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IN APPRAISAL OF SCHOOL LEVEL ENROLMENTS AND FACILITIES IN PAKISTAN: 1970-71 to 1982-83

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Introduction

We collected what is perhaps the most complete available data base of educational statistics in Pakistan with three objectives. First, to present as accurate a picture as possible of the enrollment structure in Pakistan for the two past planning periods. This is of course partly an end in itself and partly a means to our primary goal which is to identify the major areas of weakness and neglect in the education system.

Second, the lack of growth in enrollment rates on some level of disaggregation (e.g. primary rural girls' enrollment rates in Sind) is itself an important indicator of the need for attention. One can, and we have, gone somewhat further having once generated an enrollment data base. We also collected data on institutions and teachers, the two main supply side facilities, and estimate teacher-institution and teacher-student ratios to try to identify the critical supply-side bottlenecks.

Third, by concentrating on the last decade we essentially attempt to establish a benchmark. However, by making a simple assumption that at least in the short run the past trends continue in a linear fashion, we project which of the supply side bottlenecks would be self-rectifying and which would worsen. By a similar straight forward technique we conduct a few exercises to check the consistency of the Sixth Plan targets.

Cynics often claim that statistics can easily conceal more than they show. Unfortunately, for several reasons this is true for educational statistics in Pakistan for atleast three reasons. First, the data used as a base for various statistics may be inaccurate. Second,

various statistics such as the enrollment ratio or student-teacher ratio may have various distortions inherent in them due to the data collection proceedure. Finally, if the statistics are not presented in sufficient detail, they can suppress, by averaging, the most interesting findings.

In this paper we attempt to avoid atleast some of the pitfalls. There is little one can do about data inaccuracy. It is of course possible to point out inconsistencies. It is also possible at times to use alternative data sources to present a cross-check on the main findings. We are fortunate enough to be able to do this. The various provincial Directorates of Education collect educational data and these are our main sources[1]. As a complement and a cross-check, we utilise the data on educational attainment available in the 1981 Population Census.

Since the population census present information both by educational level and by age groups, we address the important issue of overstatement implicit in calculating enrollment rates by simply taking all children in ages (5-9) and (10-14) as denominators in computing the primary and secondary enrollment rates respectively. The problem is that although (5-9) may be the official age for the primary level, in reality only a portion of the children at the primary level are in this age bracket. Through out the paper we point out what the possible sources of distortions can be in various indicative educational ratios and where possible show the extent of the distortion.

The researcher using secondary data is straight - jacketed into conducting research at the level of disaggregation the data collecting agencies are interested in. Our major achievement in extending the

1. While we refer to our main source for convinience as Directorate data, in Punjab the educational data is published by the Bureau of Education and in Sind by the Bureau of Statistics.

borders of possible analysis in this regard was by personally visiting the Directorates to gather data on a rural-urban (regional) disaggregation. Our earlier work ignored this disaggregation and hence was seriously flawed in not being able to show the extent of regional variations, perhaps the most critical variations, within and across provinces[2]. The sectioning of the paper corresponds with the three objectives cited at the beginning of the introduction.

Enrollment Structures

In this section we analyse the enrollment structure in Pakistan over the last decade . . . . . The period is divided for ease of exposition and comparison into the Annual Plan periods (1970/71-1977/78) and the Fifth Five-Year Plan period (1978/79-1982/83). Also for comparison purposes, the analysis is conducted at a provincial, regional and sex disaggregation for both the primary and secondary levels.

Enrollment rates are computed as follows:

$$ER_i = \frac{E_i}{P_i} \times 100$$

Where:

ER_i = Enrollment rate at the ith level

E_i = Absolute enrollments at the ith level

P_i = Officially specified population of children at the ith level [(5-9) for primary and (10-14) for secondary].

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2. A complementary analysis at the district level using the Census data would be very useful. For a method of handling what may appear a completely intractable mass of data one could begin with Hynemann [1].

In Pakistan a considerable percentage of students are beyond the officially specified age, particularly in rural areas, due to late entry in schools. Hence the estimated ERs based on published and unpublished data collected from the provincial Directorates of Education overstate the actuals.

Thus our ER estimates presented in Tables 2 and 3 are crude. However, as long as the overstatement across a particular dissaggregation is similar the comparative analysis is valid. Fortunately, we could examine if this was the case by drawing on the 1981 Population Census which presents educational attendance by age-group. The percentage overstatement (see Appendix B, Table 1) is close enough for our comparative analysis to be meaningful[3].

