

Working Paper
345

**BARRIERS TO EXPANSION OF MASS
LITERACY AND PRIMARY
SCHOOLING IN WEST BENGAL:
A STUDY BASED ON PRIMARY DATA
FROM SELECTED VILLAGES**

**V.K. Ramachandran
Madhura Swaminathan
Vikas Rawal**

April 2003

Working Papers published since August 1997 (WP 279 onwards)
can be downloaded from the Centre's website (www.cds.edu)

**BARRIERS TO EXPANSION OF MASS LITERACY AND
PRIMARY SCHOOLING IN WEST BENGAL:
A STUDY BASED ON PRIMARY DATA FROM
SELECTED VILLAGES**

V. K. Ramachandran,*

Madhura Swaminathan*

Vikas Rawal**

April 2003

* Professor, Social Sciences Division, Indian Statistical Institute and ** Assistant Professor, Centre for Economic Studies and Planning, Jawaharlal Nehru University. This paper is part of a larger study on primary education in West Bengal initiated by Ramachandran, and he is grateful to UNICEF for funding the field research. A part of this work was done when Vikas Rawal was based at the Centre for Development Studies, Thiruvananthapuram, and the results were presented at a seminar at CDS. We are grateful to Chandan Mukherjee for his comments.

ABSTRACT

This paper examines factors affecting literacy and access to school education in West Bengal, India, and reports the results of a binomial probit model estimated with primary data from ten villages of West Bengal. In the analysis of adult literacy, the significant variables were sex, caste and occupational status and village location. In the probit results for educational achievements of children of ages 6 to 16 years in the same villages, however, occupational status was not statistically significant. In contemporary West Bengal, we argue, class barriers to school attendance have become less significant; other features of educational deprivation persist.

Key words: Education, literacy, India, West Bengal

JEL Classification: I 2

1 Introduction

West Bengal is a State of India where there has been substantial progress in the sphere of school education since a government of the Left Front led by the Communist Party of India (Marxist) came to power in 1977. That progress, however, has taken place amidst conditions of persistent backwardness in certain spheres of social development.¹ This paper, which is part of a larger study on primary education in West Bengal,² examines factors affecting access to school education in this State.

The paper attempts to identify constraints to the expansion of literacy and schooling in rural West Bengal by means of first, a descriptive analysis, and second, a binomial probit model, based on primary data on schooling and literacy in ten villages of West Bengal. This exercise is to be seen as a contribution to the larger agenda, based on quantitative as well as qualitative observations, of identifying barriers to the spread of school education, other than the primary supply-side barrier created by the failure of the public authority to provide schools and educational facilities for all children.³

1 “Progress and persistent backwardness” is the title of a section on the achievements of the Left Front in the sphere of rural development in Sengupta and Gazdar (1995).

2 See Ramachandran (1995).

3 See the summary of demand-side impediments to universal schooling in Colclough with Lewin (1993). See also Ramachandran (1995) for notes on obstacles to girls’ access to school education in rural West Bengal, and Dreze and Sen (1995) and PROBE (1999), particularly on the problems of access faced by girls.

West Bengal, located in the east of India and with a population of x million in 2001, has been ruled by a Left Front government since 1977. The leading development achievements of this government have been in the countryside, where there have been important institutional changes and a sharp acceleration in agricultural production in the 1980s and 1990s.

There have been two major sets of institutional changes in the West Bengal countryside since 1977. The first comes under the broad rubric of land reform, consisting mainly of tenancy reform and the distribution of agricultural and homestead land to landless and land-poor households. The second major institutional change is associated with the establishment of a three-tier system of local government (or panchayat). Elected bodies govern districts, blocks (subdivision of districts) and village clusters. West Bengal was the first state in India to establish such a system and it was the first to establish a regular system of decentralised development administration.

Institutional changes and a large-scale programme of rural electrification in the 1980s and early 1990s were followed by accelerated agricultural production; the rate of growth of agricultural production in West Bengal was the highest among the 17 most populous States of India from the 1980s through the mid-1990s.⁴

The paper is structured as follows. Section 2 charts the progress of literacy and school education in West Bengal. In Section 3, we discuss the primary data from the village surveys, the probit regression methodology, and the results of the probit analysis. Section 4 is a brief concluding section.

4 See Rawal and Swaminathan (1998) and Saha and Swaminathan (1994).

2 Progress of Literacy and School Education in West Bengal

2.1 State of literacy

Literacy in West Bengal is still far short of mass literacy: according to Census data, 77.6 per cent of males and 60.2 per cent of females were literate in 2001 (see Table 1). As the numbers in Table 1 show, the proportion of literates in the population in West Bengal has been higher than the corresponding figure for India at every post-Independence Census after 1961.

Table 1. Literate persons as a proportion of all persons, West Bengal and India, 1951 to 1991 (in per cent)

Year	Males		Females	
	West Bengal	India	West Bengal	India
1951	30.9	25.0	11.5	12.9
1961	40.3	34.3	17.0	12.9
1971	42.8	39.5	22.4	18.7
1981	50.7	46.7	30.3	24.9
1991	56.6	52.7	38.4	32.1

Source: Census of India, various volumes

Figures from the National Sample Survey indicate rather rapid progress in West Bengal.⁵ Literacy among men and women in rural West Bengal is spreading steadily and at a faster rate than the all India average (Table 2).

5 Information on literacy and school attendance from later rounds of the NSS have not been published at the State level.

Table 2. Proportion of literate persons in the rural population (above the age of 7), India, West Bengal, 1993-94 to 1997 (per cent)

Year	Rural West Bengal			Rural India		
	Males	Females	Persons	Males	Females	Persons
1993-94	68	47	58	63	36	50
1994-95	72	49	61	64	38	51
1995-96	71	48	60	65	39	52
1997	78	58	69	68	43	56

Source: NSSO (1998).

Literacy rates, unequal across the sexes, continue to be steeply unequal across castes and communities.⁶ Data in Table 3 indicate that although Dalits (persons from the Scheduled Castes) are deprived educationally, from 1971 onwards, literacy among Dalits in West Bengal has been slightly ahead the Indian average for Dalits. Adivasis (persons from the Scheduled Tribes) in West Bengal, however, and Adivasi women in particular, lag behind Adivasi women in other States in respect of literacy (Table 4).

Table 3. Literate persons as a proportion of all persons, Dalits, West Bengal and India, 1961-1991 (in per cent)

Year	Males		Females	
	West Bengal	India	West Bengal	India
1961	10.4	17.0	0.6	3.3
1971	25.5	22.3	9.2	6.4
1981	34.3	30.9	13.7	10.8
1991	44.4	40.2	23.3	19.0

Source: Census of India, various volumes

⁶ Data on these aspects have not yet been released for the 2001 Census.

Table 4. Literate persons as a proportion of all persons, Adivasis, West Bengal and India, 1961-1991 (in per cent)

Year	Males		Females	
	West Bengal	India	West Bengal	India
1961	14.4	13.8	1.8	3.2
1971	14.5	17.6	3.0	4.9
1981	21.2	24.5	5.0	8.0
1991	32.3	32.5	12.0	14.5

Source: Census of India, various volumes

The analysis of primary data from the WIDER villages by Sunil Sengupta and Haris Gazdar show a similar pattern of educational deprivation, ranging from Adivasi women, the most deprived, at one end of the spectrum of under-privilege, to caste-Hindu men at the other.⁷ Sengupta and Gazdar also considered changes in literacy rates over time. On the assumption that persons became literate, if at all, by the age of 15 years, they grouped the village populations by the period in which persons reached the age of 15, and by sex and caste. Their conclusions were, as they note, very striking:

At the two extremes of the literacy scale, there was no discernible trend over time: for [caste-Hindu] males the 1953-62 cohort was already very close to full literacy, while for Adivasi (Scheduled Tribe) females there has been no significant departure from total illiteracy during the entire reference period. The groups in between accounted for changes in the aggregate literacy rates between the

⁷ This refers to village surveys undertaken between 1987 and 1990 by members of a research project funded by the World Institute for Development Economics Research (WIDER) and based at the Visva-Bharati University, Santiniketan.

fifties and the late eighties. For [caste-Hindu] women, there were steady improvements throughout this period, while for Dalit (Scheduled Caste) and Adivasi (Scheduled Tribe) males the changes were more recent. The cohorts which displayed the most significant increases in literacy were the youngest ones, roughly corresponding to the period since the Left Front came to power (Sengupta and Gazdar, 1996, pp. 69-70)

2.2 *Progress in school education since 1977*

As are similar data for other states, official data on school enrolment in West Bengal are very poor. These data come from school registers, which are created and maintained by school staff whose employment depends on the enrolment that they register. The fact that the proportion of pupils enrolled in an age-cohort is often larger than the size of the age-cohort itself is the clearest evidence of false data. Official data on dropping out, or “wastage”, are also unreliable, for two main reasons. First, data on enrolment are unreliable. Secondly, many children stay more than one year — often two or three years — in class 1. The rate of dropping out in, say, between class 1 and class 2 is measured by calculating the difference between the number of children enrolled in class 2 and class 1 as a proportion of the number of children enrolled in class 1. When children who join class 1 early (say, at age 5) and stay in the same grade until they are seven years old, the number of drop-outs is overstated in the data, since stayers are counted, by this method, as drop-outs.⁸

8 See the very useful discussion of this in Chattopadhyaya *et. al.*, (1994), Ch.4. In the villages that they studied, correcting for retention, the drop-out rate between class 1 and class 5 came down from 17.5 per cent to 4.5 per cent.

