Primary Education: Progress and Constraints

This paper looks at various aspects of education in an effort to pinpoint the reasons for the poor performance of the sector. Though Andhra Pradesh is doing better in school density, size and distribution of habitations, student-teacher ratio, etc, declining allocations for education in successive budgets could undermine these gains. The non-formal system has thus far proved to be ineffective and for the state to achieve genuine literacy, it is the formal sector that needs enhanced investment.

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I Introduction

Education is one of the most important social indicators that is directly linked with economic development. Level of literacy or education is directly associated with gross domestic product, indirectly with poverty, population growth, health and crime rate. Despite its importance, education continues to be a neglected area at the policy level. After 50 years of planning, enormous funding and promises, total literacy remains to be a distant dream. The deadline for achieving total literacy is postponed year after year. Apart from overall low levels of literacy at the national level, disparities across regions, genders, social groups, etc, are of serious concern. Education is recognised as a basic input for empowerment to individual and overall development of the society. Expenditure on education and its intra-sectoral allocation, in general, appears to be the main factor influencing literacy levels [Sharif and Ghosh 2000]. At the national level the expenditure on education in relation to Gross Domestic Product (GDP) continues to be much below the desired 6 per cent level. The share of elementary education in the total expenditure on education continues to be below 50 per cent as against the required 65-70 per cent to achieve universal literacy. At the same time expenditure on education per se is influenced by non-economic factors rather than economic factors [Tilak 1995]. Moreover, some of the moderately developed states like Andhra Pradesh seem to be doing badly as far as education is concerned.

Andhra Pradesh ranks 22nd among 28 states (2001 census) in terms of adult literacy while it ranks 11th in terms of per capita state domestic product in descending order. That is, Andhra Pradesh is in the middle category in the case of per capita SDP while it is in the bottom category in the case of literacy. This indicates that the relation between economic development and education development (literacy) is not automatic. However, education development is a necessary condition for economic development and poverty alleviation.

This paper makes an attempt to examine various aspects of education in the state of Andhra Pradesh at a disaggregate level with a view to pinpoint the causes for its poor performance in primary education. Some of the important issues that need attention in this regard include: a) trends in the status of primary education and public expenditure on primary education in a regional context, b) factors (demographic, socio-economic, etc) influencing literacy levels in a regional context, and c) constraints (economic, institutional and policy) on achieving total literacy in the state. The intention here is to examine the problem of schooling (primary) at the district level and also between rural and urban situations. It may be noted that primary education and literacy represent different levels or degrees of learning. However, the differences between these two seem to be narrowing. For, during 1991 census all children below the age of 7 years have been treated as illiterate even though some school-going children might have picked up reading and writing. This is departure from the previous practice when children below the age of 5 years only were treated as illiterate [Govt of India, Census 1991, Andhra Pradesh, Series-2, p 5]. Similarly, as per NSS 42nd round (*Sarvekshna*, Vol XVI, No 4, April-June 1993) one will be considered as 'literate' if he/she can read and write a simple message in any language, which is possible only through some primary education. For the purpose of our study, we consider primary education (up to class V in Andhra Pradesh) as necessary for attaining appropriate literacy. Though the paper mainly relies on secondary sources of data, it also draws from some of the recent micro and macro studies conducted in the state and elsewhere.

II Trends in Literacy Rates

Literacy rate in Andhra Pradesh has been much below the all India level during the last four decades (Table 1). The gap between the two has narrowed down during the last decade (2001). The gap is more in the case of male literacy than that of female literacy. The estimates of literacy rates from different sources, especially National Council for Applied Economic Research (NCAER), during the 1990s have also shown some improvement in the state's performance. Female literacy has recorded a significant improvement in the state when compared to the all-India level. This could be attributed to the literacy campaign focused on women ('akshara sankranti') in the state during 2000.

The literacy rates of scheduled tribe and scheduled caste population at the all-India level are relatively high indicating a social gap in rural Andhra Pradesh. The female literacy rates of these groups is still only

around 10 per cent. In rural Andhra Pradesh, there are 731 households for every thousand households without a female literate and 465 households without any literate in the family. At the all India (rural) level these figures are 633 and 331 households respectively. As a result the effective literacy rate will be much below that of all India level. For, an illiterate in a household with at least one literate (proximate illiteracy) will be much better off than an illiterate in a household without any literate person (isolated illiteracy) due to the externality affect of literacy [Basu, Foster and Subramaniam 2000]. The externality (positive) affect will be stronger in the households in which at least one female member is literate. The female literacy in the state is low even in urban areas as compared to all India. This may be because the zamindars of the Telugu speaking areas have not encouraged universal education in the coastal as well as Telangana regions. Further, the missionaries who were working in the education field had concentrated only in the rich Godavari and Krishna delta region. Therefore, educational development in Andhra Pradesh did not take off during the early years. It was only after the state's formation in 1956 that a systematic attempt was made towards universalisation of primary education in all the districts of the state, though the delta region had always had the benefit of early Christian missionary work.

As per 2001 census, coastal Andhra region attained 62.5 per cent while Rayalaseema and Telangana regions have attained 60.7 and 58 per cent literacy levels. Between 1971 and 2001, along with the increase in the literacy rates, the regional disparities have come down substantially (Table 2).

Rural-Urban Disparities

Three-fourths of the urban and more than half the rural people had attained literacy by the year 2001 in Andhra Pradesh. The increase in literacy rate both urban and rural is higher in 1991-01 compared to earlier decades in all regions except coastal Andhra. Inter-district variations are steadily decreasing over the period both in rural and urban areas. Interestingly by 1991 all regions attained equal status in urban literacy rates but by 2001 Rayalaseema has fallen behind marginally.

We have calculated the disparity indices by taking the ratio of urban to rural literacy rates multiplied by hundred. The index ranges from '0' to '100'. Disparities tend to decline along with the ratio and vice versa. Rural-urban disparities in Andhra Pradesh are higher when compared to all India though the gap is narrowing over the period (Table 3). The rural-urban disparity is the highest in the Telangana region in all the four periods while Rayalaseema region has performed well in reducing the rural-urban disparities over the period.

Gender and Social Disparities

Telangana region has been lagging behind in terms of both male and female literacy rates for the last four decades. Over the period inter-district variations in female literacy have declined faster than that of male literacy rates (Table 2). The decline was prominent during 1990s, which may be due to the realisation of the importance of female literacy. The gender disparity in the state has been shrinking steadily from 55 per cent to 28 per cent, though the gap is still substantial (Table 4). Among the regions, disparities have declined faster in Rayalaseema and Telangana when compared to coastal Andhra and hence the narrowing of the inter-regional variations. Similarly social disparities are also shrinking though quite high at the present level (Table 5).

