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India

Karnataka: Financing Education in the Context of Economic Restructuring

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ABBREVIATIONS AND ACRONYMS

AICTE	All India Council for Technical Education
BRC	Block Resource Center
CBSE	Central Board of Secondary Education
CPI	Commissionerate of Public Instruction
CRC	Cluster Resource Center
DIET	District Institute of Education and Training
DPEP	District Primary Education Program
DSERT	Directorate of School Education Research & Training
GIA	Grant-in-Aid
GOK	Government of Karnataka
GPR	Grade Progression Ratio
HPS	Higher Primary School
HS	High School
ICDS	Integrated Child Development Services
ICSE	Indian Certificate School Examination
IIT	Indian Institute of Technology
ITI	Industrial Training Institute
LPS	Lower Primary School
MHRD	Ministry of Human Resource Development
MLA	Member of the Legislative Assembly
MTFP	Medium Term Fiscal Program
NFHS	National Family Health Survey
NIEPA	National Institute of Educational Planning and Administration
NSS	National Sample Survey
OECD	Organization for Economic Cooperation & Development
PTR	Pupil Teacher Ratio
PU	Pre-University
PUC	Pre-University College
RGI	Registrar General of India
SBC	School Betterment Committee
SC	Scheduled Caste
SDMC	School Development and Monitoring Committee
SSA	Sarva Shiksha Abhyan
SSLC	Secondary School Leaving Certificate
ST	Scheduled Tribe
TFR	Total Fertility Rate
TLM	Teaching-Learning Material
VEC	Village Education Committee

Vice President	:	Mieko Nishimizu
Country Director	:	Edwin R. Lim
Sector Director	:	Charles C. Griffin
Sector Manager	:	Michelle Riboud
Task Leader	:	Sajitha Bashir

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Executive Summary

I. Introduction

1. The Government of Karnataka (GOK) has embarked on a program for accelerating economic growth and reducing poverty by introducing fiscal and governance reforms, promoting private-sector led growth and investing in physical and social infrastructure. Recognizing the critical role of the education sector in ensuring the overall success of this program, the GOK has introduced a number of new initiatives and reforms. It has also prepared a draft education sector strategy report that will lay the basis for identifying strategic investments over the medium-term (GOK, *Shaping Education – Goals and Strategies*. February 2002).

2. The World Bank undertook two studies in order to complement the GOK's efforts to prepare its strategy for the education sector and to support the design of the Bank's assistance for the Economic Restructuring Program in Karnataka. This study addresses four major concerns: (i) identifying the priority issues facing the education sector; (ii) indicating possible areas for expenditure reform to improve the efficiency and equity of public spending in education; (iii) identifying measures to strengthen the effectiveness of public expenditure; and (iv) assessing the resource requirements for school education. The second Bank study focuses on the linkages between secondary education and the labor market.

Achievements of the Last Decade

3. Karnataka's most dramatic success has been in ensuring that, currently, nearly all children begin school and most of them complete primary schooling. Out of a total estimated population of 4.8 million children in the 6-10 year age group, approximately 92 percent were attending school in 2001 (child census). This attendance ratio is consistent with the trends observed between two rounds of the National Family Health Survey (NFHS-1 and 2), which showed that the attendance ratio for this age group increased by ten percentage points between 1992/93 and 1998/99 and stood at 86 percent in the latter year. For rural females, the increase in attendance rates has been 17 percentage points. There has been significant progress in attendance ratios among the 11 – 14 year age group, but participation is as yet far from being universal. The NFHS-2 showed that the attendance ratio was 72 percent three years earlier and had increased by 9 percentage points in six years. Attendance ratios among 11-14 year old rural-females had increased by almost 14 percentage points.

4. Attendance ratios drop very sharply for the higher age groups. About 45 percent of the 15-17 year olds are attending school (NFHS-2). The proportion of older age groups who are currently enrolled is not known but is likely to have increased. The number of higher education institutions has expanded very rapidly in the last decade, providing access to many students from rural areas and backward castes.

5. The driving forces behind near universal coverage at the primary stage and rapid enrollment growth at all levels of education were many. The government has expanded coverage, making substantial use of the private sector especially at the secondary level and beyond, hired thousands of additional teachers to reduce pupil-teacher ratios in school education and offered many incentives and subsidies to stimulate demand. During the last decade, Karnataka enjoyed low population growth with rapid economic growth, and the latter in turn has accelerated social transformations in the countryside that have also been encouraged by government policies.

6. Karnataka faces four major challenges over the next decade:

- *First, all children must enter and complete elementary education.* This requires concentrated attention on the educationally backward districts of the north with the majority of out-of-school children and high drop out rates, and on upper primary education. About 60 percent of the out-of-school children in the 6-14 year age group are from these districts. According to school-based enrollment statistics, only 65 percent of those who enter class 1 reach class 7; the highest drop out rates in the upper primary stage are, again, in the northern districts.
- *Second, it must focus on improving quality at all levels to improve learning outcomes.* Levels of learning are low at all levels and there are again considerable disparities between regions, poor and rich children and rural and urban children. Less than half of those who appear for the public examinations at the end of class 10 pass on the first attempt. Those who attain secondary education but are not able to continue higher stages, either due to low marks on school-leaving examinations or inadequate financial means, do not have the skills or knowledge for jobs in the industrial or service sectors.
- *Third, it must try to reduce inequalities in the quality of education provided to the poor and disadvantaged groups so as to enable students from these groups to access higher levels of education.* Overall, 65 percent of 12 year olds had completed primary school in 1995/96; however, less than half of the poorest children completed this stage of education, compared to 94 percent of the richest ones. This inequality increases with higher levels of education with virtually no one from the poorest one-fifth of households completing higher education.
- *Fourth, in higher secondary, collegiate and technical education, it needs to develop appropriate strategies to cater to both an expanded and more diversified student demand and to provide the knowledge, skill and attitudes that are demanded by its changing economy and labor market.* The main issues here are the lack of relevance of courses, the poor quality of college teaching (especially, but not only, in the sciences), the low percentage of students in postgraduate training and research, imbalances in enrollment between various streams and poor learning outcomes. The poor quality of higher education negatively impacts on the entire education sector, since it provides teachers for secondary education.

Public Expenditures on Education

7. Education in Karnataka is financed by state and Central governments and households. Estimates of the resources contributed by local bodies and the private corporate sector are not available. In 1995/96, total spending on education by the government (state and Central) and households amounted to Rs.2, 300 crores or 3.9 percent of gross state domestic product. Public resources financed just under three-quarters of all expenditures on education, but the public-private shares vary by levels of education. The government is the most significant spender at all levels of education, but it is most important in elementary education. The share of household financing in total spending is one-quarter at the elementary level and one-third at secondary and higher education levels, respectively.

8. Karnataka has increased its public spending on education in real terms, especially on school education. In relation to its state income, however, its educational expenditure has fallen over the decade. Over half of expenditures are on elementary education and about 30 percent on secondary. Public spending on higher education has actually fallen in real terms over much of the decade.

9. Within public spending, the state government accounts for the major share of spending. Although small Central government expenditures exert a significant influence on the choice of new programs, especially in elementary education. Central funds have financed additional teachers, classrooms and non-teacher inputs. However, the experience of the Centrally Sponsored Schemes in improving quality has not been totally satisfactory. Procurement of materials has been tardy or has resulted in low quality materials. Rigidities in norms have led to the construction of classrooms that are too small. The externally funded District Primary Education Program (DPEP) has introduced a different method for routing funds and procuring materials but there has been no formal evaluation to assess its effectiveness.

10. Four main issues need to be addressed to improve the efficiency of public spending:

- *The proportion of expenditure on non-staff inputs needs to be increased at all levels of education.* Salary costs account for 92-99 percent of public spending in different sub-sectors. A greater emphasis on quality and improving learning outcomes at all levels will necessitate more expenditures on learning materials, training and curriculum related matters. Increasing and protecting non-salary expenditures is a key issue in expenditure reform.
- *Unit costs have been rising in school education and any increase in non-salary expenditure will contribute to a further rise in unit costs unless per pupil salary expenditures are contained.* The rise in unit costs has been caused by the increase in salary levels and the fall in pupil-teacher ratios. Karnataka needs to exercise control over both the level of teachers' salaries and the number of teachers. The state government has contained the growth of salary expenditure by not

implementing the national Fifth Pay Commission's recommendations in school education (although it has done so in higher education). In order to contain the growth in costs, attention has to be paid to teacher numbers as well. Further reductions in the average pupil-teacher ratio may not lead to substantial improvements in quality, while it would definitely lead to a rise in unit costs.

- *The present deployment of teachers is inefficient and leads to enormous disparities in pupil-teacher ratios across districts and between schools within districts. Unit costs can rise very sharply if Karnataka adds more teachers to bring down high pupil-teacher ratios in some districts and schools. Instead, it should aim to use the existing teaching force more optimally by adopting three measures: rationalizing teacher deployment across districts; consolidating small higher primary and high schools; and developing a strategy for small lower primary schools where current teacher norms lead to high pupil-teacher ratios.*
- Unit recurrent costs in aided institutions are similar to or lower than those in government institutions, and the capital cost in the former has been financed by private resources. Hence, public subsidies to private institutions has enabled the government to expand total education provision at lower levels of budgetary support than if the government had expanded facilities. *There is scope, however, to make more efficient use of public subsidies to the private sector. Currently, the grant-in-aid is driven by teachers' salaries and norms for pupil-teacher ratios, which are identical to those in government institutions, and there is no incentive or scope for private institutions to seek efficiencies. The grant-in-aid framework, which enables private managements to directly recruit teachers subject to government approval for the post and regulations regarding qualifications, training and reservations for caste/community, also creates incentives for private managements to seek "donations" from prospective staff who are willing to pay them because they get the salary and benefits of government teachers. Restructuring the grant-in-aid policy to eliminate such adverse incentives is necessary.*

11. District level expenditures on elementary education reflect inefficiencies and inequities of which the following are the most important:

- *The distribution of expenditures is negatively correlated with educational backwardness, with the educationally more backward districts having higher pupil-teacher ratios and lower per pupil expenditures.*
- *The inter-district variation in per-pupil expenditures has increased over the decade as pupil-teacher ratios have fallen more rapidly in the advanced districts than in the backward districts. In the advanced districts, the child population has declined and a greater proportion are attending private schools, but teacher numbers have increased due to the availability of Central funding for additional teachers in small schools.*

- *Central Plan expenditures are also correlated with State Plan expenditures and educationally advanced districts receive the highest levels of per pupil Plan expenditure, both Central and state.*
- *Discretionary funds available with districts to address their specific priorities are limited.*

12. These regional disparities in public spending have resulted from state-level decisions rather than from the differing fiscal and economic capacity of districts. The state government could allocate more teachers to the backward districts and thereby improve educational outcomes (student retention and learning) without increasing expenditure on elementary education, if it were to redeploy teachers from the more advanced districts and raise the pupil-teacher ratio in the latter closer to the state norm. *Over the medium-term, new principles for providing school education finances to districts to enable them to address their priorities, need to be elaborated including, possibly, allocation of expenditures on the basis of teacher and non-teacher inputs per child, rather than on the basis of past teacher commitments. A certain amount of untied funding is also required to enable planning for local needs.*

13. Benefit-incidence analysis was undertaken for 1995/96, the year for which household data on the distribution of enrollment by expenditure groups is available from the National Sample Survey. Total net public expenditure on education in 1995/96 was in excess of Rs.1, 600 crores, with nearly Rs.1, 080 crores going to rural populations. A little more than half of public outlays went to elementary education; about 30 percent went to secondary education and 15 percent to general higher education. The main issues are as follows:

- The top quintile of individuals (classified on the basis of per capita monthly consumption expenditure per month) obtains just over 30 percent of public expenditures on education compared to 13 percent for the lowest quintile, for rural and urban populations combined.
- *At the elementary level, the poorest quintile benefit from public outlays roughly in proportion to their share in the population (i.e., 20 percent), but beyond the elementary level, the distribution of public outlays strongly favors the top quintiles. At the secondary level, 40 percent of public outlays goes to the top quintile, and only about 5 percent to the lowest quintile (for rural and urban populations combined). The distribution of public outlays on university education is extremely pro-rich. About three quarters of the public outlays benefit the top quintile while just over 1 percent accrues to the poorest quintile.*
- *The overall distribution of public expenditures across expenditure groups is thus strongly influenced by the ability to complete the lower stages of education and pursue higher levels of education. The analysis suggests that additional public spending on quality improvement in elementary education, which would improve*

completion rates and learning outcomes of the poor, will ensure more equitable distribution of the benefits of public spending on education.

- *The incidence of aid to private schools, in particular, benefits the higher income groups to a greater extent, while the poor benefit more from spending on government schools.* To the extent that quality is higher in aided institutions, the higher income groups also have better outcomes at the end of their education which facilitates their transition to higher levels of education or to better paying jobs. The government needs to examine whether alternative methods of providing finance to private schools would better help achieve its distributional objectives and help the poor to access higher levels of education.
- A restructuring of the grant-in-aid mechanism is therefore warranted on both efficiency and equity grounds. *A revised policy should target subsidies to poor students to enable them to access secondary and higher education and encourage the private sector to seek efficiencies without compromising quality.*
- *There is also evidence that the rich, the urban rich in particular, invest heavily at the elementary level by sending their children to private unaided schools because higher quality primary education improves performance and continuation up the educational ladder.* This enables them to access the subsidies in aided institutions at the secondary and higher levels. Karnataka needs to review the existing framework for private education at different levels of the system in order to ensure that pattern of public spending on education is consistent with equity objectives.

Improving the Effectiveness of Public Spending

14. In addition to improving the efficiency and equity of public expenditure, three sets of reforms to improve the effectiveness of public spending are considered: (a) reforms that can be implemented in the short-run and focus on improving the utilization of teacher and non-teacher inputs; (b) reforms to improve the management of the private sector and ensuring that the private sector contributes to GOK's equity goals in education; and (c) reforms to promote decentralization.

15. *The utilization of the teaching force can be improved by reducing the amount of time to non-teaching duties; increasing the effective number of teaching days per teacher per year by reviewing the leave conditions of teachers; ensuring that schools have the requisite number of teachers for the entire year through improvements in the deployment of teachers; ensuring that schools are open for 5-6 hours per day and reducing teacher absenteeism. In addition, reforms are needed in the method of recruitment of teachers and the monitoring of quality standards in the teacher education sub-sector to ensure that competent teachers are recruited. Improvements in the deployment of teachers across schools would raise effectiveness without adding to costs. Some steps have already been taken by GOK to implement these reforms. A recent Cabinet decision forbids using*

teachers for non-teaching duties and about 2,400 elementary teacher posts have been shifted within and across districts in the last two years.

16. *In order to improve the utilization of non-teacher inputs, changes are required in the production and delivery of textbooks to ensure that textbooks reach all schools before the start of the academic year. The utilization of funds for non-textbook inputs is very low due to the delays caused by the existing methods of procuring teaching-learning equipment, aids and library books in government schools. Reforms are urgently required in procurement methods to ensure that schools have the materials that they need.*

17. *Apart from improving equity in the utilization of public funds provided to the private sector, in the short-term, Karnataka needs to address some immediate issues that will improve oversight of aided institutions. There are thousands of court cases involving the Education Department, almost all of which relate to teachers in aided institutions. Most cases involve the recruitment of teachers, payment of salary and benefits, promotion and suspension and removal from service of the employee. An appeal lies to the government and the District Court against wrongful dismissal. Specific measures to enable speedy disposal of thousands of court cases and to prevent new ones from surfacing should be considered. These could include: creating an inventory of all such cases and classifying them by type of grievance; encouraging settlement of minor disputes by mutual consent; and establishing a computerized database of aided teachers to record their qualifications, service details and payment of salary and benefits.*

18. *There are two aspects of the regulatory framework for unaided institutions that have important implications for the expansion of private provision and for equity. The first relates to regulations concerning the medium of instruction under which, currently, publicly-funded institutions are not allowed to offer English-medium instruction at the primary level while some private unaided institutions are allowed to do so. This, along with the fact that English language teaching in government schools is of poor quality, creates excess demand for private unaided schools. Since English language skills are important for higher secondary and tertiary education, poor and disadvantaged students who attend government schools are less able to access higher levels of education. Measures need to be taken to address the curricular mismatch across different levels and to improve the quality of English language instruction in government schools. The second relates to government regulations on fees in unaided institutions. At the school level, a uniform fee structure is prescribed irrespective of the quality of the service and special facilities provided by the school. Rationing of unaided school places is done through unauthorized “donations” which effectively exclude poor students. Both these aspects of the regulatory framework need to be reviewed in order to ensure that the private sector is aligned with the overall goals of education policy in the state.*

19. *The third priority area of reform is in promoting effective decentralization. Both administrative and fiscal decentralization are relatively limited in Karnataka and the role of the elected lower tiers of government in the provision and supervision of educational services is not clearly defined. Within the context of the wider administrative and fiscal decentralization that is being discussed in Karnataka, GOK has to clearly delineate the*

roles, functions and powers of the state government and local bodies with respect to the following specific issues: personnel management; planning; performance monitoring; and finances.

Financing Requirements

20. GOK's goal for elementary education is to ensure that all children complete elementary education with adequate levels of learning. The GOK's draft sector strategy report outlines three basic strategies to meet this goal: ensuring that there are enough classrooms and teachers for the target population and for lengthening the elementary cycle to eight years; focusing on the backward districts; improving quality of teaching-learning processes and providing alternative education to out-of-school children. For secondary education, the objectives are to ensure that 65 percent of the relevant age group should participate and that 80 percent should successfully complete class 10. The main strategies are building additional high schools according to need, improving infrastructure, strengthening in-service teacher training, revising the curriculum and textbooks and introducing examination reforms. The secondary cycle would be shortened to two years, thus maintaining the overall duration of school education at 10 years.

21. How much would it cost GOK to meet these goals and to what extent can these requirements be financed by anticipated GOK budgetary allocations, Central government funds and private finance? *The child population (5-14 years) is projected to decline between 2000 and 2010 by about 2 - 2.5 million and this means that enrollment in elementary classes will decline in absolute terms even if universal coverage and retention is assumed and repetition rates continue at existing rates.* While demographic and enrollment projections were made up to 2010/11, financial projections were made for the next 5 years (2006/07). It has been assumed that recent trends in the growth of enrollment in private unaided schools will persist and about 18 percent of total enrollment will be in such schools by 2006/07. The remaining enrollment will be in publicly funded schools.

22. Several scenarios for financial projections are presented. *The base case scenario* for elementary education assumes that no additional elementary schools are required, although additional classrooms are required for class 8; additional teachers are recruited only in the backward districts, while existing teachers are retained in the advanced districts even though there is an anticipated drop in enrollments; that salary levels are not revised upwards; all existing pupil incentives continue; quality improvement measures focusing on teacher training and support and curriculum revision are introduced; and out-of-school children are provided alternative facilities with a certain proportion being mainstreamed every year. The base case scenario is compared with a *high cost scenario* where teacher salaries are revised and *two cost-reducing scenarios* where teachers are rationalized across districts and an alternative strategy is developed for small schools, respectively.

23. In the base case scenario, expenditure is projected to more than double, from Rs. 1,759 crores in 2001/02 (revised estimates) to about Rs. 3,700 crores in 2006/07. The major increase in expenditures is scheduled to occur in 2003/04, when class 8 is added to the elementary cycle (this is compensated by a fall in secondary education expenditures as discussed later). *The elementary education budget as a share of projected state revenue expenditure would rise from about 8 percent to 12.6 percent. There are significant changes to the composition of expenditures.* The share of salaries, currently at 92 percent, is expected to fall to 80 percent and then stabilize at about 86 percent in 2006/07. The share of expenditure on pedagogical improvement rises from 2.4 percent to 3.7 percent. Allocations for alternative schooling are significant and constitute 2.8 percent of expenditures in the last year.

24. Compared to this scenario, *the high cost scenario*, which envisages a revision of teachers' salaries in line with the 5th Pay Commission award, *raises total expenditure by about 16 percent every year. The low cost teacher rationalization scenario reduces expenditures by about 6-8 percent per year compared to the base case from 2004/05 onwards.* The significance of this measure (teacher rationalization) can be assessed by comparing these cost savings with the amounts spent on quality improvement. GOK can save a total of Rs. 819 crores over five years or an average of Rs. 164 crores per year by transferring teachers from advanced to backward districts. *This is almost double the amount spent on improving quality. The second low-cost strategy (rationalizing small schools and developing an alternative strategy for such schools) results in a cost savings of approximately Rs. 175 crores for one year, which is more than the annual amount currently spent on quality improvement.*

25. These simulations are suggestive of the possible trade-offs and savings that can arise from different strategies in the deployment of teachers, whose salaries constitute the single most important component of costs. Other sources of savings can arise from decisions on the pay scales of class 8 teachers who will be transferred to elementary schools and revision of norms for specialist teachers at the upper primary stage. However, administrative and political difficulties of introducing these changes need to be considered.

26. For lower secondary education, financial projections are based on three scenarios. The first assumes a low transition rate between classes 8 and 9 (since class 8 would have been transferred to the elementary cycle); the second uses the same transition rate as the first but assumes revision of teachers' salaries; and the third projects a high transition rate between classes 8 and 9 but assumes that existing salary scales continue. All three scenarios assume that enrollment in unaided schools will continue to grow at 2 percent per annum and financial projections are for enrollment in publicly funded schools. There is a drop in projected expenditures in 2003/04 due to the transfer of class 8 to elementary education. *Subsequently, government expenditures rise in the first scenario and are about 27 percent higher in 2006/07 as compared to 2001/02.* Most of this increase is due to investment in additional classrooms and, more importantly, in laboratories, libraries and computer education. *The second scenario (revision of pay scales) raises annual*

expenditure by about 10 percent per year. The third scenario (high transition rate) would raise total annual expenditures by 14-30 percent over the first scenario.

27. For higher secondary education, expenditures have been projected to grow at 2.5 percent annually in real terms with 6 percent annual inflation. More detailed projections will have to await state government decisions regarding the organizational structure of this cycle, specifically whether it would constitute a part of the school stage and be provided in integrated secondary schools or whether it would continue to be provided in independent institutions. Due to differences in teachers' salaries and teacher norms, the cost implications of these two strategies would be substantially different.

28. Total projected financial requirements for elementary education (the base case scenario), lower secondary education (low transition rate scenario) and higher secondary education are estimated to rise from about Rs. 2,660 crores in 2001/02 (revised estimates) to Rs. 3,382 crores in 2002/03 to Rs. 4,992 crores in 2006/07. *This represents a 26 percent increase in the first year of the projections, mainly on account of the increased cost of the transition to an 8-year elementary cycle and an additional increase of 47 percent over the next four years.*

29. Projected resource mobilization from the private sector (investment in classrooms and infrastructure by managements of aided schools and enhanced fees to be paid by the richest 40 percent of students) would reduce this financing gap by about 20 to 35 percent in each year.

30. In conclusion, attaining GOK goals for elementary and secondary education will require considerably enhanced financial allocations, even under modest assumptions of physical requirements and teachers' salaries. The volume of additional requirements depends critically on the strategies adopted by GOK and, in particular, on those strategies that affect the expenditure on teachers. *The analyses show that if GOK adopts fiscally sustainable strategies in school education without compromising on quality and equity, and if the overall fiscal reforms are successful, the financing requirements for an expanded school education system of higher quality could be met mainly from its own resources and from additional private sector mobilization.* However, an annual residual financing gap of about Rs. 200 crores exists in the medium-term. Adopting cost-reducing strategies that do not compromise quality or equity goals is one way to reduce the financing gap. Alternatively, further prioritization of GOK's goals and strategies in the elementary and secondary sectors may be necessary. Finally, the estimated financing gap would widen considerably if higher cost strategies are adopted and investments in higher secondary education and the teacher education sub-sector are also taken into account.

Chapter 1 – Introduction

I. Background

1.1 The Government of Karnataka (GOK) has embarked on a program for accelerating economic growth and reducing poverty by introducing fiscal and governance reforms, promoting private sector led growth and investing in physical and social infrastructure. The education sector has a critical role to play in ensuring the overall success of this program for a number of reasons. First, education provides the means for the majority of the population to improve the quality of their main asset, labor, thus enabling them to earn higher incomes and benefit from economic growth. Second, the availability of a skilled, knowledgeable, trainable and adaptable workforce is one of the important conditions for the state to attract private investment and compete in world markets, as important as improved power supply and infrastructure. Third, the education sector accounts for the highest share of the state government's revenue expenditure (over 20%) and fiscal reforms must necessarily take into account the expenditure requirements of the sector while fiscal constraints will necessitate greater attention being paid to sector efficiency. Fourth, the success of governance reforms will depend critically on reforms in the education sector, which accounts for the largest sectoral share of state government employees.

1.2 There is a need for expanding, restructuring and raising the quality of the education system both to support and to shape the future economic and social development of the state. Recognizing this, in 1999, GOK appointed a Task Force on education comprising senior education administrators and academics. Two interim reports on school education have already been submitted. The GOK has also undertaken and financed a more comprehensive review of individual sub-sectors that will lead to the preparation of an education sector strategy report. The GOK sector report, a draft of which was presented to a national seminar in February 2002, will assist in articulating the expected goals and outcomes at each level, the strategies for achieving these goals that are consistent with financial feasibility and the changes in policies and administrative and organizational arrangements that are required to achieve these goals. It is expected that the GOK sector report will lay the basis for the state government to identify strategic investments that would be required over the medium term in the sector and the critical financing gaps.

1.3 The sub-sector studies undertaken by the GOK cover the following areas: (i) elementary education; (ii) secondary and pre-university education; (iii) teacher education and preparation; (iv) collegiate education; (v) technical education; (vi) early childhood education; (vii) management and decentralization; (viii) private sector participation; and (ix) equity in education. The studies were undertaken by consultants under agreed terms of reference prepared by GOK. These studies build on two recent reports on education – *Karnataka Human Development Report (1999)* and *Towards a holistic strategy for improving primary and secondary education in Karnataka (2000)* – and have laid the basis for beginning an informed analysis of sectoral problems in the state. Karnataka has been unique among Indian states in conducting a study of the education system across all levels.

1.4 The World Bank undertook two studies in order to complement the GOK's efforts to prepare its strategy for the education sector and to support the design of the Bank's assistance for the Economic Restructuring Program in Karnataka.¹ This study addresses four major concerns that are relevant both to GOK and to the Bank's program of economic assistance to the state: (i) identifying the priority issues facing the education sector in ensuring universalization of elementary education, aligning secondary and higher education more closely with labor market needs and enabling greater equity in participation and completion at each level of education; (ii) indicating possible areas for expenditure reform to improve the efficiency and equity of public spending in education; (iii) identifying measures to strengthen the effectiveness of public expenditure; and (iv) assessing the resource requirements to meet the goals and address the priority issues in school education.

1.5 The second Bank report focuses on the linkages between the education sector and the labor market, the economic benefits of secondary and post-secondary education and labor market outcomes of secondary, higher secondary and vocational education graduates.

1.6 The nine GOK sub-sector studies and these two Bank reports have been prepared in a collaborative manner. Terms of reference were jointly agreed and a review committee constituted by GOK guided the studies. The findings of the GOK sub-sector studies and the draft Bank reports were presented, discussed and subjected to critical review at a workshop organized by GOK in May 2001. The eleven studies, taken together, along with the draft report of the Education Task Force, the Administrative Reforms Commission and the Committee to Address Regional Inequalities, formed the basis for preparing the comprehensive GOK education sector strategy report.

II. Scope of the Report

2.1 This report looks at the following specific issues:

- what have been the recent trends and what is the current status with respect to enrollment, completion and quality at each level of education?
- what factors, both within the education sector, and in the overall development of the state, have contributed to these trends?
- what are the priority goals and issues facing the education sector?
- what is the level of total (state and Central government and private) spending at different levels of education and the contribution of the private sector?
- what have been the trends in public expenditure on education? What is the composition of public spending? How has public expenditure benefited different income groups?
- what key issues does Karnataka need to address to contain costs and improve the efficiency and equity of public spending?

¹ The first and second Karnataka Economic Restructuring Loans (KERL) of US\$150 million and US\$100 million, respectively, were approved by the World Bank Board in FY2001 and 2002. The Program of assistance envisages a series of such loans over the next five years, provided that mutually agreed reforms are implemented. The draft reports of this study provided inputs for developing the medium-term fiscal framework of the education sector in the context of the first KERL.

- what priority measures would help to improve the governance of the sector and improve the effectiveness of public spending?
- what is the likely projected demand for elementary and secondary education taking into account demographic changes, completion/transition rates at each level and GOK goals for these levels of education?
- what are the financial requirements for service provision of acceptable quality at these levels based on projected demand and under alternative reform scenarios?
- to what extent can these financing requirements be met by state government resources, Central transfers and the private sector?