Another potential problem in our computed ERs could result from the lack of data available on the private sector schools. Atleast for the years our study covers this may not be important since most schools in the early seventies were nationalised. Some confirmation on this conjecture is available from Punjab's published educational data which do report the number of private sector schools. In the Table below we present the most recent available statistics in this regard.

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3. Since the overstatement is computed by using a different source, the absolute extent of it may well be inaccurate. For some years data were also available for the Punjab by age-group (see the 1977-78, 1978-79 and 1982-83 Educational Statistics of the Bureau of Education / 7 /). The average overstatement, utilising this common source, was about one-fourth at the primary level and one-third at the secondary level.

Table - 1

PRIVATE INSTITUTIONS AND ENROLLMENTS AS A PERCENTAGE THE TOTAL IN PUNJAB PROVINCE: 1982-83)

(Percentages)

Level	Institutions	Enrollments
Primary	0.9	2.5
Middle	3.3	4.3
High	5.1	5.2
Total	1.3	3.5

Source: Punjab [7, p.3]

It appears that for the last decade the distortions introduced into our analysis by not explicitly including private sector schooling are minor - possibly with the exception of Karachi. With these reservations we turn now to a review of enrollment structures embodied in Tables 2 and 3.

A great mass of information is contained in both Tables 2 and 3 and also in similar tables regarding the provision of facilities. In all cases only the most striking findings emerging from sex and provincial comparisons and an analysis of change over time are reported[4]

4. The findings of the change over time have to be considered suggestive because the data for a good part of the Annual Plan period for the Punjab and Sind are estimates (see Appendix A).

Table: - 2

PRIMARY ENROLLMENT RATES BY PROVINCE, REGION AND SEX

		URBAN		RURAL	
		1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83
BALUCHISTAN					
Both sexes	a	36.2	44.9	17.1	15.3
	b	(7.4)	(2.5)	(1.8)	(0.6)
Boys	a	42.7	54.3	28.8	27.7
	b	(10.1)	(3.0)	(3.6)	(1.1)
Girls	a	29.3	34.8	4.8	2.4
	b	(5.5)	(3.6)	(1.2)	(0.4)
N.W.F.P					
Both sexes	a	-	51.1	-	32.5
	b	-	(3.0)	-	(3.0)
Boys	a	-	65.6	-	53.4
	b	-	(3.9)	-	(5.0)
Girls	a	-	35.7	-	9.9
	b	-	(2.2)	-	(0.9)
PUNJAB					
Both sexes	a	63.4	61.4	38.6	40.4
	b	(2.3)	(1.8)	(0.9)	(1.9)
Boys	a	64.9	59.0	53.8	54.1
	b	(4.9)	(1.0)	(1.2)	(2.3)
Girls	a	61.7	64.1	21.5	25.3
	b	(3.1)	(2.1)	(1.8)	(1.7)
SIND					
Both sexes	a	63.6	66.5	26.1	29.0
	b	(2.8)	(0.9)	(1.0)	(1.4)
Boys	a	76.7	76.4	44.4	49.4
	b	(4.2)	(3.0)	(1.7)	(2.1)
Girls	a	49.6	56.0	6.0	8.0
	b	(6.6)	(0.6)	(0.7)	(1.0)

a : mean enrollment rate over the plan period. b: standard deviation around the mean for the Plan period.

This same pattern is repeated throughout the paper.

Note: 1. For NWFP the data is not available for earlier years. For the other provinces, the enrollments for the earlier years have either been estimated or adjusted. For details see Appendix A.

2. For estimates without the regional disaggregation see Appendix B, Table 2.

Source: See Appendix A.