The fifth quinquennial survey on employment and unemployment conducted by the National Sample Survey (50th round, July 1993-June 1994) provides data on the distribution per 1000 of persons by “principal usual activity” and by age group. One such activity (category 91) is “attended educational institutions”. If the proportion of persons in this category and in the age group 5-14 years is taken as an approximation of the proportion of children in that age-group who attend school regularly, West Bengal’s performance in respect of school attendance was poor in 1993-94, particularly in rural areas (see Table 5). In rural West Bengal, only two-third of children in the age group 5-14 attended school.

The Report of the Education Commission of West Bengal of 1992 provides a useful account of the progress of school education (and primary education in particular) under the Left Front government (GOWB, 1992). The following were the important changes in the realm of primary education, according to the Education Commission. First, there was a major expansion of primary schooling: the number of schools increased, school enrolments increased more than 80 per cent between 1977 and 1992, and the average distance between schools and living settlements was reduced across the state.⁹ In opening new schools, the Government of West Bengal concentrated on areas where Dalits and Adivasis predominated. Secondly, all school education was made free. Thirdly, the number of teachers increased raising the average number of teachers per primary school to three in 1992. Fourthly, the government improved the conditions of employment of teachers: their salaries, allowances and retirement benefits rose substantially after the Left Front came to power. Fifthly, certain schemes for providing textbooks to school

9 These changes occurred despite legal obstacles to the expansion of public schooling (see Ramachandran, 1995).

children and uniforms to girl students were begun although their coverage is not universal. Sixthly, there were changes in the administration of primary education. West Bengal, for example, introduced a system of no-detention or automatic promotion for the first five years of school.

The Report of the Education Commission is also valuable for its criticism and assessment of the many serious problems with the system of primary school education. The Commission noted that dropping out is still a major feature of primary education, that the quality of teaching has not improved, that “the system of school inspection has in practice become defunct,” and that “no real accountability exists anywhere” (*ibid.* pp. 40-41).

To sum up, the macro statistics on literacy and school attendance show that while progress has been made, educational attainment as measured by literacy continues to be unequal for different groups in society reflecting larger societal patterns of deprivation. While there has been an expansion of school infrastructure and increased participation in school, access to schooling is far from being universal. In the next section, primary data are used to examine the significance of some of the factors determining literacy and access to schooling in rural West Bengal.

Table 5. Proportion of persons in the age-group 5-14 years whose principal usual activity was “attended educational institutions”, 1993-94 (per cent)

	Boys		Girls		All children	
	India	West Bengal	India	West Bengal	India	West Bengal
Rural	70.3	68.9	55.4	61.2	63.3	65.2
Urban	84.5	84.5	80.0	76.3	82.4	80.2

Source: Swaminathan and Rawal (1999)

3 Analysis of Village Data

In this section, we first describe the primary data base (3.1), then, we discuss the probit methodology (3.2) and finally, the results of the probit regressions (3.3).

3.1 Data

There are two sets of primary data used for the analysis here. The first set covers six villages surveyed in 1989-90, 12 to 13 years after the Left Front government came to power. These villages were surveyed as part of a special study of schooling and literacy organised as part of the UNU-WIDER study titled "Rural Poverty, Social Change and Public Policy in West Bengal".¹⁰ The eight villages surveyed in the special study are listed in Table 6; only six, however, have been included in the probit analysis.

The villages are located in different parts of West Bengal (see Table 6 and Map). Of the eight villages, seven had a substantial (>26 per cent) Dalit population, 4 had a substantial (>36 per cent) Adivasi population, and one had a substantial (38 per cent) Muslim population. The major economic activity in each village was agriculture. In one village, Madhavsinghergheri in South 24-Parganas district, the primary occupation of the heads of a substantial proportion (41 per cent) of households was fishing, and in another, Umapur in Nadia district, the primary occupation of the heads of a substantial proportion (20 per cent) of households was handloom-weaving. In Kalinagar in Bardhaman district, a large number of workers worked at non-agricultural manual labour; they were employed to shovel sand from the bed of the Damodar

10 See Ramachandran (1995). Ramachandran participated in the UNU-WIDER project. The questionnaires for the special survey of 1989-90 were drafted by Debanshu Majumdar and Ramachandran, the surveys were supervised by Debanshu Majumdar and conducted by him and Basudev Ghosh.

River and load it on lorries. Simtuni village had a high proportion of migrant agricultural workers. Taken together, the villages represent an interesting and illustrative cross-section of rural West Bengal.

Table 6. List of villages surveyed by the WIDER project

Village	District	Surveyed in
Piakhan	West Dinajpur	April 1989
Nutanpara	Birbhum	August 1989
Madhavsinghergheri	South 24-Parganas	February 1990
Umapur	Nadia	April 1990
Amarsinghi	Malda	August 1990
Simtuni*	Purulia	1986-87
Kalmandasguri*	Koch Bihar	1988-89
Kalinagar	Barddhaman	July 1989

Note: * villages not included in the probit due to data cleaning problems.

The second set comprises data from five villages surveyed between November 1994 and December 1995 in four districts of West Bengal (see Table 7). The villages are Kalinagar (Barddhaman district), Kalmandasguri (Koch Bihar district), Simtuni (Purulia district), Panahar and Muidara (both Bankura district). Of these five villages, three—Kalinagar, Kalmandasguri and Simtuni – had been studied in the late 1980s as part of the WIDER project. These villages were resurveyed in respect of different aspects of literacy, primary education and child labour in 1994-95, after the Total Literacy Campaign began in the state.¹¹ The resurveys conducted in Kalinagar and Kalmandasguri in 1994-95 were census-type surveys. In Simtuni, the survey conducted in 1994 was a

¹¹ The 1994-95 studies were supported by UNICEF, and the villages were surveyed by Basudeb Ghosh, Dipankar Roy, Susanta Mandal and Ramachandran.

stratified sample survey. The population was stratified by caste and landholdings, and a sample was selected in proportion to the sizes of caste and land holding strata in the 1986-87 WIDER survey.

Table 7. List of villages surveyed in 1994-95

Village	District	Surveyed in
Simtuni	Purulia	December 1994
Kalmandasguri	Koch Bihar	May 1995
Kalinagar	Barddhaman	May 1995
Panahar	Bankura	October-December 1995
Muidara	Bankura	October-December 1995

The surveys in the remaining two villages – Panahar and Muidara in Bankura district – were conducted in October-December 1995 as part of a study of agricultural development in West Bengal.¹² Basic demographic data and data on education were collected as part of the surveys conducted in Panahar and Muidara in the same format as in the other three surveys.

3.2 *Probit model*

Probit analysis is used here to identify different factors associated with adult literacy and school enrolment among children.¹³ Probit is a method to estimate binary choice models (that is, econometric models

12 The household-level surveys in Panahar and Muidara conducted by Vikas Rawal, covered a total of 283 households, 107 in Muidara and 176 in Panahar. See Rawal (1999) for details.

13 Similar binomial and multinomial discrete choice models (Probit or Logit) have been used to identify determinants of school enrolment for children and determinants of their participation in child labour in Latin American and a few African countries. See, for example, Patrinos and Psacharopoulos (1997), Jensen and Nielsen (1997), Robles-Vasquez (2000) and Kambhampati and Pal (2001).