To sum up, the performance of Andhra Pradesh in primary education does not reflect its position in economic development. As per the 2001 census it occupies the 28th position among the 35 states and union territories in the country [Census 2001]. In fact its position had marginally deteriorated between 1981 and 1991 (moved from 25th to 26th position) but it maintained its position in 2001 census.

Table 1: Trends in Literacy Rates in India and in Andhra Pradesh
(Percentage)

Year (Source)	All India			Andhra Pradesh		
	Persons	Male	Female	Persons	Male	Female
1971 (census)	34	46	22	25	33	16
1981 (census)	44	57	30	36	48	25
1991 (census)	52	64	39	44	55	33
1994 (NCAER)	54	66	40	50	61	39
1997 (NSSO)	62	73	50	54	64	43
2001 (census)	65	76	54	61	71	51

Table 2: Trends in Literacy Rates across Regions

Region	Category	1971		1981		1991		2001	
		Mean	CV	Mean	CV	Mean	CV	Mean	CV
Coastal Andhra	Male	35.5	13.5	48.3	13.1	55.0	8.4	70.9	6.0
	Female	19.5	34.8	27.8	32.5	35.0	24.5	54.1	17.2
	Total	27.61	20.9	37.63	19.9	45.07	14.4	62.5	10.6
Rayalaseema	Male	35.2	2.6	51.0	2.8	58.7	7.3	72.9	6.6
	Female	13.1	6.0	21.8	7.0	30.6	13.4	48.1	12.5
	Total	24.39	2.9	36.76	3.3	45.01	9.1	60.7	8.8
Telangana	Male	27.4	29.5	43.9	28.8	52.1	19.6	69.0	9.5
	Female	10.7	66.3	20.5	67.1	28.5	45.2	47.0	22.7
	Total	19.14	39.8	32.18	41.7	40.47	28.5	58.0	14.8
Andhra Pradesh	Male	33.18	22.8	46.7	20.6	55.1	14.5	70.9	8.0
	Female	15.8	51.4	24.9	47.6	32.7	33.9	51.2	20.1
	Total	24.57	30.9	36.43	29.6	44.09	21.1	61.1	12.7

Note: CV = Coefficient of Variation in percentages.
Source: Population Census.

Table 3: Rural-Urban Disparity Index across Regions

Region	1971	1981	1991	2001
Coastal Andhra	50.4	49.5	41.2	23.3
Rayalaseema	55.4	49.4	38.7	21.8
Telangana	67.3	63.4	54.4	35.0
Andhra Pradesh	58.2	54.8	46.2	27.6
All India	60.1	46.4	38.9	–

Table 4: Gender Disparity Index across Regions

Region	1971	1981	1991	2001
Coastal Andhra	45.1	42.4	36.4	23.7
Rayalaseema	62.8	57.3	47.9	34.0
Telangana	60.9	53.3	45.3	31.9
Andhra Pradesh	54.7	47.8	42.3	27.8
All India	52.2	46.8	38.7	29.0

Moreover, its growth in literacy rate was slightly better than Bihar, Uttar Pradesh and Rajasthan but lower than Madhya Pradesh and Arunachal Pradesh among the low literacy rate states. It compares poorly with all India averages in all respects except in the case of ST literacy rates. These figures do not augur well for a state that boasts of an information technology hub. The inter census period (91-01) has improved the literacy rates in all the regions in comparison with 81-91 census period. Telegana region reflects the highest disparities in the case of rural-urban and social disparities while Rayalaseema reflects highest gender disparities.

III
Access to Education

The poor performance in attaining higher literacy rates could be viewed from the supply as well as demand sides. The supply side aspects include availability of schools in the vicinity, infrastructure, quality of education, etc. On the demand side the problems are high opportunity costs, high costs of education, low returns from education, etc. Since primary education has been made a fundamental right the stress is often on the supply side factors though demand factors also play an important role. Moreover, the demand side factors are directly linked with economic development provided a threshold level of development has been achieved with reasonable equity across regions and socio-economic groups. The ranking of states by literacy rates and economic development clearly indicates that development does not guarantee literacy automatically, which is true even across countries [UNDP 1990]. This emphasises the role of supply side aspects in improving the literacy levels. This is more so in the case of backward and rural areas due to the iniquitous distribution of gains between less-endowed and well-endowed regions and between rural and urban areas. Here we focus our analysis on supply as well as demand side aspects.

Physical access to school is an important dimension in terms of both supply and demand factors. Access is often defined as availability of school to all school-going children within a distance of 1 kilometre. Of late, location of the school is also considered important in defining access. For, it is observed that children from lower social groups are not comfortable going to school located in the higher social group region and vice versa [Aruna 1999, PROBE 1999]. In this section we deal with aspects of access at disaggregate level in the state. Besides, an attempt is made to look into the schemes implemented by central and state governments to counter the access problem.

At the all India level every two out of three villages have less than 500 population and a quarter of the rural population lives in these small villages (1991). Only a sixth of the total villages were in the category of above 2000 population housing less than 50 per cent of the people. Therefore, majority of the people live in villages with unfavourable conditions for supply of basic amenities including education. In this regard Andhra Pradesh is placed in a favourable position. For, 70 per cent of the rural population in the state lives in 32 per cent of the large size (above 2000) villages. Only 10.5 per cent of the population lives in villages with less than 1,000 population [Census 1981 and 1991, NCERT 1997]. Compared to the all India situation, a large proportion of the state's rural population has the advantage of easy access (supply side). Though the distribution of habitations by their size explains the social disparities it does not really explain the overall poor performance of the state in literacy rates.

All India educational surveys have attempted to examine the problem of remoteness in terms of access to primary and upper primary schools. In Andhra Pradesh, the per cent age of habitations having a primary school has increased (Table 6). This is clearly reflected in the coverage of scheduled tribe population by primary

Table 5: Social Disparity Index

Region	1971		1981		1991	
	SC	ST	SC	ST	SC	ST
Coastal Andhra	50.8	76.9	36.0	68.3	26.9	60.5
Rayalaseema	66.7	74.7	57.7	69.0	39.1	52.1
Telangana	69.4	71.2	53.4	74.4	43.4	64.7
Andhra Pradesh	60.8	74.5	47.2	71.1	46.2	60.8
All India	63.5	72.5	58.6	68.3	50.0	60.7

Table 6: Expansion of Primary and Upper Primary Schools

Survey No	Primary School		Upper Primary School		
	Percentage of Habitations	Percentage of Population Served	Percentage of Habitations	Percentage of Population Served	Within 3 kms
I (1957)	44.8 (48.1)	81.1 (60.0)	2.2 (3.1)	– (–)	– (–)
II (1965)	60.8 (38.0)	90.7 (71.5)	6.1 (7.1)	25.7 (–)	55.4 (–)
III (1973)	61.1 (44.3)	87.5 (76.1)	9.3 (8.7)	31.3 (28.9)	64.6 (72.0)
IV (1978)	64.0 (46.8)	91.8 (78.5)	10.3 (10.7)	36.0 (33.5)	71.2 (78.8)
V (1986)	72.1 (51.2)	92.7 (80.4)	15.5 (13.1)	42.4 (36.9)	97.3 (84.0)
VI (1993)	69.7 (49.8)	92.5 (77.8)	13.5 (–)	43.0 (37.1)	79.4 (85.0)

Note: Figures in brackets pertain to all India.
Source: All India Education survey 1997 (NCERT).