TABLE-3

SECONDARY ENROLLMENT RATES BY PROVINCE, REGION AND SEX

	Urban		Rural	
	1970/71	1978/79	1970/71	1978/79
	1977/78	1982/83	1977/78	1982/83
Baluchistan				
Both Sexes	23.1	26.8	2.4	2.0
	(3.1)	(1.5)	(0.3)	(0.1)
Boys	32.3	35.8	3.9	3.3
	(4.1)	(1.9)	(0.4)	(0.1)
Girls	11.8	15.8	0.2	0.1
	(2.2)	(1.6)	(0.1)	(0.0)
N.W.F.P				
Both Sexes	-	31.1	-	9.7
		(0.8)		(0.3)
Boys	-	42.5	-	17.1
		(0.8)		(0.5)
Girls	-	18.1	-	0.8
		(0.9)		(0.0)
Punjab				
Both Sexes	42.9	40.5	11.6	10.9
	(2.1)	(0.5)	(0.7)	(0.3)
Boys	55.9	50.5	19.1	17.9
	(2.5)	(0.9)	(1.2)	(0.5)
Girls	27.5	29.3	2.3	2.7
	(3.7)	(0.5)	(0.4)	(0.2)
Sind				
Both Sexes	37.2	41.3	4.2	5.6
	(2.3)	(0.7)	(0.2)	(0.8)
Boys	43.1	47.6	6.8	9.6
	(2.0)	(1.3)	(0.3)	(1.4)
Girls	30.4	34.3	0.6	0.6
	(3.5)	(0.4)	(0.3)	(0.2)

Sources: see Appendix A.

At the primary level, there has been in general a mild increase in ERs over the plan periods. The two exceptions were the decline in boy's urban ER in the Punjab and in rural ERs in Baluchistan. Examining where this change left the provincial rankings on an absolute level for the Fifth Plan period, we find the highest ERs were for urban boys in Sind at 76 percent. In the rural areas Punjab ranked first in both girls and boys' ERs. Even at 25 percent, its girls' ER was considerably larger than that in the other provinces which in all cases was below 10 percent. Baluchistan is identifiable as the real problem area since its performance in all cases has been the worst. This is particularly so concerning its rural girls' ER which declined to only 2.4 percent.

Girls' ERs were in most cases considerably below those of boys'. The interesting exception was that of the Punjab where for the Fifth Plan period girls' ER exceeded that of boys'. Also, the gender gap in rural Punjab was the lowest. The other provinces, particularly the NWFP, had a very large gender gap in rural areas.

The parallel analysis of the structure of ERs at the secondary level identifies many similarties with that which prevailed at the primary level (see Table 3). When considering the change over time, one discovers the pattern in urban areas was identical to changes at the primary level. There was overall a rising trend in ERs with the exception of a decline in boys' ER in the Punjab. In rural areas the picture was mixed but the changes in all cases were not major.

The ranking of average absolute ERs for the Fifth Plan indicated one ranking reversal in the urban areas when the secondary level was compared to the primary ranking. Punjab led for boys whereas Sind did so for girls at the secondary level. The rural pattern was identical to that which emerged for the primary level. It is discouraging that

the rural girls'ER was below 1 percent for all provinces except the Punjab-even in the latter case it only amounted to about 3 percent. These low ERs translated once again into a large gender gap in the rural areas and, again the gap was largest for the NWFP (the gender ER differential was about 20:1).

The slow pace of growth in enrollments over the plan periods is pertubing because of the increased expenditure on school level education in the Fifth Plan. There was a shift of expenditure for all provinces so that in this period the greatest percentage expenditure was on primary and following that on secondary. Thus an average (across the provinces) of thirty one percent and twenty five percent of the development expenditure was incurred on them instead of fourteen and nineteen percent respectively in the Annual Plan period.[5]

Several reasons are possible for this discordance. First, enrollments are both a supply and demand side phenomenon. Much of the non-development and development expenditure is directed towards providing supply side facilities such as the physical infra structure and teachers. A response to these facilities among the target school going population is also dependent on demand related influences. such as the attitude to schooling among parents and the opportunity cost forgone due to their children being in school.

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5. See Khan et.al./ 2, pp 416-417 /.

An additional explanation for a poor performance of enrollment over the plan period could be sought from examining what has been happening to the denominator in the ER definition i.e the target population. Unfortunately, we can only do this for an intercensal period(1972-81) since population growth estimates are not available by plan periods. Even so, a few insights are forthcoming from examining Table 4 below.

TABLE-4

COMPOUND GROWTH RATE OF TARGET POPULATIONS BY PROVINCE, REGION, LEVEL AND SEX

	Primary (5-9)				Secondary (10-14)			
	Urban		Rural		Urban		Rural	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Baluchistan	6.38	6.31	7.77	8.00	5.93	6.08	8.87	8.97
NWFP	3.68	3.79	3.76	3.64	3.72	4.24	4.81	5.16
Punjab	3.91	4.08	1.80	2.05	4.02	4.82	2.20	3.24
Sind	4.12	4.26	2.75	3.84	4.43	4.94	3.63	5.21

Source: Pakistan / 6 /.