MAP 1. Districts where the sample villages were located



in which the dependent variable can take only two discrete values).¹⁴

The estimation of binary choice models takes the form:

$$\Pr(E/I_i) = f(x_i'\beta) \quad (1)$$

$$\text{Where } I_i = x_i'\beta \quad (2)$$

The left hand side in (1) is the probability of occurrence of event E given I_i ; f on the right hand side is a cumulative distribution function (which, in a probit model, is assumed to be a normal distribution).

We have estimated two probit models in the analysis that follows. In the first, literacy among persons aged 15 years and above is the dependent variable ($y=1$ if the person is literate; $y=0$ if the person is not). In the second model, the attendance in school of children in the age-group 6 to 16 years is the dependent variable ($y=1$ if the child is attending school; $y=0$ if the child is not).

The independent variables used in both models were the following:

- the sex of the individual
- the occupation of the head of the individual's household
- the caste and religion of the individual
- the village of residence of the individual

In the second model (i.e., where the dependent variable was school attendance among six- to sixteen-year olds), two further independent variables were used: the literacy status (literate/illiterate) of the individual's father and the literacy status of the individual's mother.

14 See Maddala (1983).

These two variables were not used for the first model for lack of data. Table 8 lists the dummy variables used in the analysis.¹⁵

Table 8. Definitions of the dummy variables used in the probit analysis

Variable

Sex:

Female (S1=1 if the person was a female; S1=0 if the person was a male)

Caste, community:

- Dalit (SC = 1 if the person was from a Dalit household and SC=0 otherwise)
- Adivasi (ST = 1 if the person was from a Adivasi household and ST=0 otherwise)
- Muslim (M = 1 if the person was from a Muslim household and M=0 otherwise)
(SC=ST=M=0 if the person was from a caste Hindu household)

Primary occupation of head of household:

- Manual labour and small cultivators (MLSC = 1 if the person is from a manual labour or a small cultivator household and MLSC = 0 otherwise)
- Medium cultivator, i.e., with holdings $\geq 1 < 2.5$ ha. (MC = 1 if the person is from a medium cultivator household and MC = 0 otherwise)
- Self-employed, petty trade, etc. (SE=1 if the person is from a family that is self-employed; SE=0 otherwise)
- Others, incl. salaried persons (OTH=1 if the person does not belong to families of manual labourers or cultivators or self-employed families; OTH=0 for persons from families of manual labourers, cultivators and self-employed families.)

15 The definitions of occupational categories we have used are as follows: Manual worker: Hired agricultural or non-agricultural worker. Small cultivator: A member of a household with operational holding of less than one hectare. Medium cultivator: A member of a household with an operational holding that is at least one hectare and less than 2.5 hectares. Large cultivator: A member of a household with an operational holding of 2.5 hectares or more. Self-employed or petty trader: A member of a household that is self-employed. This includes the petty traders in the village. Others: A member of a household that is not covered by the categories above. This category includes families that live on salaried incomes. In 1989-90, there are two additional categories of fishing workers and handloom weavers.

(In 1989-90, two additional occupational categories were used: FW=1 for fishing worker and HW=1 for handloom weaver, 0 otherwise)
 MLSC=MC=SE=OTH=0 if the person is from a large cultivator household)

*Parents' Literacy**

Father's literacy (FLIT=1 if the person's father was literate, FLIT=0 if he was not)

Mother's literacy (MLIT=1 if the respondent's mother was literate; MLIT=0 if she was not)

Villages 1989-90

- Piakhan (V2=1 if the person was from Piakhan; V2=0 otherwise)
 - Amarsinghi (V3=1 if the person was from Amarsinghi; V3=0 otherwise)
 - Madhavsinghergheri (V4=1 if the person was from Madhavsinghergheri; V4=0 otherwise)
 - Nutanpara (V5=1 if the person was from Nutanpara, V5=0 otherwise)
 - Umapur (V6=1 if the person was from Umapur, V6=0 otherwise)
- V2=V3=V4=V5=V6=0 if the respondent was a resident of Kalinagar

Villages 1994-95

- Kalmandasguri (V1=1 if the person was from Kalmandasguri; V1=0 otherwise)
 - Simtuni (V2=1 if the person was from Simtuni; V2=0 otherwise)
 - Panahar (V3=1 if the person was from Panahar; V3=0 otherwise)
 - Muidara (V4=1 if the person was from Muidara; V4=0 otherwise)
- V1=V2=V3=V4=0 if the respondent was a resident of Kalinagar

* Used only in the second model (i.e., where the dependent variable was school attendance among six- to sixteen-year olds)

3.3 Probit results

1989-90 surveys

Literacy among adults

The results of the probit analysis of literacy among persons in the age-group 15 years and above are given in Table 9. The variables that emerged significant in the analysis were the dummy variables for the

sex of the respondent, the dummy variables for persons from Dalit households and Adivasi households, the dummy variables for persons from households where the occupation of the head of household was manual labour or small-scale cultivation, cultivation on land holdings in the size-group 1-2.5 hectares, fishing and handloom-weaving. The dummy variables for two villages, Amarsinghi in Malda and Nutanpara in Birbhum, were negative and significant.

Table 9 can be read as follows. The coefficient for S1 is negative, indicating that the probability of being literate is lower for a female than for a male; the corresponding t-ratio indicates that that coefficient was significant at a level of significance less than one per cent. The coefficient signs were as expected. They were negative for Dalits, Adivasis and Muslims (i.e., the probability of being literate was lower for any person from one of these three groups than for a caste Hindu). However, the coefficient for Muslim respondents was not statistically significant (this could be because of their small number in the data set). The coefficients were negative for manual workers, medium cultivators, fisherfolk, weavers, and others (i.e., the probability of being literate was lower for a person from households where the occupation of the head of household was any of these than for a person from a household where the occupation of the head of the household was cultivation on a holding of 2.5 ha. and above). All coefficients except the coefficient for “others” were statistically significant. The coefficient for self-employed persons and persons in petty trade was positive and not significant.

In respect of regional differences, the coefficients were negative for the villages in West Dinajpur, Malda, South 24-Parganas and Birbhum districts (the reference village was Kalinagar in Barddhaman district). As Kalinagar was the “most developed” village, the coefficients for the other villages are as expected. Among the village dummies, the dummy variables for the Malda and Birbhum villages were statistically significant; in other

words, the probability of being literate for a resident of these villages was lower than for residents of Kalinagar in Barddhaman district.

Table 9. Binomial probit model, maximum likelihood estimates, dependent variable: literacy of persons in the age-group >15 years, survey villages, 1989-90

Variable	Coefficient	t-ratio	Prob. t ≥x
Constant	1.6320	6.1198	0.0000
Female (S1)	-0.8022	-9.3577	0.0000
SC	-0.6730	-6.2667	0.0000
ST	-1.3681	-7.8825	0.0000
Muslim	-0.3173	-0.7768	0.437
Manual labour & small cultivator	-1.0523	-4.3377	0.0000
Medium cultivator	-0.6314	-2.4589	0.0139
Self-employed, petty trade	-0.0203	-0.0734	0.9415
Fishing work	-1.4921	-4.5907	0.0000
Handloom work	-0.9527	-2.9362	0.0033
Others, incl. salaried persons	-0.1724	-0.6128	0.5400
Piakhn, West Dinajpur	-0.2463	-1.5482	0.1216
Amarsinghi, Malda	-0.4401	-2.8996	0.0037
Madhavsinghergheri, S. 24-P.	-0.0886	-0.5444	0.5862
Nutanpara, Birbhum	-1.1542	-5.4192	0.0000
Umapur, Nadia	0.0454	0.2976	0.766
Log likelihood ratio			478.0149
Chi-square (15) ($\infty = 0.01$)			30.58

Table 10. Predicted probability (in per cent) of being literate among men and women belonging to different occupation classes, castes and villages, 1989-90

Village	Caste/ community	Men					Women				
		MLSC	MC	Fishing workers	Hand loom weavers	Others	MLSC	MC	Fishing workers	Hand loom weavers	Others
Kalinagar (Bardhaman)	SC	0.477	0.581			0.723	0.29	0.384			0.539
	ST	0.313				0.566	0.169	0.237			0.369
	Caste hindu	0.641	0.731			0.836	0.445	0.549			0.696
Piakhan (West Dinajpur)	SC	0.477	0.581			0.723	0.29	0.384			0.539
	ST	0.313	0.409			0.566	0.169	0.237			0.369
	Caste hindu	0.641	0.731			0.836	0.445	0.549			0.696
	Muslim	0.641				0.836	0.445				0.696
Madhavsinghergheri` (South 24-Parganas)	SC	0.477	0.581	0.37		0.723	0.29	0.384	0.208		0.539
	Caste hindu	0.641	0.731	0.535		0.836	0.445	0.549	0.34		0.696
Umapur (Nadia)	SC	0.477			0.502	0.723	0.29			0.311	0.539
	Caste hindu	0.641	0.731		0.664	0.836	0.445	0.549		0.469	0.696
Amarsinghi (Malda)	SC	0.37	0.472			0.627	0.208	0.286			0.43
	ST	0.226					0.116				
	Caste hindu	0.535	0.637			0.767	0.34	0.44			0.596
Nutanpara (Birbhum)	SC	0.223	0.304			0.451	0.114	0.164			0.269
	ST	0.125	0.179			0.291	0.06	0.089			0.155
	Caste hindu	0.36				0.617	0.202				0.42
	Muslim	0.36					0.202				

Notes: Manual labourers/small cultivators, MC: Medium cultivators, Others include large cultivators, self-employed and households engaged in other miscellaneous occupations. Blank cells indicate that there was no person representing that category in the sample.