III. Structure of the Report

3.1 The rest of this chapter presents the structure and organization of education in Karnataka. Chapter 2 presents the trends in enrollment in the nineties, participation, completion and learning outcomes at different stages of education and summarizes the key challenges facing the sector. It also discusses the factors that have contributed to the remarkable expansion and development of the sector and the reasons for its principal weaknesses. The third chapter examines current expenditure and financing patterns, including the share of state government, Central Government and household expenditures; the level of total sectoral and sub-sectoral allocations; the composition of expenditures; unit costs; the distribution of expenditures by districts; the incidence of public expenditures on different income groups and key reforms required to improve efficiency and equity. The fourth chapter discusses measures to improve the governance of the sector, including regulation of the private sector, which would be necessary to improve the effectiveness of public expenditures in education.

3.2 The final chapter presents quantitative estimates of enrollment projections and projections of financial requirements *for school education* to attain the goals set out in the draft GOK sector strategy report. These financial projections are based on key strategies outlined in the GOK report to reach its goals in elementary and secondary education. The implications of alternative strategies that have important effects on total costs are also presented. The chapter also compares projected expenditures with projected budgetary allocations for school education under the GOK's medium-term fiscal program and discusses various options for meeting the financing gap.

IV. Karnataka's Education System

4.1 Pre-school education is extremely limited in its outreach. There is a pre-school component in the Integrated Child Development Services (ICDS) administered by the Department of Women and Child Development which targets poor children; only 20 percent of 3-5 year old children were reportedly covered by the program according to a 1995/96 household survey (NSS). Private nurseries, mainly in urban areas, cater to the middle and upper income groups and there is little quantitative information on this sector. A child census conducted by the Department of Education in early 2001 indicates a much higher proportion of children attending pre-school education.

4.2 School education comprises an elementary cycle of seven years (four years lower primary and three years upper primary) and a secondary cycle of three years. The government proposes to lengthen the elementary cycle to eight years, with a five year cycle for lower primary (introduced in 2001/02) and a three year cycle for the upper primary stages, (to be introduced in 2003/04), and shorten the secondary cycle to two years. The total duration of school education would remain 10 years. After passing the school leaving examinations, students have the choice of continuing to the 2- year higher secondary stage (called pre-university or PU education in Karnataka), entering technician diploma courses in polytechnics or obtaining vocational training in industrial training institutes (ITI) run by the Labor Department. PU education consists of an academic stream, in which the majority of students are enrolled, and a small vocational education stream. Passing the PU examinations makes the student eligible for further education: general higher education in colleges, engineering and medical education in professional colleges and elementary teacher training courses; students can also enter the polytechnic diploma courses at this stage.

4.3 The lower primary cycle is provided in either stand-alone lower primary schools (LPS) or composite higher primary schools (HPS) which offer both lower and upper primary cycles. High schools (HS) currently offer classes 8-10.² Higher secondary (PU) education is provided in a number of institutional settings – in “composite colleges” that are attached to high schools which have classes 8-10, in independent “junior colleges” which have PU classes only and in the PU stage of some degree colleges. The private sector operates at all levels but predominates at the secondary and PU stages. The Department of Elementary and Secondary Education manages the education system from the lower primary to the PU stage; it oversees the Commissionerate of Public Instruction (CPI) encompassing classes 1-10, the Directorate of School Education Research and Training (DSERT) which prepares the curriculum and textbooks for school education, conducts in-service teacher training programs and oversees the elementary teacher training colleges; the Directorate of Pre-University Education and the Directorate of Vocational Education.³

4.4 Degree level education is provided in affiliated colleges of six state level universities and postgraduate education in the university departments. Degree level engineering education is available in engineering colleges that are affiliated to the state Visweswaraiyah Technological University and in the Regional Engineering College that is co-financed and administered by the Central and state governments. Diploma level technician courses are provided in polytechnics. Private institutions comprise the majority in both general and technical education. The Department of Higher Education oversees the post-secondary stage and has two directorates dealing with collegiate education and technical education, respectively. Each education Department reports to a separate Minister for school and higher education, respectively.

² There are very few HPS with only upper primary classes, nor are there many lower primary or upper primary sections attached to high schools.

³ It also has responsibility for adult education, for which there is a Directorate, but does not oversee pre-school education.

Table: 1.1
Education System In Karnataka 1999-2000

	Institutions	Teachers	Students
Lower Primary Schools	22,533	43,923	8,223,000
Higher Primary Schools	27,107	172,972	
High Schools	8,255	78,888	1,689,632
Pre-University Colleges	2,083	15,729	510,000
General Degree Colleges	932	20,089	485,435
Polytechnics	185	3,891	51,278
Engineering Colleges	82	3,944	73,221

Note: Enrollment figures are not available separately for lower primary and higher primary schools. For higher education, figures are for year 1998/99; source: Report of the Dept. of Collegiate Education. For technical education, figures of teachers and students are for year 1998/99; source: Report of Dept. of Technical Education. The number of institutions is from the GOK sub-sector study on Technical Education. For PUC, figures for teachers and enrollment are from Report of Directorate of Pre-University Education; the number of institutions is from the GOK sub- sector study on Secondary and PU education.

4.5 Schools that receive state government funds (both government and private schools) are obliged to follow the curriculum of the Karnataka State Board of Education. The syllabus and textbooks for classes 1-10 and the elementary teacher training institutions are prepared by the DSERT. Private unaided schools are free to choose syllabi of other boards, including the Central boards (CBSE or ISCE). Common school-leaving examinations at the end of class 10 are conducted by the respective Boards of School Education; examinations for the elementary teacher training institutions are conducted by the DSERT. The Board of Pre-University Education prepares the curriculum and conducts state-level examinations for both years of PU education. There are no officially prescribed or prepared textbooks at the PU level. Universities are responsible for developing curricula in general higher education. For polytechnics, the relevant authority for curricula and examinations is the State Board of Technical Education; the Technical Teachers' Training Institutes under the Central government produce and market textbooks and instructional materials for the entire country. For degree level engineering colleges, the Visweswaraiiah Technological University prescribes the curriculum and is responsible for award of degrees. Instructional materials are prepared by national Curriculum Development Centers of the All India Council of Teacher Education (AICTE) and the Centers of Educational Technology in the Indian Institutes of Technology (IITs).

4.6 Government-funded institutions are obliged to provide instruction in the mother tongue up to class 4, after which English-medium instruction can be offered if the government sanctions "English-medium sections" in particular schools (government and aided).⁴ English as a subject language is taught only in class 5; a proposal from the Department to teach English from class 3 is pending with the government. However, all students can opt to sit for public examinations in either Kannada or English medium up to the post-graduate level, irrespective of the medium in which they have been taught (and in

⁴ There are many linguistic groups in the state. Kannada, being the mother tongue of the majority of the population, is the main language of instruction, but Urdu, Malayalam, Telugu, Tamil and English are also used. Textbooks based on the state board curriculum for classes 1-10 are prepared in all these languages by the DSERT.

other Indian languages offered in the state at the secondary level). English-medium instruction and examinations are mandatory only in degree level engineering education. Private unaided institutions started after 1994 are also required to provide instruction in the mother tongue up to class 4 but English medium instruction can be provided thereafter; in practice, many offer English instruction in the lower classes as well.

Chapter 2– The Education Sector in Karnataka – Achievements and Major Issues

I. Introduction

1.1 This chapter reviews the current status of Karnataka's education system and its performance in terms of enrollment trends, participation, completion and learning outcomes at different stages of education and summarizes the key challenges facing the sector. It then examines the main factors that have shaped the development of the sector in the nineties and that help to explain both its remarkable achievements and its principal weaknesses.

II. Trends in the Nineties – Achievements and Challenges

2.1 Karnataka has made tremendous progress in the nineties in all sub-sectors of education, as reflected in growth in enrollment and the near universal participation of the younger age groups in primary education. In 2000-01, about 8.6 million students were enrolled in elementary classes and 2.0 million at the secondary stage. Enrollment in PU education and in degree level general education was about half a million each. Approximately 51,000 students were enrolled in polytechnics and 73,000 in engineering colleges.

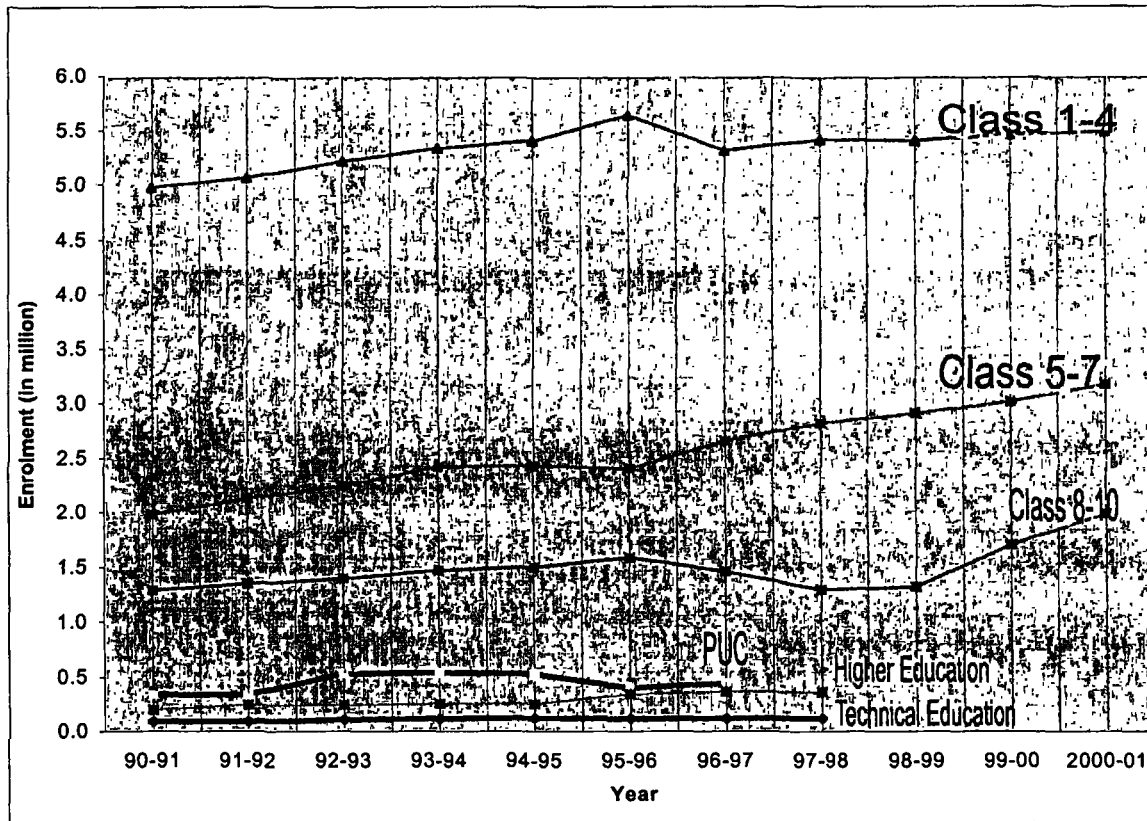
2.2 Enrollment at the elementary stage increased at 2.2 percent p.a. in the last decade, with more rapid growth at the upper primary stage (4.8 percent p.a.) than at the lower primary stage (1.0 percent p.a.). In absolute terms, enrollment in classes 1-4 rose from 4.9 million to 5.6 million between 1990/91 and 1995/96 and fell to about 5.5 million in 2000-01, reflecting a rapid decline in fertility rates and the size of the eligible cohort. Enrollment in classes 5-7 rose from 1.9 million to 3.2 million between 1990/91 and 2000/1. Over the decade, the annual growth rate of enrollment was 4.4 percent at the secondary stage, 4.6 percent at the higher secondary stage, 9 percent in general higher education and 4.4 percent in technical education (Table 2.1 and Chart 2.1).

Table: 2.1
Karnataka: Enrollment Trends

	Classes 1-4	Classes 5-7	Classes 8-10	PUC	Higher	Technical
1990-91	4,971,982	1,978,641	1,290,281	336,864	199,349	88,200
1991-92	5,062,384	2,125,644	1,349,369	336,864	240,830	88,200
1992-93	5,214,889	2,244,357	1,396,235	528,619	243,020	105,008
1993-94	5,332,338	2,419,047	1,467,270	538,306	252,975	112,731
1994-95	5,402,702	2,433,344	1,495,414	526,506	253,046	122,502
1995-96	5,635,147	2,405,188	1,582,568	398,315	341,995	118,307
1996-97	5,313,372	2,648,226	1,456,454	442,649	366,018	119,194
1997-98	5,412,818	2,813,042	1,294,319	N/A	362,775	119,194
1998-99	5,404,173	2,912,939	1,320,677	N/A	485,435	125,419
1999-00	5,456,932	3,012,898	1,696,100	510,000	N/A	N/A
2000-01	5,484,600	3,173,979	1,987,357	N/A	N/A	N/A
Growth Rate (% p.a.)	0.98	4.8	4.4	4.6	8.9	4.4

Source: GOK data.

Chart 2.1
Karnataka Enrollment Trends 1990/91-2000/01



2.3 Karnataka's most dramatic success has been in ensuring that currently nearly all children begin school and over 90 percent of the 6-10 year olds are in school. This achievement is confirmed by both Education Department statistics and independent household surveys. Out of a total estimated population of 4.8 million children in the 6-10 year age group, approximately 92 percent were attending school, according to the child census carried out in January 2001 by the department. This attendance ratio is consistent with the trends observed between two rounds of the National Family Health Survey (NFHS-1 and 2), which showed that the ratio increased by ten percentage points between 1992/93 and 1998/99, and stood at 86 percent in the latter year (Table 2.2 (a)). For rural females, the increase in attendance rates has been 17 percentage points (Table 2.2 (b))

2.4 There has been significant progress in attendance ratios among the 11-14 year age group, but participation is as yet far from being universal. There is also less consistency between the Education Department statistics and household survey data. According to the child census, about 85 percent were in school in 2001. The NFHS-2 showed that the attendance ratio was 72 percent three years earlier and had increased by 9 percentage points in six years. Attendance ratios for rural females had increased by almost 14 percentage points.

2.5 Attendance ratios drop very sharply for the higher age groups. About 45 percent of the 15-17 year olds are attending school (NFHS-2). The proportion of older age groups who are currently enrolled is not known.

Table 2.2(a)
Current Attendance in School
(percent of age group)

Age Group (years)	NFHS-1	NFHS-2	Age Group (years)	NSS
	1992/93	1998/99		1995/96
			3-5	21.3
6-10	75.6	86.4	6-9	79.1
11-14	62.9	71.6	10-12	70.7
15-17	n.a.	44.9	13-15	57.0
			16-17	44.1
6-14	70.5	79.9	6-14	74.4

Table 2.2(b)
Current Attendance in School (Rural Females)
(percent of age group)

Age Group (years)	NFHS-1	NFHS-2	Age Group (years)	NSS
	1992/93	1998/99		1995/96
			3-5	17.5
6-10	64.8	81.9	6-9	69.3
11-14	46.4	60.7	10-12	54.4
15-17	n.a.	27.1	13-15	43.1
			16-17	23.5
6-14	57.4	72.8	6-14	61.5

Source: National Family Health Surveys – 1 and 2; National Sample Survey, 52nd round.

2.6 Overall, as shown by rising attendance ratios and growth in enrollment, there is a tremendous increase in participation at all levels of education. The most significant impact of this has been the remarkable reduction in illiteracy among the younger age groups. NFHS data show that the illiteracy rate among 10-14 year olds halved (a drop of 16 percentage points) in six years to about 16 percent; for rural females, the illiteracy level dropped by almost 20 points to 22 percent (Table 2.2(c)).

Table 2.2 (c)
Illiteracy Rates by Age Group

Age Group (years)	All Children		Rural Females	
	1992/93	1998/99	1992/93	1998/99
10-14	32.7	16.3	42.2	21.8
15-19	25.2	15.5	38.9	23.3
20-24	32.7	22.8	50.9	36.0

Source: National Family Health Surveys, 1 and 2.

2.7 Despite these successes, Karnataka faces major challenges over the next decade. There are wide regional disparities in participation rates even at the elementary level. Outcomes in terms of completion rates and learning at different stages of education are still

far from satisfactory. There are also significant gaps in educational outcomes between rural and urban children and between income groups and these gaps widen at higher stages of education.

2.8 *Participation and completion rates in elementary education are still low in the seven districts of the north and the east.* The child census revealed that one-quarter of children (6-14 years) in these two districts were out of school, compared to less than 1 percent in the southern districts. About 60 percent of the out-of-school children were from seven districts: the five districts of Hyderabad-Karnataka and two from the Bombay-Karnataka region. In Raichur and Gulbarga, the two most backward districts, only two-thirds of class 1 children complete primary education (DPEP data). *Drop out rates are high at the upper primary stage for the state as a whole, but again this is largely due to the backward districts.* School-based statistics indicate that about 85 percent of those who enter class 1 complete class 4 but only 65 percent reach class 7; the majority who do not do so are from the Hyderabad and Bombay regions. It may not be an exaggeration to say that Karnataka's success in ensuring full enrollment and completion at the elementary level will depend to a large extent on educational progress in these seven districts.

2.9 There are significant differences between different population groups in the proportion of children completing various stages of education. NSS data for 1995/96 reveal that completion rates improve dramatically by economic status. Overall, 65 percent of 12 year olds had completed primary school in 1995/96; however, less than half of the poorest children completed this stage of education compared to 94 percent of the richest ones.⁵ About two-thirds of 16 year olds complete middle school; close to 90 percent of the richest students do so, but only 40 percent of the poorest students reached this stage. Most striking are the differences in completion rates of 24 year olds. *Virtually no person from the poorest quintile, either male or female, in rural or urban areas, had completed higher education, while thirty percent of the richest 24 year olds had done so* (Chart 2.2 (a)).

2.10 The differences in completion rates between rich and poor households exist in both rural and urban areas, but they are narrower in urban areas. *Equally significantly, male-female differences in completion rates are very small in urban areas for all quintile groups but they are very pronounced in rural areas among the poorest.* In rural areas, just over 50 percent of the 12-year-old boys from the lowest quintile had completed primary; only 24 percent of 12 year old girls had attained the same level (Chart 2.2(b)). About 45 percent of 16-year-old rural boys from the lowest quintile had completed middle school compared to 15 percent of rural girls. For higher levels of education, the male-female differences among the rural poor narrow considerably as very few of them reach these classes.

⁵ Per capita annual consumption expenditure is used to classify individuals into quintile groups, after assigning to each individual his or her household weight. Per capita expenditure quintiles were calculated separately for rural and urban areas and for the two jointly.

2.11 By contrast, male-female differences in completion rates for the lowest quintile in urban areas are very small at all levels of education (Chart 2.2(c)). They are also very small for richer households (not shown in chart). In urban areas, differences in completion rates are linked to income differentials; in rural areas, both income and gender affect completion rates. These inter-quintile, rural-urban and gender differences are wider for the higher age groups.

2.12 Due to the rapid advances made in primary and upper primary enrollment and completion in the latter half of the nineties, these inter-quintile differences in completion rates are likely to have diminished at the elementary stage. Nevertheless, it would appear that the majority of those who do not complete elementary education are the rural and urban poor, while poor rural girls are the most disadvantaged; they are therefore excluded from higher levels of education.

Chart 2.2 (a)
Completion Rate by Level of Education and Quintile for Karnataka
(1995/96)

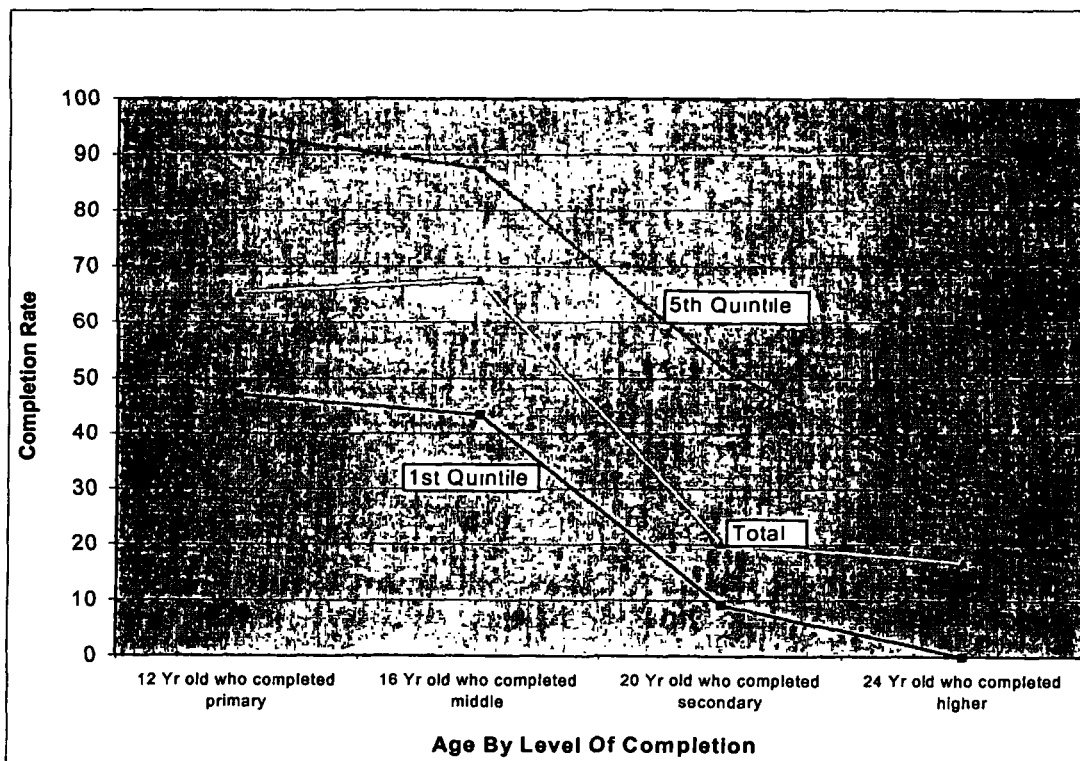


Chart 2.2 (b)
Completion Rate For Lowest Quintile For Rural Karnataka
(1995/96)

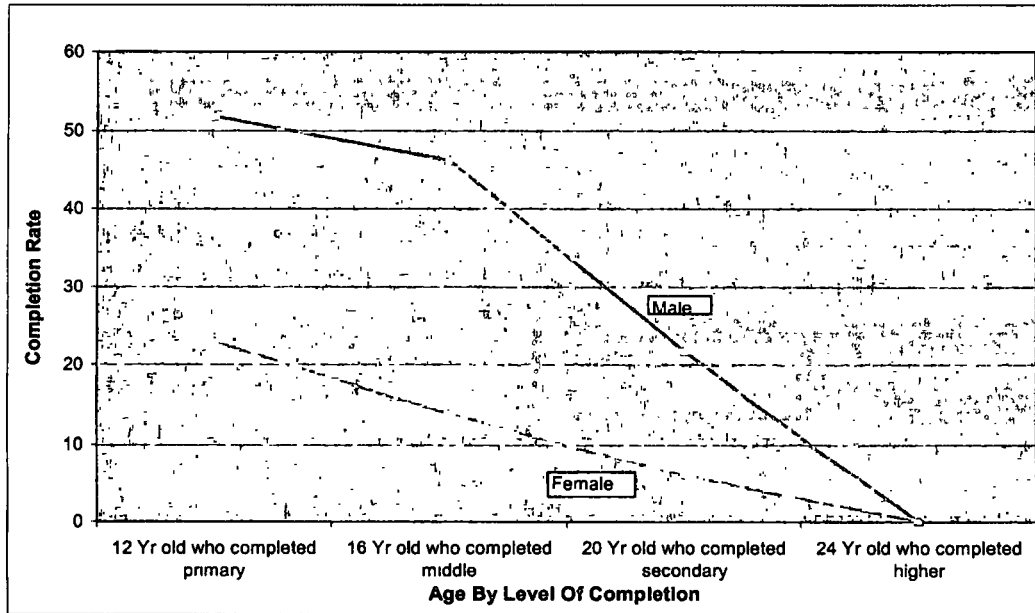
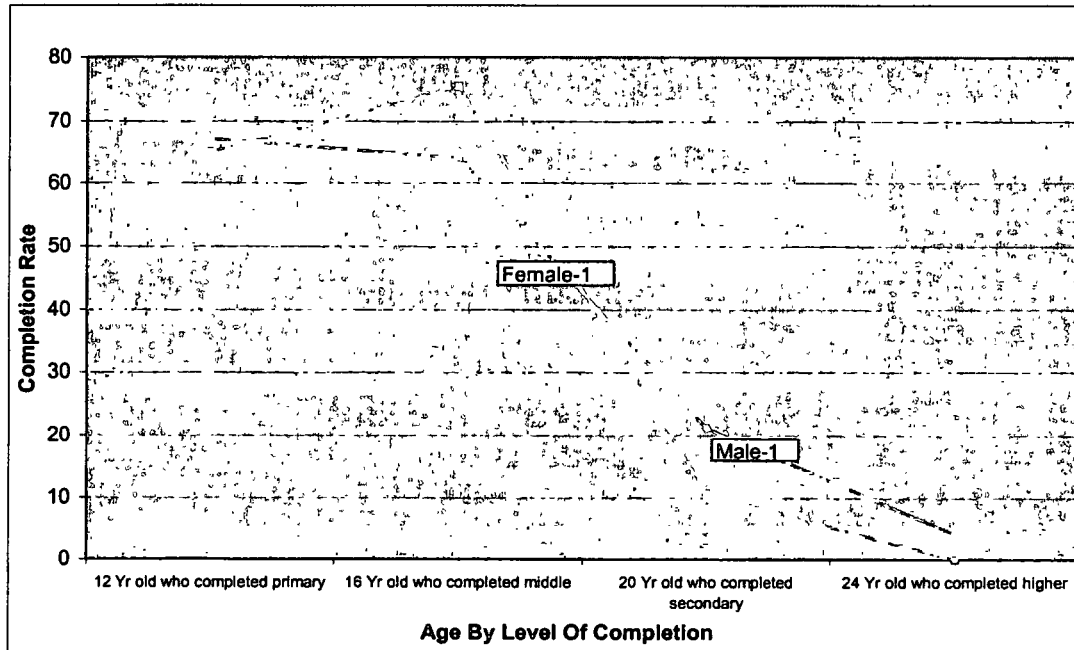


Chart 2.2 (c)
Completion Rate For Lowest Quintile For Urban Karnataka
(1995/96)



Source: World Bank calculations using NSS 1995/96 data.

2.13 *Many students repeat classes at all stages of education and take longer to complete each cycle than the anticipated number of years.* The proportion of over-age children increases with each stage of education; this proportion partly indicates late entry into school, but it also reflects high levels of repetition which may increase as students progress through the system. The National Sample Survey on education (1995/96) showed that one-quarter of enrolled 10-12 year olds attend primary, instead of upper primary, classes. The proportion of over-age children is higher in rural than urban areas: in rural areas, about 30 percent of 10-12 year olds were in lower primary classes, compared to 17 percent of urban children. Nearly 30 percent of enrolled 13-15 years olds attend upper primary classes (and not the secondary stage), while almost one half of the enrolled 16-17 year olds are in secondary classes and not at the higher secondary level. About 35 percent of enrolled 18-23 year olds are in higher secondary classes, instead of in college. Differences between rural and urban students in the extent of over-age representation are much more pronounced at this stage. About 55 percent of rural students in this age group are in higher secondary schools compared to 24 percent in urban areas. About one-third of students repeat the secondary school leaving examination and the pre-university terminal examination; repetition rates are high in college and technical education courses as well.

2.14 *Levels of learning are low at all levels and there are again considerable disparities between regions, poor and rich children and rural and urban children, although apparently not between boys and girls.* There is no statewide assessment of children's learning at the elementary stage. Achievement surveys in the districts where the Bank-funded District Primary Education Program (DPEP) operates show that learning levels are low in mathematics and Kannada language. Over half the students who appear for the state-wide school leaving examination at the end of class 10 fail on the first attempt and quarter fail even after repeated attempts. The proportion of those who fail on the statewide PU examinations varies between 55 to 65 percent. The public examination data show that there are no significant differences between boys and girls in the pass rates, but these do exist between Scheduled Caste and Schedule Tribe (SC/ST) students and others. The SC/ST students have lower pass rates and score fewer marks, thus affecting their progression to higher education and selection into professional and science courses. The average performance on these public examinations of rural students and of poor children is also lower. Examination scores reveal that performance is particularly poor in mathematics, science and English. The children of the poor and of the socially disadvantaged groups receive a worse education, at all levels, than others.