For one thing, the mild trend in the growth of ERs could, to a great extent, be explained by the high growth rate in target population that had to be contended with. Overall, the poor performance for Baluchistan can be understood in this same perspective of absolute enrollment growths having to keep pace with a very high growth in population. This is particularly true of the decline in rural ERs at both levels in Baluchistan.

As earlier mentioned, data were available from another source i.e. the latest Population Census. In view of the importance of establishing a benchmark of the enrollment structures by level we have devoted some space to evaluating and reporting the findings from this source and comparing them to those drawn from the Directorates data source.

We drew our data from Tables 9 and 10 of the provincial Census Reports. The former gives information on school attendance by age group and this we have earlier utilised to give an indication of the extent to which crude ERs may overstate the actuals. The latter gives information on the distribution of students in various age cohorts by levels. This Table is the one from which we have derived an enrollment structure.

The information contained is based on the tabulation of responses to the following apparently unambiguous questions: "Are you currently attending any level"? and "what is the highest level/grade passed by you?", Logic would suggest that if the answer to the first question is "Yes", that they are currently attending the level beyond the highest one passed. However, our estimates based on this assumption led to improbable results i.e ERs for the secondary level exceeded those of the primary level[6].

The only alternative assumption was to consider students being at the level which enumerators had documented them to have actually passed. Adjusting for this possible misstatement we do arrive upon reasonable results which are reported below in Table 5. It was reassuring that the Islamabad district census report-the only one which reports school attendence-has infact used this alternative

6. Since over fifty percent of students drop-out by the time they reach class 5 and since there is further attrition evident from the lower class 6 enrollments, it is unlikely that secondary ERs could exceed those of the primary level. See Khan et.al. / 3, Table II-3 /.

assumption for computing ERs. With these lengthy but necessary prefacing remarks we turn to the contents of Table 5.

In general, barring some exceptions, the ER estimates based on the Population Census data are lower than those based on the Directorates data. On the one hand, one can imagine that if funding or even performance is tied to the growth in enrollments, there would be an incentive for overstatement by those furnishing data to the provincial Directorates via the District Education Officers. On the other hand,underenumeration is often a problem of census surveys in developing countries.

Despite the sources being different, one can observe that, by and large, the same patterns existed when juxtaposing the interprovincial ER rankings based on the Census data and those based on the Directorates data for the same year. One exception on the primary level is urban Sind girls'enrollments exceeding the corresponding ER in the Punjab./ The lower girls'ER in the Punjab in the Census as compared to the Directorate data casts doubt on what appeared earlier to be an encouraging and interesting though very suprising finding; that for the Fifth Plan period the average girls' ER exceeding that of boys' in urban Punjab. Sind and NWFP are shown as having higher primary urban ERs in the Census than in the Directorate data/ for both sexes For NWFP at least,this may be cause for inquiry considering that its Directorate educational data usually reveals it to have had in almost all cases the largest gender gap.

Enrollments are the base statistics which can be utilised to assess the pressure on various facilities provided by the provincial Education Ministries. The next section is devoted to such an appraisal.

TABLE-5

A COMPARISON OF ENROLLMENT RATES ESTIMATED FROM DIRECTORATES OF EDUCATION AND POPULATION CENSUS DATA: 1980-81.

	Primary Level							
	Urban				Rural			
	Male		Female		Male		Female	
	Directorate	Census	Directorate	Census	Directorate	Census	Directorate	Census
Baluchistan	52.1	51.7	31.8	22.6	28.1	13.0	1.9	1.3
NWFP	63.8	66.1	35.4	40.3	53.0	39.2	9.9	6.7
Punjab	58.2	54.0	61.7	44.8	53.4	34.4	25.0	12.0
Sind	75.4	76.9	56.7	64.7	50.1	22.0	8.5	4.6
	Secondary Level							
Baluchistan	34.9	25.8	13.9	11.3	3.4	5.7	0.1	0.7
NWFP	42.5	25.5	18.1	14.1	17.2	10.9	0.8	1.1
Punjab	49.9	30.0	29.4	22.2	17.5	11.9	2.6	2.9
Sind	46.7	44.4	34.7	34.3	10.0	9.5	0.4	1.3

Note: The 1980/81 Directorates data is used to estimate ERs to correspond with the 1981 census year.