Based on these probit results, we have calculated the predicted probability of being literate for men and women in each village separately. The variation in each village across caste and occupational class is reported (Table 10). The estimates show, for example, that among manual labourers and small cultivators in Kalinagar village, a male caste Hindu has a higher probability of being literate (0.64) than a scheduled tribe man (0.31). To take another example, among women manual labourers in Nutanpara, the probability of a scheduled tribe woman being literate is only 0.06 as compared to 0.11 among a scheduled caste woman and 0.20 among a caste Hindu or Muslim woman. The results reveal the combined effect of caste or religion and occupational class.

Enrolment in schools among children

The results of the probit analysis of school attendance among children in the age-group 6-16 years are given in Table 11. As mentioned before, the explanatory variables in these estimations included two additional dummy variables representing the literacy of the parents of each six- to sixteen-year old. First, there was a significant negative coefficient for gender indicating that girls had lower enrolment rates than boys. The dummy variables Dalits, Adivasis and Muslims were statistically significant and negative as was the dummy variable for fishing workers. Additionally, literacy of the respondent's mother was positive and significant and of large magnitude.

Table 11. Binomial probit model, maximum likelihood estimates, dependent variable: school attendance in the age group 6-16 years, survey villages, 1989-90.

Variable	Coefficient	t-ratio	Prob. t ≥x
Constant	1.3434	2.4640	0.0137
Female (S1)	-0.4091	-2.7780	0.0055
SC	-0.4722	-2.3861	0.0170
ST	-1.5178	-5.4068	0.0000
Muslim	-1.7214	-2.5106	0.0121
Manual labour & small cultivator	-0.7670	-1.6484	0.0993
Medium cultivator	-0.8067	-1.6120	0.1070
Self-employed, petty trade	-0.5598	-1.0747	0.2825
Fishing work	-1.8286	-3.2259	0.0013
Handloom work	-1.2574	-1.8225	0.0684
Others, incl. salaried persons	-1.0583	-1.8271	0.0677
Father's literacy	0.0141	0.0751	0.9401
Mother's literacy	0.6589	2.7835	0.0054
Piakhn, West Dinajpur	0.3413	1.3237	0.1856
Amarsinghi, Malda	0.2550	0.8493	0.3957
Madhavsinghergheri, South 24 Parganas	0.2499	0.9523	0.3410
Nutanpara, Birbhum	-0.8855	-2.9957	0.0027
Umapur, Nadia	0.6633	2.3221	0.0202
Log likelihood ratio			226.8419
Chi-square (17) ($\mu = 0.01$)			33.41

Table 12. Predicted probability (in per cent) of being enrolled in school among boys and girls belonging to different castes and villages

Village		Caste/ community	Boys		Girls	
			Having literate mothers	Having literate mothers	Having illiterate mothers	Having illiterate mothers
Kalinagar (Bardhaman)		SC	0.822	0.705	0.754	0.614
		ST	0.619	0.457	0.519	0.358
		Caste hindu	0.881	0.793	0.831	0.718
		Muslim				
Piakhan (West Dinajpur)		SC	0.822	0.705	0.754	0.614
		ST	0.619	0.457	0.519	0.358
		Caste hindu	0.881	0.793	0.831	0.718
		Muslim	0.57	0.407	0.468	0.313
Madhavsinghergheri (South 24 Parganas)	Fish workers	0.426	0.277	0.33	0.203	20.3
		0.543	0.381	0.441	0.29	29
	Others	0.822	0.705	0.754	0.614	61.4
		0.881	0.793	0.831	0.718	71.8
Umapur (Nadia)		SC	0.9	0.823	0.856	0.755
		ST				
		Caste hindu	0.935	0.881	0.905	0.832
		Muslim				
Amarsinghi (Malda)		SC	0.426	0.277	0.33	0.203
		ST				
		Caste hindu	0.543	0.381	0.441	0.29
		Muslim				
Nutanpara (Birbhum)		SC	0.656	0.496	0.559	0.396
		ST	0.401	0.257	0.308	0.187
		Caste hindu	0.753	0.613	0.67	0.512
		Muslim	0.353	0.22	0.266	0.158

Notes: Blank cells indicate that there was no child representing that caste/community in the sample.

At first glance, the results of the probit analysis indicate that adult literacy and school attendance among children in the six villages are associated with the same socio-economic determinants. There is, however, one notable difference. The occupation, or class, variables in the probit regression for school attendance were not as important (with one exception) as in the probit regression for adult literacy. While all the occupational dummy variables were of the same sign in the two regressions, *only* the dummy variable for fishing workers was significant in the regression for school attendance.

As before, the predicted probability of being enrolled in school is calculated and reported in Table 12. One of the interesting results here is of the impact of mother's literacy on a child's probability of being enrolled in school. For example, among scheduled caste girls in Amarsinghi village, the probability of being enrolled is 0.20 if the mother is illiterate and 0.33 if the mother is literate.

1994-95 surveys

Similar analyses were conducted with the village survey data for 1994-95.

Literacy among adults

The results of the probit analysis of literacy among persons in the age-group 15 years and above are given in Table 13. The variables that emerged significant were the dummy variables for females, for persons from Dalit, Adivasi and Muslim households, for persons from manual worker or small cultivator households, and for persons from households engaged in "other occupations". The signs of the coefficients were as expected and similar to the results obtained from the 1989-90 surveys.

Table 13. Binomial probit model, maximum likelihood estimates, dependent variable: literacy of persons in the age-group >15 years, survey villages, 1994-1995

Variable	Coefficient	t-ratio	Prob. t ≥x
Constant	1.528	12.542	0.0000
Female (S1)	-0.816	-11.518	0.0000
SC	-1.055	-12.255	0.0000
ST	-1.211	-9.689	0.0000
Muslim	-1.294	-8.271	0.0000
Manual labour & small cultivator	-0.500	-7.664	0.0000
Medium cultivator	-0.156	-1.876	0.0607
Self-employed, petty trade	0.094	0.794	0.4274
Others, incl. salaried persons	0.564	4.844	0.0000
Kalmandasguri, Koch Bihar	0.025	0.18	0.8571
Simtuni, Purulia	-0.650*	-3.683	0.0002
Panahar, Bankura	-0.448*	-3.859	0.0001
Muidara, Bankura	0.015	0.12	0.9041
Log likelihood ratio			547.2091
Chi-square (13) ($\infty = 0.01$)			27.69

Table 14. Predicted probability (in per cent) of being literate among men and women belonging to different occupation classes, castes and villages, 1994-95

Village	Caste/ community	Male					Female				
		Manual labour, small cultivator	Medium cultivator	Large cultivator	Self- employed	Others	Manual labour, small cultivator	Medium cultivator	Large cultivator	Self- employed	Others
Kalinagar (Bardhaman)	SC	0.493	0.579		0.616	0.738	0.301	0.378		0.415	0.555
	ST	0.454	0.54			0.707	0.269	0.342			0.516
	Caste hindu	0.737	0.798	0.822	0.822	0.89	0.553	0.636	0.671	0.671	0.782
Kalmandas-guri (Koch Bihar)	SC	0.493	0.579	0.616	0.616	0.738	0.301	0.378	0.415	0.415	0.555
	ST	0.454					0.269				
	Caste hindu Muslim	0.737 0.434	0.798 0.519	0.822	0.822	0.89 0.69	0.553 0.253	0.636 0.323	0.671	0.671 0.358	0.782 0.496
Simtuni (Purulia)	ST	0.303	0.38			0.557	0.161	0.213			0.358
	Caste hindu	0.593					0.392				
Panahar (Bankura)	SC	0.383	0.467		0.506	0.643	0.216	0.279		0.312	0.443
	ST	0.347	0.429	0.467			0.19	0.249	0.279		
	Caste hindu Muslim	0.641 0.329	0.716	0.746 0.447	0.746	0.838 0.587	0.441 0.178	0.527	0.566 0.263	0.566	0.696 0.386
Muidara (Bankura)	SC	0.493	0.579		0.616		0.301	0.378		0.415	
	ST	0.454					0.269				
	Caste hindu	0.737	0.798	0.822	0.822	0.89	0.553	0.636	0.671	0.671	0.782

Notes: Blank cells indicate that there was no person representing that category in the sample.