Table 7a: Availability of Primary Schools by Social Groups (1993)

Category	Primary Schools in		Primary School within 1 km	
	Percentage of Habitations Covered	Percentage of Population	Percentage of Habitations	Percentage of Population Covered
Scheduled tribe	46.7 (45.9)	69.8 (71.4)	67.5 (76.3)	82.0 (88.6)
Scheduled caste	50.0 (37.0)	82.1 (64.3)	93.2 (82.3)	97.2 (91.3)
All	69.7 (49.8)	92.5 (77.8)	88.6 (83.3)	97.6 (93.8)

Note: Figures in brackets pertain to all India.
Source: All India Education survey 1997 (NCERT).

Table 7b: Access to Primary Schools by Regions and Social Groups

Region	Scheduled Castes		Scheduled Tribes	
	Percentage of Habitations	Percentage of Population	Percentage of Habitations	Percentage of Population
Coastal Andhra	91.2 (83-96)	91.4 (83-96)	91.3 (85-95)	80.8 (58-94)
Rayalaseema	72.3 (58-93)	62.7 (42-97)	81.7 (66-100)	65.2 (37-97)
Telangana	88.6 (78-98)	89.6 (80-98)	75.8 (59-93)	68.9 (52-87)
State	84.2 (58-98)	82.1 (42-98)	80.2 (59-100)	69.8 (37-97)

Note: Figures in brackets indicate range across the districts.
Sources: All India Education Survey 1997.

schools (Table 7a). However, only 82 per cent of the tribal population is being covered by primary schools within 3 km of the habitations as against above 97 per cent in the case of scheduled castes and all categories of population. The situation is similar even in the case of upper primary schools. The sixth All India Educational Survey estimated that about 93 per cent of population in 70 per cent of habitations was covered as a primary schools. One kilometre from the centre of the habitation to school is considered as a convenient distance for children by walk. The proportion of population having access to a school within walking distance is 98 per cent in 89 per cent of the habitations (Tables 7a and 7b).

Density of Primary Schools

Primary school density in terms of number of schools per 1,000 sq kms and per 1 lakh children (6-11 years), average area (catchment) per school and children (6-11) per school, student teacher ratio and share of private schools reflect the quantitative and qualitative aspects pertaining to access to schooling. The Rayalaseema region has highest school density followed by coastal Andhra (Table 8). The average area per school gives some idea regarding the efficient coverage in terms of distance. It is interesting to note that although coastal Andhra schools are crowded (assuming enrolment is directly linked to the number of school-going children), it has better density of schools. On the contrary, in Rayalaseema and Telangana regions, schools are not only sparsely located but also crowded.

There are about 5.9 per cent of private schools but the concentration of these schools is high in delta districts of coastal Andhra. Krishna district has the highest proportion of private schools (25.6 per cent). Availability of teachers and infrastructure facilities in the schools reflects the quality of education. Student teacher ratios have gone up between 1981 and 1999-2000 reflecting the declining quality of education at the primary level (Table 9). However, the trend has reversed between 1991 and 1999-00, which may be due to the special emphasis on primary education during the 1990s. In comparison with all India figures, Andhra Pradesh has a better student-teacher ratio in all the periods. Though Telangana region has the most unfavourable ratio, the regional disparities have narrowed down substantially over the last two decades (Table 9).

As far as infrastructure facilities are concerned, 75 per cent of the primary schools have pucca buildings but nearly half the schools have single rooms and about 40 per cent of the schools have a single teacher. The provision of drinking water, toilets, blackboards, etc, in the schools is below minimum requirements. Only 30 per cent of the schools have drinking water, 14 per cent of the schools have urinal facilities. Moreover, only 8 per cent of the schools have separate toilets for girls.

In order to bridge the access gap and improve literacy levels, non-formal education centres (NFECs) have been promoted to bring non-enrolled and dropout children to formal education. In 1996-97, there were 31,245 NFECs in the state enrolling about 6.38 lakh children. However, this accounts for only 23.9 per cent of the out-of-school children reflecting the huge demand-supply gap. Of the total NFECs 25,400 are state run centres and the remaining are run by non-governmental organisations (NGOs). Between 1992-93 and 1996-97 there was no increase in the number of state run centres while the number of NGO run centres have recorded a growth of 92 per cent [GoI 1998]. The average allocation of funds for state run centres was about 16 crores (between 1992-97) at the rate of Rs 6,280 per centre. Despite the expenditure, the performance of the NFECs is not encouraging. Even in the case of NFECs the performance of the state is poor compared to that of all India level. Only 22.8 per cent of the students in the state completed the course as against 30.8 per cent at the all India level in the year 1996. Of this only 13.5 of the total students (5.4 per cent of the girl students) have entered the formal system in the state as against 28.7 (12.4 per cent of the girls) at the all India level. These figures also indicate that non-formal system of education is no substitute for the formal system. In terms of infrastructure facilities in the NFECs the state is also placed badly, which may explain the poor performance. More importantly, above 80 per cent of the teachers in these schools have below secondary or secondary education qualification [GoI 1998].

Enrolment vis-a-vis Dropouts

Enrolment is a necessary condition for obtaining literacy in a formal system but not sufficient to attain literacy. Higher enrolment leads to higher literacy rates provided dropouts do not increase at the same rate. As per the estimates of the education department enrolment ratio in the state was as high as 90 per cent in 2000 compared to 73 per cent in 1991-92 (Table 10). Coastal Andhra region seems to have reached saturation in enrolment ratios and Rayalaseema has the highest enrolment ratios in both the periods, while Telangana moved from third position to second position.