2.15 *Those who attain secondary education but are not able to continue to higher stages, either due to low marks on school-leaving examinations or inadequate financial means, do not have the skills or knowledge for jobs in the industrial or service sectors.* The majority of secondary school leavers either remain unemployed or inactive (not looking for a job) for several years.⁶ This is partly due to the slow growth in employment

⁶ See companion World Bank report, *INDIA Karnataka: Secondary Education and the New Agenda for Economic Growth*. June 2002.

in the organized sector since the mid-nineties. However, private sector employers indicate that the lack of basic language and mathematical skills among secondary school leavers inhibit their employment in all but manual, unskilled jobs of a casual nature; they also prevent employers from investing in on-the-job training of new employees.

2.16 *There have been significant changes in student demand for various courses in higher education.* Enrollment in undergraduate science and arts courses has declined due to greater demand for engineering education and commerce and management courses consequent on recent changes in the labor market. *Although there is little hard evidence about outcomes in collegiate and technical education, it is believed that the subject matter knowledge and ability to apply this knowledge in work is poor.* Postgraduate enrollment is very low, representing only 2 percent of total enrollment in general higher education, and quality is also poor. The poor quality of higher education in general, and of postgraduate education, in particular, has repercussions for the entire education system by lowering the quality of teachers entering other levels of education.

III. The Factors Shaping Karnataka's Education Development

3.1 The driving forces behind near universal coverage at the primary stage and rapid enrollment growth at all levels of education were many. First, the network of educational institutions (government and private) expanded substantially, increasing access and enabling more students to move to higher stages of education. By 1993/94, 97 percent of the population was already served with a lower primary school within a distance of 1 km. Since then, another 440 LPS and about 8,000 higher primary schools (HPS) were created. There are currently 22,533 LPS and 27,107 HPS in the state; the ratio of upper primary to lower primary sections is (1:2.2) is actually higher than the recommended national norm (1:2.5). About 20,000 additional classrooms were built in the last six years. The number of high schools increased by about 30 percent in the last six years, taking the total to 8,225. Close to 90 percent of the population has access to a high school within 5 kms. of their habitation. The ratio of high schools to upper primary schools is 1: 3.3. The number of PU institutions also increased by nearly one-third over the last decade to 2,083. Between 1995/96 and 1998/99, the number of general degree colleges increased from 749 to 932. The number of engineering colleges has risen from 53 to 82. Another 40 engineering colleges have been sanctioned by the state government and are awaiting clearances from the All India Council of Technical Education.

3.2 Second, the pupil-teacher ratio in school education was brought down very rapidly by hiring additional teachers. In elementary education, the teaching force increased by almost 50 percent over the decade with an additional 63,000 teachers being hired; the pupil-teacher ratio declined from 51 to 35. The size of the teaching force in high schools has almost doubled during the decade with the hiring of 35,000 additional teachers; the pupil-teacher ratio is now 23. This has contributed to increasing retention in school education.

3.3 Third, the government made use of the private sector in promoting expansion, using both publicly financed private provision and private financing. The former category

of institutions, called aided institutions because they receive government aid for teachers' salaries, accounts for a substantial share of enrollment especially at the secondary stage and beyond.⁷ In lower primary and upper primary classes, about 21 percent and 28 percent, respectively, of students are currently in private institutions, with nearly one-third of the private school enrollment at the lower stage and half at the upper primary stage being in aided schools. At secondary and PUC level, the private enrollment share is about 68 percent and 80 percent, respectively, and two-thirds of private enrollment at each level is in aided institutions at each level. In collegiate education, the private enrollment share is estimated to be about 85 percent; 70 percent of private enrollment is in aided institutions, although some of the students enrolled in aided institutions are actually in "unaided sections" that are financed by student fees. In technical education, both at the diploma and degree levels, private unaided institutions are in the majority and account for the overwhelming share of enrollment.

3.4 Fourth, the state government has provided many incentives and subsidies to stimulate demand by offsetting the private costs of education. Almost all levels of education in Karnataka, except professional education (technical, medical and teacher training), are more or less tuition free in publicly financed institutions (government and aided institutions). Elementary students in government institutions also receive free textbooks, free uniforms and uncooked grains, the latter supplied by the Central government under the National Program for Nutritional Support to Primary Education.⁸ SC/ST girls in classes 5–7 get free school bags and notebooks. Girls in classes 8–10 in government schools receive free uniforms and do not pay fees. At secondary and higher levels, children of SC/ST and other backward classes receive subsidized instructional materials and scholarships. In unaided institutions at all levels, parents finance both instructional services and educational materials.

3.5 Fifth, during the last decade, Karnataka enjoyed low population growth with rapid economic growth, and the latter in turn has accelerated social transformations in the countryside that have also been encouraged by government policies. Together, these factors have raised the demand for education and made it possible for the state to provide for education. The total fertility rate (TFR) declined from 2.85 children to 2.13 between 1992 and 1998, or just above population replacement levels; the size of each annual cohort entering class 1 had started declining from 1995/96. Complemented by strong economic growth, with state income growing at about 8 percent per annum, this led to a rise in per capita incomes. The growth rate of industry and services has been particularly rapid (11–12 percent per annum). Between the mid-eighties and the early nineties, organized sector employment grew by almost 4 percent per annum, with private sector

⁷ Until 1987, GOK encouraged linguistic and religious minorities to establish and administer institutions of their own choice as provided under Article 30 of the Indian constitution. These institutions usually became eligible for government financial aid. The government has similarly encouraged private educational institutions established by SC/STs, often providing land free of cost to such institutions, apart from other subsidies. During the first half of the decade the number of aided institutions was more or less stationary, but a few hundred more were added thereafter, mainly at the elementary and secondary levels.

⁸ This Program has replaced the earlier (and much smaller) state government program of providing free mid-day meals.

employment in the organized sector increasing at more than double that rate (9 percent per annum). Employment growth has slowed down in the organized sector since the mid-nineties, but the earlier expansion stimulated the demand for secondary and general higher education which are now required as minimum qualifications by employers in the industrial and service sectors. Software and IT-enabled services have been the fastest growing sectors in Karnataka; in part, this was enabled by state government policies in the eighties to encourage private engineering colleges which created a pool of technically trained manpower. The rapid growth of the IT sector has, in turn, further stimulated an astounding growth in technical education.

3.6 Economic growth made it possible for both the government and the private sector to provide additional educational services while it also raised the demand for educated manpower and the private demand for education. Social changes that have accelerated in the last two decades have also had a major influence on both demand and supply. Access to education, particularly higher education, has been seen as the principal instrument for redressing economic inequalities between castes and social groups. Reserved quotas in higher and technical education, for backward castes and SCs/STs currently account for half of the seats in publicly financed educational institutions and in public sector jobs. Quotas, in education and in jobs, have also been created at various times for students from rural backgrounds and/or those who have studied in Kannada medium. Reservation in education and public sector jobs based on castes has a long history in Karnataka and has also been influenced by the national political mobilization around caste-based inequalities that gained momentum in the early nineties.⁹ The extraordinary growth of the private unaided colleges in Karnataka is partly a reflection of this process of changing social relations and attempts by many social groups to gain access to higher education.

3.7 Despite the tremendous progress made in the last decade and the considerable efforts made by the state government to improve coverage and access, four broad problems have received inadequate attention. These are: regional disparities in the provision of education facilities, especially at the elementary level; the poor quality of the curriculum, teacher preparation and instructional materials; the inferior quality of education provided to the poor and socially disadvantaged; and the rapid changes that are occurring in the content and delivery of higher and technical education worldwide, leading to greater competition between providers and differentiated student demand.

3.8 *Regional disparities in education are a legacy of the past and they were not adequately addressed until very recently except in the provision of the schools.* Karnataka comprises five broad regions – Mysore, Bombay, Madras, Kodagu and Hyderabad – which were formed by the merger of Kannada speaking areas bordering erstwhile princely states or British Presidencies. As early as 1955-56, the enrollment ratio of 6-11 year olds was between 75-85 percent in many districts of the first four regions, compared to 27 percent in the Hyderabad region. The growth in literacy in the latter region was low; in 1991, literacy rates were in the range of 38-45 percent and female literacy rate was as low as 26 percent in one district. The Hyderabad region also has higher proportion

⁹ Reservations based on castes began in 1919 in areas that subsequently became part of Karnataka.

of SC and ST population than the state as a whole (over 30 percent compared to 20 percent for the state). The region is also economically poor, leading to seasonal migration and social practices such as child marriage abound in these regions. Both these factors reduce educational demand.

3.9 There is evidence that the quality of education provision even at the elementary level is poorer in the seven backward districts of the north and east (comprising the Hyderabad region and part of the Bombay region). Pupil-teacher ratios are still much higher – about 56 in Gulbarga (Hyderabad) compared to 23 in Chickmagalur (Kodagu). Schools remain open for less time due to teachers arriving late and departing early – in part due to poorly developed roads and bus services. At the secondary level, the northern region has a much lower share of high schools unlike the more equitable geographical spread of elementary schools.¹⁰ Many high schools in the region do not have proper buildings, facilities and furniture and students sit on the floor.

3.10 *The poor quality of the curriculum, teacher preparation, instructional materials and facilities account for high levels of repetition and low levels of learning.* First, there are issues with the curriculum, its content and structure at each level, the linkage between different subjects and the lack of continuity between levels of education. Second, teachers do not have the knowledge, pedagogic skills and opportunities for professional development for providing high quality instruction. They have poor pre-service training and limited in-service training. Elementary teachers are inadequately prepared for multigrade situations, which is the norm in the majority of schools. Their subject knowledge is weak and many wait for years after teacher training to get their first job. At both upper primary and secondary levels, at least one-quarter teach subjects that they did not study; in the former, many also have to handle multiple classes and subjects. Many do not teach regularly. Third, instructional materials for pupils are limited and of poor quality beyond the primary stage where some innovations have been introduced. Most elementary schools do not have libraries and only 15 percent of high schools had a collection of books; less than half of the PU colleges had a library. Fourth, opportunities for learning science are very poor from the upper primary stage onwards when science is introduced as a subject. Less than half the high schools have a combined laboratory. Only half the PU institutions offering science courses had a separate laboratory for each science group and 35 percent had a combined laboratory; 14 percent had no laboratory at all.¹¹ Fifth, there is no periodic assessment of student learning at any level in government institutions to monitor learning outcomes. In 2001/02, for the first time, assessment of student learning in classes 2,4 and 7 was conducted. Finally, the government's educational management is weak especially in providing pedagogical leadership (for instance, in articulating expectations of learning outcomes at each level) and holding teachers accountable, but also in ensuring that institutions are functional with timely filling in of teacher vacancies, provision of non-teacher inputs and repair and maintenance of facilities.

¹⁰ GOK, 1999. *Report of the Official Committee Setup to Study the Development of North and South Karnataka.*

¹¹ Data are from the NCERT 6th All India Survey of Education, 1993/94.

3.11 *The poor and disadvantaged social groups receive education of a lower quality and this contributes to the inequality in educational outcomes.* There are many factors outside the educational system that negatively influence educational outcomes for these groups. Among them are the lack of a supportive home environment due to low levels of parental education; poverty, which prevents parents from purchasing additional instructional materials and may cause irregular school attendance due to participation of children in paid/unpaid work; poor child health and nutrition which may impair cognitive functioning, concentration, vision and hearing and may cause prolonged absence from school. However, factors operating within the public education system reinforce the disadvantages that the poor, the SC/ST and rural female children face. Most of these students attend government institutions which have less stimulating learning environments as described in the foregoing paragraph. In addition to these characteristics, these students tend to receive poorer quality instruction within classrooms due to the attitudes and work of teachers. Teachers tend to have lower expectations vis-à-vis these students regarding their capabilities and motivations; devote less time and attention to them in classroom instruction; give these students fewer opportunities for self-expression and development of confidence in the classroom; provide less feedback to students and parents regarding progress and problems. The mismatch in the curriculum at different levels of education, particularly in the teaching and use of English language, makes it more difficult for the poor and the disadvantaged to compete at higher levels of education. The medium of instruction in government schools is Kannada and the teaching of English is poor. The poor quality of the public education system is an important factor in the failure of children from the lowest quintile groups to complete upper primary education and access higher levels of education.

3.12 *The emphasis in higher and technical education has been on rapid quantitative expansion using the private sector and little attention has been paid to changes in student demand and to quality.* Changing student demand combined with rigidity in course offerings and staff deployment have led to imbalances in pupil-teacher ratios that affect quality and increase inefficiency. Quality is poor and uneven across both collegiate and technical education. Uneven quality of instruction is especially evident in the science stream in general higher education and in engineering colleges, both on account of laboratories and the availability of the subject specific teaching faculty. The mismatch in curriculum across different levels of education and in language of instruction in particular has a negative effect on student performance. Student performance in science is low among those who have studied in Kannada medium at the school level since the textbooks and other instructional materials at the college level are mostly in English. The professional competence and stability of the teaching force in private unaided institutions is limited. Reforms in the governance of the higher and technical education sub-sectors are crucial, including reforms in university administration, to enable hiring of competent faculty, diversification of courses, renewal of the curriculum, changes in the evaluation system and greater networking of institutions to share expensive resources such as laboratories and computerized library facilities.

IV. Conclusion

4.1 Strong aggregate economic performance and favorable demographic factors together with policies to expand provision of and stimulate demand for education at all levels have contributed to a rapid improvement in educational indicators in the state. This is reflected in the growth in enrollment at different stages and, most impressively, in the near universal participation and completion of the 6-9 year age group in lower primary education. The network of institutions and teachers for all levels has increased across the state.

4.2 Karnataka faces four main challenges in the medium-term. First, it must ensure that all children enter and complete elementary education. This requires concentrated attention on the educationally backward districts of the north where the majority of out-of-school children are and where drop out rates are high. Second, it must focus on improving quality at all levels to improve learning outcomes. Third, it must try to reduce inequalities in the quality of education provided to the poor and disadvantaged groups so as to enable students from these groups to access higher levels of education. Fourth, in secondary, higher and technical education, it needs to develop appropriate strategies to cater to both an expanded and more diversified student demand and to provide the knowledge, skills and attitudes that are demanded by its changing economy, labor market and social system.

Chapter 3 - Public Expenditures on Education in Karnataka – Trends and Issues

I. Introduction

1.1 Education is financed by both government and households. Households invest in education because of the benefits that accrue to them through higher earnings and other non-market outcomes. Although education is not a 'pure' public good, public financing of education can be justified for a number of economic reasons. Market failures, arising from the existence of externalities, capital market imperfections and incomplete information, can lead to a situation in which the forces of private demand and supply would produce less than the socially optimal quantity of education. Apart from intervening to redress market failures, an important justification for public support of education arises from the fact that it can help to reduce poverty and income inequalities. Without government intervention, only those who are able to afford the costs of education will be able to invest in education, while the poor would be excluded, thus perpetuating income inequalities. To the extent that better education promotes economic growth, public spending on these services can also contribute to growth-mediated strategies for poverty reduction. This suggests that public expenditure on education should be directed towards providing education that private producers would not provide or would provide too little of and providing services that would benefit the poor.

1.2 This chapter asks three main questions: How much is spent on education in Karnataka, who spends it and what do they spend it on? Is public spending on education in Karnataka efficient and what can be done to make it more efficient? How can public spending be used to improve distributive objectives? The chapter begins with a description of the system of educational finance in the state followed by a discussion of the total expenditure on education and the shares of the government and household sectors. The main trends in public expenditures and sub-sectoral allocations are presented next. This is followed by a discussion of the experience of Central transfers for education. Specific measures to improve efficiency by reducing or containing unit costs are presented thereafter. The chapter then examines two aspects of equity: disparities in elementary education expenditure across districts and the incidence of public education expenditures across income groups. Issues relating to the provision of public grants for private schools are discussed in some detail within each of the sections on efficiency and equity, respectively. The concluding section summarizes the key issues that the state government should address in improving the utilization of the resources it spends on education.

II. The System of Educational Finance in Karnataka

2.1 Both the government and the private sector are involved in providing education; private institutions enroll more than two-thirds of students in secondary and higher education and almost 85 percent of those in technical education. Only in elementary education is the role of the private sector relatively limited. However, not all the costs of privately provided education are privately financed because many private institutions

receive public funds. Conversely, although the public sector is the main provider of education at the elementary level, private financing plays an important role at this level because families incur costs even in publicly provided education.

2.2 Within the public sector, both state and Central governments provide finance for education. The state government finances its own institutions as well as a significant number of private institutions through the two Departments of Education. In the former category of institutions, it finances buildings and infrastructure, teachers, equipment, in-service teacher training, instructional materials and textbooks for pupils (for classes 1-7). In the latter (aided institutions), it finances teachers, in-service teacher training and textbooks for pupils (for classes 1-7). All capital and maintenance expenditures in these institutions are financed by private managements. In general, only those private institutions that were established before 1987 receive public aid, although there have been exceptions and teacher posts that were created after 1987 in existing aided institutions are also publicly financed. A small part of education expenditures in the state is financed by departments other than the Education Department, mainly the Department of Social Welfare. The Social Welfare Department finances certain educational facilities such as residential schools, hostel facilities and special scholarships for children from SC/ST background (who study in publicly-financed institution). For technical education, the departments in charge of science and technology which give research and other grants to institutions.

2.3 Central government funds are reflected in the state government's budget for education, except in the case of the District Primary Education Program where the Central share goes directly from the Ministry of Human Resource Development (MHRD) to the state DPEP society.¹² Off-budget contributions under DPEP became significant only from 1995/96 onwards. Central funds finance the same items as state government funds do but, in general, they are available only for government institutions and not for privately aided institutions (the exception is in-service teacher training, which is usually provided to teachers in both government and aided institutions).

2.4 Local governments in Karnataka receive transfers from the state government earmarked for specific programs and inputs for elementary and secondary education, including the salaries of teaching and non-teaching staff and departmental staff at the district and lower levels. Local government expenditures are classified under the "District Sector" head in the annual budget of the Department of Elementary and Secondary Education. Local governments do have access to some "untied" general transfers and limited independent sources of revenue; it is not known how much they spend on education from these additional sources of revenue, although the volumes are believed to be negligible compared to state government expenditures.

2.5 Information on public spending is available from the Detailed Demand for Grants of the individual departments of the state government. Data on private expenditures are

¹² The Central share is financed entirely by external aid agencies, including the World Bank.

available from household surveys, the most recent of which was conducted in 1995/96 by the National Sample Survey Organization.

III. Public and Private Financing of Education

3.1 How much is the total spending on education in Karnataka? In 1995/96, a total of about Rs. 2,300 crores was spent on education in the state, representing 3.9 percent of gross state domestic product (Table 3.1). This amount includes budgetary expenditure by the two Departments of Education and the Department of Social Welfare but excludes off-budget expenditure under DPEP.¹³

3.2 Public resources financed just under three-quarters of all expenditure on education, but the public-private shares vary by levels of education. *The government is the most significant spender at all levels of education, but it is most important in elementary education.* Of total spending on elementary education, three-quarters came from the government and one-quarter from households (Table 3.1, top half). At each of secondary and higher education levels, the government accounts for two-thirds of expenditures; at the technical education level, it accounts for 60 percent of expenditures. Although a large share of enrollment at the secondary and higher education stages is in private institutions, almost half the private enrollment is in institutions that receive public aid. The share of private spending in technical education, although high relative to other levels, appears low given that about 85 percent of total enrollment was in unaided institutions even in 1995/96.¹⁴ The “other” category includes adult education and language development in the case of the Education Department and residential schools and hostels in the case of the Social Welfare Department. Since the residential schools and hostels cater to children studying in classes 5-10, a small proportion of the expenditure of the Social Welfare Department is for elementary education.

3.3 Of the combined government and household expenditure on education, just under one half was spent on elementary education, 32 percent on secondary, 14 percent on higher and 3 percent on technical education (Table 3.1, bottom half). The distribution of public expenditure across levels of education showed a slightly greater share for elementary education (52 percent), and slightly lower shares for secondary, higher and technical education, compared to the distribution of total expenditures. Surprisingly, over 40 percent of household expenditures were also on elementary education and 37 percent on secondary education. The shares of private spending on higher and technical education were 16 and 5 percent, respectively.

¹³ In 1995/96, these amounted to only Rs. 22 crores or less than 1 percent of the total revenue expenditure on education from all sources, including households.

¹⁴ Private spending at this level may have been underestimated in the household survey as the number enrolled in technical education among the sampled households was very small in absolute terms.

Table 3.1
Karnataka: Financing of Education (1995/96)

For each level of education, percentage of spending by source of financing					
	Total (Rs. Crores)	Households	Total Govt. (S.W +Ed.)	Social Welfare	Education Dept.
Elementary	100.0 (1118)	23.2	76.8	0.0	76.8
Secondary	100.0 (740)	31.6	68.4	0.0	68.4
Higher	100.0 (321)	32.0	68.0	0.4	67.6
Technical	100.0 (77)	39.0	61.0	7.8	53.2
Other	100.0 (36)	0.0	100.0	17.6	82.4
Total	100.0 (2292)	27.3	72.7	0.6	72.1
For each financing source, percentage of spending by level of education					
	Total	Households	Total Govt. (S.W +Ed.)	Social Welfare	Education Dept.
Elementary	48.8	41.6	51.5	0.0	51.9
Secondary	32.3	37.4	30.4	1.6	30.6
Higher	14.0	16.2	13.2	9.4	13.2
Technical	3.4	4.8	2.8	43.0	2.5
Other	1.6	0.0	2.2	46.0	1.8
Total (Rs. Crores)	100.0 (2292)	100.0 (625)	100.0 (1667)	100.0 (14)	100.0 (1653)

Note: The "other" expenditure category under Social Welfare includes expenditure on residential schools and hostels that cover children in classes 5-10.

Source: Detailed Estimates of Expenditure of Education and Social Welfare Department, GOK and NSS 1995/96.

3.4 Of the combined government and household expenditure on education, just under one half was spent on elementary education, 32 percent on secondary, 14 percent on higher and 3 percent on technical education (Table 3.1, bottom half). The distribution of public expenditure across levels of education showed a slightly greater share for elementary education (52 percent), and slightly lower shares for secondary, higher and technical education, compared to the distribution of total expenditures. Surprisingly, over 40 percent of household expenditures were also on elementary education and 37 percent on secondary education. The shares of private spending on higher and technical education were 16 and 5 percent, respectively.

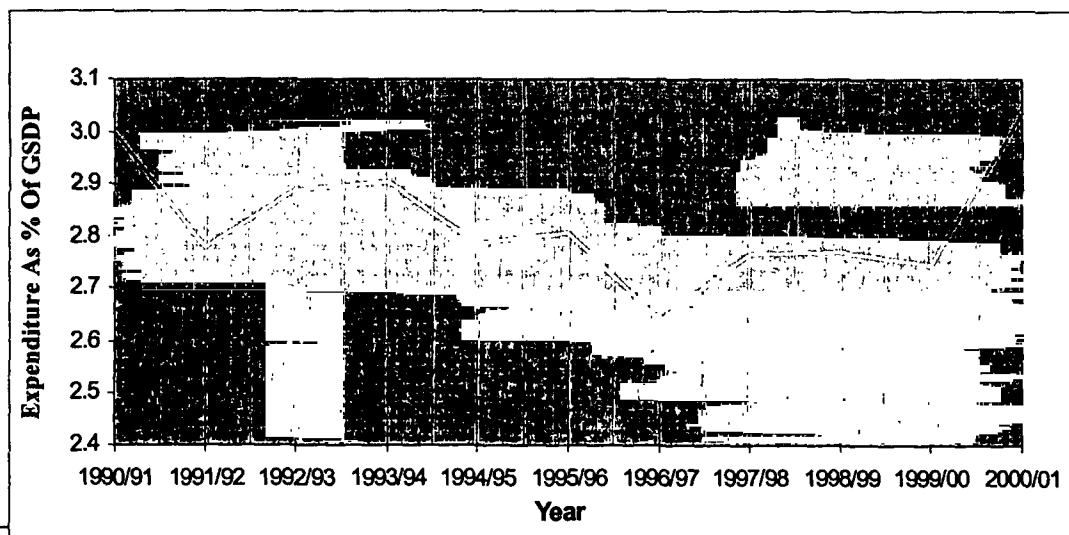
3.5 The table also shows that in 1995/96, the Social Welfare Department's education expenditures represented less than 1 percent of public spending; more recent data for 1997/98 also reveal a similar share. The Department accounts for 8 percent of total spending on technical education. More importantly, the bulk of the Department's expenditures are on "other education", comprising mainly the residential schools (46 percent), technical education (43 percent) and higher education (9 percent). Expenditures of the department on technical and higher education are mainly for scholarships. The Social Welfare Department provides a small attendance scholarship to SC/ST students

studying in classes 5-7. Incentives for Scheduled Castes (SC) and Scheduled Tribes (ST) at the school level are included in the Education Department's budget.

IV. Trends in Budgetary Expenditures ¹⁵

4.1 In 2000/01, Karnataka spent over Rs. 3,550 crores from public funds on general and technical education, representing just over 3 percent of gross state domestic product (GSDP), the same share as at the beginning of the nineties (Chart 3.1). Although real expenditures on education have grown at about 5.6 percent per annum in the nineties, total public expenditure actually fell as a share of GSDP through much of the decade, reflecting the rapid growth of income during the decade. The growth in income enabled the state to devote more real resources to the sector with the same or less "effort". As a share of total government revenue expenditure, the share of education has been in the range of 18-20 percent. The share of total expenditure (revenue and capital) has been just above 16 percent. The real growth in education expenditures during the nineties has been the highest in Karnataka among 14 major Indian states.¹⁶ The proportion of income that is devoted to education is, however, low compared to the all-India average (3.7 percent) and to many other Indian states. The priority that is given to education in public resource allocation is somewhat below that of the educationally advanced states of Kerala (18 percent) and Tamil Nadu (17 percent), and also below that of other states such as Assam (22 percent), Bihar (23 percent) and Rajasthan (19 percent).

Chart 3.1
Total Public Expenditure On Education As Percentage of GSDP



¹⁵ Budgetary expenditures are taken to mean only those shown in the Education Department's budget. Unless otherwise indicated, these include expenditure under all Centrally Sponsored Schemes except Central assistance for DPEP which is not reflected in the state government's budget. Expenditures of the Social Welfare Department have not been included because they represent a very small fraction of overall public expenditures.

¹⁶ Bashir, S. (2000). *Government Expenditures on Elementary Education in the Nineties*. European Commission. New Delhi

4.2 Plan expenditures have risen since the beginning of the decade as a share of total education expenditures. Although expenditures under the plan head are supposed to indicate new programs and activities, this is not always the case. During the mid-nineties, they averaged about 20 percent of expenditures and fell back to about 15 percent by the end of the decade. These proportions are considerably higher than in many other states. Another significant feature in Karnataka is that education Plan expenditures have steadily risen from year to year, and have not been subjected to the annual fluctuations that are common in the other states. This may be due to the fact that a large component of Plan expenditures, especially at the elementary level, is in fact on teachers' salaries which would normally have been part of the non-plan budget.

4.3 Elementary education receives the highest share of both total and Plan education expenditures, followed by secondary, higher and technical (Table 3.2 and Chart 3.2). Elementary education has received about 52 percent of total allocations in almost all years, with a slight drop to 48 percent in 2000/01. It has received between 55-68 percent of Plan expenditures on education (not shown in the table). The annual growth in real expenditures on elementary education has been close to 5.7 percent.

4.4 In 1990/91, secondary education received 28 percent of total allocations, but the share rose through the nineties to about 30 percent of total allocations, with a drop to 28 percent in the last year. The sub-sector has received about 17 percent of education Plan allocations; the real annual growth of expenditures on the sub-sector has been about 6 percent.

4.5 There has been a decline of about 2 percentage points in the share of higher education in total education allocations since 1991/92 (from 14.3 to 12.2 percent in 1999/00). This share rose to about 16 percent of total allocations in the last year, largely on account of new pay scales introduced for college teachers. Higher education received less than 5 percent of education Plan allocations in the last four years, about one-third of the share that it got in the early nineties. Averaging over the decade, real expenditures in higher education have grown at about 4 percent per annum but unlike other sub-sectors, there have been annual fluctuations and absolute declines in some years.

4.6 Technical education, comprising both engineering and polytechnic education, accounts for less than 2 percent of total expenditures. Its share in education Plan expenditures has been in the range of 3-8 percent, although in the last two years it fell to 2 percent. Real expenditures in the sub-sector have grown at about 4 percent per annum. Unlike other sub-sectors, Plan expenditure account for more than one-third of the expenditure on this sub-sector.