The dummy variables for two villages – Simtuni in Purulia and Panahar in Bankura – were negative and significant; i.e., the probability of being literate was lower in these villages than in Kalinagar in Bardhaman district. Bardhaman is perhaps the most advanced district in the state in respect of agricultural production, and also the district that was first identified by UNESCO as having achieved mass literacy in the Total Literacy Campaign of 1995.

Table 14 shows the predicted probabilities of being literate among men and women of different villages.

Enrolment in schools among children

The results of the probit analysis of school enrolment among children in the age-group 6-16 years are given in Table 15. The variables that emerge significant in explaining the probability of a child's being enrolled in schools are gender, caste and the literacy of a child's mother. As expected, girls have a lower probability of being enrolled in school than boys are. All three dummy variables representing castes and communities had negative coefficients that were significant at less than one per cent level of significance. This implies that the Dalit, Adivasi and Muslim children had a significantly lower probability of being in school than upper caste Hindu children.

Table 15. Binomial probit model, maximum likelihood estimates, dependent variable: enrolment of children in the age group 6-16 years, survey villages, 1994-95

Variable	Coefficient	t-ratio	Prob. t ≥x
Constant	1.345	6.839	0.0000
Female (S1)	-0.263	-2.449	0.0143
SC	-0.764	-5.102	0.0000
ST	-1.195	-6.705	0.0000
Muslim	-1.406	-5.754	0.0000
Manual labour & small cultivator	0.003	0.863	0.3881
Medium cultivator	-0.130	-0.927	0.3542
Self-employed, petty trade	0.219	1.131	0.2580
Others, incl. salaried persons	-0.095	-0.508	0.6115
Father's literacy	0.00002	0.104	0.9174
Mother's literacy	0.001	3.531	0.0004
Kalmandasguri, Koch Bihar	0.469	2.067	0.0388
Simtuni, Purulia	-0.893	-4.011	0.0001
Panahar, Bankura	0.045	0.244	0.8071
Muidara, Bankura	0.338	1.678	0.0934
Log likelihood ratio			169.8908
Chi square (15) ($\infty = 0.01$)			30.58

Table 16. Predicted probability (in per cent) of being enrolled in school among boys and girls belonging to different castes and villages

Village	Caste/ community	Boys		Girls	
		Having literate mothers	Having illiterate mothers	Having literate mothers	Having illiterate mothers
Simtuni	SC				
	ST	0.364	0.364	0.305	0.305
	Caste hindu	0.654	0.654	0.592	0.592
	Muslim				
Other villages	SC	0.682	0.682	0.623	0.623
	ST	0.583	0.582	0.518	0.517
	Caste hindu	0.822	0.822	0.78	0.78
	Muslim	0.531	0.53	0.465	0.465

Notes: Blank cells indicate that there was no child representing that caste/community in the sample.

Although literacy of the respondent's mother is observed to be statistically significant, the size of the coefficient is much smaller in the regression based on village data for 1994-95 than in the corresponding regression for 1989-90. Interestingly, the dummy variable representing a child's father's literacy was not found to be significant in determining whether a child was in school.

In the 1994-95 estimation too, none of the occupation dummy variables were found to be significant in explaining the probability of enrolment of children in schools.

Among the village dummy variables, Simtuni, a village in Purulia district, had, not unexpectedly, a negative coefficient. Surprisingly, however, Kalmandasguri in the relatively backward northern district of

Koch Bihar showed a positive coefficient. This is a village where Ramachandran (1995) observed substantial progress in education: data for the two surveys of 1986-87 and 1994-95 indicated a rise in level of educational achievement among people of Dalit households, especially among Dalit males (*ibid.*). Ramachandran also noted “a new enthusiasm for education in the last decade”. One of the factors contributing to this was the literacy campaign: “although unsuccessful in its primary objective of establishing sustained universal adult literacy, (it) had the effect of eroding the traditional apathy towards primary education that existed among some people” (*ibid.* p 53)

Table 16 shows the predicted probability of boys and girls belonging to different castes and communities being enrolled in school. The table shows that children in Simtuni lagged significantly behind children in other villages. The probability of a scheduled tribe girl being enrolled in school was only 0.3 in Simtuni and 0.52 in other villages. The probability of being enrolled in school was 0.78 for Caste Hindu girls and 0.82 for Caste Hindu boys in villages other than Simtuni. It is noteworthy that the probability of being in school was not very different as between children with illiterate mothers and children with literate mothers. This is probably because of a very small coefficient for mother’s literacy in the estimated regression. This perhaps reflects that consciousness for children’s schooling had spread equally among literate and illiterate parents.

4 Discussion and Concluding Remarks

Among studies that have attempted to identify the factors affecting demand for schooling in rural India, a recent paper by Kambhampati and Pal (2001) is based on data from six of the WIDER village surveys of 1987-89. Kambhampati and Pal (KP hereafter) use two indicators of schooling, enrolment (yes/no) and attainment (reflecting non-drop-out

status). Their main emphasis was on the differences in factors affecting school enrolment as between boys and girls. One of their major conclusions, based on the results of logit regressions, is that the probability of school enrolment depends on parental literacy. While the literacy of the male head of households affects positively both sons and daughters, mother's literacy is seen to be more important for daughters. Among family characteristics, per capita expenditure and caste status had significant effects on enrolment.¹⁶ The major points to emerge from the KP study, which is not only a very recent econometric study but also deals with some of the same villages, is that father's and mother's literacy matter (the latter particularly for girls) as does per capita income or expenditure for enrolment and retention of children in school in rural West Bengal.

Dreze and Kingdon examine factors affecting the demand for schooling based on a large-scale survey conducted in 122 villages across the five States of Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan and Himachal Pradesh (Dreze and Kingdon, 2001).¹⁷ Dreze and Kindgon also undertake logit regressions to identify factors affecting school enrolment and grade attainment. One of the important findings of their analysis is the strong effect of parental education on school enrolment, with father's education being more important for boys and mother's education more important for girls. Secondly, they find a clear "intrinsic disadvantage" among families of Scheduled Castes, Scheduled Tribes and Other Backward Castes though not Muslims. Among household

16 Although their variable for occupation of household head was not significant, this variable was not clearly defined. All persons engaged in "agriculture or agriculture-allied activities" were grouped under one category. This would imply that landlords, peasants and agricultural labourers were all part of the same group.

17 For further details of the survey, see PROBE (1999).

characteristics, ownership of assets has a significant positive effect on enrolment. Finally, among supply side factors, several factors emerge as significant and in particular, “school meals have a major positive effect on formal school participation” (ibid., p 21).

Turning to secondary-data-based analysis, Jayachandran (2002) uses data from the Census of India for 1981 and 1991 to undertake a district-level analysis of factors associated with the demand for schooling. She reports that school attendance rate was affected by adult literacy (positively), female work participation (positively), poverty (negatively), household size (negatively), caste (only for girls) and school accessibility.

To sum up, recent research suggests that among household-level characteristics, three sets of factors are important influences on school attendance and enrolment in rural India. The first set pertains to parental literacy, and particularly literacy of mothers. The second set comprises economic status as identified by per capita expenditure or poverty or ownership of assets. Finally, caste discrimination still continues to prevail in rural India.

Our results, we believe, show some small but important differences in respect of occupational class as well as parental literacy on participation in schooling.