Source: For the Directorates data see Appendix A. For the Census data see Pakistan /6/.

2. Educational Facilities

The two major facilities provided at the school level are teachers and institutions. A simple though rough method to assess the load on them, and thereby to guage the adequacy of supply, is to calculate their provision relative to enrollments i.e the enrollment-institution and enrollment-teacher ratios.

Statistics on the number of institutions and teachers are given by school. Hence they are not entirely consistent with enrollment data which are generally available by level rather than by institution. This distorts the accuracy of the two ratios at the primary level. Enrollments at this level include enrollments of primary units which are attached to secondary schools, whereas these units are not counted as seperate primary schools. Hence our ratios overstate the actuals. At the secondary level this is not the case, because enrollments at this level comprise grades (VI-X), while secondary schools also cover the same grades.

Data are available by school for Punjab and Baluchistan so once again we are able to get some indication of the extent of overstatement at the primary level. For both enrollment-institution ratios and student-teacher ratios the overstatement for urban areas was greater than for rural areas suggesting that there is more of a tradition for urban secondary schools to have primary units. The extent of overstatement is presented in Appendix 8, Table 3. For enrollment-institution ratios it varied from a low of 23 percent in rural boys' schools in the Punjab to 158 percent in urban girls' schools in Baluchistan during the Fifth Plan. Overstatement for student-teacher ratios could only be computed for the Punjab. These varied from 24 percent for rural boys' schools to 60 percent for urban girls' schools.

Unfortunately, the difference in the degree of overstatement limits the usefulness of our comparative analysis for the primary level which should therefore be viewed as merely suggestive.

There are other possible distortions. Since not all institutions recorded in the Directorates statistics actually exist, our enrollment-institution ratios for this reason is biased downward[7]. Also, by averaging as we do, the average class size (level enrollment divided by five) for the earlier grades is under-stated while that for the later years is overstated because of the high attrition that takes place within and between grades. With these caveats we proceed to a discussion of the Tables of ratios.

Table 6 cites the enrollment-institution ratios. Most striking ofcourse is the much higher ratios for the urban as compared to the rural areas Thus the higher urban ERs in Table 2 and 3 were not matched by enough institutions to make the ratios equivalent across regions. Consequently, while the urban ratios suggest overcrowding, those in the rural areas suggest underutilised capacity.

Viewing the change over time, there was in general a rising trend in enrollment-institution ratios except for urban Punjab for both sexes and rural Baluchistan for girls at the primary level. Considering that urban boys' ERs in the Punjab and rural girls' ERs in Baluchistan declined during this period, the supply side failing is greater than it may at first appear. Punjab and Baluchistan for boys were such exceptions at the secondary level. Once again, secondary level urban boys' ERs in the Punjab had actually declined over the period in question

7. A recent survey of primary education in selected backward districts conducted by United Consultants Limited /11, p.12 /suggested that about 3 percent of all schools were non-operating. A pilot survey for Sind showed these to be as high as 14 percent. See Sind/8,p.6/.

TABLE-6

ENROLLMENT-INSTITUTION RATIOS BY PROVINCE, REGION, LEVEL AND SEX.

	Primary				Secondary			
	Urban		Rural		Urban		Rural	
	1970/71	1978/79	1970/71	1978/79	1970/71	1978/79	1970/71	1978/79
	1977/78	1982/83	1977/78	1982/83	1977/78	1982/83	1977/78	1982/83
Baluchistan								
Both Sexes	495	937	36	42	165	183	34	39
	(149)	(121)	(5)	(3)	(10)	(17)	(5)	(2)
Boys	722	1468	37	47	238	237	36	32
	(230)	(238)	(6)	(3)	(22)	(25)	(6)	(2)
Girls	329	582	27	20	82	112	11	12
	(69)	(70)	(6)	(2)	(11)	(12)	(5)	(4)
NWFP								
Both Sexes	-	284	-	91	-	339	-	141
		(9)		(7)		(21)		(4)
Boys	-	335	-	103	-	433	-	154
		(21)		(9)		(40)		(5)
Girls	-	221	-	53	-	215	-	44
		(4)		(3)		(8)		(2)
Punjab								
Both Sexes	429	313	66	66	466	444	140	132
	(65)	(14)	(1)	(1)	(23)	(10)	(4)	(3)
Boys	411	286	77	74	604	536	167	159
	(76)	(18)	(2)	(3)	(55)	(7)	(7)	(4)
Girls	458	346	48	52	301	333	52	56
	(77)	(12)	(3)	(2)	(36)	15	(5)	(1)
Sind								
Both Sexes	261	298	45	56	335	400	87	135
	(14)	(4)	(2)	(3)	(16)	(23)	(4)	(25)
Boys	225	254	45	56	317	372	90	142
	(10)	(11)	(2)	(3)	(16)	(22)	(5)	(25)
Girls	339	403	45	56	369	454	66	66
	(21)	(37)	(2)	(3)	(14)	(27)	(30)	(24)