Interestingly, dropout ratios are also high in the state, which may be due to fictitious enrolment. There are wide variations in dropout ratios across districts (7-63) (Table 11). Telangana recorded the highest dropout ratios followed by coastal

Table 8: School Density and Catchment Area Across the Regions, 1999-2000

Region	School Density		Catchment Area			Total Schools
	Per 1,000 Sq km	Per Lakh Children (6-11)	Area in Sq km	Children	Share of Private School	
Coastal Andhra	298 (167-519)	608 (413-858)	3.6 (1.9-6.0)	178 (117-242)	8.8 (1.3-25)	25287
Rayalaseema	187 (108-292)	689 (405-889)	6.1 (3.4-9.3)	161 (113-247)	4.5 (2.8-7.9)	12317
Telangana	155 (138-1626)	437 (70-846)	6.0 (0.6-8.2)	228 (121-1551)	2.8 (0.7-43.9)	17794
Andhra Pradesh	213 (108-1626)	523 (70-889)	5.0 (0.6-9.3)	191 (113-1551)	5.9 (0.7-43.9)	55398

Source: Department of Education, Govt of Andhra Pradesh

Table 9: Trends in Student Teacher Ratios at Primary Level

Region / Year	1981	1991	2001	Percentage Change	
				1981-91	1991-01
Coastal Andhra	37.5	56.3	44.0	50.1	-21.8
Rayalaseema	33.4	49.7	46.6	48.8	-6.2
Telangana	23.0	48.5	50.6	110.9	4.3
Andhra Pradesh	27.5	51.9	46.5	88.7	-10.4
All India	54.0	59.4	58.8*	10.0	–

Note: * pertains to the year 1998-99.
Source: Census and Department of Education, Govt of Andhra Pradesh.

Andhra and Rayalaseema regions. Rayalaseema with highest enrolment ratio recorded the lowest dropout ratio. Similarly, girls have recorded higher dropout ratios too. Over the years enrolment ratios have increased while dropout ratios have declined indicating a positive impact on effective enrolment and literacy. Overall the enrolment ratio has increased by 19 per cent whereas the dropout ratio has declined by 31 per cent. Telangana has recorded the highest increase in enrolment ratio and the lowest dropout ratio. Coastal Andhra recorded no improvement in the enrolment ratio and recorded 41 per cent decline in dropout ratio. In fact, both coastal Andhra and Rayalaseema recorded a decline in boys' enrolment ratios. On the contrary, girls have gained substantially in terms of enrolment (positive and high) but lost in terms of dropout ratios (negative and high).

One of the recent field studies in the three regions of Andhra Pradesh vindicates the high enrolment ratios though the variations across the regions are not the same [Rao 2002]. On the contrary, dropout ratios are quite low (between 10 and 15 per cent) in all the three regions. However, there are differences between developed and backward regions within each region. While the differences across regions are marginal in the case of enrolment they are substantial in the case of dropouts. This is true even in the case of developed and backward regions within the regions. Backward regions record the highest dropout ratios. This indicates that the problem is of retention rather than enrolment.

IV
Expenditure on Education

Public spending on education is critical for improving literacy levels. Though economic variables like per capita gross domestic product, etc, do not explain the variations in the literacy rates, public expenditure on education seems to have a strong bearing on the performance of literacy. However, it is not necessary that public expenditure on education be directly linked with per capita incomes, as the former is usually influenced by non-economic factors like political will, etc. Moreover, the performance of primary education is directly influenced by intersectoral allocation of funds within the education sector, i e, allocation towards primary, secondary, technical and higher education sectors. In this section an attempt is made to examine the financial allocations to education in the state in comparison with the country as a whole. The idea is whether the poor performance of the state in literacy rates can be explained in terms of expenditure on it. However, lack of data on public expenditure at the district or regional level limits our analysis to the aggregates of country and state. The regional and district level analysis of public expenditure and financial resources is recognised as an important variable in understanding the status of education only recently (after the 1990 conference in Jomtien, South Africa and the revised national policy on education in1992).

Inadequate allocation of funds to elementary education is due to inadequate recognition of the importance of elementary education by our planners and policy makers [Tilak 1999]. International agencies view this as a problem of under investment [Varghese 1998]. The central government has increased its role in support of primary education since 1986, mainly by supporting interventions to improve learning achievement. It has adopted both uniform and specially tailored interventions [World Bank 1997]. At the all India level expenditure on education accounts for 3.1 per cent of the gross domestic product. Investment in education at all India level needs to be more than doubled from the present level of 3.1 per cent of the GDP and a greater allocation to primary education is necessary if every child in India is to be got into school in the next five years [Sharif and Ghosh 2000]. These studies indicated the decline in allocation of funds to education due to structural adjustment programmes following economic reforms and the lack of political will towards achieving universal education. The sources of funds for education include central and state government budget allocations, aid from international agencies, mobilisation of funds from local non-governmental organisations (NGOs) and village level education committees. The funds from the last two agencies are marginal. It is suggested that the collection of education cess from the people is necessary to augment the financial resources for funding elementary education.

The total expenditure on education at the all India levels as a proportion of gross national product (GNP) accounts for 3.8 per cent during 1995-96. The share of education in GNP has recorded an increase between 1980-81 and 1995-96 though there was a decline between 1990-91 and 1995-96. The growth rates indicate a clear decelerating trend and decline even in absolute terms. In Andhra Pradesh the situation is one of stagnation. Though there is an increase in the public expenditure on education between 1980-81 and 1995-96, in terms of its ratio to the NSDP it remained more or less around 3.0 per cent (Table 12). Unlike in the case at all India level, Andhra Pradesh has recorded faster deceleration in the share of education during 1985-86 through 1995-96. This reflects the low priority accorded to education in the state.

Table 10: Enrolment Ratios in Primary Schools (5-9 Age Group)

Region	1992			2000		
	Boys	Girls	Total	Boys	Girls	Total
Coastal Andhra	86.4	78.3	82.6	82.0	81.2	81.6
	(75-96)	(68-91)	(73-94)	(70-101)	(71-97)	(71-99)
Rayalaseema	99.2	70.4	84.9	97.5	94.8	96.1
	(88-122)	(64-79)	(76-96)	(81-116)	(80-106)	(81-111)
Telangana	81.0	53.9	68.1	92.6	87.0	89.8
	(68-102)	(45-76)	(59-79)	(67-103)	(72-98)	(69-101)
Andhra Pradesh	86.2	58.9	72.7	87.7	84.8	86.3
	(68-122)	(45-91)	(59-96)	(67-116)	(71-106)	(69-111)

Note: Figures in brackets indicate the range across the districts.
Source: Department of Education, Govt of Andhra Pradesh.