To recapitulate, the results of the probit analysis of the educational attainments of people above the age of 15 years, measured in terms of their literacy, showed that whether or not a person was literate related significantly to his or her sex, caste and occupational status and to the region in which his or her village was located. The results of the probit analysis of the educational achievements of children in the age group 6 to 16 years in the same villages, measured in terms of whether or not

they were attending school, showed that whether or not a child was attending school was related significantly to the child's sex and caste, to whether or not the child's mother was literate and to the region in which the child's village was located. Father's educational status was not a significant variable. Further, the coefficient of the variable "mother's literacy" was significant but of smaller magnitude in the analysis for 1994-95 as compared to the village surveys of 1989-90. It thus appears that consciousness regarding schooling has even spread to non-literate parents.

A key difference between the two sets of regressions, that is, for adults and for children, was that occupational status was not a significant determinant of child's schooling.¹⁸ If it is assumed that adult literates today became literate while at school in their childhood, the analysis is consistent with the following interpretation. Occupation — or class status — was a more important determinant of literacy among adults than it was a determinant of school attendance among children (other than among households headed by fishing workers). In contemporary West Bengal, we argue, class barriers to school attendance have become less significant; other social and regional features of educational deprivation persist.

An important feature of our analysis in this paper is that very similar estimates (in terms of signs and significance of coefficients) were obtained from both sets of village studies, that is, the six village surveys of 1989-90 and the five village surveys of 1994-95. This is an indication of the robustness of our estimates.

We began the paper by documenting recent changes in West Bengal in respect of literacy and school education, and argued that the

18. The only exception was fishing workers in the 1989-90 surveys.

picture was one of progress amidst continuing backwardness. The analysis of primary data showed that disparities of region, caste, community and gender remained in educational attainments among rural persons. In the absence of a law of compulsory education to equalise access, school education too continues to reflect larger societal patterns of deprivation.¹⁹ At the same time, there has been progress in respect of reducing class disparities in access to education.

19. On the need for a law of compulsory education in India, see Ramachandran (2002).

References

- Colclough, C. with K. M. Lewin (1993), *Educating All the Children, Strategies for Primary Schooling in the South* (Oxford, Clarendon Press).
- Dreze, J. and A. Sen (1995), *India, Economic Development and Social Opportunity* (Oxford and New Delhi, Oxford University Press).
- Dreze, J. and G. G. Kingdon (2001), "School Participation in Rural India", *Review of Development Economics*, 5, 1, pp 1-24.
- Government of West Bengal (GOWB) (1992), *Report of the Education Commission*, Calcutta.
- Jayachandran, U. (2002), "Socio-Economic Determinants of School Attendance in India", Delhi School of Economics, Centre for Development Economics, Working Paper No. 103, June.
- Jensen, P. and H. S. Nielsen (1997), "Child Labour and School Attendance? Evidence from Zambia", *Journal of Population Economics*, 10 (4), pp. 407-24.
- Kambhampati, U. S, and S. Pal (2001), "Role of Parental Literacy in Explaining Gender Difference: Evidence from Child Schooling in India", *The European Journal of Development Research*, 13, 2, Dec., pp 97-119.
- Maddala, G. S. (1983), *Limited Dependent and Qualitative Variables in Econometrics*, (Cambridge, Cambridge University Press).
- National Sample Survey Organisation (NSSO) (1991), "Results on Participation in Education (All-India), NSS 42nd Round (July 1986-June 1987)", *Sarvekshana*, Issue 46, Vol. 14, No. 3, Jan-March.
- National Sample Survey Organisation (NSSO) (1991), "Results on Participation in Education for 8 Major States, NSS, 42nd Round", *Sarvekshana*, Issue 56, Vol. 17, No. 1, July-Sep.
- National Sample Survey Organisation (NSSO) (1998), Summary Tables on Literacy (unpublished paper).

- Patrinós, H. A. and G. Psacharopoulos (1997), "Family Size, Schooling and Child Labour in Peru: An Empirical Analysis", *Journal of Population Economics*, 10 (4), pp. 387-405.
- The Probe Team (1999), *Public Report on Basic Education in India*, (Oxford University Press, New Delhi).
- Ramachandran, V. K. (1995), "Universalising School Education: A Case Study of West Bengal", Draft paper, (Mumbai, Indira Gandhi Institute of Development Research).
- Ramachandran, V. K. (2002), "Compulsory School Education and the Law in India" in A. Kumar and S. Lahiri (eds.), *Behind the Blackboard: Contemporary Perspectives on Indian Education* (, SFI Publications, New Delhi).
- Rawal, Vikas and Swaminathan, Madhura (1998), "Changing Trajectories: Agricultural Growth in West Bengal, 1950 to 1996" *Economic and Political Weekly*, 33(40), Oct 3-9.
- Rawal, Vikas (1999), *Irrigation Development in West Bengal, 1977-78 to 1995-96*, Ph.D. thesis submitted to Indira Gandhi Institute of Development Research, Mumbai.
- Robles-Vasquez, H. (2000), "A Micro-economic Analysis of Child Labour Force Participation and Education: The Case of Mexico, 1984-1996", Ph.D. Dissertation, The Pennsylvania State University.
- Saha, Anamitra and Swaminathan, Madhura (1994), "Agricultural Growth in West Bengal in the 1980s: A Disaggregation by Districts and Crops", *Economic and Political Weekly*, 29 (13), Mar 26.
- Sengupta, Sunil and Gazdar, Haris (1996), "Agrarian Politics and Rural Development in West Bengal", in Dreze, Jean and Sen, Amartya (ed.), *Indian Development: Selected Regional Perspectives* (Oxford, Oxford University Press).
- Swaminathan, Madhura and Rawal, Vikas (1999), "Primary Education for All", in Parikh, Kirit (ed.), *India Development Report, 1999-2000* (New Delhi, Oxford University Press).

CENTRE FOR DEVELOPMENT STUDIES

LIST OF WORKING PAPERS

[New Series]

The Working Paper Series was initiated in 1971. A new series was started in 1996 from WP. 270 onwards. Working papers beginning from 279 can be downloaded from the Centre's website (www.cds.edu)

- W.P. 270** **ACHIN CHAKRABORTY** *On the Possibility of a Weighting System for Functionings* December 1996
- W.P. 271** **SRIJIT MISHRA** *Production and Grain Drain in two inland Regions of Orissa* December 1996
- W.P. 272** **SUNIL MANI** *Divestment and Public Sector Enterprise Reforms, Indian Experience Since 1991* February 1997
- W.P. 273** **ROBERT E. EVENSON, K.J. JOSEPH** *Foreign Technology Licensing in Indian Industry : An econometric analysis of the choice of partners, terms of contract and the effect on licensees' performance* March 1997
- W.P. 274** **K. PUSHPANGADAN, G. MURUGAN** *User Financing & Collective action: Relevance sustainable Rural water supply in India.* March 1997.
- W.P. 275** **G. OMKARNATH** *Capabilities and the process of Development* March 1997
- W. P. 276** **V. SANTHAKUMAR** *Institutional Lock-in in Natural Resource Management: The Case of Water Resources in Kerala,* April 1997.
- W. P. 277** **PRADEEP KUMAR PANDA** *Living Arrangements of the Elderly in Rural Orissa,* May 1997.
- W. P. 278** **PRADEEP KUMAR PANDA** *The Effects of Safe Drinking Water and Sanitation on Diarrhoeal Diseases Among Children in Rural Orissa,* May 1997.
- W.P. 279** **U.S. MISRA, MALA RAMANATHAN, S. IRUDAYA RAJAN** *Induced Abortion Potential Among Indian Women,* August 1997.