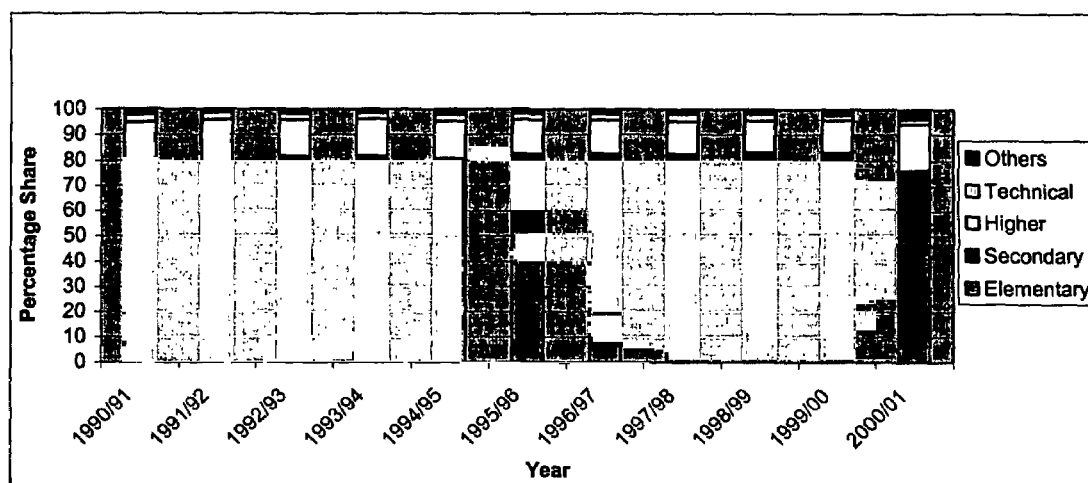
Table 3.2
Expenditure on Education
(Rs. Crores at current prices)

	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01
Elementary	407	468	529	651	716	858	975	1,104	1,304	1,464	1,759
Secondary	222	273	343	365	422	507	555	647	778	867	986
Higher	112	155	148	177	201	219	242	267	306	353	552
Adult	9	6	8	8	10	7	7	6	6	5	6
Technical	22	26	26	31	38	41	47	63	66	58	61
Total	781	934	1,066	1,242	1,407	1,653	1,852	2,121	2,502	2,805	3,350

Note: Actual expenditure up 2000/01. Total includes expenditure on language development and a 'general' category and hence exceeds the sum of the expenditures on individual sub-sectors shown in the table.

Source: Detailed Estimates of Expenditure of Education Departments, GOK.

Chart 3.2
Share Of Elementary, Secondary, University and Technical Education in Total Expenditure on Education



4.7 Priority within budgetary allocations, and especially within Plan allocations, has clearly been given to elementary education throughout the decade and additional resources have gone mainly to appoint thousands of new teachers, build additional classrooms and create some new higher primary schools. However, the most rapid increase has occurred in secondary education where there has been a big expansion in the network of new schools and in additional teachers. Karnataka devotes relatively small shares of public funds to higher and technical education, compared to other states, reflecting the large contribution of private provision and financing at these levels.

V. Central Government Expenditures on Education

5.1 Central assistance for education is provided through Centrally Sponsored Schemes that provide grant finance and is included in the budget figures discussed above. In 1998/99, the Central government financed only 2 percent of all revenue expenditures on education. Earlier in the decade the share of Central funds was higher (closer to 5 percent) but by the end of the Eighth Plan (1992-97), the schemes in sub-sectors other than elementary education had ceased to be significant sources of finance for states. The Central assistance share would also go up marginally if DPEP funds that do not appear in the state budget are added – in 1997/98, DPEP financial releases to the state constituted 5 percent of public expenditure on elementary education reflected in the state budget. The Central government also provides foodgrains for primary school students, an expenditure that is not reflected in the State government's budget.

5.2 Though small in relation to the total state government spending, Central assistance exerts considerable influence on the choice of new programs and activities. This is especially so in elementary education where the largest share of Central assistance has been directed. Central funds have accounted for 21-46 percent of total (Central and state) annual Plan expenditures on elementary education (Table 3.3). There have been three Central schemes in elementary education: Operation Blackboard (OB), which financed an additional teacher and classroom in single teacher/room schools, the Teacher Education scheme which provided District Institutes of Education and Training in each district and the District Primary Education Program (funded by the World Bank). Of the 63,000 additional teachers hired in elementary schools between 1990/91 and 1998/99, 37,000 were contributed under OB. Of the 50,000 additional classrooms built in this period, 21,000 were financed under OB. In fact, the indicated Central share understates the importance of Central funds in influencing new programs. Much of the state Plan expenditure at the elementary level is not for *new* activities – they include expenditure for provision of textbooks and other supplies to all students and the salaries of teachers who have been hired under the OB scheme and who are currently being financed from the state Plan (rather than from the non-Plan budget). *Almost all incremental finance for quality improvement activities at all levels of education has been provided by the Central government.*

5.3 Central grant finance is clearly a welcome additional source of funds but there are issues about their effectiveness and about whether they encourage inefficiencies and have reduced regional disparities. Evidence regarding the effectiveness of the Central schemes is presented here while the latter two issues are discussed in subsequent sections of this chapter.

Table 3.3
Central And State Financing of Elementary Education Plan
(Rs. Crores)

		1990/91	1995/96	1996/97	1997/98	1998/99
1	Elementary Education Plan (as budget) (2+3)	33	196	213	174	245
2	State Plan for Elementary Education	26	171	181	127	192
3	Central assistance through budget	7	25	32	47	53
4	Central assistance outside budget (DPEP)		22	15	60	84
5	Total Central assistance as share of total plan (%)	21.5	21.7	20.7	45.8	41.7

Note: Total plan expenditure for elementary education = elementary education plan (as in budget) plus Central assistance outside budget.

Source: Detailed Estimates of Expenditure of Education Department, GOK and DPEP State Progress Reports (GOI)

5.4 The evaluation of OB has not yielded favorable results for the non-teacher components of the scheme. In a recent field survey in Karnataka as part of a national evaluation conducted by the National Institute of Educational Planning and Administration (NIEPA), the majority of teachers expressed dissatisfaction with the quality and size of school rooms, the teaching learning materials and the fact that teacher training has not been provided (Panchmukhi et al., 2001). Unit costs of classrooms fixed at Rs. 40,000 per classroom had not been revised upwards for several years and led to use of sub-standard building materials, reduction of classroom size below norms or construction of one room instead of the stipulated two. In many schools reported in the evaluation, OB classrooms are used as stores because they cannot accommodate existing class sizes. In some years, funds sanctioned for purchase of teaching learning materials (TLM) had not been fully used or were used ineffectively (Panchmukhi et al, 2001). The problem of under-utilization of these funds appears to be related to procurement being undertaken at state (for library books) and district level, rather than at the block or school level, leading to delays in placing orders. Much of the procured material has been sub-standard or unusable. Standardization of lists at the district/state level leaves no room for adaptation to school-specific needs and thus reduces the usage of the material by teachers.

5.5 Among the centrally sponsored schemes in elementary education, DPEP has been innovative to the extent that it has enabled the greatest flexibility and adaptation to district-specific needs. By putting ceilings on civil works and additional teacher recruitment, it has encouraged district planners to focus on quality and student learning. Nevertheless, DPEP has not enabled districts to move completely towards developing holistic plans for primary education because plan and non-plan funds from other central and state government sources are available to districts only in the form of particular schemes.

5.6 In secondary education, the main Central scheme introduced after the National Policy on Education, 1986, was the creation of high-quality residential (Navodaya Vidyalaya) schools, one in each district, for talented rural students. There is no information available on how many rural poor children access these schools (which have

higher unit costs) and what their outcomes are. Apart from this, the Central government has operated a scheme for vocationalization of school education. The state's experience in implementing this scheme has been disastrous. A large number of facilities were created with out-dated equipment and faculty that were recruited were untrained. After the cessation of Central assistance, these faculty have become the responsibility of the state government. Due to outdated and dilapidated machinery, as well as irrelevance of the curriculum and courses, student demand for vocational education is negligible although students get enrolled while waiting to join other courses.

VI. The Efficiency of Public Spending

The Composition of Public Expenditure

6.2 *The composition of public expenditures reveals the dominance of personnel costs. Only 7 percent of the elementary education budget in 2000/01 was allocated for all non-salary items put together (including instructional materials for pupils and construction of classrooms). For other sub-sectors, the proportions are likely to be similar or even higher. In collegiate education, close to 98 percent of government expenditures is on salaries. Unless the non-salary inputs are financed by students, the productivity of teachers is likely to be hampered and learning outcomes reduced. Currently, above the elementary stage, instructional materials for pupils (such as textbooks and supplies) in all types of schools are privately financed but there is little scope for private financing of school-based instructional materials and equipment (laboratories, libraries and computers) in government institutions due to restrictions on fees. Aided institutions have some leeway in charging for non-salary components and hence providing the necessary non-salary components. A key issue in expenditure reforms is to ensure that the non-salary components are adequately funded in government institutions so as to improve the quality of educational services for the poor.*

Trends in Unit Costs

6.3 *Per pupil public expenditures in school education have risen through out the decade, but the most rapid increase has been at the lower secondary level (Charts 3.3a and 3.3b). In constant prices, the unit expenditure at the elementary level in 1998/99 was 40 percent higher than in 1990/91; in high schools, the increase was 60 percent.¹⁷ Given the dominance of salaries, these large increases capture simultaneous steady rises in real teachers' salaries and decline in pupil-teacher ratios. By contrast, there was a 30 percent decline in real per pupil expenditures in higher education between 1990/91 and 1997/98 (although the sharp rise in public expenditure in 2000/01 would have led to a rise in the unit cost). This decline in per pupil expenditure is explained by two things. First, as shown in an earlier section, real public expenditure on higher education has declined during these years in absolute terms, indicating that many teacher vacancies may not have been filled (real salaries of teachers would have risen since they are indexed). Second,*

¹⁷ Per pupil expenditures could not be worked out for the secondary education as a whole, because of lack of accurate data on higher secondary enrollment in government and aided schools.

student enrollment has risen and in the absence of new teacher recruitment, there has been a rise in student-teacher ratios. In technical education, real per student expenditure has risen by about 12 percent over the decade.

6.4 If spending on non-salary components were to increase, as would be required to sustain quality improvements, unit costs would rise, at least in government institutions. The issue is whether there is scope for reducing unit salary costs without reducing quality to obtain efficiency gains. The two components that drive unit salary costs are the average salaries of teachers and the pupil-teacher ratio. Karnataka has tried to contain the rise in average salary levels of teachers by not awarding the pay increases recommended by the Fifth Pay Commission; however, there is some increase in the average salary levels due to the change in the seniority structure of the teaching force over time. The other main contributor to unit costs, the average pupil-teacher ratio, has fallen steeply in school education - from 51 to 36 in elementary education and from 35 to 23 in secondary education – and has thus contributed to rising unit costs. This reduction partly reflects the reduction of the pupil-teacher ratio in existing schools and the addition of many new small schools with minimum norms for teachers irrespective of enrollment size (minimum of two teachers for each LPS, four teachers for each HPS and eight teachers for each HS).

6.5 International experience and research evidence suggest that very high pupil teacher ratios (for instance, above 45 in elementary education) do have a negative impact on student achievement and retention. Reducing the average pupil-teacher ratios from their earlier high levels, especially at the elementary stage, was necessary and the increase in unit cost would therefore appear justified in order to improve quality and educational outcomes. *However, further reductions in the average pupil-teacher ratio may not lead to substantial improvements in quality, while it would definitely lead to a rise in unit costs.*

6.6 *While Karnataka does not need to reduce its average pupil-teacher ratio further, its present deployment of teachers is inefficient and leads to enormous disparities in pupil-teacher ratios across districts and between schools within districts. Unit costs can rise very sharply if Karnataka does not address these issues appropriately.* There are three priority measures that the state can implement to improve quality without hiring additional teachers and raising unit costs. *First, it could rationalize elementary teachers across districts; the range in the pupil-teacher ratio is currently between 21 and 52. The inter-district variation in the pupil-teacher ratio and unit costs has equity implications as well and is examined in greater detail in the next section. A costly strategy would be to reduce the pupil-teacher ratio in the backward districts without raising it in the more advanced districts. Second, it needs to review its strategy for small lower primary schools in rural areas that have abnormally high costs per student because the pupil-teacher ratio is high. As many as 56 percent of government lower primary schools have fewer than 60 students. Since consolidation of LPS cannot be carried beyond a point unless children are*

Chart 3.3 (a)
Per Pupil Expenditure on Elementary and High School Education
(at constant prices)

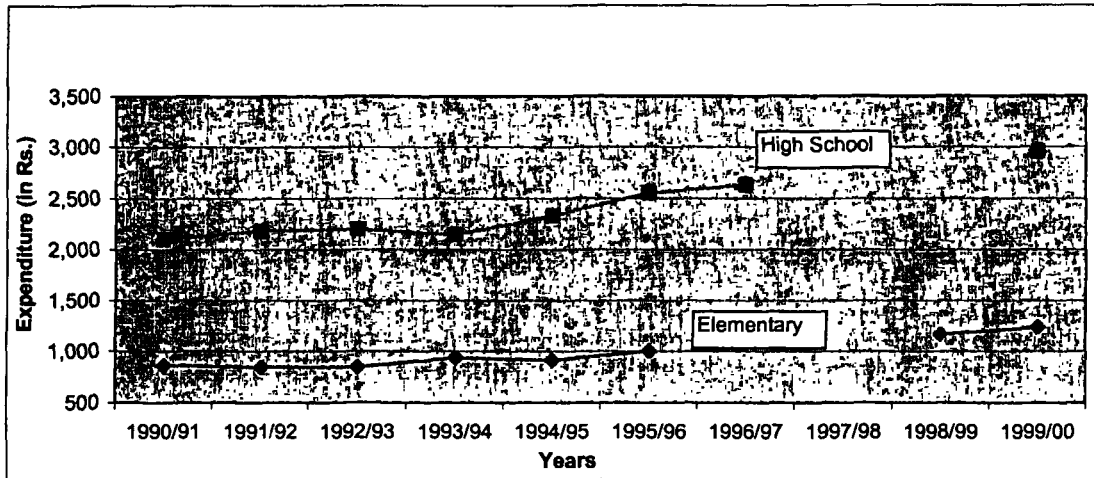
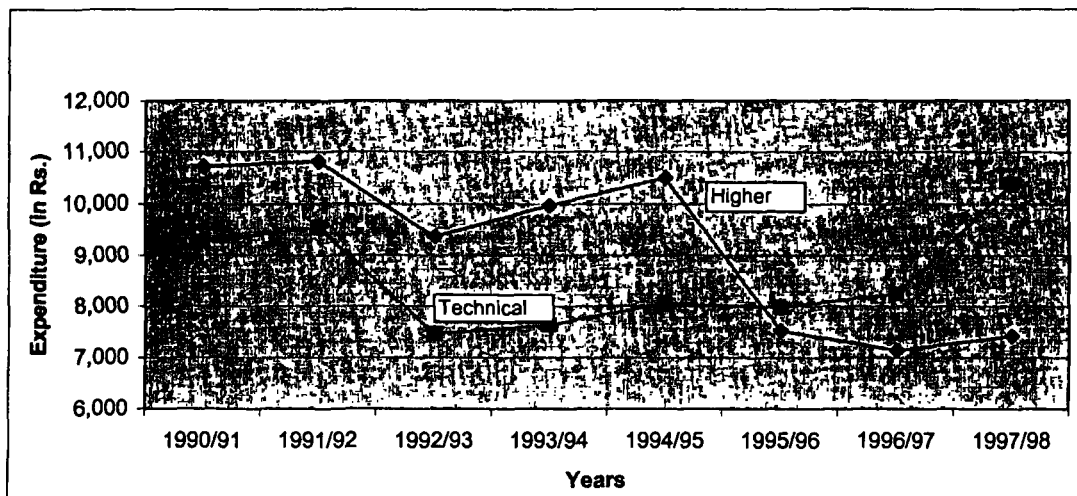


Chart 3.3 (b)
Per Pupil Expenditure on Higher and Technical Education
(at constant prices)



Source: World Bank calculations

forced to travel long distances, it may be better to think of a strategy for small schools that is not exclusively based on the norm of two regular teachers for every school. Alternative models that include a combination of a regular, specially trained teacher, a teaching assistant, more frequent and regular teacher support and more learning materials per pupil could be tried, as have been done in other countries with small rural schools. *Third, it needs to consolidate many small higher primary schools and secondary schools*

to achieve economies of scale, more efficient use of the teaching force and better learning results by ensuring the availability of subject teachers. Currently, one-quarter of government higher primary schools have fewer than 40 students; about three-quarters have less than 90 students. Many small HPS and HS do not have science and mathematics teachers, which means that the content knowledge of teachers teaching these subjects is poor.

Cost Differentials Across Levels of Education

6.7 The cost per student in high schools was a little more than twice the cost per student in elementary education. This is comparable to international levels (in Indonesia, for instance, the ratio is 2.5). The unit cost in higher education is about seven times higher than in elementary education and in technical education about eight times higher. (Table 3.4). The cost differential between school education and higher education has declined over the decade and is also comparable to that in many developing countries (7.4 in Latin America, 8.2 in the Middle East and North Africa) although higher than that in industrialized countries (2.5 in the OECD countries). As a result, there does not seem to be much scope for efficiencies in public spending by further reducing these cost differentials.

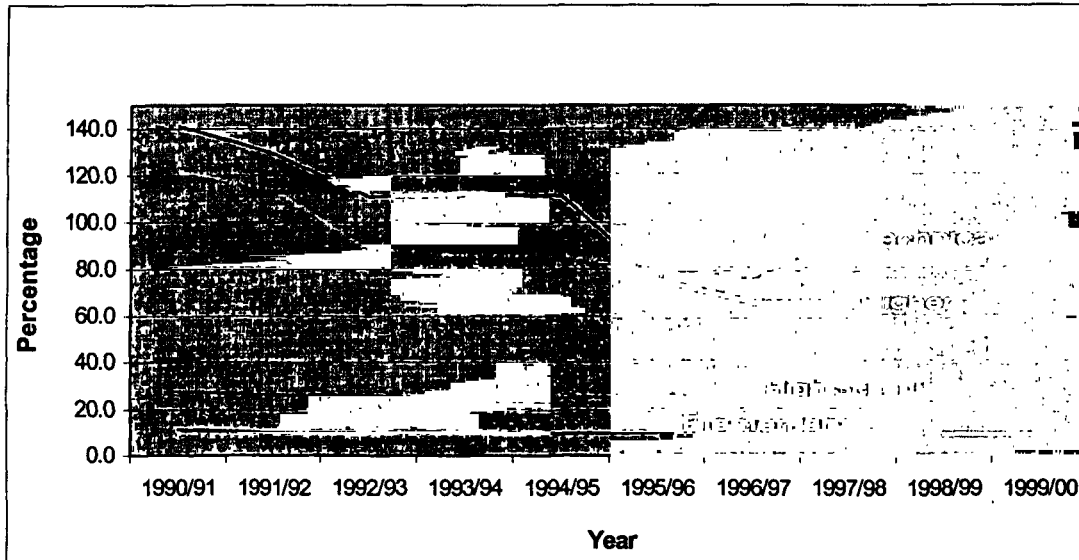
Table 3.4
Ratio of Unit Cost
(at constant prices)

	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999-00
Elementary	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Secondary	2.4	2.6	2.6	2.3	2.6	2.6	N.A.	N.A.	N.A.	2.4
Higher	12.4	12.8	11.1	10.7	11.5	7.5	N.A.	N.A.	N.A.	N.A.
Technical	10.8	11.3	8.8	8.2	8.8	8.0	N.A.	N.A.	N.A.	N.A.

Source: World Bank calculations

6.8 The growth in real per pupil public expenditure has just about kept pace with the growth in real per capita income; in higher education, real per student expenditure has fallen from 140 percent to just 60 percent of per capita income (Chart 3.4).

Chart 3.4
Per pupil expenditure as percentage of per capita GSDP
(at constant prices)



Source: World Bank calculations

Cost Differentials Across Government and Private Aided Institutions

6.9 A significant share of public expenditure is provided in the form of grant-in-aid to privately managed institutions, almost all of which goes to meet teachers' salaries.¹⁸ Between 1990/91 and 1999/2000, the total grant-in-aid almost trebled; the sharp increase in 2000/01 was on account of the increase in higher education, with the state government increasing salaries of teachers in these institutions to the levels recommended by the 5th Pay Commission. (Table 3.5 and Chart 3.5). Within the total grant-in-aid, the maximum share (about half) has traditionally gone to secondary education and this share has remained constant at about 53 percent. The share of higher education has increased from about 25 to 31 percent. Grant-in-aid for elementary schools has declined from about 18 percent of the total to 12 percent in 1998/99. Technical education has received only 3 percent of the total aid to private institutions.

¹⁸ Under the grant-in-aid (GIA) code, the GOK may give different types of grant (salary, building and equipment) to the private educational institutions that have been granted recognition and satisfy the basic conditions of infrastructure, minimum years of functioning etc. For higher education, affiliation to a statutory university is also required for an institution to be eligible for GIA. Within affiliated private degree colleges, only courses leading to approved B.A., B.Sc. and B. Com. degrees are eligible for aid. Currently, the GIA to private institutions is limited to salary grant in the form of direct reimbursement of salary of approved and sanctioned staff (teaching and non-teaching) in the aided institutions. The release of salary grant is subject to conditions regarding pupil enrollment and attendance and minimum number of working days.

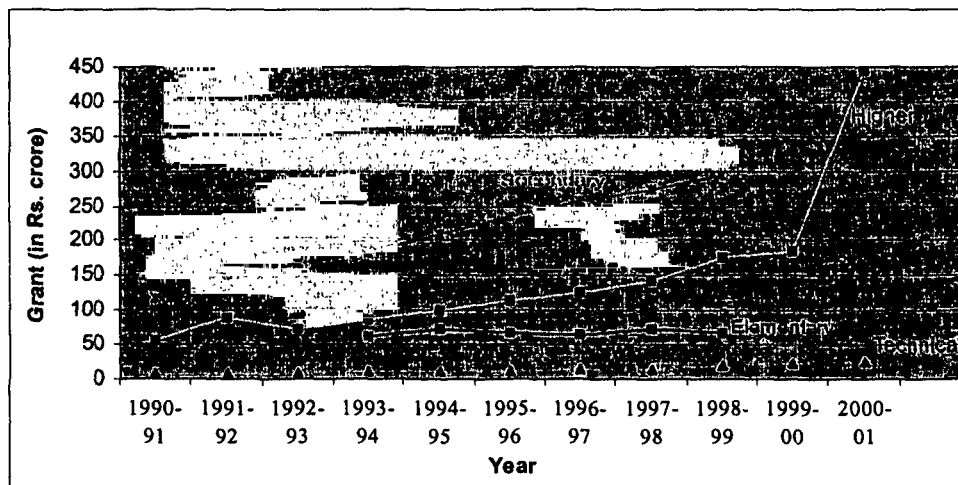
Table 3.5
Grant-In-Aid For Education
(in Rs. Crore at current prices)

	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	1999/00	2000/01		
Elementary	N/A	N/A	N/A	60.3	72.4	65.9	63.7	72.5	67.5	N/A	N/A		
Secondary	118.6	137.5	168.3	182.5	210.4	233.9	256.6	275.3	293.7	N/A	N/A		
Higher	55.8	89.8	73.5	87.6	101.7	113.4	126.1	142.2	175.2	183.7	443.3		
Technical	9.6	8.4	9.3	12.1	11.9	11.8	13.4	14.8	19.2	22.6	23.9		
Total	N/A	N/A	N/A	342.6	396.4	425.2	459.8	504.7	555.7	N/A	N/A		
				Percentage Share									
Elementary	N/A	N/A	N/A	17.6	18.3	15.5	13.9	14.4	12.2	N/A	N/A		
Secondary	N/A	N/A	N/A	53.3	53.1	55.0	55.8	54.5	52.9	N/A	N/A		
Higher	N/A	N/A	N/A	25.6	25.7	26.7	27.4	28.2	31.5	N/A	N/A		
Technical	N/A	N/A	N/A	3.6	3.0	2.8	2.9	2.9	3.5	N/A	N/A		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		

Note: Data for 2000/01 are revised estimates.

Source: Detailed Estimates of Expenditure of Education Department, GOK

Chart 3.5
Grant-in-aid for Education



6.10 How do unit public costs vary across the two types of institutions? Data are available only for school education. At the secondary level, per pupil public expenditure in aided institutions is almost the same as in government institutions; this reflects the fact that pupil-teacher ratios and average teachers' salaries are the same in the two types of institutions. At the elementary level, per pupil expenditure in aided schools is almost half that in government institutions, mainly because of the low pupil-teacher ratios in rural government schools and the relatively high ratios in the aided elementary schools that tend to be located in urban and semi-urban areas. Aided institutions, therefore, provide education at the same (or lower) unit cost as government institutions; the cost differential

at the elementary stage arises from the different population group that the government institutions serve.¹⁹

6.11 *Providing subsidies to private institutions has enabled the government to provide education at a similar or lower per pupil annual recurrent cost than in government institutions.* The total cost to the government is reduced since private managements are expected to finance the infrastructure which otherwise would have to be financed by the government. There have been no studies on the relative cost-effectiveness of government and aided institutions in the state. The performance of pupils from aided institutions in the secondary school leaving examinations is better on average, although there are wide variations across schools; the crude pass rates and examination marks, however, also do not control for the higher socio-economic background of the pupils in aided schools that may lead to superior academic performance.

6.12 *There is scope, however, to make more efficient use of public subsidies to the private sector.* The Grant-in-Aid (GIA) is a discretionary grant as the state government has the right to change and interpret rules and can refuse or withdraw the grants.²⁰ Currently, the conditions under which the grant is given remove almost all discretionary powers from the state government. Private aided institutions are obliged to pay salaries that are identical to those in government institutions as a condition of receiving the grant. They are also obliged to abide by government norms regarding class size, pupil-teacher ratios, subject teachers and so on. This means that there is an in-built mechanism that raises the assistance to private aided institutions when salary scales are revised by national pay commissions, in the case of school education, or the University Grants Commission, in the case of colleges. There is also no possibility for private institutions to experiment with class size and deployment of teachers. In effect, there is no incentive for private aided institutions to reduce unit costs.

6.13 The incentive framework for private managements created by the GIA policy has also led to other problems. Teachers in government institutions are recruited through a common entrance test (at the elementary level) or by a government recruitment committee which publishes the list of applicants ranked by order of merit using marks obtained in the degree and B.Ed. examinations (at the secondary level). In aided institutions, private managements at the secondary level have the authority to appoint teachers subject to government approval for the post and regulations regarding minimum qualifications, training and caste/community reservations. They use a combination of interviews, demonstration teaching and special tests to recruit teachers. While this allows

¹⁹ However, private costs in the two types of schools may differ, especially at the secondary level. At the elementary level, aided institutions do not charge tuition fees but students have to purchase textbooks. At the secondary level, although fees in aided institutions are fixed by government and are relatively low (compared to unaided schools), they are somewhat higher than in government schools and aided schools can also levy some additional charges for special facilities.