Table 11: Dropout Ratios in Primary Schools

Region	1992			2000		
	Boys	Girls	Total	Boys	Girls	Total
Coastal Andhra	44.4	53.7	48.9	33.1	36.2	34.6
	(23-61)	(44-64)	(42-63)	(27-44)	(30.49)	(29-46)
Rayalaseema	39.6	51.6	45.0	27.2	33.8	30.4
	(21-47)	(43-57)	(31-51)	(18-35)	(23-41)	(20-38)
Telangana	55.3	61.7	57.0	46.2	47.2	46.7
	(25-72)	(27-75)	(26-73)	(8-62)	(6-64)	(7-63)
Andhra Pradesh	48.5	56.4	52.6	39.4	41.2	40.3
	(21-72)	(27-75)	(26-73)	(8-62)	(6-64)	(7-63)

Note: Figures in brackets indicate the range across the districts.
Source: Department of Education, Govt of Andhra Pradesh.

However, budget allocations are better indicators of the priority given to education. Andhra Pradesh provides a lesser share of its budgetary allocations to education compared to the national budget. Allocation is low even when compared to southern states. Allocations have declined both at the aggregate and state levels though the gap between the state and the central allocations (all states) is narrowing over the period (Table 12). While the share of education in Andhra Pradesh's budget has come down from 19.1 per cent in 1980-81 to 16.6 per cent in 1995-96, in the case of all states it has come down from 25.5 per cent to 19.6 per cent during the same period. This might aggravate the situation further given the fact that allocations in Andhra Pradesh had experienced sharper declining trend (-2.4) during the period 1990 and 1995-96. In the absence of any political or popular support, the education sector becomes the first victim. One cannot attribute this to the reform process alone, as there are other pressures on state finances such as populist programmes.

The share of elementary education in the total budget as well as in the education budget is the ultimate indicator of literacy performance in the state. As in the case of education, elementary education gets a lower share in the state budget when compared to the central budget allocations. Similarly, the share of elementary education in the education budget in Andhra Pradesh is not only on the lower side but has also declined since 1985-86. The share of primary education in the state has declined from 44.1 per cent to 41.7 per cent, while in the case of all other states, it has increased from 48 per cent to 49.6 per cent. This is mainly due to the high priority given to higher education in the state. As it is, the allocations for elementary education are much below the requirements (above 60 per cent) both at the national and state levels. The decline in the allocation in the state is of serious nature. If this trend continues, the state will be pushed to the lowest rungs of the literacy ladder. These trends are sharply reflected in the quality of education (per student expenditure). Per student expenditure in the state has also been declining since 1985-86 (Table 12). In this regard, the gap between all India and the state is widening fast, as per student expenditure at the all India level is showing an increasing trend. These trends are similar for the total student population as well as elementary student population.

There seems to be some improvement in the allocations towards education in the late 1990s in terms of its ratio to GSDP and per student expenditure (Table 14). But, there is no improvement in the case of primary education. In fact, the allocations towards primary education in 2000-01 and 2001-02 are lower than that of 1995-96. More importantly, a lion's share (above 80 per cent) of the expenditure is spent on salaries leaving little for improving the quality of education. This is despite the introduction of District Primary Education Programme (DPEP) during 1994-95. The expenditure on DPEP mainly goes towards infrastructure. This could be the reason why there was some dip in the per pupil expenditure in the late nineties (Table 13). Per pupil expenditure of DPEP ranges from less than Rs. 200 in Kurnool to above Rs. 600 hundred in Nizamabad district. These variations exist in the case of per classroom expenditure also. However, there is no significant relationship between per pupil expenditure and level of literacy across districts, though one expects a negative relationship, i e, more expenditure per unit in the low literate districts in order to reduce inequalities [DFID 2001]. Similarly, tribal districts like Adilabad, Srikakulam and Visakhapatnam do not attract higher per unit expenditure even under DPEP. This indicates that expenditure flows do not match existing disparities. This is reflected in the perpetuation of social and gender disparities in literacy levels in the state. Dropout rates continue to be a nagging problem while enrolment rates have improved. This problem is more among the SC, ST communities and females. Therefore, retention at primary level and improving the enrolment at the upper primary level are the main concerns as far as the ST community is concerned.

V
Determinants of Literacy

Thus, the above analysis explains the poor performance of the state in literacy to some extent. However, the analysis was mainly supply-sided, though demand as well as supply factors influence literacy levels. In this section an attempt is made to explain the variations in literacy levels across the districts of the state in order to identify factors influencing the literacy levels based on the secondary data. Besides, we have also examined the reasons for dropout and non-enrolment of children based on the household level data in the three regions of the state. This is based on the perceptions of 3000 households spread over 12 villages in three districts belonging to coastal, Rayalaseema and Telangana regions.

Using the secondary data we have estimated the regression equations across the

Table 12: Public Expenditures on Education and Allocation
(at constant prices 1980-81=100)

Public Expenditure on Education and Its Shares	Andhra Pradesh				All States			
	1980-81	1985-86	1990-91	1995-96	1980-81	1985-86	1990-91	1995-96
Total expenditure (Rs in millions)	2291	3521 (10.7)*	3925 (2.3)+	3987 (0.3)@	29306	43785 (9.9)*	64605 (9.5)+	75474 (3.4)@
As percentage of GNP	2.9	4.0 (7.6)*	3.3 (-3.4)+	3.0 (-2.2)@	3.0	3.6 (4.4)*	4.1 (2.6)+	3.8 (-1.4)@
As percentage of budget	19.3	18.4 (-0.9)*	18.8 (0.4)+	16.6 (-2.4)@	25.5	20.5 (-4.0)*	21.1 (0.6)+	19.6 (-1.4)@
Share of primary education in the budget	8.5	8.5	8.4	6.9	12.2	10.1	10.5	9.8
Share of primary education in education	44.1	46.1	44.9	41.7	48.0	49.5	50.0	49.6
Expenditure per student (total) (in Rs)	316	376	357	330	291	344	440	426
Expenditure per student (primary) (in Rs)	189	232	225	222	185	230	311	305

Notes: Figures in brackets are growth rates, *= between 1980-81 and 1985-86; +=between 1985-86 and 1990-91; @=between 1990-91 and 1995-96.
Source: Sharif and Ghosh (2000).

Table 13: Recent Trends in Expenditure on Education in Andhra Pradesh

Particulars	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Expenditure on education as per cent of GSDP	2.4	2.6	2.7	2.9	3.1	3.3	3.2
Real expenditure/ student (Rs)	219	258	269	316	345	398	405
Share of primary education (per cent)	55	54	53	57	57	51	53
Share of salaries in primary education	93	88	94	85	93	90	84

Source: DFID, 2001.

districts for different literacy segments such as rural, urban, male, female, SC and ST, etc. A number of explanatory variables, both from demand and supply side, were used in the analysis. The specification and other details of the selected variable are presented in Appendix 1.

