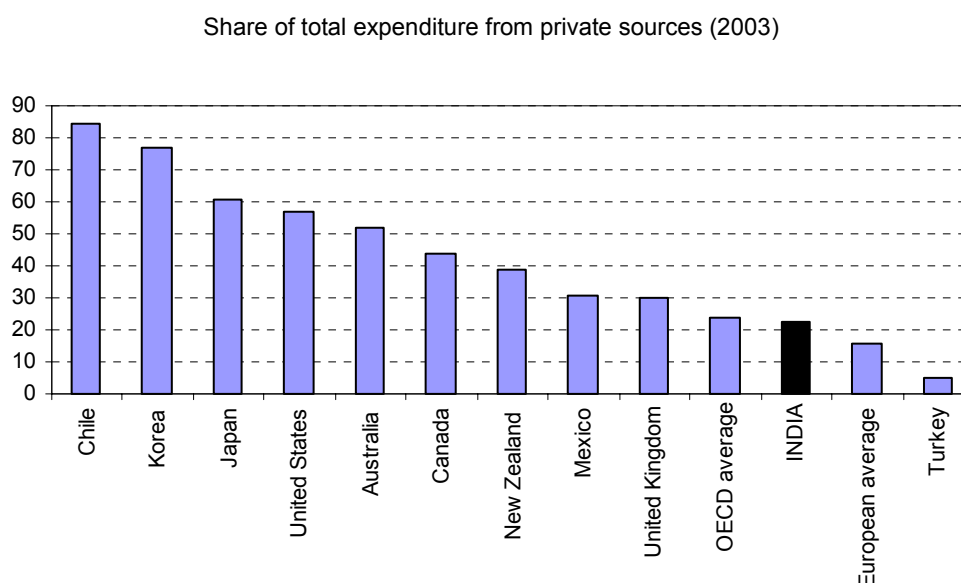
Source: Tabulation of 61st National Sample Survey.

Investment in tertiary education has been rising. The numbers of students enrolled for undergraduate and post-graduate studies has been increasing by almost 5% per year, about twice as fast as the numbers of people in the relevant age groups. The total number of students in tertiary education was estimated to be 10.5 million (8.5% of the 18-23 age group) in 2003. However, the official figures underestimate the number of students in vocational and diploma level studies. This data is only available on the basis of sample surveys which suggest that, in 2004, the overall participation in higher education was 11½ per cent for the 18-23 age group, as almost 3½ per cent of the age group participated in diploma rather than degree studies (Table 4). International comparisons of participation are usually made by comparing the total number of students to the population aged 18 to 23 (a gross enrolment rate). Despite this growth in numbers, the gross enrolment rate in India, at 13%, is still below that in other developing countries where the gross enrolment rate is around 18%. In 2001, about 6½ per cent of the population over 25 had a tertiary

degree. This proportion rises to 9½ per cent in the age group 25-29. Graduates are concentrated in urban areas where the proportion of the population with degrees is twice as high as in the country as a whole.

In contrast to enrolments, public spending on higher education, at 0.7% of GDP, is in line with that found in other developing countries for which data is available. However the extent of private contributions toward the costs of tertiary education is low relative to many developing countries, although it is similar to the OECD average (Figure 5). It has been growing rapidly, rising from less than 1% in 1995 to 22% in 2003 in the figures reported to UNESCO. This may be a considerable underestimate as national sources suggest private expenditure was already 28% of total expenditure at all levels of education in 2001 and unofficial estimates suggest that the private share may have risen substantially higher since then (Agarwal, 2007).

Figure 5. Private expenditure on tertiary education for selected countries



Source: UNESCO-OECD (2005) for India in 2002 and *Education at a Glance: OECD Indicators 2006* for other countries.

In order to further broaden the coverage of higher education and produce more college graduates, expansion of the sector is needed. However, expansion may be held back by a lack of supply of suitably qualified students from secondary schools. Already, 59% of students who finished the higher secondary level of education move to tertiary education (Thorat, 2006). There is scope for this to rise further, as participation rates in rural areas are generally low. However, at present, if rural students made the transition to higher education at the same rate as urban students, the overall participation rate of rural children in tertiary education and would still be less than half that of the urban children, as a much lower proportion of rural children graduate from higher secondary schools in comparison to urban children. A major expansion of tertiary education would require increased graduation rates from higher secondary schools, notably in rural areas.