²⁰ The GIA cannot be claimed as matter of right even by existing aided institutions. The GIA is sanctioned only if funds are available with the state government. Approved staff posts (especially in non-teaching positions) have often not been filled when vacancies arise if the state government does not have sufficient funds.

managements the flexibility to select skilled teachers, there is also an incentive to seek financial donations from prospective staff seeking employment. Prospective staff are willing to pay since they obtain employment on the same terms as in government schools which are far superior to those in private unaided institutions. There are reports of such cases. The problem is aggravated when the same management runs both teacher training institutions and schools – teacher trainees pay to get into the training institutions where they can pass irrespective of their performance; they can then get recruited into schools on payment of additional donations. Managements sometimes try to dismiss staff by withdrawing subjects (especially at the PU level and in colleges) and also try to remove staff from service on flimsy grounds since there is a powerful incentive to recruit new teachers against new donations. Many conflicts and court cases have arisen due to these practices. *Restructuring the GIA policy to eliminate such adverse incentives is necessary.*

6.14 The only control exercised by the state government is over the sanction of new institutions and teachers' posts; since 1987, few new institutions have been brought under the GIA code and relatively few additional teacher posts have been approved since 1996. While this measure has contained the growth in GIA, it has led to a situation where those institutions that are on the "aided" list continue to receive salaries of "sanctioned" teachers in perpetuity, while new private institutions, on the other hand, are denied any form of subsidy. One option that is being considered by GOK is to gradually reduce the GIA while allowing private aided institutions to charge fees and provide one-time grants to new (or existing unaided) private institutions where these have to be encouraged, after which period the institutions would become self-financing. *However, the equity effects of this option will need to be considered more carefully: the poorer students who currently attend aided institutions will not be able to access education, unless subsidies are provided to them or government provided education expands.*

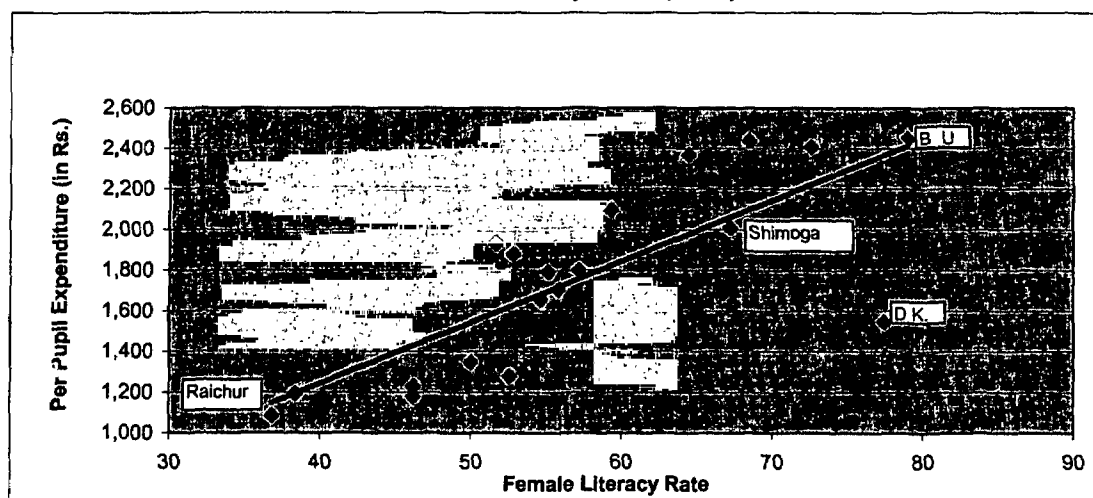
VII. Regional Disparities in Public Spending on Elementary Education

7.1 As discussed in Chapter 2, there are wide inter-district variations in enrollment and completion in elementary education within the state. The seven northern districts (Raichur, Gulbarga, Bellary, Bidar, Kopal, Bijapur and Bagelkote) account for as much as 60 percent of the out-of-school children in the 6-14 year age group; these districts are also poorer, have a higher proportion of SC population and had lower enrollment and literacy rates at the time of the formation of the state. Targeting of public expenditures to these districts is necessary in order to improve equity in elementary education. This section examines the inter-district variation in public expenditure on elementary education.²¹

²¹ In Karnataka, allocations and actual expenditures on school education across districts are shown in the education department's budget and in the "link documents". These permit an analysis of inter-district expenditures. In principle, district level bodies (as well local bodies below them) can contribute to education spending from their own sources. However, there is no readily available estimate of these amounts; in proportion to state level spending, these amounts are very small, but better information on these expenditures and their composition would undoubtedly contribute to a more complete understanding of inter-district variations in public spending.

7.2 There are wide variations in per pupil expenditures across districts. In 1998/99, the average per pupil (district) expenditure in elementary education was Rs. 1,651. However, the range was from Rs. 966 in Kopal district to Rs. 2,451 in Chickmangalore; that is to say, the highest level of service provision was two and a half times that of the lowest. More importantly, the more educationally backward the district, the lower the per pupil expenditure. This relationship is depicted in Chart 3.6, where the district level per pupil expenditure in elementary education in 1998/99 is plotted against the district female literacy rate in 2001.

Chart 3.6
District Level Per Pupil Expenditure in Elementary Education (1998/99) and
Female Literacy Rate (2001)



Source: World Bank calculations

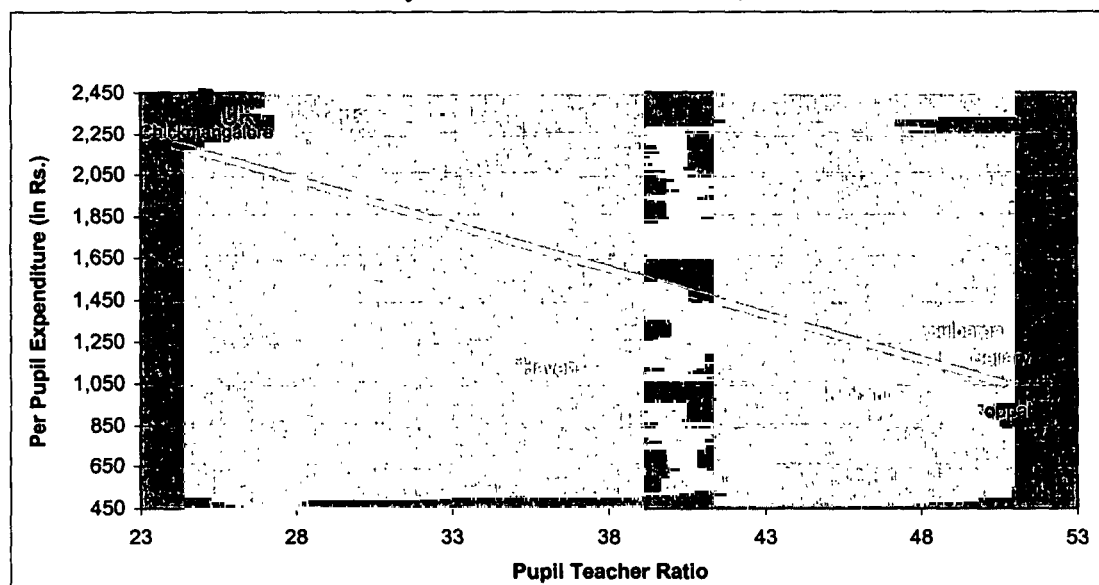
7.3 There is also evidence that, although per pupil expenditures have risen in all districts over time, the inter-district variation has actually widened over time. In 1991/92, the ratio of the highest to lowest per pupil expenditure across districts was 1.5; in 1998/99, it was 2.5. In 1998/99, Kopal spent the same per pupil as the highest spending district did in 1991/92 in current prices; in constant prices, its level of service provision was below that attained by the highest spending district eight years previously.

7.4 The main reason for this wide variation in per pupil expenditures is the difference in pupil-teacher ratios across districts. As Chart 3.7 shows, per pupil expenditure and pupil-teacher ratios show a high negative correlation.²² Thus, some districts have more than twice the per pupil expenditures of others because pupil-teacher ratios are almost half those in other districts. Pupil-teacher ratios vary from 51 in Kopal, a backward district, to 24 in Chickmangalore; they are below 30 in the districts of Hassan, Uttara

²² The correlation between the two variables in 1998/99 was -0.84 . Pupil-teacher ratios were calculated using enrollment and teachers in government and aided schools for each district.

Kannada, Shimoga, Tumkur and Kodagu, all of which are educationally advanced as reflected in their high female literacy rates. The change in pupil-teacher ratios over time also explains why the inter-district variation in expenditures has worsened over time. Pupil-teacher ratios have declined in all districts, but they have declined more rapidly in the more advanced districts than in the other districts. In 1998/99, the pupil-teacher ratio in the backward districts was higher than the pupil-teacher ratio attained by the advanced districts in 1991/92.

Chart 3.7
District Level Per Pupil Expenditure and Pupil Teacher Ratio in
Elementary Education in Karnataka, 1998/99



Source: World Bank calculations

7.5 It appears that state government policy has not effectively targeted its elementary education expenditure to those districts that are lagging behind in enrollment and completion, since the inter-district allocation of expenditures, which in turn is primarily influenced by the allocation of teachers, is determined at the state level. *The important point is that these differences are the result of state government policy rather than of inter-district variations in economic capacity (unlike the differences in per pupil expenditures between different states which are influenced by their fiscal capacity).* There are two reasons why the inter-district range in pupil-teacher ratios has widened. First, the number of pupils in government-funded schools in some of the more advanced districts has actually fallen – due to demographic changes that have reduced the child population, and due to more children attending private schools. Second, the number of teachers has increased in all districts, including those in which student enrollment has fallen. This apparently is due to the provision of additional teachers under the Centrally Sponsored Scheme of Operation Blackboard for single teacher schools – many of the more educationally advanced districts in south Karnataka have very small habitations and schools with low enrollment for which the state government had earlier provided only

one teacher. While providing these additional teachers using Central funds, the state government did not re-deploy teachers from schools where enrollments had fallen, leading to a situation in which the average pupil-teacher ratio in these districts is well below the state average and norm (the norm is 35, while the pupil-teacher ratio is less than 30 in most of these districts).

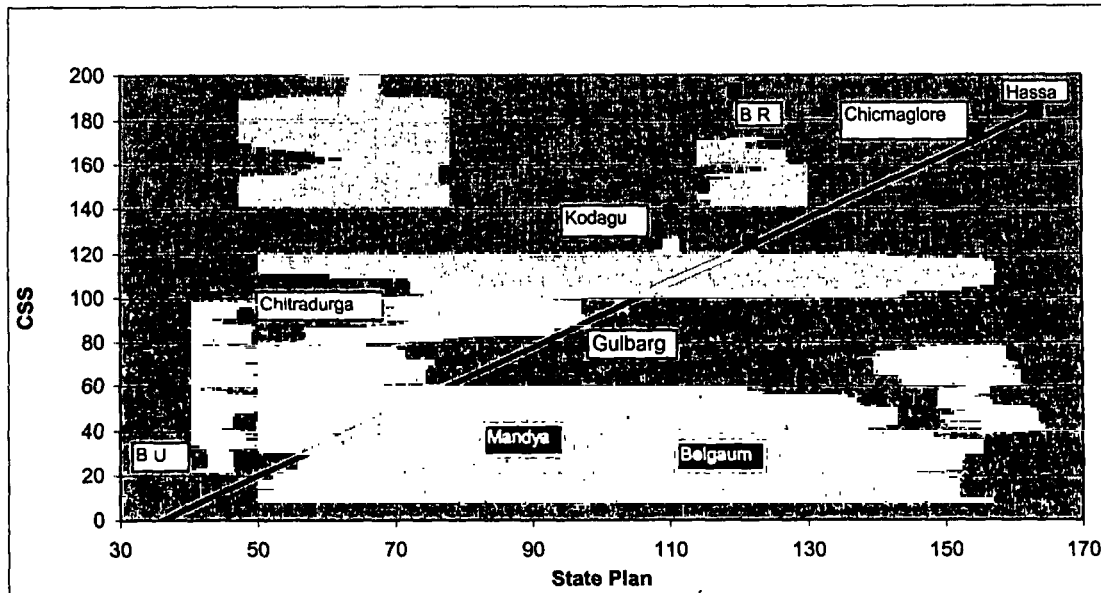
7.6 The state government could allocate more teachers to the backward districts and thereby improve educational outcomes (student retention and learning) without increasing expenditure on elementary education, if it were to redeploy teachers from the more advanced districts and raise the pupil-teacher ratio in the latter closer to the state norm. Due to the existence of many small schools in the advanced southern districts, the number of teachers that could be redeployed will depend on whether there is a new strategy for small rural schools (that is, by not revising the two teacher norm). In the short-term, the fact that the current pupil-teacher ratio in these districts is substantially below the state norm indicates that there is probably scope for redeploying surplus teachers even with the existing two-teacher norm. Careful school mapping exercises and studies to examine the feasibility of redeploying teachers across districts are required to ensure that these potentially large savings in public expenditures are tapped. In addition, incentives may have to be given to teachers to re-deploy across districts.

7.7 The district expenditures discussed above relate to both non-plan and plan allocations that are transferred to districts by the state government and cover mainly salary expenditures. The size of the plan allocation for individual districts is very small in absolute terms. In 1998/99, the average district plan expenditure on elementary education was about Rs. 2.52 crores, with substantial variations across districts. Unfortunately, budgetary data available at the state level do not permit a detailed analysis of these allocations. The “link documents” which indicate the budget plan allocations to different districts (but not the actuals) indicate considerable annual fluctuations in the amounts allocated for textbooks and supplies to schools (Vyasulu, 2000). In many years, allocations for many districts are shown as zero suggesting, although it is not likely, that these districts received no free textbooks for their pupils. It is necessary that the inter-district allocation of non-teacher inputs be analyzed in greater detail, especially as these inputs are critical to improving student learning.

7.8 Moreover, educationally advanced districts also receive the highest levels of per pupil Plan expenditure, both Central and state. The allocation of Central plan assistance (excluding DPEP) across districts is positively correlated with state plan expenditure – districts that receive more Central Plan funds also receive more state plan funds per pupil (Chart 3.8). The reasons for this high correlation cannot be explained without knowing the composition of these Plan expenditures, which is not shown in the state government’s budget documents. However, it is clear that the allocation of Central funds which is undertaken at the state level is not targeted towards the backward districts and that

Central funds are contributing to, not reducing, the disparities in inter-district spending per pupil.²³

Chart 3.8
District Per Pupil Expenditure on Elementary Education Under State and Central Plan, 1998/99. (Rupees)



Note: B.U. = Bangalore Urban; B.R. = Bangalore Rural
Source: World Bank calculations

7.9 *A major issue in the context of decentralization in Karnataka is to discuss new principles for providing school education finances to districts to enable them to address their priorities.* Allocation of expenditures on the basis of teacher and non-teacher inputs per child could be considered in order to promote equity and efficiency. Currently, district allocations are driven by past decisions regarding hiring of teachers and ignore changes in the child population and actual teacher requirements. In periods of budgetary constraint, this policy is unfavorable to the educationally backward districts that still have a large number of children out of school and hence have fewer sanctioned teacher posts. Due to the operation of multiple schemes with different sources of financing and different norms, resource planning at the district level has not been undertaken. A certain amount of untied funding is required to enable planning for local needs. New financing arrangements will also require new methods of managing the educational system and a greater attention to the outcomes of schooling to ensure that funds are used effectively.

²³ The exception in this case is DPEP, under which only low female literacy districts are eligible for Central funding. However, Central assistance under DPEP is not included in the Central funds shown in Chart 3.8 because they are not reflected in the state government budget (the state government contribution to DPEP would be included in state Plan expenditures, but represent only 15% of DPEP expenditures).

VIII. Incidence of Public Education Expenditures

8.1 To what extent does public spending on education in Karnataka benefit the poor? In 1995/96, *total* net public expenditure on education was in excess of Rs. 1,600 crores, with nearly Rs. 1,080 crores going to rural populations. A little more than half of public net expenditures went to elementary education; about 30 percent went to secondary education and 15 percent to general higher education. The incidence of these expenditures across individuals of different socio-economic status is discussed in this section. The key indicator of economic status used here is the annual consumption expenditure per capita. Per capita expenditure quintile groups were calculated separately for rural and urban areas and for the two jointly.²⁴

Table 3.6
Distribution of Net Public Expenditure by Educational Level, Region and Quintiles.
1995/96

Education Level	Region	Share in Benefit at Each Level/Region		Total Net Public Outlay (Rs. Crores)
		Quintile 1	Quintile 5	
Total	Rural and Urban	12.69	31.53	1612.40
	Rural	13.00	26.75	1080.64
	Urban	16.23	26.51	531.78
	Male	7.85	19.25	1080.64
	Female	4.84	12.28	531.78
Elementary	Rural and Urban	19.79	14.21	858.80
	Rural	18.12	16.01	660.95
	Urban	28.40	9.04	197.86
Secondary	Rural and Urban	5.89	39.53	495.22
	Rural	5.69	35.88	326.82
	Urban	11.26	25.48	168.40
University	Rural and Urban	1.64	74.51	239.04
	Rural	0.63	75.20	86.66
	Urban	7.33	50.61	152.38

Note: Technical education is omitted from the table as single numbers in individual quintiles were very small. Total public outlay includes expenditure on technical education.

Source: Annex Table 3.1.

8.2 The top quintile obtains just over 30 percent of the net expenditure on education compared to 13 percent for the lowest quintile, for rural and urban populations combined (Table 3.6; see Annex 3.1 for the distribution of expenditures across all quintiles). This

²⁴ See A. Mahal (2001) for further details. The net per unit cost of service provision has been used to calculate the differences in allocation of total public outlays across income groups. The unit in this analysis is the individual pupil. The net per unit cost is the average per pupil public expenditure minus any user fees paid to the government. Enrollment estimates obtained from the NSS survey, which are somewhat below official government estimates, have been used to calculate the per pupil public expenditure. Total government expenditures are adjusted for user charges paid by pupils, which were obtained from government budgetary data – total user charge revenues represented less than 0.7 percent of total education outlays. Households in the NSS survey reported paying a larger amount in tuition and examination fees, but these are likely to have included payments to unaided institutions.

points to substantial inequality in the distribution of public outlays. Moreover, urban areas get a disproportionately large share of the education subsidies, about 33 percent, compared to their share in the population aged 5-24 years of about 26.6 percent. There is also substantial gender inequality, with the share of males in education outlays being 61 percent.

8.3 The inequalities in the incidence of benefits – be it across quintile, rural/urban areas or gender – are substantially driven by the distribution of benefits at levels of education above the elementary level. Both gender and inter-quintile differences in the incidence of benefits increase by level of education and there are considerable differences between rural and urban within each of these classifications.

8.4 *Starting at the elementary level, the poorest quintile benefit from public outlays roughly in proportion to their share in the population (i.e., 20 percent).* The distribution of benefits for the rural population is almost equal across all quintile groups; for the urban population, however, it is strongly biased towards the poor, with 28 percent of outlays benefiting the poorest income group, and only 9 percent going to the top quintile. This pro-poor distribution, especially in urban areas, reflects the fact that a considerable proportion of children from rich families attend private unaided schools that receive no government funds. Of the total public outlay on elementary education, over three-quarters goes to rural areas, reflecting the preponderance of rural pupils in total enrollment at this stage.

8.5 Beyond the elementary level, the distribution of public outlays strongly favors the top quintiles. *At the secondary level, 40 percent of public outlays goes to the top quintile, and only about 5 percent to the lowest quintile (for rural and urban populations combined).* Urban areas have a more equitable distribution, with one-quarter of total benefits accruing to the top quintile and over 11 percent to the bottom quintile. However, two-thirds of the total public outlay at this level accrues to the rural population, and is distributed less equitably than in urban areas which explains the overall regressive distribution of public outlays in secondary education.

8.6 *The distribution of public outlays on university education is extremely pro-rich. About three quarters of the public outlays benefit the top quintile while just over one percent accrues to the poorest quintile.* Again, the distribution is more skewed in rural areas than in urban areas, although even in the latter about half the public outlays benefits the richest income groups. Rural areas, however, received only one-quarter of the total outlays on university education.

8.7 *The overall distribution of public expenditures across income groups is thus strongly influenced by the ability to complete the lower stages of education and pursue higher levels of education.* Currently, enrollment and completion rates at the elementary level are much lower for the poorer income groups, especially for the rural poor and for rural girls.

8.8 The above analysis also throws light on the social forces driving changes in educational policy in Karnataka. The perception that higher education benefits accrue to the urban areas is largely true and this leads to demands that greater access to subsidized higher education should be provided to rural students (both by opening new colleges in rural areas and through special quotas in existing colleges). However, given the current distribution of school completion rates across different income levels, the expanded provision of higher education in rural areas has benefited mostly the rural rich, leading to the criticism that the expansion of subsidized higher education is not in line with the priority of poverty reduction.²⁵

8.9 For each expenditure quintile, the per pupil expenditure as a proportion of mean per capita expenditure in each quintile was also examined (though not reported in the table). This measure provides an indication of the extent to which public spending adds to the welfare of the poor. Two findings are noteworthy. First, the public outlays accruing to each group amount to quite a substantial portion of the mean per capita expenditure for the state. Second, public spending, taken as a proportion of mean per capita expenditure of each quintile, does not increase with household expenditure levels. For the poorest 20 percent of the population in Karnataka, per pupil expenditure amounted to 128 percent of the mean per capita expenditure. By contrast, for the top 20 percent, the ratio of per pupil expenditures to mean per capita expenditure was 85 percent. *In short, public spending on education has a significant impact on enhancing resources for the poor.*

8.10 The approach used in the above analyses focuses on total rather than marginal benefits. The analysis using total benefits indicates how public educational spending contributes to reduction of inequality and poverty and the implications of eliminating publicly funded education. If government spending on elementary education were removed, for instance, the poorest 20 percent of the population would lose roughly 20 percent, the same as the richest 20 percent of the population. Elimination of government spending on higher education would not affect the poor to any significant degree.

8.11 The distributional impact of a marginal reallocation of resources from, for instance, higher education to elementary education cannot be directly deduced from the above analysis. The incidence of aggregate benefits suggests that this shift in resources would have a positive distributional effect, but much would depend on what the additional resources for elementary education are spent on. If they are spent on improving conditions in the government-funded schools that the rich send their children to, the marginal distributional effect will be negative. On the other hand, if they are spent on quality improving activities in schools attended by the poor, the positive distributional effect will be seen not only in elementary education, but also at higher levels if more poor children are able to progress to secondary education and beyond.

8.12 One implicit assumption in benefit-incidence analysis is that public spending is a good indicator of benefits received. This assumption does not take into account

²⁵ The average per capita expenditure of the top expenditure quintile in rural areas is lower than that of the top quintile in urban areas, i.e., the richest of the rural households would be poorer than the richest urban households.

differences in the quality of public institutions to which people have access and the fact that these differences might be positively associated with socio-economic status. In many cases, the poor would not receive the full benefit suggested by the average per pupil expenditure if, for instance, schools that they attend are not open for the requisite time and teachers do not turn up or do not teach. *To the extent that the functioning of government funded schools serving the poor is known to be worse, the distribution of benefits even at the elementary level is much less equitable than indicated by the discussion above. In this case, improving the effectiveness of public expenditures for the poor may have as much of a positive distributional impact on the poor as increasing public spending on elementary education.*

IX. Incidence of Subsidies to Private Schools

9.1 The incidence of the expenditure on aided institutions on different income groups can be inferred from the distribution of students of different income groups who are enrolled in these institutions at different levels and information on the sub-sectoral allocation of the grant-in-aid and per pupil expenditure reported earlier. Aided institutions cater to a greater proportion of children from the richest households at all levels of education than do government institutions (Table 3.7). This is more true of urban areas than of rural areas. For instance, about 30 percent of all elementary students in urban aided schools are from the highest income group; only 10 percent are from the lowest quintile. By contrast, only about 2 percent of all students in elementary classes in urban government schools are from the highest quintile, while over one-third is from the lowest quintile. *There is also a greater representation from the richer income groups in aided secondary and higher education institutions, the two sub-sectors which account for most of the grant-in-aid.* About one-third of the secondary level students in urban aided institutions are from the top quintile; two thirds are from the top two quintiles. These institutions draw less than 6 percent of students from the lowest quintile. Government secondary institutions, on the other hand, cater to almost 20 percent of students from the poorest quintile and only 16 percent from the richest quintile (not shown in table). Similarly, at the university level, 61 percent of students in urban aided institutions are from the richest quintile while 40 percent of students in urban government institutions are from this group. Overall, the representation of the poor at the university level is low, but they are present to a greater extent in government institutions than in aided ones.

9.2 *The rich derive proportionately greater benefit than the poor from public assistance to privately managed education institutions. Enrolling in aided institutions, especially at the secondary and higher education levels, is the main means by which the rich benefit from a substantial share of total public expenditure.*

Table 3.7
Enrollment in Aided Institutions
Percentage Share of Different Quintile groups (by Level of Education)
(Row percentages)

Urban						
	I	II	III	IV	V	Total
Primary	13.3	15.7	18.3	27.5	25.2	187,731
Middle	6.1	7.4	15.5	37.9	33.1	213,242
Secondary	5.7	8.9	21.7	31.3	32.9	352,403
University	2.8	6.4	8.4	21.4	61.0	14,835
Rural						
	I	II	III	IV	V	Total
Primary	0.0	10.4	49.4	25.3	14.9	55,186
Middle	5.8	2.2	32.4	32.7	26.9	73,501
Secondary	2.8	8.0	25.3	21.3	42.6	512,132
University	1.3	4.5	6.9	3.2	84.1	80,079

Source: NSS 1995/96

9.3 Why do the rich prefer to send their children to aided institutions rather than to government institutions? One reason is that aided institutions exercise greater control over their teachers – although salary levels and eligibility criteria for teachers are the same in aided and government institutions, in aided institutions, it is the private management and not the government which recruits teachers. Managers also exercise greater control over teacher attendance and performance in the school. The rich are therefore able to access subsidized education of higher quality than what is available in government schools. Another reason is the availability of instruction in the English medium that is offered only in private institutions.

9.4 *At the margin, reducing expenditures on assistance to private institutions and reallocating these resources to government institutions would benefit the poor, especially if there are enhanced allocations to those government institutions which primarily serve the poor.* In particular, additional public spending on quality improvement in elementary education, which would improve completion rates and learning outcomes of the poor, will ensure a more equitable distribution of the benefits of public spending on education.

9.5 There are many legal and other impediments to bringing about this reallocation, the removal of which would require changes in various policies and laws regarding government regulation of private aided institutions. Moreover, even from a distributional angle, the income criterion alone is not a politically persuasive argument for reducing this assistance; those who are classified as belonging to the richest quintile, especially in rural areas, often belong to social groups that had traditionally less access to education and are now trying to redress these inequalities through gaining access to subsidized higher

education.²⁶ Despite these difficulties, improving the targeting of the aid to private institutions must be a priority concern for GOK if overall equity in public spending is to improve.

9.6 *Alternatively, the government could try to restructure its aid to private institutions so that this subsidy benefits poorer students directly.* Paying the salaries of teaching staff in aided institutions is not an effective means for targeting the subsidy since students from richer families can also gain access to aided institutions. Indeed, there is an incentive for aided institutions to seek richer students who can pay additional charges for higher quality services. One method of targeting poorer students is to give them an entitlement to an annual subsidy that would be paid to the private institution that he/she attends. This would mean a change to current structure of the GIA policy, introducing measures to enable the private aided institutions to raise additional resources from richer students and identifying criteria for distributing subsidies to poorer students. Since the income criterion is difficult to implement, one possibility is to target subsidies at the secondary and higher education level to those students who have studied in government schools at the elementary level. Subsidies to poor students could be given either directly or through a differentiated fee structure.²⁷

X. Private Expenditures and the Incidence of Public Expenditures

10.1 As noted earlier, private expenditures amounted to nearly 28 percent of all education spending in the state. In general, people in higher quintiles incurred more per student expenditure as out-of-pocket costs than did those in the lower quintiles. The rich pay more because a greater proportion of their students end up enrolling in secondary and higher education where costs are higher.

10.2 However, and again as noted earlier, almost four-fifths of total private spending is actually on elementary education. The high share of private expenditure on elementary schooling reflects the fact that most children from rich families are enrolled in unaided schools at this level of education. It also reflects the fact that at levels beyond elementary education, the rich families tend to enroll their children in publicly funded institutions and are able to benefit disproportionately from public spending at these levels, as demonstrated by the analysis of the incidence of public expenditures reported in the previous section.

²⁶ Various participants in the workshop session that discussed the GOK sub-sector report on collegiate education noted the remarkable change that has occurred in the last decade, with a far greater representation of rural students from backward (not necessarily SC/ST) castes which have hitherto not participated in this education. This is considered important from the point of view of bringing about social change and social cohesiveness and can be viewed as being among the external benefits of higher education.

²⁷ A condition for receiving government assistance is that aided institutions can charge only those tuition fees and other fees that are prescribed by the government. Currently, the tuition fees are twice those charged in government institutions but are still nominal, and half the fee collection is remitted to the state treasury. Other fees can be retained by the management for developmental purposes but the fee levels are relatively low. Within this framework, aided institutions would not be able to finance their recurrent expenditures if the state government were to reduce the GIA.

10.3 Table 3.8 provides evidence of these shifts in enrollment between government funded and private unaided institutions at successive levels of education for different quintile groups in rural and urban areas. The differences in the utilization of government and private institutions between quintile groups *within* urban areas are very pronounced, as are those between rural and urban areas.