At the theoretical level the expected relationships between literacy and various independent variables are rather unclear, as the literature is a bit controversial due to the location specificity of the results (for an exhaustive review see Bhatty, 1998). The controversy is mainly on the issues of supply and demand side aspects of literacy. Some argue that the poor performance on the literacy front is mainly due to the low priority accorded to primary education at the policy level in terms of financial allocations. These views are supported by some micro level studies where impact of access and quality of primary education was found to have a strong bearing on literacy, enrolment and dropout ratios. A more clinching argument is that poor economic status forces households to keep their children away from schools. The opportunity cost of time (children's) is not only positive but also important for the household's survival. In other words, the ability of the poor households to send their children to school is very low not only because they lose children's income but without grown-up children at home they will not be able to fully devote themselves to wage employment. Apart from income, the ability of the household to send their children to school is dependent on the composition of the family. If the family consists of older people who are not fit for physical labour but can take care of less demanding household chores like looking after siblings, then the family does not require school going children at home. This could be the reason why half the poor are able to send their children to school. In a study of 93 schools in Karnataka it was observed that access to primary education and its quality, retention and dropout rates are related to the prevailing caste, class and gender divides in the region [Kaul 2001]. Besides, the costs (direct) of schooling are substantial in comparison with their low-income levels [Krishnaji 1997]. Costs will be much higher when indirect costs are also taken into account. The total costs explain the low parental motivation. Lack of relevance and quality of the curriculum results in poor returns from education and hence benefits are not conspicuous or dramatic. This dimension needs to be taken into account when talking about parental motivation.

Synthesising the wide spectrum of views, the PROBE (Public Report on Basic Education, 1999) report, after an extensive field study in four states, has categorised some of the conventional views as myths. The four important myths listed are: (i) parents are not interested, (ii) child labour is the main obstacle, (iii) elementary education is free and (iv) schools are available. The first two myths are largely misrepresented. They are taken on the face value of the statements, as they do not go into the underlying relationships. As mentioned above, parent's interest or motivation is closely linked with their dependence on children in household activities. This in turn is determined by the household's economic status and structure. In the absence of an intensive probe it is difficult to understand the underlying factors. Opposite responses are elicited when questions are posed differently, e g, why are you not sending your children to school? / Are you not interested in your children's education? Similarly, child labour is taken as labour market participation. Children may not be directly participating in the labour market or earning wages, but they facilitate greater work participation at the household level by taking care of household chores like fetching water, fuel wood, herding cattle, looking after infants, etc. In fact, unpaid household work is the most common form of child work [Bashir 1994 as quoted in Bhatty 1998]. It is estimated in the four PROBE states (Uttar Pradesh, Madhya Pradesh, Rajasthan and Bihar) that 20 per cent of the boys and 22 per cent of the girls have worked for more than 8 hours on the preceding day of the survey while only 5 per cent of the boys and 1 per cent of the girls performed wage labour [PROBE 1999:16]. Therefore, it is not correct to say for these states that child labour is an obstacle to literacy on the basis of children's participation in the labour market.

It is now widely accepted that elementary education is not free. The direct costs of primary education are estimated to be in the range of Rs 20 to Rs 85 [PROBE 1999, Krishnaji 1995, Majumdar 1996 quoted in Bhatty 1998]. These costs are substantial especially to low income categories. More importantly, opportunity cost of child time is also a major deterrent. Though physical access (availability of primary school within one kilometre of the habitation) is not a serious problem, socio-cultural constraints aggravate the problem. Access needs to be defined in a socio-cultural context rather than simple physical access. This would explain the low literacy rates among the socially disadvantaged sections, but not a serious constraint on the overall literacy performance. In what follows we explore some of these issues in the context of Andhra Pradesh.

The explanatory power of the specifications is quite high (above 90 per cent in some cases). Specifications turned out strong in the case of rural and female segments, which are lagging behind in terms of literacy levels (see Appendix Table 1). The estimates are theoretically consistent and robust between the periods 1981 and 1991. Broadly our results corroborate with Krishnaji's (1996) study of 1981 census data. Though our findings are not new, some of the variables we have employed are different and hence add to the explanation. Our results for both the periods strongly support the demand side aspects of literacy performance in the state. Access and gender aspects have also turned out important. As far as access is concerned the variable proportion of habitations with primary school (% HWS), turned out significant during 1980-81 but not in 1990-91. Same is the result with the quality variable, student-teacher ratio (S-T ratio). Gender variable, proportion of female teachers (%FTECH), turned out significant only in 1991. In 1981 it did not turn out significant.

Indicators of prosperity at the district level such as per cent age of gross irrigated area (% GIA) and value of yield per hectare (YIELD) have a positive impact on literacy. While % GIA turned out significant in 1981, YIELD turned out significant in 1991. In other words, literacy rates are high among the prosperous regions due to the demand for education. Interestingly percentage of private schools (% PS) has a major bearing on the literacy performance at the district level. Its influence has substantially improved by 1991. Advent of private schools reflects the demand drive for literacy. Besides, their increasing influence also reflects the declining quality of public schools. We hasten to add that this should not be taken as a case for privatisation of primary education. This trend (growth in private schools at the primary level) would aggravate inter and intra regional disparities in the absence of improvement in the public systems. Proportion of female teachers to the total teachers (% FTECH) has a strong and

positive impact on literacy in most categories in 1991. Some of the micro studies clearly indicate that female teachers represent better teacher attendance and better quality of education [Bhatty 1998].

Determinants of Enrolment

Given the wide variations across the districts in the enrolment ratios at the primary level an attempt is made here to identify the factors that explain the variations. At the theoretical level economic prosperity is expected to have a positive impact on enrolment rates. Therefore, we have incorporated all the demand factors, discussed above, as independent variables. Besides, adult literacy rates, SC/ST literacy rates, access factors such as schools per one lakh population are included. Proportion of children in the age group 0-5 years is also included in the analysis, as this variable is found to have a significant negative impact on enrolment at the state level [Reddy 1995]. The estimates were obtained for the year 1991.