Disadvantaged social groups are also under-represented in higher education. But for these groups to the proportion of higher secondary school graduates that enter into tertiary education is only slightly lower than the national average. The government has introduced a policy that will expand the range of groups that can benefit from “reservations” (*i.e.* quotas) that is intended to ameliorate some of these imbalances (Hasan and Mehta, 2006). Given that the existing rates at which qualified students from these groups move into tertiary education are quite high, a focus on disadvantaged groups’ primary and secondary education

enrolment and *completion* rates would seem to be essential, as the underlying source of the imbalances for these groups appears to be a lack of well-prepared students. To do this, broader institutional strengthening needs to be undertaken, along similar lines as that for primary education, by improving the incentives of both students and teachers. Thus the key would appear to be improving the attendance of children, especially in rural areas, at the secondary level.

While increased public expenditure is one option, the fiscal position of the government would not appear to allow for a rapid increase in the overall scale of public outlays. At present, universities and colleges have little incentive to increase fees, as funding from fees results in a lower grant from central or state governments. If colleges were allowed to keep all grants irrespective of the fees they receive, then incentives would change. Moreover, the rate of return to higher education in India would seem to support the possibility of an even greater level of cost-sharing between the government and students, as long as concerns about equity of access are dealt with adequately especially as payment for higher education in private colleges is widespread.

Box 2. The returns to education in India and financing of higher education

Private rates of return are an important determinant of the level of investment in education. As a result of substantial segmentation in India's labour market, rates of return to education are very low in the casual employment market (where the bulk of workers are illiterate), but in the wage-earning regular employment market, private rates of return are strongly increasing with education. Moreover, the returns for primary and secondary education increased over the 1990s, and the returns for college education are especially large, particularly in the most recent year (2004), and are now well above the typical OECD return of 10% per year (Table 5), this suggests that the use of private financing for higher education is an entirely feasible strategy for funding its expansion in India, presuming that liquidity constraints can be overcome.

Table 5. Private rates of return to education

Completion of:	Per cent per year					
	Regular workers			Casual workers		
	1983	1999	2004	1983	1999	2004
Primary school	5.75*** (0.004)	5.30*** (0.006)	5.44 (0.157)	1.88*** (0.002)	1.93*** (0.002)	1.52 (1.112)
Middle school	3.13*** (0.003)	3.35*** (0.004)	5.76 (0.081)	0.17 (0.002)	0.19 (0.002)	2.64 (0.185)
Secondary school	6.01*** (0.002)	6.25*** (0.002)	8.64*** (0.031)	0.62* (0.003)	0.20 (0.002)	1.51 (0.227)
College education	9.43*** (0.003)	12.37*** (0.003)	15.44*** (0.019)	1.13 (0.017)	0.92 (0.009)	3.57 (0.490)

Note: *** significant at the 1% level, ** at the 5% and * at the 10% level. The figures in parenthesis are standard errors.

Source: Estimates based on OECD analysis of the 61st NSS Survey for 2004 and Dutta (2006) for 1983 and 1999.

Financing approaches in OECD countries vary substantially for higher education, but the trend in recent years has been to increase private participation, by increasing the share of private institutions, the share of costs covered by student fees or both. Some countries have created universal loan systems (e.g. most English-speaking countries), although others continue to provide generous grants (e.g. Nordic countries), while the remainder still rely heavily on family transfers. A recent review of tertiary education policies by the OECD suggests that rates of return to higher education are sufficient in most countries to make student loans the most appropriate approach to fund expansion (Oliviera Martins *et al.*, 2007). India's rate of return to higher education suggests that a well-designed student loan program could facilitate expansion of higher education, if a solid framework for new institutions is put into place.

- a. The rates of return are somewhat lower if the effects of the selection of workers into either regular or casual employment are taken into account econometrically. Dutta (2006) finds that in 1999, for instance, after taking into account selection bias, the rate of return to college education is lower, at 10.3% (vs. 12.4%). A lower rate of return is also found for other levels of education if such effects are included, with primary school lowest.

As a greater share of higher education costs is borne by students, the importance of having an accessible source of financial aid becomes critical. OECD countries that have sought to expand their tertiary education systems have found it useful to improve access to student loans when raising tuition fees (see Box 8.2). Government scholarships have been declining over time in India, and are inherently limited in their ability to benefit large numbers of students in any case.⁶ Student loans have the advantage of being relatively inexpensive for government and highly scalable. However, the existing student loan programme in India, even after its expansion in 2001/02, reaches only 2-3% of students. There is some evidence suggesting that this is partly due to the programme's banking procedures being overly complex (Agarwal, 2006). In order to provide equitable access to loan financing, government guarantees on loans are appropriate. In countries that have fully private loan systems, loans are often limited to students with collateral or to students in fields that offer especially high future earnings.

More subtly, the structure of a student loan programme can have strong effects on student behaviour, particularly in the case of risk-averse students who are unsure of their career-earning potential. Income-contingent loans have been found to be a useful antidote to this information asymmetry, although they may have unforeseen costs if not designed correctly (OECD, 2007a). Some screening for the quality of the institution, for instance, may be necessary.