10.4 Among the top quintile in urban areas, it is evident that the majority of their children are enrolled in private institutions at all levels of education. However, *at the*

Table 3.8
Enrollment in Government, Aided and Unaided Institutions
by Level of Education
(percentage of total enrolled at each level)

Quintile 5	Urban					
		Primary	Middle	Secondary	University	Technical
	Government	6.4	9.7	24.3	25.3	38.5
	Aided	33.1	54.5	60.3	61.9	8.9
	Unaided	60.5	35.8	15.4	12.8	52.6
	Total enrolled	100.0	100.0	100.0	100.0	100.0
	Total number	142,891	129,664	189,357	58,008	12,655
Quintile 1	Urban					
		Primary	Middle	Secondary	University	Technical
	Government	84.4	86.7	67.8	67.1	0.0
	Aided	9.6	8.9	27.8	32.9	0.0
	Unaided	6.0	4.5	4.5	0.0	0.0
	Total enrolled	100.0	100.0	100.0	100.0	100.0
	Total number	261,643	147,319	72,796	13,116	0
Quintile 5	Rural					
		Primary	Middle	Secondary	University	Technical
	Government	94.8	89.9	45.3	28.1	100.0
	Aided	1.8	6.6	46.0	63.5	0.0
	Unaided	3.4	3.4	8.6	8.4	0.0
	Total enrolled	100.0	100.0	100.0	100.0	100.0
	Total number	447,473	299,260	474,718	106,083	1,591
Quintile 1	Rural					
		Primary	Middle	Secondary	University	Technical
	Government	100.0	96.0	72.0	0.0	0.0
	Aided	0.0	2.7	19.1	0.0	0.0
	Unaided	0.0	1.3	8.8	100.0	0.0
	Total enrolled	100.0	100.0	100.0	100.0	100.0
	Total number	654,126	159,871	74,541	1,061	0

Source: NSS 1995/96

primary level, nearly 60 percent are enrolled in private unaided institutions; this proportion decreases to 36 percent at the middle stage, 15 percent at the secondary stage and 13 percent at the university level. At the primary level, the majority of rich urban children are enrolled in private unaided, but at higher levels, especially at secondary and college levels, the majority are enrolled in government-funded institutions (i.e., government-run and aided institutions). It is especially significant that very few rich urban children are enrolled in government-run institutions at the primary level while in secondary and university education, close to one quarter of them are enrolled in government-run institutions.

10.5 In striking contrast, the lowest quintile in urban areas overwhelmingly uses government schools at the elementary stage; at the secondary and higher education levels, two-thirds of the students from this group are enrolled in government institutions, and close to one-third in aided institutions. Very few are enrolled in unaided institutions.

10.6 Again, in contrast with the top quintile in urban areas, over 90 percent of children from the top quintile in rural areas are enrolled in government institutions at the elementary stage. Not surprisingly, close to 100 percent of rural poor children are in government schools. At the secondary stage, about 45 percent of the top quintile are enrolled in government institutions, though another 46 are enrolled in aided institutions. Among the rural poor, close to three-quarters are in government institutions at the secondary stage.

10.7 *The above discussion suggests that the urban rich, in particular, invest heavily at the elementary level by sending their children to private unaided schools because higher quality primary education improves performance and continuation up the educational ladder.* Evidence from the Bank's tracer study of secondary education and PU students also suggests that students who studied in unaided schools at the primary level were more likely to pass the Secondary School Leaving Certificate (SSLC) examination, even after controlling for other background factors. Since secondary and higher education are also subsidized, it is possible that these initial investments allow the rich to disproportionately access subsidies at higher levels. An indication of this is provided by the relative private expenditure per student of the top and bottom quintiles, by level of education. Starting with a value exceeding 10 at the primary level, the ratio of per student expenditure of the top quintile to that of the bottom quintile falls to about 1.5 at the secondary level and is about 3 at the graduate level. *This also suggests that investments in elementary education to improve the quality of education for the poor may be an important policy tool to ensure that the benefits of public spending on higher education are more equitably distributed.*

10.8 There are also significant differences in the importance of individual private expenditure items across quintiles. The five most important expenditures (in that order) of the top quintile at the elementary level were tuition fees, uniforms, books and stationery, transport and private coaching. The first four items reflect the high share of enrollment in unaided schools; the last shows that the rich supplement the teaching in unaided schools with out-of-school tuition even at the elementary level. By contrast, the

most important items of expenditure for the poorest quintiles were uniforms, stationery and “other fees” (such as nominal annual or sports fees). The poorest children are thus totally dependent on publicly provided educational inputs (teachers and non-teacher inputs).

10.9 An important policy issue for Karnataka that arises from this discussion is whether the existing framework that allows private unaided schools to operate at the elementary level while enabling privately-managed institutions at the secondary level and beyond to access public subsidies is consistent with equity objectives. This issue is discussed in greater detail in the next chapter.

XI. Distribution of Incentives by Income Groups

11.1 The NSS household survey also collected information on whether currently enrolled students benefited from subsidized or free books, mid-day meal schemes, scholarships, tuition exemptions and transportation subsidies. The first item is available only to elementary level students studying in government schools; the second item to those studying in primary classes in government-funded schools, while the rest are made available for higher levels of education, mainly to SC/ST students, rural students and girls.

11.2 The data on these incentives could not be disaggregated by both income levels and the level of education/age group to examine whether the poor benefit most from these programs. However, various analyses suggest that they are indeed targeted towards rural children from the poorest income groups and towards SC/ST children, although not all eligible children receive them. The most important of the incentives is the provision of free or subsidized books; 65 percent of students at the elementary level (and 37 percent of all students in the 5-24 year age group covered by the survey) reported receiving them. Thirty-four percent of elementary students also reported receiving mid-day meals.²⁸ About 12 percent of all graduate students reported receiving scholarships and 15 percent of them also benefited from tuition exemption. Over 35 percent of higher secondary students and 45 percent of graduate students also benefited from transport concessions.

11.3 A greater proportion of rural enrollees had access to such incentives than urban enrollees. The advantage of rural students is concentrated primarily in two areas – in access to free/subsidized books, and to mid-day meals. Nearly 46 percent of the rural enrollees reported benefiting from free books, in comparison with only 16 percent for urban enrollees. The corresponding proportions for mid-day meals were 23 percent and 7 percent, respectively. About 14 percent of rural enrollees received scholarships, compared to 8 percent of urban enrollees.

11.4 The variation in incentives received by males and females is also of interest, in view of the gender disparities in education. Females and males had fairly similar

²⁸ At the time of the survey, the National Program for Nutritional Support to Primary Education had not been launched; at the time, the state operated its own mid-day meal program with very limited coverage.

proportions receiving subsidized books and mid-day meals. However, in the case of incentives that accrue at higher levels of education, males get a somewhat higher share than females of scholarships (14 and 10 percent, respectively), tuition exemptions (6 percent and 4.5 percent, respectively) and transport concessions (8.8 percent and 4 percent, respectively).

11.5 Students from the poorest quintiles had much better access to subsidized books and mid-day meals than the top quintiles. For instance, 63 percent of students in the bottom quintiles received free or subsidized books; the proportion in the top quintile was negligible. *Although the proportion of the poorest groups receiving free/subsidized books is large, it still suggests inadequate targeting given that all poor students are supposed to get these books at the elementary level where most of these students are represented.* The proportion of the poor receiving free textbooks was especially low in urban areas – only 37 percent of the urban poor received these incentives.

11.6 The poorest quintiles also have a greater proportion of students getting scholarships (18 percent) than the top quintile (5 percent). Transport concessions, on the other hand, are skewed in the opposite direction – 15 percent of students in the top quintile get these concessions, while only 3 percent of the poorest quintile get them. This probably reflects the richer groups having more students attending higher levels of education in distant locations.

11.7 Controlling for the level of education in the above analysis would be necessary to assess whether the distribution of incentives is truly equitable across expenditure quintiles. *However, the distribution of these incentives by caste indicates that a substantial proportion does go to sections that have been educationally deprived.* Nearly 81 percent of the scholarships went to persons belonging to SC/ST, partly reflecting the fact that most scholarships are awarded by the Social Welfare Department. SC/ST students also had access to 57 percent of the total number of tuition exemptions in the state.

XII. Summary and Conclusions

12.1 Public spending contributes about three-quarters of total spending on education; although the share of private financing increases with the level of education, the public sector plays the major role at all levels. Within the public sector, the state government accounts for the major share of spending, the Central government playing a significant role only in elementary education.

12.2 Karnataka has increased its public spending on education in real terms, especially on school education. In relation to its state income, however, its educational expenditure has fallen over the decade. The allocation of public spending across sub-sectors has been in line with sectoral priorities and the expected role of the public sector. Over half of expenditures are on elementary education and about 30 percent on secondary education.

12.3 Although the Central government contributes a small share of total expenditures, it exerts a significant influence on the choice of new programs and on quality improvement, especially in elementary education. Central funds have financed additional teachers, classrooms and non-teacher inputs. However, the experience of the Centrally Sponsored Schemes in improving quality has not been fully satisfactory. Procurement of materials has been tardy or has resulted in low quality materials. Rigidities in norms have led to the construction of classrooms that are too small. The externally funded DPEP has introduced a different method for routing funds and procuring materials but there has been no formal evaluation to assess its effectiveness.

12.4 Salary costs predominate in public expenditures, accounting for 93-99 percent of public spending at different levels of education, and a key issue in expenditure reform is to increase the proportion of expenditure on non-staff inputs. A greater emphasis on quality at all levels will necessitate more expenditure on learning materials, training and curriculum related matters. Unit costs have been rising in school education due to the increase in salary levels and the fall in pupil-teacher ratios. Any increase in non-salary expenditure will therefore contribute to a further rise in unit costs unless per pupil salary expenditures are contained. Karnataka needs to exercise control over both the level of teachers' salaries and the number of teachers. The state government has contained the growth of salary expenditure by not implementing the national Fifth Pay Commission's recommendations in school education (although it has done so in higher education). Further reduction of the average pupil-teacher ratio, currently at 36:1, is not warranted on efficiency grounds. However, in order to use existing teachers optimally and not to add more teachers to address the problem of high pupil-teacher ratios in some districts and schools, the state needs to adopt three measures: developing a strategy for small lower primary schools where current teacher norms lead to high pupil-teacher ratios, consolidating small higher primary and high schools and rationalizing teacher deployment across districts.

12.5 The differential in unit costs across sub-sectors is quite narrow in Karnataka and comparable to those in countries of East Asia. Unit costs in private aided high schools are about the same as in government schools; unit costs in private aided elementary schools are lower than in government schools, mainly because private institutions are located in urban areas while the majority of government elementary schools serve dispersed rural habitations. There may be scope for utilizing public aid for private schools more efficiently. Currently, the grant-in-aid is driven by teachers' salaries and norms for pupil-teacher ratios, which are identical to those in government institutions, and there is no incentive or scope for private institutions to seek efficiencies. The grant-in-aid framework, which enables private managements to directly recruit teachers subject to government approval for the post and regulations regarding qualifications, training and reservations for caste/community, also creates incentives for private managements to seek "donations" from prospective staff who are willing to pay them because they get the salary and benefits of government teachers. Restructuring the grant-in-aid policy to eliminate such adverse incentives is necessary.

12.6 District level expenditures on elementary education reflect inefficiencies and inequities. The distribution of expenditures is negatively correlated with educational backwardness, with more backward districts having higher pupil-teacher ratios and lower per pupil expenditures. Moreover, the inter-district variation in per-pupil expenditures has increased over the decade as pupil-teacher ratios have fallen more rapidly in the advanced districts than in the backward districts. In the advanced districts, the child population has declined and a greater proportion are attending private schools, but teacher numbers have increased due to the availability of Central funding for additional teachers in small schools. Central Plan expenditures are also correlated with State Plan expenditures and more advanced districts receive more of both Central and State Plan expenditures. These regional disparities in public spending have resulted from state-level decisions rather than from the differing fiscal and economic capacity of districts. The state government could allocate more teachers to the backward districts and thereby improve educational outcomes (student retention and learning) without increasing expenditure on elementary education, if it were to redeploy teachers from the more advanced districts and raise the pupil-teacher ratio in the latter closer to the state norm. Over the medium term, new principles for providing school education finances to districts to enable them to address their priorities need to be elaborated including, possibly, allocation of expenditures on the basis of teacher and non-teacher inputs per child, rather than on the basis of past teacher commitments. A certain amount of untied funding is also required to enable planning for local needs.

12.7 A disproportionate share of public educational spending goes to the higher income groups, mainly because they have a much larger share than the poor in enrollment in secondary and higher education where per pupil public expenditure is higher. The analysis suggests that additional public spending on quality improvement in elementary education, which would improve completion rates and learning outcomes of the poor, will ensure more equitable distribution of the benefits of public spending on education. The incidence of aid to private schools, in particular, benefits the higher income groups to a greater extent, while the poor benefit more from spending on government schools. To the extent that quality is higher in aided institutions, the higher income groups also have better outcomes at the end of their education which facilitates their transition to higher levels or to better paying jobs. The government needs to examine whether alternative methods of providing finance to private schools would better help achieve its distributional objectives and help the poor to access higher levels of education.

12.8 A restructuring of the grant-in-aid mechanism is therefore warranted on both efficiency and equity grounds. A revised policy should target subsidies to poor students to enable them to access secondary and higher education and encourage the private sector to seek efficiencies without compromising quality.

12.9 There is also evidence that the rich, the urban rich in particular, invest heavily at the elementary level by sending their children to private unaided schools because higher quality primary education improves performance and continuation up the educational ladder. This enables them to access the subsidies in aided institutions at the secondary and higher levels. Karnataka needs to review the existing framework for private

education at different levels of the system in order to ensure that pattern of public spending on education is consistent with equity objectives.

Annex 3.1
Distribution of government subsidies on education, by gender, education level and quintiles, 1995/96 (Karnataka)
Share in Benefit at Each Level/Region

Education Level	Region	I			II			III			IV			V			Totals		
		Males	Female	Persons	Males	Female	Persons	Males	Female	Persons	Males	Female	Persons	Males	Female	Persons	Male	Female	Subsidies (Rs. Crs.)
Elementary	Total	11.75	8.04	19.79	13.28	8.37	21.65	12.63	10.27	22.91	11.14	10.3	21.44	8.1	6.11	14.21	56.9	43.1	858.8
	Rural	11.4	6.72	18.12	13.09	8.56	21.66	13.78	8.12	21.9	11.63	10.68	22.31	9.68	6.33	16.01	59.59	40.41	660.95
	Urban	14.3	14.27	28.4	10.16	13.22	23.39	10.23	10.93	21.16	8.73	9.28	18.01	4.69	4.36	9.04	47.94	52.06	197.86
High School	Total	4.75	1.15	5.89	7.95	5.19	13.14	14.47	6.39	20.86	12.56	8.01	20.57	22.36	17.17	39.53	62.09	37.91	495.22
	Rural	5.03	0.67	5.69	8.36	3.56	11.91	14.42	7.52	22.24	17.33	6.95	24.27	21.3	14.58	35.88	66.73	33.27	326.82
	Urban	5.85	5.41	11.26	8.52	5.26	13.78	8.23	11.68	19.91	15.91	13.65	29.56	14.56	10.92	25.48	53.08	46.92	168.4
University	Total	0.23	1.41	1.64	4.76	1.44	6.2	7.65	1.17	8.82	6.42	2.42	8.83	50.57	23.93	74.51	69.63	30.37	239.04
	Rural	0.63	0.00	0.63	7.42	3.26	10.68	6.71	0	6.71	6.77	0	6.77	61.78	13.42	75.2	83.32	16.68	86.66
	Urban	3.78	3.56	7.33	8.61	0.89	9.5	3.52	2.54	6.06	17.15	9.34	26.49	28.79	21.82	50.61	61.85	38.15	152.38
Technical	Total	7.98	0.00	7.98	7.98	0	7.98	0	0	0	18.98	0	18.98	47.89	17.18	65.07	82.82	17.18	19.34
	Rural	24.87	0.00	24.87	0.00	0	0	24.87	0	24.87	37.1	0	37.1	13.15	0	13.15	100	0	6.2
	Urban	0.00	0.00	0.00	10.43	0	10.43	0	0	0	50.86	15.57	66.42	13.43	9.71	23.15	74.72	25.28	13.14
Totals	Total	7.85	4.84	12.69	10.30	6.26	16.58	12.31	7.16	19.92	10.97	8.31	19.28	19.25	12.28	31.53	60.69	39.31	1612.4
	Rural	8.69	4.31	13.00	11.13	6.57	17.71	13.56	7.24	20.8	13.11	8.63	21.74	17.39	9.36	26.75	63.88	36.12	1080.64
	Urban	8.19	8.04	16.23	9.20	6.84	16.05	7.42	8.49	15.92	14.46	10.84	25.29	14.94	11.57	26.51	54.22	45.78	531.78

Source: Mahal (2001)

Chapter 4 - Improving the Effectiveness of Public Expenditures in Education

I. Introduction

1.1 As discussed in the previous chapter, Karnataka can improve the efficiency and equity of the resources that it spends currently on education by introducing various reforms in the financing of the sector. This chapter discusses some priority reforms which are expected to improve service delivery and the governance of the sector. It focuses on school education, partly because this is the immediate priority for GOK and because this is where enhanced resource allocations are most likely in the short-term, and partly because governance issues in tertiary education are much more complex, involving Universities, national regulatory bodies (University Grants Commission and All India Council for Technical Education), the state government and private managements.

1.2 Some reforms in the management of the school education system can be implemented within the existing administrative framework while other reforms are more profound and will require considerable detailing as well consensus-building before they can be implemented. The chapter therefore deals with three sets of reforms: (a) reforms that can be implemented in the short-run and focus on improving the utilization of teacher and non-teacher inputs; (b) reforms to improve the management of the private sector and ensuring that the private sector contributes to GOK's equity goals in education; and (c) reforms to promote decentralization.

II. Improving the Utilization of Teacher and Non-Teacher Inputs

Improving teacher effectiveness and accountability

2.1 Teachers account for most of the expenditure on school education. How well they are prepared and deployed and how effectively they teach will have a crucial role to play in determining education outcomes.

Specifically, the state government needs to address the following issues:

- i *The amount of time allocated to non-teaching duties should be reduced.* Currently, teachers are deputed for a variety of tasks including human and livestock census, periodic surveys, elections, examinations, health camps, sports and games. A recent Cabinet decision forbids the use of teachers for any non-teaching work other than elections and census work. This needs to be monitored.
- ii *The effective number of teaching days per teacher per year needs to be stipulated and this may require reviewing the leave conditions of teachers.* It is estimated that out of a total 220 teaching days in a school year, every teacher avails of a minimum of 50 days' leave (casual leave, earned leave, medical leave and maternity/paternity leave). This implies that many two-

teacher schools effectively become single teacher schools for almost one quarter of the school year, thereby directly affecting outcomes.²⁹

- iii *Elementary schools need to be open for 5 -6 hours per day with the requisite number of teachers.* Many teachers, especially in rural areas with limited or infrequent transport facility, come late to school and leave early, and schools are open for only 2-3 hours. GOK has made a good start in trying to post primary teachers in schools close to their residences. Greater empowerment of school committees and involvement of teachers' unions may be required to ensure teacher accountability.
- iv Although *teacher absenteeism* in the sense of unauthorized absence from school is reported to be relatively little in the state, it does exist and *needs to be monitored.*
- v *Reforms in the recruitment of teachers into government service and in the teacher education sub-sector are required to ensure that competent teachers are recruited.* GOK has already eliminated "interviews" in the process of recruitment which has reduced the possibility of recruiting inadequately prepared teachers. Currently, recruitment is done on the basis of a common test which is taken by all eligible graduates of teacher training institutions; the marks received on the test and the marks given by the teacher training institutions are averaged and applicants are listed by order of merit. However, teacher training institutions have some discretion in the marks awarded to trainees and therefore the process is not entirely free of manipulation – there are many incentives for prospective teachers to pay for entry into teacher training institutions and secure marks that will enable them to be recruited. Reforms are required to accredit the quality of teacher training institutions and change the focus from merely giving recognition on the basis of input criteria.
- vi *The content knowledge of teachers needs to be constantly upgraded to counter obsolescence of skills and knowledge.* This is especially required at the upper primary and secondary levels, where currently teachers receive very little in-service training.

2.2 Expanding the teaching force to cope with the problem of reduced teaching time caused by teacher absences is a costly option.³⁰ *Improvements in the deployment of teachers, and more importantly, their motivation, would raise effectiveness without adding to the costs.* From the point of view of ensuring minimum standards of service,

²⁹ The GOK sub-sector study on management of school education found that in 354 sample schools across three districts covered in field visits, 106 teachers had been deputed to other tasks and 44 teachers were on long leave.

³⁰ For instance, the GOK Task Force on Education and the sub-sector study on management have suggested the creation of a category of "reserve teachers" who would substitute for teachers on leave/deputation. The cost implications of this option need to be carefully evaluated.

the current policy of indicating the minimum number of teachers based on enrollment will not be sufficient. It may be better to stipulate, publicize and monitor, for instance, that, in two-teacher schools, both teachers would be available for all 220 days for a minimum of 6 hours each day. The block and district authorities would then have to ensure that this service standard is indeed met and communities would be empowered to monitor that these standards are maintained.

Improving the Provision and Delivery of Non-teacher Inputs

2.3 The effectiveness of teachers depends partly on the time availability of appropriate teaching-learning materials and aids. More of these materials need to be made available to schools, their quality should improve and they should be ready for use at the beginning of the academic year. The following specific reforms need to be considered:

- i *Changing the methods of procuring teaching-learning equipment, aids and library books.* Currently, in elementary education, materials are procured at the state or district level, leading to delays, inappropriate materials being procured and underutilization of sanctioned amounts. Instead, funds could be released directly to schools or the block/cluster level resource institutions where they exist. In secondary education, release of funds to the school headmaster for purchase of materials is appropriate. Appropriate changes in financial regulations, including measures for financial monitoring and accountability, combined with training of personnel will be required to operationalize these changes.
- ii *Improving the production and delivery of textbooks.* Primary students who receive free textbooks often receive them late in the academic year. At the secondary level, students purchase textbooks from the market but these are not often available at the start of the academic year because of delays in production and printing. Textbooks for the state syllabus are prepared for printing by the DSERT and printed by private publishers and delays occur at various stages of the process. A greater focus on improving logistics and operations management is required at the state level.

III. Strengthening Management of the Private Sector

Management of the Private Aided Sector

3.1 Karnataka's extensive use of private schools has been, on the whole, an efficient use of public resources (although there are some in-built adverse incentives) but it has not been equitable. As discussed in Chapter 3, this assistance is not currently targeted towards meeting equity objectives because aided institutions are utilized to a greater extent (though not entirely) by the higher income groups. Possible methods of restructuring the grant-in-aid mechanism were also raised. In the short-term, Karnataka needs to address some immediate issues that will improve oversight of aided institutions.

Currently, much of the time of the Department's staff (both at college and school level) is taken up by attending to court cases involving private managements (usually service cases) that often drag on for ten years. There are thousands of court cases involving the Education Department, almost all of which relate to teachers in aided institutions. Most cases involve the recruitment of teachers, payment of salary and benefits, promotion, suspension and removal from service of the employee. An appeal lies to the government and the District Court against wrongful dismissal. Many of these court cases arise because of the incentive framework created by the grant-in-aid framework discussed in Chapter 3.

3.2 *Specific measures to enable speedy disposal of these cases and to prevent new ones from surfacing should be considered.* These could include: creating an inventory of all such cases and classifying them by type of grievance; encouraging settlement of minor disputes by mutual consent; and establishing a computerized database of aided teachers to record their qualifications, service details and payment of salary and benefits.

Improving Equity and Quality in Private Unaided Institutions

3.3 Unaided institutions are granted recognition by the state government provided they meet certain conditions regarding enrollment, teachers, syllabus and infrastructure; tertiary level institutions need to be approved by the affiliating university or the AICTE (for technical institutions). As implied by the nomenclature, these institutions do not receive any direct grants from the government. However, the income from all such institutions, if managed by a public charitable trust, is exempt from income tax and this is a major incentive for the private sector to establish educational institutions. In addition, some institutions (especially those run by SC/ST) have been given land by the government at concessional rates.

3.4 There are two aspects of the regulatory framework for unaided institutions that have important implications for the expansion of private provision and for equity. The first relates to regulations concerning the medium of instruction. The second relates to government regulations on the fees that can be charged by these institutions. The government also needs to examine the effect of private sector expansion on the public sector and ensure that there is complementarity in provision. Finally, the question of how to improve quality in the private sector should be seriously addressed.

3.5 *Medium of instruction:* English language skills are required at the PU and tertiary level since the majority of science and professional courses are taught in English medium.³¹ Employers in modern industries and services also demand skills in written and spoken English. Hence, there is a strong demand for English at the school level, especially among those families who expect their children to continue into higher education.

³¹ However, students at the PU level can write their examinations in the medium of their choice.

3.6 The current policy regarding language of instruction creates inequities. At the PU and higher levels, private unaided institutions can offer instruction in any medium and many offer English medium instruction. At the school level, only religious or linguistic minority private institutions (aided and unaided) can offer English medium instruction.³² All other institutions at the school level have to impart instruction in Kannada. In government and aided schools, English was, until recently, offered as a second language only from class 6 onwards and teaching of English was perceived as inadequate. This framework creates, on the one hand, excess demand for the relatively few seats in English-medium schools. On the other hand, non-minority institutions, which cannot officially offer English-medium education, apparently impart instruction in both English and Kannada (using textbooks in both languages) in order to cater to parental demand with deleterious effects on instructional practice. *The policy needs review to ensure that the curricular mismatch across different levels of education is addressed so as to enable students from all types of schools to compete for secondary and higher education.*

3.7 *Regulation of fees:* At the school level, the government has introduced a uniform fee structure for all unaided schools, apparently in a move to prevent managements from “over-charging” parents. However, the uniform fee structure may not take into account the services and special facilities provided such as computer training, sports facilities, playground and other curricular/extra-curricular activities. Further, as a result of the language policies in higher and school education discussed earlier, there is excess demand for the minority English-medium schools. For both these reasons, managements are able to collect funds through unauthorized donations and school places are rationed by the ability to pay, despite official ceilings on fees. *These policies are inequitable because effectively poor children cannot attend private English-medium schools which increase the probability of succeeding in the school-leaving examination and in enrolling in professional and science courses, where the returns to education are higher.*

3.8 The uniform fee structure also means that institutions are not able to compete for teachers by offering higher salaries and in general, they pay lower salaries than those paid to government-funded teachers. Teachers in unaided institutions are therefore pressing the government to provide grant-in-aid to these schools, through agitations and writ petitions in the High Court.

3.9 In technical education, the current fee structure is determined by a Supreme Court judgment that stipulates that the state government should formulate a common fee for all types of institutions (government, aided and unaided); fees can vary by type of course and are revised every three years. For each course, fees are fixed for three types of seats – “merit” seats, “payment” (or management) seats and “Non-resident Indian” seats. All places in government and aided institutions are regarded as “merit” seats (but they are relatively few in number); 50 percent of the seats in unaided institutions are also treated as “merit” seats while 35 percent are management seats 15 percent are NRI seats. “Merit” seats are charged the lowest fees, fees for management seats are higher and fees for NRI

³² Minority institutions established after 1994 are supposed to offer instruction in the mother tongue or Kannada up to class 4 and can offer English medium instruction thereafter.

seats are denominated in dollars; however, fees for each category are common across government, aided and unaided institutions. A common entrance test qualifies students for entry into the institutions; students can choose the course and institution in order of their merit ranking on the test. Students with the highest merit ranking therefore choose the higher quality institutions but pay less fees. Students with lower rankings have to take courses with less potential in the job market and in lower quality institutions but have to pay more. *Since performance on the entrance test is highly correlated with socio-economic background, the effect is that poorer students tend to pay higher fees for the same courses than richer students and they also tend to be in the more traditional courses, with lower potential for employment.*

3.10 The expansion of the private unaided sector has implications for costs in publicly provided institutions. Enrollment in government urban schools is often affected when private schools are opened in the neighborhood, leading to too many teachers for too few pupils in the former. A similar situation exists in general higher education where government colleges that offer traditional courses have few students, because unaided institutions are able to offer new “job-oriented” courses. *Integrated planning, taking into account the respective roles and contributions of government and private institutions for each level of education, will help to reduce these inefficiencies.*

3.11 Finally, educators in Karnataka express concern about pedagogical practices in private unaided education. The GOK’s sub-sector studies on private education and technical education state that educational practices in these institutions are similar to those in government institutions and emphasize rote learning and heavy reliance on textbooks. They focus on immediate outcomes, such as performance on examinations that are valued by parents, rather than on educational processes that would benefit the student in the long run. As a result, private institutions are often the most resistant to introducing changes in methods of teaching-learning, in testing and examinations – not least because teachers in private institutions are not exposed to new pedagogical methods and experiences, unlike teachers in government institutions who can be given training. The presence of a private sector which caters to the elite, but which promotes outdated pedagogical practices, also nullifies attempts to change teaching-learning methods in government institutions. For these reasons, as well as the equity considerations mentioned earlier, there are often calls to curb the private sector in education or to regulate it further, especially at the school level. However, *examination reform, curricular reform and changes in higher and technical education (for which private schools prepare their students) may be more influential in bringing about the desired changes in behavior than regulations regarding teachers and teaching practices.*

IV. Decentralizing the Education System

4.1 In the medium-term, Karnataka needs to consider major reforms to decentralize the education system within the broader agenda of decentralization in the state. This will involve redefining the roles, functions and powers of the state government and the local bodies within the context of the general program of decentralization in the state.