The linear regression exercises revealed that none of the demand factors turned out significant. Even work participation rates do not have any impact on the enrolment ratios. Adult literacy rates and access to schools (number of schools/1 lakh population) turned out significant (see appendix Table 2). Both of them have a positive impact on the enrolment ratios of male and female. Access to schooling has a strong influence on enrolment. Increasing the density of schools, especially in remote areas, is a better alternative than merely fixing the targets for enrolment. Fixing targets for enrolment under various literacy programmes and *Janmabhoomi* programme in the absence of requisite facilities is resulting in fictitious enrolment. This, in turn, causes the high dropout ratios. This clearly brings out the point that policies to improve literacy ought to integrate demand and supply aspects. While supply factors ensure higher enrolment, demand factors help improving the retention rates.

The importance of demand factors on dropouts and non-enrolment is conspicuous in our analysis of household level data.[1] Reasons expressed by households are grouped under demand and supply factors. Supply related problems are captured under school problems and others (includes gender and social discrimination), while all other reasons reflect the demand side problems. Poverty and economic activity are the most important reasons for dropout / non-enrolment among male as well as female children, though male children dropout rates are more dependent on these reasons (Table 14). Here economic activities include wage labour as well as unpaid labour such as work on own farm, supporting the parents in their activities. While poverty appears to have greater influence in the backward regions, economic activity seems to play a greater role in the developed regions. This may be due to the pull factors consequent to greater labour demand, especially during the peak seasons, in the developed regions. Domestic activity and lack of interest among parents are important deterrents, especially in the case of females. On the other hand, school problems seem to be secondary as far as dropout/non-enrolment of children is concerned, in backward as well as developed regions.

The cost of education further accentuates demand problems. The costs of education at the primary level seem to be much higher when all the costs such as uniform, transport costs, pocket money, etc., are included. The costs range from about Rs 400 to about Rs 800 per annum in the case of government schools (Table 15). The gender differences are marginal as far as costs are concerned. The costs are about four times higher in the case of private schools. More than a third of this expenditure goes towards uniform followed by notebooks, pocket money, etc [Rao 2002]. On the other hand, direct costs of school fee and textbooks account for less than 3-4 per cent of the total costs in the public schools while it is above 40 per cent in the case of private schools.

Analysis of factors influencing literacy rates and effective enrolment rates brings out interesting aspects. While demand factors rule the extent of literacy and dropout rates, access or supply factors or quality factors influence enrolment rates. This indicates the need for an integrated approach of demand and supply factors in order to bring the children to school and retain them. Bringing the children to school, keeping them in school and make them literate goes beyond access factors. This demands, apart from demand factors, intensive institutional arrangements such as social mobilisation of the community on child labour and education [Dev 2001]. Such attempts are very successful at the micro level as demonstrated by the MV foundation. Its replicability at the macro level needs to be explored. This calls for addressing the problem through evolution of proper institutional arrangements rather than focusing on demand (poverty) and supply (simple access) factors.

VI
Policy Initiatives and Implications

The performance of Andhra Pradesh in attaining literacy has been dismal. Despite its better economic status in comparison with number of other states, its position in terms of literacy levels is sliding. It compares poorly with all India averages in almost all indicators such as rural-urban disparities, gender disparities, etc. It is

Table 14: Reasons for Dropout and Non-Enrolment
(Percentage of Households)

Category		Poverty	Eco Activity	Dom Activity	No Interest	School Problems	Others
Male	Developed	37	41	04	14	02	02
	Backward	41	24	07	18	07	03
	Overall	39	35	05	15	04	03
Female	Developed	23	31	16	22	05	03
	Backward	23	10	15	31	00	21
	Overall	23	21	16	25	03	12

Source: Field Survey of 300 households in three districts of Guntur, Anantapur and Medak.

Table 15: Expenditure per Student at Primary Level (in Rs/Year) by Type of School

Region		Expenditure Per Student by School Type (Rs/Year)			
		Government		Private	
		Boys	Girls	Boys	Girls
Coastal	Developed	840 (1.1)	833 (1.0)	2065 (51.6)	2068 (41.9)
	Backward	497 (1.1)	429 (1.1)	1335 (50.1)	1001 (41.2)
Rayalaseema	Developed	516 (0.9)	550 (0.9)	1984 (58.9)	1547 (53.7)
	Backward	532 (1.3)	536 (1.6)	2795 (35.8)	–
Telangana	Developed	398 (4.8)	376 (2.2)	1060 (39.0)	2150 (27.9)
	Backward	451 (2.0)	442 (2.2)	1467 (25.3)	–

Note: Figures in brackets indicate proportion of expenditure on school fee.
Source: Rao, 2002.

doing better only in terms of ST literacy rates. The poor performance of the state is somewhat puzzling if we look at the other indicators. For, the state is doing better in access indicators like school density, size and distribution of habitations, student-teacher ratios, etc. However, in terms of expenditure, the state's budgetary allocations to education are lower in comparison with all states taken together. The declining allocations to primary education may further aggravate the situation. On a comparative scale the state may slide further if the increasing trend at the aggregate level (all states) in terms of the two indicators, viz, the share of primary education and per pupil expenditure at the primary level, is any indication.

The Vision 2020 document rightly identifies the problems ailing the education system in the state. The document identified low literacy levels of parents, poverty, lack of access to school and poor infrastructure facilities as the main causes of low literacy rates. These are in tune with our findings. Though it emphasises increasing access to schooling by building more schools, employing more teachers, etc, the declining allocations go against this objective. Moreover, any increase in allocation is due to the salary component. Expenditure is further diluted due to the allocations towards non-formal system, which is neither effective nor sustainable. The impact of these non-formal modes is moderate at the best. The emphasis ought to be on formal education in order to achieve genuine literacy.

The three major important programmes initiated in tune with the new education policy (1986) are Operation Black Board (OBB), Andhra Pradesh Primary Education Project (APPEP) and District Primary Education Project (DPEP). The OBB programme, supported by the government of India, focuses on supportive infrastructure such as construction of school buildings, providing teaching aids, playgrounds and creation of additional teacher posts. The APPE project was assisted by the Overseas Development Authority (ODA) with the objective of improving the quality of schooling, construction of additional classrooms and teacher training centres. This programme was merged with the DPEP after 1995. DPEP in Andhra Pradesh was launched initially in five backward districts in 1996 and later extended to 14 districts with an objective of involving local community and NGOs in designing, implementation and participation in the education programmes through education committees. This programme has many incentive schemes such as midday meal/supply of dry rations to enhance enrolment, regular attendance of the students and to reduce dropout and also to maintain the nutritional status of the students. The Andhra Pradesh government has also designed schemes such as 'Mabadi'(our school) 'Chaduvkundam' (Back to school) and 'akshara sankranti' to improve access to children, women and of disadvantaged communities in tiny habitations. The '*vidya* volunteer' scheme was started to support single teacher schools. Educational technology institutions at the district level were established to improve the teachers' training quality.