- W.P. 280 PRADEEP KUMAR PANDA** *Female Headship, Poverty and Child Welfare : A Study of Rural Orissa, India*, August 1997.
- W.P. 281 SUNIL MANI** *Government Intervention in Industrial R & D, Some Lessons from the International Experience for India*, August 1997.
- W.P. 282 S. IRUDAYA RAJAN, K. C. ZACHARIAH** *Long Term Implications of Low Fertility in Kerala*, October 1997.
- W.P. 283 INDRANI CHAKRABORTY** *Living Standard and Economic Growth: A fresh Look at the Relationship Through the Non- Parametric Approach*, October 1997.
- W.P. 284 K. P. KANNAN** *Political Economy of Labour and Development in Kerala*, January 1998.
- W.P. 285 V. SANTHAKUMAR** *Inefficiency and Institutional Issues in the Provision of Merit Goods*, February 1998.
- W.P. 286 ACHIN CHAKRABORTY** *The Irrelevance of Methodology and the Art of the Possible : Reading Sen and Hirschman*, February 1998.
- W.P. 287 K. PUSHANGADAN, G. MURUGAN** *Pricing with Changing Welfare Criterion: An Application of Ramsey- Wilson Model to Urban Water Supply*, March 1998.
- W.P. 288 S. SUDHA, S. IRUDAYA RAJAN** *Intensifying Masculinity of Sex Ratios in India : New Evidence 1981-1991*, May 1998.
- W.P. 289 JOHN KURIEN** *Small Scale Fisheries in the Context of Globalisation*, October 1998.
- W.P. 290 CHRISTOPHE Z. GUILMOTO, S. IRUDAYA RAJAN** *Regional Heterogeneity and Fertility Behaviour in India*, November 1998.
- W.P. 291 P. K. MICHAEL THARAKAN** *Coffee, Tea or Pepper? Factors Affecting Choice of Crops by Agro-Entrepreneurs in Nineteenth Century South-West India*, November 1998
- W.P. 292 PRADEEP KUMAR PANDA** *Poverty and young Women's Employment: Linkages in Kerala*, February, 1999.
- W.P. 293 MRIDUL EAPEN** *Economic Diversification In Kerala : A Spatial Analysis*, April, 1999.
- W.P. 294 K. P. KANNAN** *Poverty Alleviation as Advancing Basic Human Capabilities: Kerala's Achievements Compared*, May, 1999.
- W.P. 295 N. SHANTA, J. DENNIS RAJA KUMAR** *Corporate Statistics: The Missing Numbers*, May, 1999.
- W.P. 296 P.K. MICHAEL THARAKAN, K. NAVANEETHAM** *Population Projection and Policy Implications for Education: A Discussion with Reference to Kerala*, July, 1999.

- W.P. 297** **K.C. ZACHARIAH, E. T. MATHEW, S. IRUDAYA RAJAN** *Impact of Migration on Kerala's Economy and Society*, July, 1999.
- W.P. 298** **D. NARAYANA, K. K. HARI KURUP**, *Decentralisation of the Health Care Sector in Kerala : Some Issues*, January, 2000.
- W.P. 299** **JOHN KURIEN** *Factoring Social and Cultural Dimensions into Food and Livelihood Security Issues of Marine Fisheries; A Case Study of Kerala State, India*, February, 2000.
- W.P. 300** **D. NARAYANA** *Banking Sector Reforms and the Emerging Inequalities in Commercial Credit Deployment in India*, March, 2000.
- W.P. 301** **P. L. BEENA** *An Analysis of Mergers in the Private Corporate Sector in India*, March, 2000.
- W.P. 302** **K. PUSHPANGADAN, G. MURUGAN**, *Gender Bias in a Marginalised Community: A Study of Fisherfolk in Coastal Kerala*, May 2000.
- W.P. 303** **K. C. ZACHARIAH, E. T. MATHEW, S. IRUDAYA RAJAN**, *Socio-Economic and Demographic Consequences of Migration in Kerala*, May 2000.
- W.P. 304** **K. P. KANNAN**, *Food Security in a Regional Perspective; A View from 'Food Deficit' Kerala*, July 2000.
- W.P. 305** **K. N. HARILAL, K.J. JOSEPH**, *Stagnation and Revival of Kerala Economy: An Open Economy Perspective*, August 2000.
- W.P. 306** **S. IRUDAYA RAJAN**, *Home Away From Home: A Survey of Oldage Homes and inmates in Kerala*, August 2000.
- W.P. 307** **K. NAVANEETHAM, A. DHARMALINGAM**, *Utilization of Maternal Health Care Services in South India*, October 2000.
- W.P. 308** **K. P. KANNAN, N. VIJAYAMOHANAN PILLAI**, *Plight of the Power Sector in India : SEBs and their Saga of Inefficiency* November 2000.
- W.P. 309** **V. SANTHAKUMAR, ACHIN CHAKRABORTY**, *Environmental Valuation and its Implications on the Costs and Benefits of a Hydroelectric Project in Kerala, India*, November 2000.
- W.P. 310** **K. K. SUBRAHMANYAN. E. ABDUL AZEEZ**, *Industrial Growth In Kerala: Trends And Explanations* November 2000
- W.P. 311** **INDRANI CHAKRABORTY** *Economic Reforms, Capital Inflows and Macro Economic Impact in India*, January 2001
- W.P. 312** **N. VIJAYAMOHANAN PILLAI** *Electricity Demand Analysis and Forecasting –The Tradition is Questioned*, February 2001

- W.P. 313 VEERAMANI, C** *India's Intra-Industry Trade Under Economic Liberalization: Trends and Country Specific Factors*, March 2001
- W.P. 314 U.S.MISHRA, MALA RAMANATHAN** *Delivery Compli-cations and Determinants of Caesarean Section Rates in India - An Analysis of National Family Health Surveys, 1992-93*, March 2001.
- W.P. 315 ACHIN CHAKRABORTY** *The Concept and Measurement of Group Inequality*, May 2001.
- W.P. 316 K. P. KANNAN, N. VIJAYAMOHANAN PILLAI** *The Political Economy of Public Utilities: A Study of the Indian Power Sector*, June 2001.
- W.P. 317 K. J. JOSEPH, K. N. HARILAL** *India's IT Export Boom: Challenges Ahead*. July 2001.
- W.P. 318 JOHN KURIEN, ANTONYTO PAUL** *Social Security Nets for Marine Fisheries-The growth and Changing Composition of Social Security Programmes in the Fisheries Sector of Kerala State, India*. September 2001.
- W.P. 319 K. C. ZACHARIAH, P. R. GOPINATHAN NAIR, S. IRUDAYA RAJAN** *Return Emigrants in Kerala: Rehabilitation Problems and Development Potential*. October 2001
- W.P. 320 N. VIJAYAMOHANAN PILLAI, K. P. KANNAN**, *Time and Cost Over-runs of the Power Projects in Kerala*, November 2001.
- W.P. 321 VEERAMANI C.** *Analysing Trade Flows and Industrial Structure of India: The Question of Data Harmonisation*, November 2001.
- W.P. 322 K. C. ZACHARIAH**, *The Syrian Christians of Kerala: Demographic and Socioeconomic Transition in the Twentieth Century*, November 2001.
- W.P. 323 V. K. RAMACHANDRAN, MADHURA SWAMINATHAN, VIKAS RAWAL**, *How have Hired Workers Fared? A Case Study of Women Workers from an Indian Village, 1977 to 1999*. December 2001.
- W.P. 324 K. P. KANNAN, N. VIJAYAMOHANAN PILLAI**, *The Aetiology of the Inefficiency Syndrome in the Indian Power Sector Main Issues and Conclusions of a Study*. March 2002.
- W.P. 325 N. VIJAYAMOHANAN PILLAI**, *Reliability and Rationing cost in a Power System*. March 2002.

- W.P. 326 K.C. ZACHARIAH, B.A. PRAKASH, S. IRUDAYA RAJAN,** *Gulf Migration Study : Employment, Wages and Working Conditions of Kerala Emigrants in the United Arab Emirates.* March 2002.
- W.P. 327 K. RAVI RAMAN,** *Bondage in Freedom, Colonial Plantations in Southern India c. 1797-1947.* March 2002.
- W.P. 328 K. P. KANNAN, K. S. HARI,** *Kerala's Gulf Connection Emigration, Remittances and their Macroeconomic Impact 1972-2000.* March 2002.
- W.P. 329 J. DEVIKA,** *Imagining Women's Social Space in Early Modern Keralam.* April 2002.
- W.P. 330 ACHIN CHAKRABORTY,** *The Rhetoric of Disagreement in Reform Debates* April 2002.
- W.P. 331 SURESH BABU,** *Economic Reforms and Entry Barriers in Indian Manufacturing.* April 2002.
- W.P. 332 K. P. KANNAN,** *The Welfare Fund Model of Social Security for Informal Sector Workers: The Kerala Experience.* April 2002.
- W.P. 333 K. PUSHPANGADAN** *Social Returns from Drinking Water, Sanitation and Hygiene Education: A Case Study of Two Coastal Villages in Kerala,* May 2002.
- W.P. 334 E. ABDUL AZEEZ,** *Economic Reforms and Industrial Performance an Analysis of Capacity Utilisation in Indian Manufacturing,* June 2002.
- W.P. 335 J. DEVIKA,** *Family Planning as 'Liberation': The Ambiguities of 'Emancipation from Biology' in Keralam* July 2002.
- W.P. 336 PULAPRE BALAKRISHNAN, K. PUSHPANGADAN, M. SURESH BABU,** *Trade Liberalisation, Market Power and Scale Efficiency in Indian Industry,* August 2002.
- W.P. 337 K.NAVANEETHAM,** *Age Structural Transition and Economic Growth: Evidence From South and Southeast Asia,* August 2002.
- W.P. 338 PRAVEENA KODOTH,** *Framing Custom, Directing Practices: Authority, Property and Matriliney under Colonial Law in Nineteenth Century Malabar,* October 2002.