4.2 Based on the 73rd and 74th constitutional amendments, Karnataka passed a new act which introduced the mandatory three-tier system of local government; this act superseded the 1983 act, the first of its kind in the country, which had formally devolved powers to districts and villages. Despite its long experience with decentralization, and the fact that school education comes within the purview of the local bodies, there has been little effective decentralization of the school education system.

4.3 The Gram Panchayat (GP) at the village level is responsible for promotion of adult literacy and ensuring full enrollment and attendance in primary schools as well as selection of beneficiaries for poverty alleviation programs. The Zilla Panchayat (ZP) at the district level is responsible for the establishment, maintenance and management of secondary schools. Among the three tiers, the ZP is the most functional; it has its own staff, receives funds from the state and prepares plans and implements development projects. The Taluk Panchayat (TP) disburses the salary of primary school teachers.³³

4.4 At both levels, both administrative and fiscal decentralization are relatively limited. All policies and norms are established at the state level (often in line with national parameters) and there is little scope for local bodies to take decisions on matters such as the opening of schools, deciding on alternative delivery systems, the number and salary of teachers, hiring of temporary teachers to fill vacancies and the provision of teaching-learning materials. The linkages between the local bodies and the schools are weak. Most GPs and TPs do not discuss education regularly and even when they do, the discussion relates to infrastructure requirements and the distribution of incentives. Since the local bodies have few powers, head teachers do not report problems with school functioning to the local bodies, instead referring them upwards. The district and block level officers of the education department report both to the local bodies and to their own administrative hierarchy and relationships between the local bodies and the departmental structure at different levels are still in a state of flux.

4.5 Fiscal decentralization is extremely limited. The “district sector plan” comprises allocations for specific state and Central schemes that are to be implemented by district bodies and does not signify untied allocations available for districts to undertake their own planning.³⁴ The schemes consist of “salary schemes” (i.e., payment of salaries for newly appointed personnel), beneficiary schemes (distribution of textbooks, scholarships) and others (construction of classrooms, teaching-learning equipment). Since each of these schemes have norms and criteria laid down by either the Central or state governments that govern implementation, there is little that districts can do in terms of planning or implementation other than deciding on further sub-allocations to TPs and GPs and

³³ Administratively, the functioning of the school education system is overseen by the “amenities committee” of the GP (which also looks after health and public works); the “general standing committee” of the TP (along with all other development departments excluding social welfare); and the “education and health committee” of the ZP.

³⁴ The “district sector” plan comprises all sectors with which the local bodies are concerned and includes allocations from Central and state schemes. Within the district plan outlay, the allocation on school education was in the range of 8-13 percent in the latter half of the nineties, ranking third behind the allocations for rural employment and rural water supply.

identifying the beneficiaries and schools that are to get additional inputs. In practice, the non-salary component of the district sector plan for education is very limited; most non-salary schemes are in the 'state sector' plan and their allocation across districts is decided at the state level. As discussed in chapter 3, the basis for these inter-district Plan allocations is not transparent, nor has it been targeted towards the backward districts. In 2001/02, the GOK decided to allocate 50 percent of the state sector non-salary plan allocation to the backward districts; implementation of this decision needs to be monitored.

4.6 In addition to the statutory bodies and their education committees, GOK has established School Development and Monitoring Committees (SDMCs) in all LPS, HPS and HS through a government order issued in 2001. The SDMCs have replaced the former elected Village Education Committees (VECs) for elementary schools and School Betterment Committees (SBCs) for high schools. Membership of the new committees is restricted to parents of pupils studying in the school (unlike the VECs and SBCs whose members could be drawn from the local community, not just parents). The SDMCs, whose ex-officio secretary is the headmaster of the school, organize the monthly "Samudaya datte shale" (school meets the community) program, during which teachers meet parents and discuss the progress of individual students. The SDMCs also administer the funds for school repairs and classroom construction which are allocated by the ZP and routed through the TP. They also approve teachers' leave absences and are authorized to mobilized community resources for school development activities.

4.7 These initiatives have undoubtedly increased the interaction with communities and teachers' accountability. However, the SDMCs are not yet effective instruments of decentralized school management. In elementary schools, SDMC members are not elected, but are nominated by the elected local Member of the Legislative Assembly (MLA) from eligible parents (subject to quotas for SC, ST and women); the MLA also nominates the chairperson. SDMCs of high schools are elected but the MLA is the ex-officio chairperson. Further, allocation of funds for construction to individual schools (beyond the small annual grants for repairs and maintenance that go to every committee) is determined by the district education authority based on a needs assessment and then sanctioned by the ZP. The responsibilities of these committees and those of the local bodies are not clearly demarcated. *The role of the SDMCs in quality monitoring and in preparing plans for school improvement is still limited; their effectiveness and the extent of community participation also varies across districts and between rural and urban areas. A program of capacity building is required to strengthen these committees.* It is also necessary to delineate the role of the SDMCs within a wider accountability framework for teachers, involving schools, resource support institutions and department officials, and to equip them to fulfill this role.

4.8 Within the context of the wider administrative and fiscal decentralization that is being discussed in Karnataka, GOK has to clearly delineate the roles, functions and powers of the state government and local bodies with respect to the following specific issues:

- i *Personnel management* – who will have responsibility for setting norms for qualifications and terms of employment, responsibility for hiring and payment of salaries and benefits, promotions and professional development?
- ii *Planning of the system* – who will take decisions regarding opening and expansion of schools or alternative education facilities, including private schools?
- iii *Performance monitoring* – how will student performance be monitored? What would be the respective roles of the district and state government?
- iv *Finances* – how will funds be devolved to districts for education and how will utilization of funds be monitored? How will Central funds be distributed across districts?

Chapter 5 – Financial Requirements

I. Introduction

1.1 Based on the analysis of issues of individual sub-sectors, GOK has prepared a draft education sector strategy report which outlines goals and strategies for the medium term.³⁵ Although the report deals with the entire education sector, from pre-primary to higher and technical education, specific targets for participation and completion rates of the relevant age groups have been outlined only for elementary and lower secondary education.

1.2 This chapter presents the financing requirements to meet the goals for school education, comprising elementary and lower secondary education. Specifically, it asks the following questions: (i) how much would it cost GOK to provide school education for the target population by implementing the broad strategies outlined in the draft sector strategy report? (ii) to what extent can these requirements be financed by anticipated GOK budgetary allocations, Central government funds and private finance? In answering the first question, the chapter also examines the cost implications of alternative strategies that have been discussed in Chapter 3 of this report.

1.3 The first section of this chapter presents projections of the population of new entrants which form the basis for enrollment projections used in subsequent sections. The second and third sections discuss the financing requirements for elementary and lower secondary education, respectively, using alternative assumptions of student enrollment and alternative strategies. The last section examines the sources of financing and the financing gap.

II. The Demographic Transition and Implications for School Education

2.1 Demographic projections of the school-age population are central to estimating the financial requirements for school education. In addition to demographic variables, policies regarding promotion and repetition and private decisions to continue with education will affect the enrollment in each stage of education. This section presents the projections of the population entering school while subsequent sections on financing requirements explain the estimates of enrollment for elementary and lower secondary education derived using alternative assumptions regarding continuation in school.

2.2 Karnataka's rapid fertility decline implies that it would be easier to finance the requirements of school education than before. Official estimates of population projections by five-year age groups in individual states for the years 1996 to 2016 have been made by the Registrar General of India (RGI). These projections are based on the 1991 population figures and fertility and mortality rates obtained from the Sample Registration System.³⁶

³⁵ Government of Karnataka. *Shaping Education – Goals and Strategies*. Draft Report. February 2002.

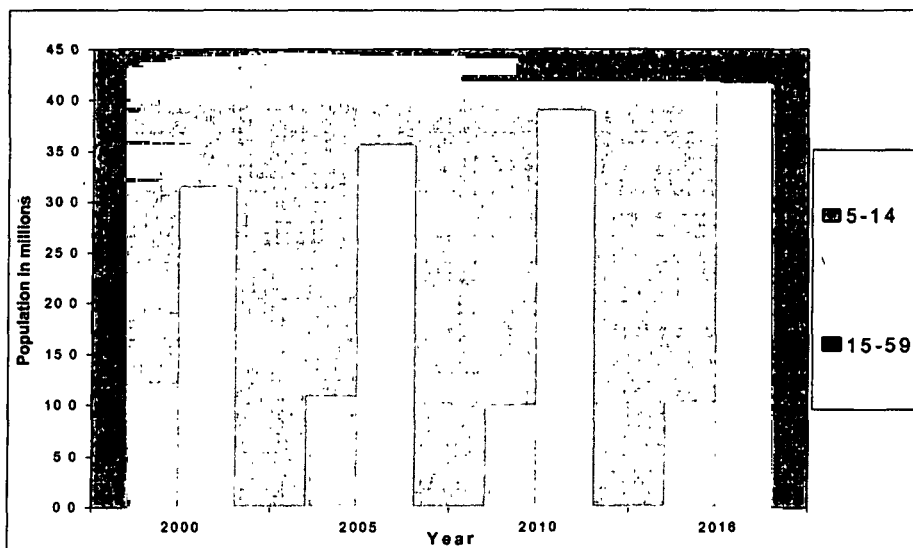
³⁶ Registrar General of India, *Projections of Population (1995)*.

Since the projected population for 2001 is very close to the actual population of the 2001 census, the difference between the two being of the order of 0.03%, it is likely that the population of five-year age groups will also be close to the RGI projections unless the decline in infant mortality and child mortality rates has been different from what was used in the projections.³⁷

2.3 The RGI's projections for the 5-14 year age group show that the size of this group had started declining in absolute terms from 1998, when it peaked at 12.2 million (Chart 5.1). This reflects the steady decline in fertility that had started from the early nineties. *From 2000 onwards, the population of this age group is projected to decline in absolute terms by about 200,000 to 250,000 each year up to about 2012, after which the size increases by about 30,000 each year for a few years.*

2.4 These trends, combined with the growth in the size of the working age population (15-59) over the same period, imply that the school dependency ratio³⁸ will lower considerably, thereby easing the fiscal burden on taxpayers for providing elementary education. Karnataka's dependency ratio is currently 38 and is expected to decline to 30 in five years and to reach 25 by 2016. This was the dependency ratio reached by Korea in 1990. *This means that in order to finance the existing levels of coverage and quality of elementary education in Karnataka, each adult would have to pay 20 percent less tax, assuming everything else remained unchanged.* Alternatively, with the same tax effort, Karnataka can finance higher levels of quality since it does not have to spend on creation of additional facilities.

Chart 5.1
Projected Population Trends In Karnataka 2000-2016



³⁷ The projected population for March 1, 2001 was 52.719 million; the actual population on the same date was 52.734 million.

Source. Calculated from RGI data

2.5 The demographic transition thus offers an opportunity for Karnataka to put additional resources into raising the quality of elementary education even assuming the existing tax effort does not change. However, in order to exploit this opportunity, careful disaggregated planning is required. *First*, the transition has not occurred evenly across the state. In some districts (Mandya, Hassan, Uttara Kannada, Udipi), the fertility rate is below replacement levels while in others, such as Bellary, Bidar, Raichur and Gulbarga, it is still high. These differences are reflected in the decadal growth of overall population: in the former group of districts, the increase in population was close to or below 10%, in the latter group of districts, it was over 20%. In the next decade, the decline in the child population in the lower fertility districts will be more rapid than in the northern districts. *Second*, there are different implications for the lower primary and upper primary cycles. While both the relevant age groups are projected to decline over the next decade, the decline is sharper in the younger age group (5-9 years) especially in the first half of the decade, as the further lowering of fertility rates reduces the number of children born in the coming years.

III. Financing Requirements for Elementary Education

3.1 GOK has articulated clear goals for elementary education. These are to ensure that:

- all 6 year olds are enrolled in school by 2001/02
- all children aged 6-10 years are enrolled in primary school by June 2004
- all children aged 6-14 years are enrolled in school by June 2007
- all children who enter school will complete the elementary cycle with adequate levels of learning

3.2 In order to achieve these targets, GOK proposes the following strategies:

- lower primary cycle to be lengthened to 5 years (in 2001/02) and the total elementary cycle to 8 years (in 2003/04) by adding an extra class to lower primary and higher primary schools so as to ensure that the 6-14 year age group is covered
- all required infrastructure and human resources to be in place by 2007 to provide eight years of quality education
- the learning process, curricula, textbooks and teacher training to be revised in order to make them locally relevant, child-centered, activity based and of improved quality in order to enable all students to graduate with adequate levels of learning and continue with secondary education if they wish
- children in the age-group 6-14 years who are currently out of school to be provided alternative schooling/bridge school facilities and enabled to re-enter school as appropriate

3.3 The cost of implementing these strategies will depend on exogenous as well as policy related variables. The main exogenous factor is the number of new entrants into

³⁸ Measured as the size of the population ages 5-14 years as percentage of population ages 15-59 years.

class 1 which depends on the projected population of 6 year olds. The size of the student population in classes 1-8, however, will depend not only the number of new entrants but also on policies regarding promotion and repetition as well as factors influencing drop out. The size of the student population in *publicly financed schools* will further depend on policies regarding private (unaided) provision. The cost of lengthening the elementary cycle and providing the required infrastructure and teachers will depend on policies regarding the opening of new schools, construction of additional classrooms, the number of teachers and their salary levels. Similarly, the cost of providing alternative schooling depends partly on the number of children currently out of school (exogenous), the number that may be added or subtracted from this stock (depending on policies that influence drop out) and the strategies for providing alternative schooling. The specific strategies adopted for improving quality, including the expansion and upgradation of teacher training, are also policy variables that will have a bearing on cost. Each of these factors is discussed further below.

Projected New Entrants and Enrollment in Classes 1-8

3.4 The number of new entrants in class 1 depends on the size of the population of ages 5,6 and 7 as the children who enter school are generally in this range. The age distribution of the 2001 population has not yet become available; single age-year population projections based on the 2001 census were made for this study using various assumptions.³⁹ In order to smoothen the projected population of these single year age groups, it was decided to use the estimated population figures for the years 2001 and 2011 and to estimate the population of these ages for the intervening years by assuming a gradual decline. The projected number of new entrants in the years 2003 to 2011 was estimated by assuming that 10 percent of children age 5 and 90 percent of age 6 will enter class 1 and there will be no child of age 7 or more left for entering class 1 after 2002. This assumes that GOK is successful in its goal of enrolling all 6 year olds in school by 2001/02. *The number of new entrants into class 1 declines from about 1.18 million in 2002 to about 1.03 million in 2011.*

3.5 Enrollment projections for classes 1-8 have been made on the basis of various assumptions regarding drop-out and repetition. First, the drop out rate is assumed to drop to about 2 percent in all classes from 2002 itself, compared to current drop-out rates of between 3-5 percent in individual classes. Second, the repetition rate is assumed to remain at current levels, ranging from about 5 to 11 percent in individual classes.⁴⁰ The first requires concerted action by the Department to ensure that almost all students are retained in school in every class. Although a strong assumption, it is not unreasonable given the already relatively low levels of drop out and the fact that retention is high in many advanced districts, thus requiring special focus only on the backward districts. The assumption also implies that almost all children continue to class 8 which will be transferred to elementary education from 2003 (currently, the transition rate is much

³⁹ Details of the assumptions regarding population projections, projection of new entrants and enrollment projections are given in A.B.L. Shrivastava, *Revised Enrollment Projections for Grades 1 to 10 in Karnataka*. October 2001.

⁴⁰ Current estimates of drop out and repetition rates have been obtained for DPEP districts in 1999.

lower due to the fact that class 8 forms part of high schools). The second assumption implies that reducing repetition is not a priority for GOK at this stage, particularly given the large number of first generation learners who are entering the school system.⁴¹

3.6 *Enrollment in class 1-8, on the basis of these projections, is scheduled to rise from 9.44 million in 2002 to 9.59 million in 2004 and thereafter decline gradually to 8.33 million in 2011.* Enrollment in classes 1-5 is expected to decline over the period, due to the fall in the number of new entrants, while it is expected to rise sharply in classes 6-8 due to the reduction in drop-out. For the purpose of financial projection, enrollment projections up to 2006/07 have been used.

Enrollment in Publicly Provided Elementary Education

3.7 About 15 percent of total enrollment in classes 1-8 is in private unaided schools, the remainder being in government or aided schools. Enrollment in the former has been increasing at the rate of about 2 percent per year and it is assumed that this trend would continue for the next five years. By 2006/07, about 18 percent of total enrollment in these classes would be in private unaided schools. The financial projections discussed below relate to the provisions that need to be made for students in government and aided schools.

Cost of Basic Infrastructure and Teachers Pupil Incentives for an 8-Year Cycle⁴²

3.8 Since Karnataka has a well-developed network of lower primary and upper primary schools, it has been assumed that there is no need for additional schools. Additional classrooms are required both in existing schools and for providing extra classrooms for lengthening the elementary cycle from June 2003. The total estimated requirement is about 52,000 additional classrooms. Water and sanitation facilities are required in about 16,000 and 34,500 schools (department estimates).⁴³

3.9 Existing GOK schemes for provision of textbooks, uniforms and school bags have been assumed to continue. Textbooks are provided to all children while school bags are provided to SC/ST children in classes 5-7.

3.10 The demand for teachers is projected on the basis of additional teachers required for districts with an average pupil-teacher ratio higher than 36:1. New teachers are recruited only in the 'backward' districts where they are required. These backward districts are classified as those where the existing pupil teacher ratio (PTR) is lower than

⁴¹ Four other scenarios for enrollment projections were also developed, involving alternative assumptions of repetition and drop out rates, including no change from the current situation and gradual decline in the repetition and drop out rates. The scenario described in the text, although somewhat optimistic, was chosen for the financial projections as it appears most consistent with GOK objectives and the enrollment projections are the largest among all the scenarios. This ensures that GOK is providing for the upper threshold for enrollment in projecting its financing requirements.

⁴² The estimates of physical requirements, unit costs and total costs are discussed in detail in the Technical Annex to this report.

⁴³ Figures have been rounded to the nearest hundred.

state average of 36:1. These districts are Bagalkot, Belgaum, Bijapur, Dharwar, Gadag, Haveri, Dakshin Kannada, Bellary, Gulbarga, Koppal and Raichur where the average PTR at the elementary level is 44:1.

3.11 In the absence of more accurate data at the district level, it is assumed that enrollment will grow at an annual rate of 2 percent in these districts, which is the average rate of child population growth in this region. For the remaining districts, enrollment is projected as the residual i.e. total enrollment projections for the publicly funded schools (explained earlier) less the projected enrollment in backward districts. New teachers are recruited in the backward districts to bring down the PTR to 36:1. The existing teachers will be maintained in the remaining districts where the average PTR is 28:1 since enrollment in these grades is expected to fall in these districts.

3.12 Teachers' salary scales are assumed to be unchanged. Average teachers' salaries are expected to grow at 2.5 percent per annum in real terms with 6 percent annual inflation. Assumptions regarding teachers' salaries for class 8 teachers are crucial to the financial projections. Currently, teachers in classes 1-7 are on a lower scale than those teaching class 8, who are on the same scale as secondary school teachers. There are three possibilities for GOK: (i) pay all teachers in the new upper primary cycle (classes 6-8) the secondary teachers' scale; (ii) pay all teachers in the upper primary cycle the elementary teachers' scale; and (iii) pay the teachers of class 6 and 7 the elementary scale and teachers of class 8 the secondary scale. The first option will impose a much higher expenditure burden on elementary education, which will only partially be offset by the reduction in the secondary education budget. The second option will be the cheapest but is difficult to implement as it would require downgrading the salary scales of existing class 8 teachers. The third option is organizationally the most difficult (differential pay scales for teachers handling similar work) but has no cost implications and is likely to be implemented. Only the cost of the third option is reported here since discussions with the Department of Education officials indicate that this is most likely. However, the decision on pay scales will depend on the curriculum for class 8 which will affect the teaching load and the requirement for subject teachers in upper primary classes; currently, the class 8 curriculum is part of the secondary school curriculum and requires greater subject specialization.

Quality Improvement Strategies

3.13 There are six components for undertaking quality improvement in order to enhance learning and retention. These comprise an extension of the DPEP strategies to cover upper primary together with activities at the state level for system-wide reforms. They include: (i) extension of Block Resource Centers and Cluster Resource Centers to 13 non-DPEP districts and to the upper primary stage; (ii) annual teacher training for all teachers as under DPEP; (iii) providing teaching-learning material grants to all elementary teachers according to DPEP norms; (iv) creating a District Institute of Educational Training (DIET) for 5 new districts for which Central funding is not available; (v) revision of curricula and textbooks and reforms of the examination system; and (vi)

encouraging innovation and research in DIETs and the Directorate of School Education, Research and Training (DSERT).

3.14 The strategies that are listed above may need to be modified in important respects if, for instance, higher teacher grants are required for upper primary classes or if teacher-training costs are higher for these classes (than under DPEP). Alternative methods of delivering teacher training and re-defining the roles and tasks of the BRCs, DIETs and DSERT are under discussion in Karnataka which may have cost implications.⁴⁴ However, in the absence of further detailing, it is difficult to cost these alternative strategies.

Strategies for Out-of-School Children

3.15 Approximately 1.05 million children in the age group 6-14 years were estimated to be out of school in 2001 (GOK Child Census, January 2001). All existing out-of-school children are expected to be covered by alternative schooling facilities, but it is assumed that there are no further additions to the stock since drop out rates would be reduced to negligible levels. About 20 percent of the 1.05 million children are assumed to leave the alternative schooling facility every year (roughly the proportion whose age exceeds 14 years). Although GOK policy is to ensure that all children in the eligible age group are brought back to school, this may not be realistic for older children or for all children in the younger age group. Hence, “mainstreaming”, or bringing these children back to formal school is expected to occur only for *half of the 6-10 year age group* who are currently out of school. The remaining children continue in alternative schooling facilities until the age of schooling.

3.16 The total cost of this strategy therefore involves two components: (i) the cost of providing alternative facilities for eligible out-of-school children and (ii) the cost of “mainstreaming”, which consists of additional teachers on the basis of an average pupil-teacher ratio of 36:1 (for the children brought back to school), teacher training and teacher grant costs and pupil incentives. The norms for alternative schools under the new Centrally Sponsored Scheme, Sarva Shiksha Abhiyan (SSA), are used to estimate the first component.⁴⁵ There is an additional implicit assumption that bringing out-of-school back to school (and eliminating future drop outs) will not require further incentives (to offset opportunity costs, for instance).

⁴⁴ See GOK, *Shaping Education – Goals and Strategies*. Draft Report. February 2002

⁴⁵ The unit costs proposed under SSA, assuming children remain in the alternative school for a year, are higher than the current GOK bridge school program for out-of-school children (“Chinnarangala”). In the latter, a group of 10 - 25 children are taught by a teacher and a volunteer for two months of the summer holidays. Paid-out expenses include the honorarium of the volunteer, the cost of learning materials and the cost of material development by a state resource group. Teachers are compensated through 25 days’ additional earned leave. Although the costs are lower, it is not clear how effective this short-duration program is compared to a longer duration alternative school model in terms of learning outcomes and retention of children in school. The higher cost model has been assumed here given the importance GOK gives to full retention and improving learning outcomes.

Summary of Financial Projections for Publicly Provided 8-Year Elementary Education (Base Case Scenario)

3.17 Table 5.1 reports the projected financing requirements under the above assumptions, called the Base Case Scenario for the years 2002/03 to 2006/07. Revised estimates for 2001/02 are also reported. Expenditure rises from about Rs. 1,759 crores in 2001/02 to about Rs. 3,723 crores in 2006/07. The major increase in expenditures is scheduled to occur in 2003/04, when Class 8 is added to the elementary cycle. The projected increase from 2002/03 to 2003/04 is 23 percent; thereafter, the annual increase in expenditure is about 7-14 percent per year.

3.18 The composition of expenditure also changes considerably. The current share of salaries is about 92 percent. This is expected to fall to about 80 percent and gradually rise to 86 percent by 2006/07. About 7-8 percent of the total expenditure is on civil works in the first two years on account of the additional classrooms that have to be built and the construction of new BRCs/CRCs and DIETs. This falls to about 5 percent by 2006/07. The share of expenditure on pedagogical improvement (i.e., all components of quality improvement except civil works) rises from 2.4 to 3.7 percent. A significant share of total expenditure is on alternative schooling, about 4.6 percent in 2002/03 declining to 2.8 percent in 2006/07.

3.19 Clearly, salary costs will still constitute the overwhelming share of total expenditures. However, there are significant expenditures on pedagogical improvements, alternative schooling and incentives (approximately equal in absolute terms). These expenditures would need to be monitored for their effectiveness; in particular, the substantial allocations for alternative schooling should be monitored to gauge the quality of education provided to out-of-school children and the success in "mainstreaming" them.

3.20 These enhanced expenditures will mean that a greater proportion of GOK's revenue expenditures will need to be allocated to elementary education, from 8.6 percent in 2001/02 to 12.6 in 2004/05. The proportion of GSDP allocated to elementary education will have to rise from about 1.5 percent to 1.8 percent.⁴⁶

Alternative Scenarios for Elementary Education Expenditures

3.21 Three alternative scenarios are considered here, focusing on alternative assumptions regarding teacher costs which constitute the overwhelming share of total costs. These are (i) revision of teacher pay scales in line with the 5th Pay Commission recommendations (ii) rationalization of teachers across districts and (iii) consolidation of small schools and new strategy for small lower primary schools. The first option is a high cost scenario while the other two are potentially cost-reducing. Assumptions regarding

⁴⁶ Projections of revenue expenditures and GSDP are taken from GOK's Medium Term Fiscal Programme, February 2002 (unpublished).

each are discussed below. Assumptions regarding basic infrastructure, incentives, alternative schooling and quality improvement are retained as in the Base Case scenario.

3.22 5th Pay Commission revision: All staff receive higher salaries, with teachers' salaries rising on average by 20 percent and those of other staff by about 26 percent per year. Although GOK has no intention of implementing these recommendations at the moment, there could be pressures from teachers to do so both for reasons for parity with teachers in other states and with other professions. Salary costs are affected in all components of the Base Case (teachers' salaries, mainstreaming of out-of-school children, and teacher training costs).

3.23 Rationalization of teachers across districts: The Base Case Scenario assumes that additional teachers would be recruited in the backward districts with high pupil-teacher ratios while there would be no reduction in teachers in districts with low pupil-teacher ratios. This is a high-cost scenario as it leads to further reductions in the pupil-teacher ratio in the latter districts (due to the fall in the child population) and it is not clear that such reductions in pupil-teacher ratios are warranted for improving quality. *This cost-reducing scenario assumes that instead of recruiting additional teachers in backward districts, teachers are transferred from districts with a surplus i.e. where the PTR is below 36:1 to districts with a deficit where the PTR is above the state average.* In classes 1-7, only as many teachers are recruited as are required to maintain the current state average. The overall PTR falls to 33:1 for classes 1-8 because additional teachers are hired for Class 8 from 2003/04.

3.24 Consolidation of small schools and new strategy for small lower primary schools: 56 percent of LPS have fewer than 60 students in four classes. One-third of the HPS have fewer than 40 students. Since many LPS serve small rural habitations, it is not possible to close down these schools. However, the abnormally high PTR in these schools raises unit costs and these may rise even further due to a fall in the child population. An alternative strategy is that GOK hires assistant teachers instead of a regular second teacher for LPS with enrollment below 60 students. Assuming that each of these 12,290 schools has a minimum of two teachers, there would be a potential 'surplus' of 12,290 teachers. If GOK decides to close all its HPS schools with enrollment below 40 students and half of the teachers in these schools are not needed (the other half being redeployed to other HPS where enrollments would increase), there would be a surplus of about 20,700 teachers.