The recent programmes seem to have undue focus on enrolment resulting in high dropouts. The dry ration programme has encouraged fictitious enrolment [Dev 2001]. Even the District Primary Education Programme (DPEP) initiated in 1993 did not appear to be effective in the state. Instead the stress needs to be on meeting the social needs of rural population, which inhibits access to education, such as elder children participating in economic activities, looking after younger siblings or attending domestic chores, etc. Equal importance should be given to retention of the enrolled children, especially among scheduled tribes and scheduled caste children. This calls for a balanced approach to tackle supply as well as demand problems pertaining to primary education.

The schemes designed to solve these problems such as residential schools, anganwadi centres, pre-primary schools, supply of dry ration, textbooks, uniform, etc, are more supply sided in nature. The state government has also adopted the 'bridge school' concept of MV Foundation in the name of 'back to school' programme. However, in order to make the schemes effective, intensive institutional arrangements are required. Some of the innovative approaches are followed by NGOs such as MV Foundation [Dev 2001]. These institutional arrangements could be replicated with suitable modifications.

From the demand side, generation of productive employment and minimum wages go a long way in reducing the household's dependence on children. In other words, rural economy has to be liberated from the vicious circle of agricultural involution, that is, low employment, low wages and high participation rates. Only through creation of productive employment with a decent (minimum) wage rate could one reduce the work participation rates. As rightly argued in the recent Human Development Report [UNDP 2000]: good health, education and jobs cannot be attained by legislation. Economy should be strong enough to provide them. For that people should be productively (economically) engaged. The role of state is to provide conducive environment for such activities. Specific policies are required to address the problems of the disadvantaged groups such as gender and social disparities. Employment of more female teachers appears to be an effective instrument in improving the female literacy and enrolment. This would take care of the cultural taboos surrounding female education to some extent. Sociocultural aspects ought to be taken into account while planning more schools for SC and ST populations. Even designing of the curriculum for these groups needs special attention.

Appendix 1

Lit_i = F (Access, Quality, Gender, Demand and Social factors) + U_i ------ I

Where,

Lit_i = percentage of literate population in the 'i^{th}' segment of the population. i = total female literacy, total literacy (male + female), rural female literacy, rural total literacy, urban female literacy, urban total literacy and SC and ST literacy.

Access factors include school density per 1,000 km (SD/1000km) and per one lakh population (SD/ 1lakh) and percentage of habitations with a school (% HWS). All these factors are expected to have a positive impact on literacy levels.

Quality factors include student-teacher ratio (S-T ratio), proportion of private schools in total schools (% PS), urbanisation defined as per cent age of urban population (% URB), road length per 100 square kilometres (ROAD). These factors are expected to have a positive impact on literacy rates.

Gender factors include percentage of female and male teachers (% FTECH and % MTECH), female work participation rates (FWPR) and adult female and male literacy rates (Lit.ADLF and Lit.ADLM).

Demand factors include the development indicators or proxies of economic prosperity. Factors considered are per cent age of population leaving below poverty line (% BPL), relative development index (RDI), farm size (FSIZE), percentage of gross irrigated area (% GIA), yield per

hectare (YIELD), work participation rates of total population, SC and ST population (TWPR, SC/ST WPR), percentage of workers depending on agriculture (% AGLAB). Of these factors % BPL, WPRs and % AGLAB are expected to have a negative impact and the remaining factors are expected to have positive impact on literacy rates.

Social factors include proportion of scheduled caste population (% SC) and proportion of scheduled tribe population (% ST). These two factors are expected to have a negative impact on literacy rates, as these sections are having the lowest literacy levels.

Linear regressions were estimated across 22 districts of the state. Hyderabad district was not included due to its cosmopolitan and urban nature. Analysis was carried out for the 1981 and 1991 census periods to examine the changes, if any, between the periods and also to test the robustness of the results. Analysis was focused on the priority areas of literacy such as rural literacy, female literacy and SC/ST literacy. Number of permutations and combinations of the selected (listed above) independent variables were estimated to arrive at the best specifications in terms of explanatory power and significance of the variables. In order to eliminate less important variables and avoid multi-colinearity problems we have used the correlation matrices. For checking multi-colinearity problem we have adopted the statistical criteria: if the simple correlation coefficient of two independent variables is greater than the value of multiple 'R', then one of the two correlated variables has to be dropped [Klein 1962:64, 101]. However, as long as the multi-colinearity between the two variables is not too severe to vitiate the results by affecting the signs of the coefficients, no great caution need be exercised in this regard. Based on the correlation matrices we have selected the variables for incorporating in the final specifications. The coefficients of the selected equations are presented in appendix Table 1. EPW

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Note

1 The analysis is based on the data collected from all the households (3000) in 12 villages spread over the 3 regions of Andhra Pradesh. For the sake of simplicity these villages are grouped as developed and backward.

Appendix Table 1: Gist of the Linear Regression Estimates

Dependent Variable	1981	1991
Total female Literacy	TWPR (-); % GIA (+); % PS (+); % HWS (+); S-T ratio (+)	% PS (+); TWPR (+); % FTECH (+); YIELD (+)
Total literacy (male+female)	TWPR (-); % PS (+); % HWS	FTECH (+); TWPR (-); % PS (+); YIELD (+)
Rural female literacy	% GIA (+); TWPR (-); % HWS (+); S-T ratio (+); % PS (+)	YIELD (+); % PS (+); % FTECH (+)
Rural total literacy	% GIA (+); TWPR (-); % HWS (+); S-T ratio (+)	FTECH (+); YIELD (+); % PS (+)*
Urban female literacy	TWPR (-)	No variable is significant
Urban total literacy	TWPR (-)	No variable is significant
SC/ST total literacy	TWPR (-); % PS (+); S-T ratio (+); % BPL (-)@	% PS (+); YIELD (+); SC/ST WPR (-); FWPR (-)

Notes: All the variables are significant at less than 10 per cent level indicated with their respective signs in the brackets. @ Significant at 11 per cent level; * significant at 12 per cent level.

Appendix Table 2: Linear Regression Estimates of Effective Enrolment Ratios

Independent Variable	Dependent Variable	
	Female Enrolment Ratio	Male Enrolment Ratio
1 Adult male literacy	–	0.5920888* (0.1113)
2 Adult female literacy	0.7308674* (0.0697)	–
3 Number of Schools/1 lakh population	0.1125391* (0.0216)	0.1283589* (0.0260)
R Square	0.88	0.77
Adjusted R Square	0.87	0.75
Number of Observations	22	22

Notes: Figures in brackets are standard errors. * Significant at less than 1 per cent level

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