- W.P. 339 M PARAMESWARAN**, *Economic Reforms and Technical Efficiency: Firm Level Evidence from Selected Industries in India*. October, 2002.
- W.P. 340 J. DEVIKA**, *Domesticating Malayalees: Family Planning, the Nation and Home-Centered Anxieties in Mid- 20th Century Keralam*. October, 2002.
- W.P. 341 MRIDUL EAPEN, PRAVEENA KODOTH** *Family Structure, Women's Education and Work: Re-examining the High Status of Women in Kerala*. November 2002.
- W.P. 342 D NARAYANA** *Why is the Credit-deposit Ratio Low in Kerala?* January 2003.
- W.P. 343 K. PUSHPANGADAN** *Remittances, Consumption and Economic Growth in Kerala: 1980-2000*, March 2003.
- W.P. 344 PRADEEP KUMAR PANDA** *Rights-Based Strategies in the Prevention of Domestic Violence*, March 2003.

BOOKS PUBLISHED BY THE CDS

Health Status of Kerala

P G K Panikar and C R Soman

CDS. 1984. pp 159, Hardcover , Rs.100/ \$ 11 & Paperback, Rs. 75/ \$ 10

Bovine Economy in India

A Vaidyanathan

Oxford & IBH. 1988. pp 209, Hardcover, Rs. 96/ \$ 11

Essays in Federal Financial Relations

I S Gulati and K K George

Oxford and IBH. 1988. pp 172, Hardcover, Rs. 82/ \$ 10

Land Transfers and Family Partitioning

D Rajasekhar

Oxford and IBH. 1988. pp 90, Hardcover, Rs. 66/ \$ 10

Ecology or Economics in Cardamom Development (No Stock)

K N Nair, D Narayana and P Sivanandan

Oxford & IBH. 1989. pp 99, Paperback, Rs. 75/ \$ 10

The Motor Vehicle Industry in India (Growth within a Regulatory Environment)

D Narayana

Oxford & IBH. 1989. pp 99, Paperback, Rs. 75/ \$ 10

The Pepper Economy of India (No Stock)

P S George, K N Nair and K Pushpangadan

Oxford & IBH. 1989. pp 88, Paperback, Rs. 65/ \$ 10

Livestock Economy of Kerala

P S George and K N Nair

CDS. 1990. pp 189, Hardcover, Rs. 95/ \$ 10

Caste and The Agrarian Structure

T K Sundari

Oxford & IBH. 1991. pp 175, Paperback, Rs.125/ \$ 14

Coconut Development in Kerala: Ex-post Evaluation

D Narayana, K N Nair, P Sivanandan, N Shanta and
G N Rao

CDS. 1991. pp 139, Paperback, Rs.40/ \$ 10

Trends in Private Corporate Savings

N Shanta

CDS. 1991. pp 90, Paperback, Rs. 25/ \$ 10

International Environment, Multinational Corporations and Drug Policy

P G K Panikar, P Mohanan Pillai & T K Sundari

CDS. 1992. pp 77, Paperback, Rs.40/ \$ 10

Rural Household Savings and Investment: A Study of Some Selected Villages

P G K Panikar, P Mohanan Pillai & T K Sundari

CDS. 1992. pp 144, Paperback, Rs. 50/ \$ 10

Indian Industrialization: Structure and Policy Issues. (No Stock)

Arun Ghosh, K K Subrahmanian, Mridul Eapen & Haseeb A Drabu
(EDs).

OUP. 1992. pp 364, Hardcover, Rs.350/ \$ 40

Limits To Kerala Model of Development: An Analysis of Fiscal Crisis and Its Implications.

K K George

CDS. 1999 (2nd edition) pp 128, Paperback, Rs. 160/ \$ 18

Industrial Concentration and Economic Behaviour: Case Study of Indian Tyre Industry

Sunil Mani

CDS. 1993. pp 311, Hardcover, Rs. 300/ \$ 34

Peasant Economy and The Sugar Cooperative: A Study Of The Aska Region in Orissa

Keshabananda Das

CDS. 1993. pp 146, Paperback, Rs.140/ \$ 16

Urban Process in Kerala 1900-1981

T T Sreekumar

CDS. 1993. pp 86, Paperback, Rs.100/ \$ 11

Impact of External Transfers on the Regional Economy of Kerala

P R Gopinathan Nair & P Mohanan Pillai

CDS 1994. pp 36, Paperback, Rs.30/ \$ 10

Demographic Transition in Kerala in the 1980sK C Zachariah, S Irudaya Rajan, P S Sarma, K Navaneetham,
P S Gopinathan Nair & U S Mishra,CDS. 1999 (2nd Edition) pp 305, Paperback, Rs.250/ \$ 28**Growth of Firms in Indian Manufacturing Industry**

N Shanta

CDS. 1994. pp 228, Hardcover, Rs. 250/ \$ 28

Floods and Flood Control Policies: an Analysis With Reference to the Mahanadi Delta in Orissa

Sadhana Satapathy

CDS. 1993 pp 98, Paperback, Rs. 110/\$ 12

Growth of Market Towns in Andhra: A Study of the Rayalseema Region C 1900-C.1945

Namerta

CDS. 1994. pp 186, Paperback, Rs.125/ \$ 14

Growth of Education in Andhra - A Long Run View

C Upendranath

CDS. 1994. pp 158, Paperback, Rs. 135/ \$ 15

CDS M.Phil Theses (1975/76-1989/90): A Review Vol.1

G N Rao

CDS. 1996. pp 162, Paperback, Rs. 155/ \$ 18

Trends In Agricultural Wages in Kerala 1960-1990

A A Baby

CDS. 1996. pp 83, Paperback, Rs. 105/ \$ 12

CDS M.Phil Theses (1990/91-1993/94): A Review Vol.II

T T Sreekumar

CDS. 1996. pp 99, Paperback, Rs. 120/\$ 14

Industrialisation in Kerala: Status of Current Research and Future Issues

P Mohanan Pillai & N Shanta

CDS. 1997. pp 74, Paperback, Rs. 110/ \$ 12

Health, Inequality and Welfare Economics

Amartya Sen

CDS, 1996. pp 26, Paperback, Rs. 70/ \$ 10

Property Rights, Resource Management & Governance: Crafting An Institutional Framework for Global Marine Fisheries

John Kurien

CDS & SIFFS, 1998. pp 56, Paperback, Rs. 50/ \$10

Agrarian Transition Under Colonialism: Study of A Semi Arid Region of Andhra, C.1860-1900

GN Rao

CDS, 1999. pp 133, Paperback, Rs. 170/ \$19

Land Relations and Agrarian Development in India: A Comparative Historical Study of Regional Variations

Sakti Padhi

CDS, 1999. pp 335, Hardcover, Rs. 425/\$48

Poverty, Unemployment and Development Policy : A Case Study of Selected Issues With Reference to Kerala

United Nations, 2000 (reprint), pp 235

(available for sale in India only), Rs. 275

Performance of Industrial Clusters: A Comparative Study of Pump Manufacturing Cluster in Coimbatore (Tamil Nadu) & Rubber Footwear Cluster in Kottayam (Kerala)

P. Mohanan Pillai

CDS, 2001, pp 158, Paperback, Rs. 175/\$18

Kerala's Gulf Connection: CDS Studies on International Labour Migration from Kerala State in India

K.C. Zachariah, K. P. Kannan, S. Irudaya Rajan (eds)

CDS, 2002, pp 232, Hardcover, Rs. 250/\$25

Plight of the Power Sector in India: Inefficiency, Reform and Political Economy

K.P. Kannan and N. Vijayamohanan Pillai

CDS, 2002, Rs. 400/\$40

This work is licensed under a
Creative Commons
Attribution – NonCommercial - NoDerivs 3.0 Licence.

To view a copy of the licence please see:
<http://creativecommons.org/licenses/by-nc-nd/3.0/>