3.24 Table 5.2 summarizes the results of the first two of the above scenarios and compares them with the Base Case Scenario. The high cost scenario of implementing the 5th Pay Commission award raises total elementary expenditure by about 16 percent per year. Expenditure rises as a share of revenue expenditures to about 14.5 percent (compared to 12.6 percent in the Base Case) and as a share of GSDP to about 2.1 percent (compared to 1.8 percent). The low cost teacher rationalization scenario, on the other hand, reduces expenditures by about 6-8 percent per year from 20045 onwards compared

Table 5.1
Elementary Education Base Case Scenario
(Rs. Crores)

	2001/02 (r.e.)	2002/03	2003/04	2004/05	2005/06	2006/07
	Classes1-7	Classes1-7	Classes1-8	Classes1-8	Classes1-8	Classes1-8
Infrastructure and Pupil Materials						
Additional classrooms		143	152	161	171	99
Repairs of buildings		36	38	41	44	45
Water and toilet		21	22	24	25	27
Learning Materials & Incentives		106	127	131	129	124
Total		306	340	357	369	295
Reducing PTR in backward districts and shifting class 8 to Elementary						
Teachers' salaries	1589	1772	2227	2580	2845	3139
Other staff salaries	31	34	37	40	43	47
Total		1816	2264	2620	2888	3186
Alternative schooling						
Providing facilities for out of school children		105	89	76	64	54
Mainstreaming children		0	20	43	47	51
Total		105	109	118	111	105
Improving Quality						
Teacher training (in-service)		12	14	15	16	17
Academic support (BRCs/CRCs) (including construction)		27	40	56	75	96
Teaching Learning Materials grants to teachers		10	12	13	14	15
Curriculum and examination reform		1	1	1	1	1
Research activities		1	1	2	2	2
DIETS		4	12	11	6	7
Total		55	81	98	114	137
Others (unallocated)	139					
Grand total	1759	2273	2793	3193	3481	3723
Of which: (in percentage)						
Salaries	92.1	79.5	81.0	82.1	83.0	85.6
Civil Works	n.a.	8.8	7.6	7.1	6.9	4.6
Pedagogical improvement (excluding civil works)	n.a.	2.4	2.9	3.1	3.3	3.7
Alternative schooling	n.a.	4.6	3.9	3.7	3.2	2.8
Incentives	n.a.	4.7	4.6	4.1	3.7	3.3
Elementary Education Expenditure as percentage of:						
Revenue receipts	9.9	11.5	12.4	12.4	N/a	n.a.
Revenue expenditure	8.6	10.3	11.8	12.6	N/a	n.a.
GSDP	1.5	1.7	1.8	1.8	1.8	1.6

Source: World Bank calculations

to the Base Case. As a proportion of projected GSDP, the expenditure on elementary education in this scenario increases from 1.5 percent in 2001/02 to 1.76 percent in 2003/04 after which it falls back to 1.5 percent in 2006/07(not shown in table). The magnitude of the amount saved is greater in the last three years of the projections because of the increase in the number of teachers due to the addition of Class 8 to the elementary cycle (Chart 5.2).

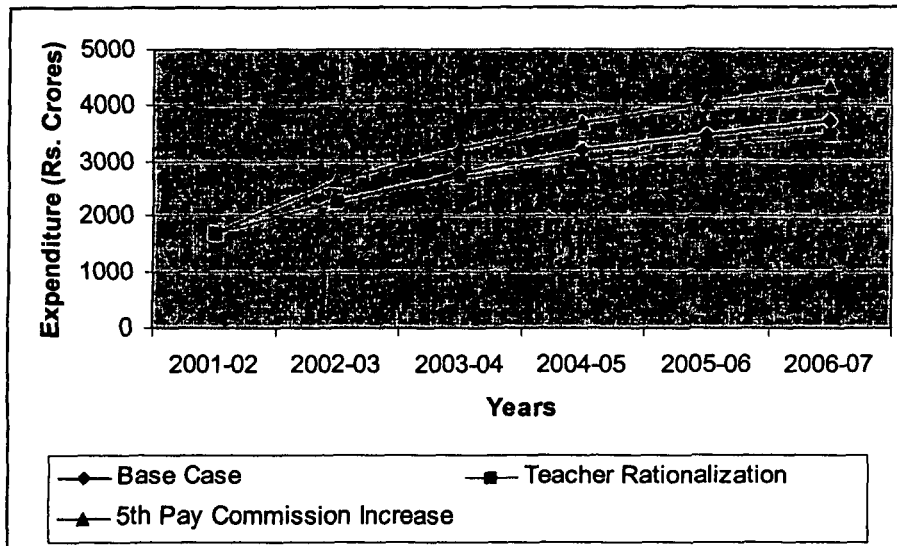
3.25 The significance of this measure (teacher rationalization) can be assessed by comparing these cost savings with the amounts spent on quality improvement. *GOK can save a total of Rs .819 crores over five years or an average of Rs. 164 crores per year by transferring teachers from advanced to backward districts. This is almost double of the amount spent on improving quality.*

Table 5.2
Alternative Scenarios for Elementary Education
(Rs. Crores)

	2001/02 (r.e.)	2002/03	2003/04	2004/05	2005/06	2006/07
	Classes1-7	Classes1-7	Classes1-8	Classes1-8	Classes1-8	Classes1-8
Infrastructure & Pupil Materials (unchanged for all scenarios)		306	340	357	369	295
Salaries						
5th Pay Commission Scenario	1620	2156	2682	3099	3417	3769
Teacher Rationalization Scenario	1620	1798	2165	2382	2691	2928
Alternative schooling and mainstreaming						
5th Pay Commission Scenario		105	112	126	119	114
Teacher Rationalization Scenario		105	109	118	111	105
Improving Quality						
5th Pay Commission Scenario		57	83	100	117	141
Teacher Rationalization Scenario		55	81	98	114	137
Others (unallocated)	139					
Grand Total						
5 th Pay Commission						
% Increase over Base Case		15.5	15.2	15.5		
Teacher Rationalization						
% Decrease compared to Base Case						

Source: World Bank calculations

Chart 5.2
Total Expenditure Required for Elementary Education



3.26 The last of the three alternatives presented above is more difficult to project and hence an attempt has been to assess the savings for the current year. If the small LPS are staffed with one regular teacher and one assistant teacher, instead of two regular teachers, and assistant teachers are paid the salary levels paid to parateachers in other states, there would be a net saving of Rs. 85 crores.⁴⁷ If GOK also decides to consolidate all its HPS schools with enrollment below 40 students, and half of the teachers in these schools (20,700 teachers) are not needed, this would result in a further cost savings of approximately Rs. 90 crores. Thus, the total cost savings from closing down very small schools and even retiring half the teachers would be approximately Rs. 175 crores, which is more than the annual amount spent on quality improvement. However, implementing this reform would require further detailed micro-planning exercises to identify small schools that could be consolidated without making access difficult for rural children.

3.27 These simulations are suggestive of the possible trade-offs and savings that can arise from different strategies in the deployment of teachers. Other sources of savings can arise from decisions on the pay scales of class 8 teachers (mentioned earlier) as well as revision of the norms for specialist teachers at the upper primary stage. Administrative and political difficulties of introducing changes need to be considered – for instance, moving teachers across districts may be difficult since elementary teachers are hired at the district level and may entail additional costs in the form of incentives. GOK has already initiated steps in this direction by moving about 2,400 teacher posts across districts. The small school strategy would also require additional expenditure in the form of additional learning materials and enhanced teacher support costs which have not been included above. The hiring of assistant teachers requires changes to

⁴⁷ This is estimated as follows. The cost savings of reducing 12,190 regular teachers at the current average salary paid to elementary teachers of Rs. 85,980 per annum, is Rs. 106 crores. The 12,290 assistant teachers to replace these regular teachers, who would be paid about one-fifth the salary of regular teachers, would cost Rs. 21 crores.

personnel policy and can lead to demands for regularization and prolonged litigation. Earlier experiences in hiring teachers on different terms and conditions, which has been tried in Karnataka, will need to be studied.

3.28 In any case, the above discussion highlights that GOK should avoid a high cost strategy that adds more teachers without adding to outcomes. In particular, lengthening the elementary cycle requires careful planning in the deployment of teachers while adding the extra class, and detailed school profiles with numbers of children and catchment areas. Even if the consolidation of small lower primary schools is difficult, the state should avoid creating more small schools (particularly higher primary schools which have a high unit cost).

IV. Financing Requirements for Lower Secondary Education

4.1 GOK's objectives for secondary education are as follows:

- about 65 percent children in the relevant age-group should participate (compared to 45 percent at the moment)
- about 80 percent of those who join should successfully complete class 10
- secondary school leavers should be able to participate in the rapidly changing world of work or to move to higher education

4.2 The main strategies for achieving these goals are:

- building additional high schools according to need
- improving the infrastructure of high schools to enable the curriculum to be taught effectively (laboratories and libraries)
- providing in-service teacher training (which is almost entirely absent at the moment)
- revising the curriculum (to enable diversification and greater student choice) and textbooks and undertaking reform of the public examination system

4.3 The draft GOK sector strategy report also proposes integration of the lower secondary and higher secondary stages, moving the latter to the school stage. This has been suggested in view of the fact that high schools would have only two classes after class 8 is shifted to elementary schools. However, this major reform would require further operational detailing to estimate the costs and is not considered in this report.

Projected Enrollment in Classes 9 and 10

4.4 Although GOK objectives have been set in terms of the proportion of the age-group participating in lower secondary education and completing class 10, for the purposes of medium-term planning, it is possible only to make enrollment projections on the basis of the flow of students from the elementary stage. Two scenarios have been considered. The first presumes that the Grade Progression Rate (GPR) between class 8 and 9 is 0.71, which is the current GPR between grade 7 and 8. The actual current GPR between class 8 and 9 is 0.95, but currently these two classes form part of the secondary cycle and this high transition rate may not be sustained once class 8 shifts to the elementary stage. The second scenario presumes that the GPR between class 8 and 9 remains at the current high level of 0.95. This situation will arise if the demand for secondary education is high and most children continue to remain in school up to class 10.

4.5 Private decisions to continue with education beyond the elementary stage will determine enrollment in classes 9 and 10 and these depend partly on economic variables such as income, wealth, price of education and the expected rate of return. However, the experience of states (Kerala and Tamil Nadu) show that social and cultural factors are important determinants for seeking education and that participation in secondary education tends to become universal once elementary education is universalized. It is assumed that there are no additional public costs for inducing students to continue with secondary education (in the form of more incentives, scholarships etc), once the quality of elementary education improves for all students so that there are no academic barriers to participating. This may be true for urban areas where demand for secondary education is strong both for boys and girls and amongst the poor. However, in rural areas, girls' participation at secondary level may take longer, both due to cultural factors as well as the limited employment prospects for girls in off-farm activities.

Enrollment in Publicly-Provided Lower Secondary Education

4.6 As with elementary education, about 15 percent of enrollment is in private unaided schools and this enrollment is assumed to grow at about 2 percent per year. At the secondary stage, about half the remaining enrollment is in private aided schools. Private aided schools receive government funding for teachers' salaries and teacher training but not for investment in infrastructure and equipment. This has to be taken into account in projecting the requirements for public finance.

Cost of Infrastructure and Teachers

4.7 Unlike elementary education, there is some uncertainty in the physical requirements for additional schools and infrastructure. Bank estimates are that 50 new (government) high schools are required and that 60 percent of government high schools need laboratories and libraries (the first number is based on the current ratio of high schools to elementary schools and the second on information from NCERT's Sixth All India Survey, 1992/93 and GOK's sub-sector study on secondary education).⁴⁸ These estimates have been used for projecting the requirements for additional infrastructure. Teacher requirements are based on a pupil-teacher ratio of 23:1 for additional enrollment and GOK norms for minimum number of teachers for new high schools.

Quality Improvement Strategies

4.8 Six activities are envisaged to improve quality: (i) all teachers receive annual training; (ii) all teachers receive annual teacher grant; (iii) academic support to schools and teachers is provided by hiring five resource persons (subject specialists) for every two blocks; (iv) computer education is introduced in all government and aided schools; (v) annual provision for consumables and replacement of equipment and books; and (vi) annual maintenance grant to cover procurement of learning materials and minor repairs. The cost of curriculum revision and

⁴⁸ The Department of Education, on the other hand, estimates that 700 new high schools are required and that only 20 percent of government high schools need laboratories and libraries.

examination reform has not been included as this may require further detailed studies.⁴⁹ In any case, it may not constitute a large amount in absolute terms.

Financial Projection Scenarios

4.9 The projections are presented under three scenarios. The first assumes a low transition rate between classes 8 and 9; the second uses the same transition rate as the first but assumes that the 5th Pay Commission pay scales are implemented for secondary school teachers; and the third projects a high transition rate between classes 8 and 9 but assumes that existing salary scales continue.

4.10 Table 5.3 shows the financial requirements for new facilities and quality improvement based on the above projections. The financial burden to be borne by the government and that to be borne by aided schools is shown separately (Part A and Part B of Table 5.3, respectively). The estimates for the aided schools are the same in all three scenarios because they relate to expenditures on classrooms, laboratories, libraries and other infrastructure; salaries for aided schools (which change in the various scenarios) are borne by the government and are included in the top half of the table.

There is a drop in the projected expenditures in 2003/04 for all three scenarios due to the transfer of class 8 to elementary education. Subsequently, government expenditures rise in the first scenario and are about 27 percent higher in 2006/07 as compared to 2001/02. Most of this increase is due to investment in additional classrooms and, more importantly, in laboratories, libraries and computer education.

4.11 Implementing the pay commission recommendations raises total expenditure borne by the government by about 10 percent every year. The third scenario, where there are more students entering Class 9 every year is the most expensive scenario due to the increase in number of teachers required for the increased enrollment strength. Total annual expenditures in this scenario are about 14-30 percent higher than in the first scenario.

⁴⁹ The GOK draft sector strategy proposes a restructuring of the DSERT to focus on specialized functions relating to curriculum development and research. Further detailing would be required to cost this proposal.

Table 5.3
Financial Projections for High School Education: Summary
(Rs. Crores)

	2001/02 (b.e.)	2002/03	2003/04	2004/05	2005/06	2006/07
	Classes 8-10	Classes 8-10	Classes 9-10	Classes 9-10	Classes 9-10	Classes 9-10
A. To be borne by Government						
Expanding and Maintaining Facilities						
Low Transition Rate (no pay increase)		796	554	599	638	793
Low Transition Rate (with pay commission increase)		885	615	664	708	881
High Transition Rate (no pay increase)		796	640	691	845	1054
Improving Quality						
Low Transition Rate (no pay increase)		81	74	84	94	112
Low Transition Rate (with pay commission increase)		86	78	88	99	118
High Transition Rate (no pay increase)		81	80	90	107	128
Total						
Low Transition Rate (no pay increase)						905
Low Transition Rate (with pay commission increase)						909
High Transition Rate (no pay increase)						1082
B. Capital expenditure in aided schools						
Expanding and Maintaining Facilities		16	24	25	19	19
Improving Quality		10	27	36	46	57
Total		26	51	61	66	76

Note: Expenditure to be borne by government includes salaries of teachers in government and aided schools and capital expenditure in government schools. Capital expenditure in aided schools is shown separately as it is not normally borne by the government.

Source: World Bank calculations

V. Financing Elementary, Lower Secondary and Higher Secondary Education

5.1 In this section, the total requirements for elementary, lower secondary and higher secondary education are compared with available sources of finance to arrive at the financing gap.

5.2 Projections for higher secondary education have not been undertaken as they are much more complex and will have to await state government decisions regarding the organizational structure of this cycle, specifically a decision regarding the location of classes 11 and 12. Unit costs vary tremendously between the different types of institutions; they also vary by subject of study and data are currently not available for this. Hence, it has been assumed that expenditure on higher secondary education (PU education) would grow at 2.5 percent in real terms annually with 6 percent annual inflation.

5.3 It should also be noted that the projections for elementary education and high school education discussed here do not take into account the requirements of investments in pre-service teacher education, especially in secondary education. Such investments would be necessary to improve the quality of school education. The existing over-supply of teachers at both elementary and secondary level suggests that expansion of pre-service training facilities is not required. However, improving the quality of these institutions may be required, but since most of the institutions are in the private sector, the effort should be to create a framework for mobilizing additional private resources for quality improvement, rather than providing additional public funds for this purpose (except perhaps on a selective basis for inducing system-wide changes, for instance, in improving the certification of teacher training programs).

5.4 The GOK's medium term fiscal program (MTFP) projects annual allocations for elementary and secondary (including PU) education up to 2004/05. These allocations are from GOK resources and Central government grant assistance for SSA (which is included in the GOK budget). The MTFP allocations represent one financing source. The second source is Central government assistance for DPEP which is currently outside the GOK budget. These have been estimated on the basis of actual project funds that remain to be disbursed in 2002/03.

5.5 The third financing source is from the private sector and two components are considered here. First, it is assumed that managements of aided schools will finance the cost of additional infrastructure and improved quality (laboratories, libraries and teacher training). Second, since aided schools cater to richer students (see Chapter 3), it has been assumed that the richest 40 percent of students pay an increasing proportion of per pupil recurrent expenditures in the form of fees.⁵⁰

⁵⁰ Specifically, it has been assumed that the top quintile of students pays 20 percent and the second quintile pays 10 percent of the per pupil recurrent expenditure as fee in 2002/03. These proportions gradually increase to 100 percent and 50 percent in 2006/07, for the top quintile and the second quintile, respectively.

Table 5.4
Financing School Education (Projections)
(Rs. Crores)

	2002-03	2003-04	2004-05	2005-06	2006-07
Elementary Education (Base Case)	2273	2793	3193	3481	3723
High Schools (govt.+aided) (Low Transition Rate)	903	680	744	798	981
PU Education	206	224	244	265	288
Financing Gap	269	224	303	na	na
Financed by:					
1 GOK MTFP Allocation	3088	3473	3878	na	na
2 Central Govt. (DPEP – II)	25	0	0	-	-
3 Additional Private Resources					
▪ Private Managements	26	51	61	66	76
▪ Fees in Aided schools	20	26	43	64	100
Financing Gap (with private)	223	147	199	na	na

Source: World Bank calculations

5.6 The total financing requirements are based on the Base Case scenario for elementary education and the low transition rate scenario for lower secondary education. Without the mobilization of additional private sector finance, the projected financing gap is about Rs. 300 crores in 2002/03, Rs. 224 crores in 2003/04 and Rs. 300 crores 2004/05 (Table 5.4). The estimate of the financing gap is crucially dependent on the considerably enhanced MTFP allocations in future years, which would represent a break from recent trends in budgetary allocations. Enhanced private sector contributions would further reduce the financing gap by Rs. 46 crores in the first year and by Rs. 176 crores in 2006/07. Thus, additional private sector mobilization along the lines envisaged here could reduce the financing gap by 20 to 35 percent in each of the first three years.

5.7 The estimates of the financing gap are also dependent on the assumptions underlying the projections of financing requirements. If GOK adopts higher cost strategies in elementary and secondary education (for instance, if it revises teachers' salaries in line with the Pay Commission or builds many more new upper primary or high schools), the financing gap would widen considerably or else expenditures on other components must be reduced. The same would happen if additional pupil incentives, such as cooked meals were provided to reduce drop-out and improve attendance. On the other hand, if it adopts cost-reducing strategies as indicated in the section on elementary education, the financing gap would be narrowed. Cost-saving strategies for lower secondary education have not been explored but they could be simulated in future refinements of these exercises. If the transition rate to class 8 rises in the short-run, the financing gap would widen. Finally, the projections of additional private sector finance are modest; more could be mobilized if GOK is willing to consider a restructuring of the grant-in-aid mechanism for aided schools, as discussed in Chapter 3, without negatively affecting the participation of poor students.

VI. Conclusion

3.5 The analyses undertaken in this chapter show that reaching the GOK goals for elementary and secondary education will require considerably enhanced financial allocations. Total projected financial requirements for elementary education (the base case scenario), lower secondary education (low transition rate scenario) and higher secondary education are estimated to rise from about Rs. 2,660 crores in 2001/02 (revised estimates) to Rs. 3,382 crores in 2002/03 to Rs. 4,992 crores in 2006/07. *This represents a 26 percent increase in the first year of the projections, mainly on account of the increased cost of the transition to an 8-year elementary cycle, and an additional increase of 47 percent over the next four years.* The volume of additional requirements depends critically on the strategies adopted by GOK and, in particular, on those strategies that affect the expenditure on teachers. The ability of the state government to finance the additional requirements depends to a considerable extent on the success of the fiscal reforms program, continued economic growth and the political will to commit the amounts indicated in the MTFP for school education. Similarly, projected Central assistance for elementary education in the state will depend on the ability of the Central Government to substantially increase allocations to education (as well as the state's capacity to effectively use these funds). If GOK adopts fiscally sustainable strategies in school education without compromising on quality and equity, and if the overall fiscal reforms are successful, the financing requirements for an expanded school education system of higher quality could be met mainly from its own resources and from additional private sector mobilization. However, an annual residual financing gap of about Rs. 200 crores exists in the medium-term. Adopting cost-reducing strategies, focusing on containing teacher expenditures that do not compromise quality or equity goals is one way to reduce the financing gap. Otherwise, GOK would need to mobilize additional resources through the budget or from other sources or, alternatively, further prioritize its goals and strategies in the elementary and secondary sectors. Finally, the estimated financing gap would widen considerably if higher cost strategies are adopted and investments in higher secondary education and the teacher education sub-sector are also taken into account.

Bibliography

Consultants' Reports:

Ajay Mahal – *Achievements, Private Expenditures, and Beneficiaries of Public Subsidies on Education: A Case of Karnataka*. April 2001.

A.B.L. Shrivastava – *Enrollment Projections for Grades I to X of Karnataka State for the Years 2001-2010*. October 2001.

Vinod Vyasulu – *The Budget for Education: A Study at the District Level in Karnataka*. January 2001.

Government of Karnataka Subsector Studies:

1. Early Childhood Development
2. Role of Private Sector in Education
3. Secondary and Pre-University Education
4. Teacher Education
5. Structure and Functions of Educational Management & Decentralization Study
6. Collegiate Education
7. Technical Education
8. Elementary Education
9. Equity in Education in Karnataka

Government of Karnataka: Draft Education Sector Study Report. *Shaping Education – Goals and Strategies*. February 2002.

References:

Bashir, S. (2000). *Government Expenditure on Elementary Education in the Nineties*. European Commission. New Delhi.

Center for Monitoring Indian Economy. (1990). *Basic Statistics Relating to the Indian Economy*. Vol. 2, States. EIU. Bombay.

Government of India. (1998). *Attending an Educational Institution in India: Its Level, Nature and Cost*. NSS 52nd Round, July 95-June 96, NSSO. New Delhi.

_____ (1998). *State Profile 1991 India. Census of India*. New Delhi.

_____ (2000). *Economic Survey 1999-2000*. Ministry of Finance. New Delhi.

Ministry of Health and Family Welfare (1995). *National Family Health Survey, Karnataka 1992-93*. PRC and IIPS. Bombay and Bangalore.

_____ (2000). *National Family Health Survey, India 1998-99*. ORC Marco and IIPS. Mumbai.

Ministry of Human Resource Development. (1992-1999). *Selected Educational Statistics*. Department of Education, Government of India. New Delhi.

Government of Karnataka. (1993). *Report of The Karnataka Universities Review Commission*. Karnataka University Press. Dharwad.

_____ (2000). *Detailed Estimates Of Expenditure. Vol. III. 2000-2001*. Karnataka.

_____ (2000). *Sixth All India Education Survey: State Report*. Department of Public Instruction. Bangalore.

_____ (2000). *A Brief Note On Pre-University Education*. Department of Pre-University Education. Bangalore.

_____ (1999). *Human Development In Karnataka*. Planning Department. Bangalore.

_____ (2000). *A Brief Note On Pre-University Education*. Department of Pre-University Education. Bangalore.

_____ (1999). *Economic Survey of Karnataka 1998-99*. Department Of Finance. Karnataka.

_____ (1999). *Annual Administration Report 1998-99*. Department of Technical Education. Bangalore.

_____ (2000). *Report On The Function of Collegiate Education*. Department Of Collegiate Education. Bangalore.

_____ (1998). *Policy Issues And Development Priorities For Directorate For Technical Education*. Department Of Technical Education, Development Cum Coordination Committee of The Directorate.: Karnataka.

_____ (2001). *Budget Allocation For Zilla Panchayat Plan and Non-Plan for the Year 2000-01. Vols. 1 & 2*. Karnataka.

Lalitha, M.S. (2000). *Implementation of Operation Blackboard Scheme in Karnataka- A Survey*. NIEPA.: New Delhi.

Narayana, M.R. (1999). *Grant-In-Aid To Private Degree Colleges In Karnataka State: Current Status and Future Policy Alternative*. ISEC. Bangalore.

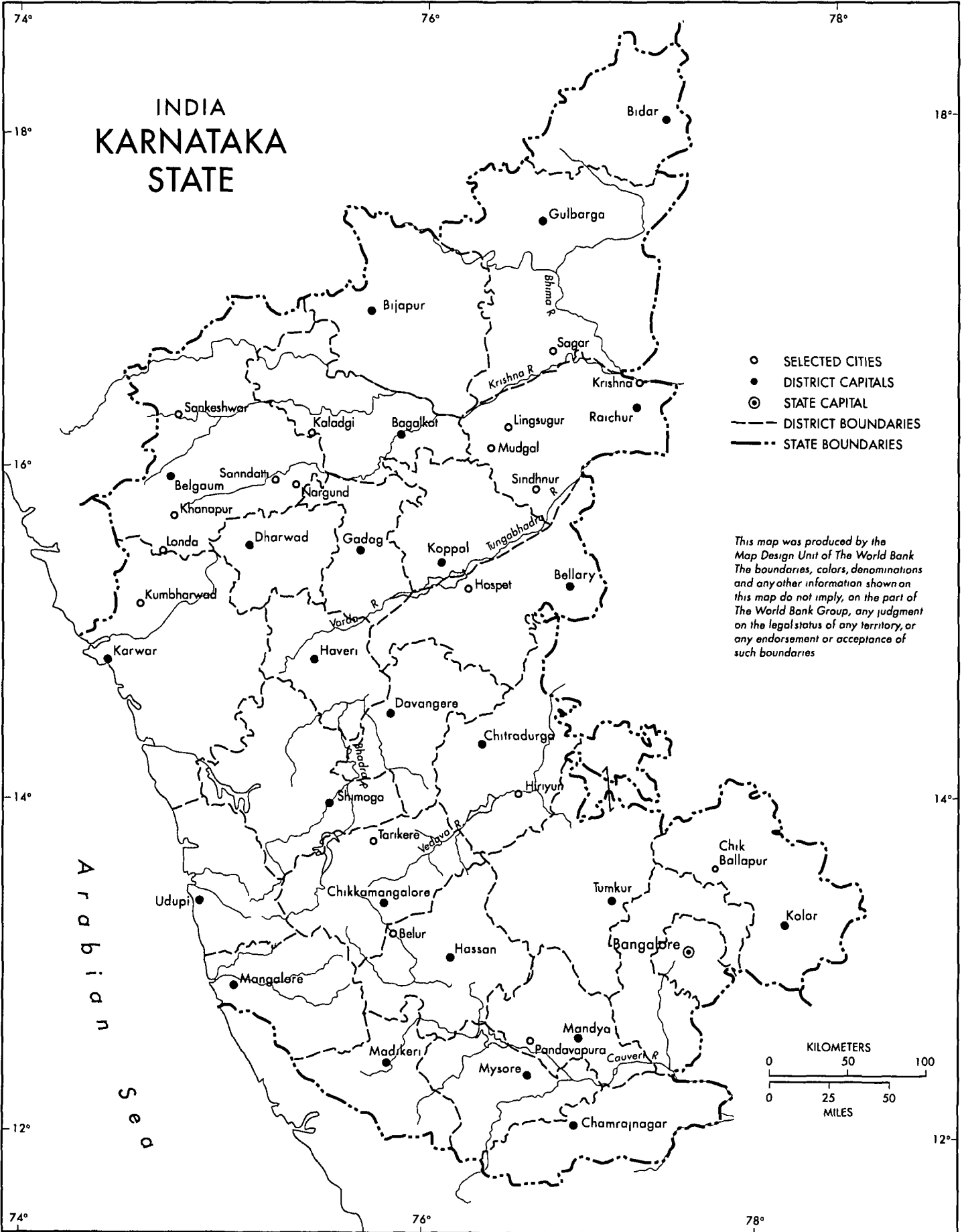
NIEPA. (2000). *Implementation Of Operation Blackboard Scheme In Primary Schools In India*. Draft Report. MHRD. New Delhi.

Panchamukhi. P R, K.R. Shah. (2000). *Financial Management Of Operation Blackboard Scheme: A Study Of Seven States*. Center For Multi-Disciplinary Development Research. Karnataka.

Samuel & Lingaraju. (1997). *Regional Disparities In Higher Education In Karnataka*. Population Research Center. Bangalore.

Seetharamu, A.S. (1999). *Structural Changes And Adjustments In Higher Education Within a Framework of A Transitional Indian Society*. Draft Report. ISEC. Bangalore.

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