Beyond greater personal contributions, more choice among public and private institutions could instil a degree of competition that would keep costs down and improve quality. The National Knowledge Commission has recognised that improving the quality of most higher education leaves much to be desired and recognised that better quality was a key to improved performance. This is particularly the case amongst the undergraduate colleges where quality is variable – even amongst the one-third that are assessed by the University Grants Commission, one-quarter were found to be of low quality and most of the two-thirds that are not assessed are presumably of low quality (Thorat, 2006). The affiliation system means that colleges find it difficult to adapt and there is difficulty in adapting curricula to changing needs – indeed in many cases curricula have not changed for decades. A second and perhaps more serious problem is the affiliation process that allows unaccredited colleges to affiliate with accredited ones and issue recognized degrees, even though they themselves have not been recognized by the University Grants Commission (UGC). According to UGC data, two-thirds of higher education institutions fall into this category. Independence of new institutions is needed, so that they can establish their own reputations. In addition, independent bodies need to be set up so that more credible accreditations can be provided (Agarwal, 2006). The sector needs an institution that provides better quality control and which controls the establishment of new universities which would otherwise require Acts of Parliament.

OECD experience based both on an assessment of practice in different countries (Kis, 2005) and studies of specific countries suggest that a successful certification and assessment requires:

- Mandatory accreditation in order to grant diplomas or receive public funding;
- Renewable accreditation, *e.g.* every five years, to ensure institutions make a long-term commitment to quality, with adjustment of the period of accreditation to the perceived quality of the institution with more frequent evaluations for lower quality institutions;
- Common system-wide accreditation standards for various types of institutions, while allowing for institution-specific evaluations;
- Outcome measures should be used (such as students and graduate surveys, employers views, labour market performance of graduates) as well as input variables;

6. A few top schools offer financial aid (IITs), but other institutions have lacked sufficient resources.

- Develop an accreditation framework in line with international standards and processes, and allow some reputed international accreditation bodies to operate at the national level, including use of foreign assessors on review teams.

The UGC is currently introducing a new accreditation procedure, but it is still voluntary and does not incorporate a significant number of output measures.

Greater competition between universities for government funding through foundations, similar to what is done in the United States using funds from the National Science Foundation and other endowments, might also help improve quality. As well, greater competition over students can also provide strong incentives to improve the value of educational services, especially if there are substantial student contributions.

Until recently, however, court decisions (and legislation) have severely restricted the set-up and operation of private universities (Kapu and Metha, 2004). While these have in part been a reaction to the mushrooming of low-quality institutions in some states, and there have been some examples of successful new entrants, on the whole, government restrictions on private universities' operation have not allowed the sector to develop very broadly (Mukerji, 2006). Nevertheless, private universities have considerable potential in India.

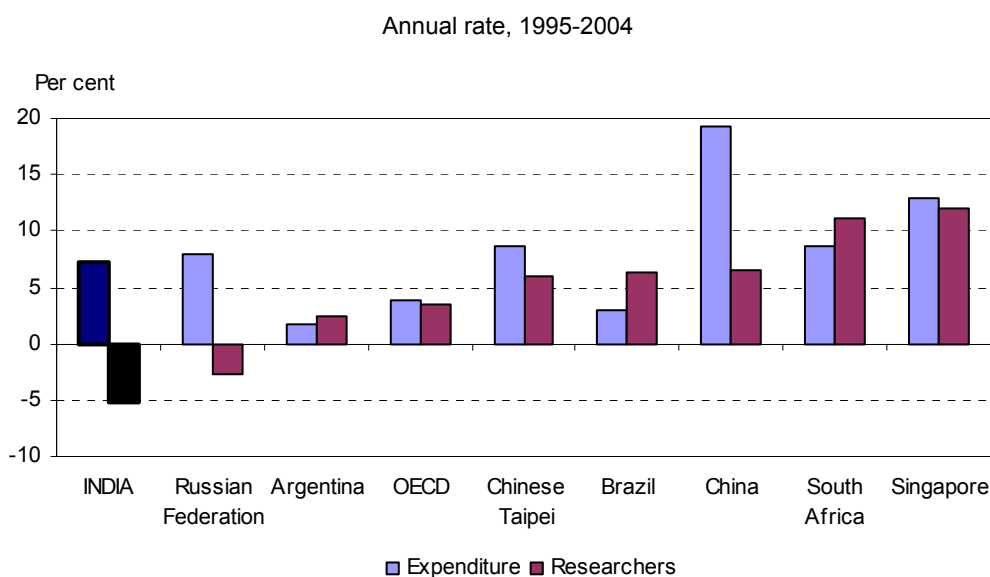
Greater competition and higher rates of student contribution may also help to solve a problem of relevance of fields of study that has arisen, and is manifest in the difficulty of new graduates' entry into the labour force.⁷ This problem is illustrated by the positive correlation between new graduates' education levels and unemployment rates (see OECD, 2007b). Large numbers of students continue to study arts disciplines, even though technical and professional skills are much more in need.⁸

The potential for moving towards a more market-oriented choice of disciplines is illustrated by the recent study of vocational training in the 61st National Sample Survey, which found that almost a third of informal vocational training was in computer trades, with more traditional areas becoming increasingly unpopular. Industrial Training Institutes and polytechnics (often on private initiative) have served to fill some of the unmet needs through training especially in computer skills.

The quality of higher education also has important effects on the capacity of the economy to generate new knowledge through innovation and R&D. India's R&D intensity was similar to China's as recently as the late 1990s, at just under 1% of GDP, but China's intensity has skyrocketed since. India's R&D expenditure has continued to grow, but the number of researchers has declined, suggesting much of the growth has come from rising wages (see Figure 6). More fundamentally for universities, India's share of R&D performed in the higher education sector is much smaller than other countries' – one-third of China's, for example, and one-fifth of Japan's. With its gradually improving level of intellectual property rights protection (IIPA, 2007), India's R&D performance could be much higher. The lack of strong R&D capacity likely reflects broader institutional constraints, and is reflected in low citation counts, and few institutions with strong international standing, making it difficult to attract and retain top scholars.

7. The McKinsey Global Institute found that only one-quarter of college graduates in India were employable by multinationals, for instance (Farrell *et al.*, 2005; NASSCOM-McKinsey, 2005).

8. Students are more generally unprepared for the labour market, according to appraisals by TeamLease.

Figure 6. Growth rates of R&D expenditure and personnel

Note: Expenditure based on growth rate in domestic currency at current prices, deflated with GDP deflators.

Source: OECD (2006), *Science and Technology Outlook*.

Decentralisation would help with basic education and other services

Institutional weaknesses in Indian schools stem partly from the incomplete decentralisation that has taken place. Following the constitutional amendments in 1992, local governments have been set up in many states, but few of these governments have been given access to sufficient resources or granted responsibility for core functions – education included (Government of India, 2006).

Yet there are positive examples. Evaluations of education reforms in Madhya Pradesh illustrate that decentralising control to local communities can have strong positive benefits. The programme in Madhya Pradesh gave rural local governments (Panchayati Raj) responsibility for hiring and monitoring of teachers as well as for building and maintaining schools, leading to improved attendance, accessibility and outcomes (World Bank, 2006b). While such programmes require concerted efforts and considerable political will (another trial in Rajasthan ended badly after political support was withdrawn), they can be successful if they can correctly align functions and responsibilities at a local level. Evidence from OECD countries suggests that decentralisation and increased autonomy at the local level is systematically associated with higher levels of efficiency in primary and secondary education (Sutherland *et al.*, 2007). Further moves to strengthen localities should help to improve India's education outcomes. However, experience in the OECD suggests that such decentralisation has to be done in a coordinated way so that there is adequate capacity building and a progressive transfer of budgetary responsibility.

Conclusion

The delivery of educational and health services in India needs to be improved significantly. Considerable progress has been made through such government initiatives as those designed to draw more children into schools through projects such as the “Free Mid-day Meals” and the “Education for All” programmes. Further action along the lines of cash grants in exchange for attendance, as in a number of Latin American countries, may be necessary in five of the poorest states where two-thirds of the out-of-school children are found. These grants should be, for equity purposes, financed directly by the centre. However, while school attendance is necessary for closing the literacy gap, it is not sufficient. The number of teachers is limited, making attendance *and* quality essential to compensate for a lack of numbers. Here transparency and accountability to the local population is essential to ensure that educational outputs are high. It will be necessary to measure and publicise performance results for schools, at the primary level.

Box 3. Policy recommendations for improving human capital formation

- *Improve the efficiency of basic educational services:* overall expenditure appears to be adequate; however, the quality of primary and secondary education is lacking. Despite relatively high salaries, teacher attendance rates are strikingly low, for instance. Incentives need to be strengthened by tying pay to performance, and further decentralising administration and experimenting with voucher schemes.
- *Further decentralise government:* greater local government budgetary and substantive control over education and health services should improve the incentives of providers to deliver higher quality services.
- *Improve participation of disadvantaged groups through providing special intervention:* efforts to target the poor and socially excluded groups should be enhanced, ideally through programmes that are self-selecting such as those that offer cash payments for participation among the worst-off groups, especially in the poorest states, so minimising the need for quotas.
- *Provide a more realistic framework for higher education:* given the potential for higher levels of private financing and development of more private institutions, a less discriminatory framework for their establishment is needed. Income-contingent student loan programs should be considered to ensure equity.

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