Notes: 1. Only all girl institutions are being considered.
2. For Sind ratios starts from 1974/75 since data are not available for earlier years.
3. The high numbers for Baluchistan in urban Primary schools represent an overstatement of the 'actual' by about 150 percent due to the existence of primary units in secondary schools (see Appendix E, Table 3).

Sources: See Appendix A

In absolute terms, only the ratios for the Fifth Plan period are ranked. While Punjab had the third highest ratios at the primary level, for both boys and girls at the secondary levels its ratios were among the highest. For both sexes and regions Baluchistan in general had the lowest ratios except primary schools where they were the highest. In general boys' schools had considerably higher ratios than girls' schools and secondary level ratios were higher than those for primary.

A better grasp of these ratios can be attained by converting them into average class size. The Table below gives the highest and lowest average class sizeson various levels of disaggregation.

TABLE-7

RANGES OF AVERAGE CLASS SIZES(1978-79/1982-83).

School Type	Highest		Lowest	
Urban Primary,Boys	Baluchistan	(294)	Sind	(52)
Urban Primary,Girls	Baluchistan	(116)	NWFP	(44)
Rural Primary,Boys	NWFP	(21)	Baluchistan	(10)
Rural Primary,Girls	Sind	(11)	Baluchistan	(4)
Urban Secondary,Boys	Punjab	(107)	Baluchistan	(47)
Urban Secondary,Girls	Sind	(91)	Baluchistan	(22)
Rural Secondary,Boys	Punjab	(32)	Baluchistan	(6)
Rural Secondary,Girls	Sind	(13)	Baluchistan	(2)

Source: Table 6.

If one regards a class size between 20 to 40 students at the primary level as reasonable (less for the secondary level) than in most cases at both levels there is overcrowding in urban schools and underutilization of capacity in rural schools. The extremes represented by the numbers for Baluchistan are once again brought out. (see for example the average class sizes of 4 and 2 in the rural areas)[8].

The other important element on the supply side is the availability of teachers. Once again, using enrollments as the base one can infer the average pressure on teachers. The results of this exercise are presented below in Table 8 for three out of the four provinces for which data on teachers was available.

Over time there has been a declining trend in student-teacher ratios in the Punjab in boys' schools whereas the reverse was true for Sind at both the primary and secondary level. In girls' schools the overall trend is unward except for Punjab urban primary schools.

Once again, at both levels, boys' schools had considerably higher student-teacher ratios than girls' schools and urban schools had larger ratios that rural schools.

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8. The data available from the provincial Directorates is purely quantitative. Some qualitative information at the primary level is available in a survey conducted by the United Consultants Ltd /11/. Their main findings with regards to institutions-without going into the provincial disaggregation-are that 80 percent of schools had buildings, of these 31 percent were katchha, 53 percent had leaky ceilings and 51 percent consisted of one-room schools. In addition, 72 percent of the school had no boundary walls, 33 percent had no furniture, 45 percent had no arrangement for drinking water, 87 percent had no latrines and 97 percent had no arrangement for first aid.

TABLE-5

STUDENT-TEACHER RATIOS BY PROVINCE, REGION, LEVEL AND SEX.

	Primary				Secondary			
	Urban		Rural		Urban		Rural	
	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83
NWFP								
Both Sexes	-	49 (2)	-	46 (2)	-	17 (1)	-	12 (0)
Boys	-	61 (3)	-	50 (3)	-	18 (1)	-	13 (0)
Girls	-	36 (1)	-	32 (1)	-	13 (0)	-	4 (0)
Punjab								
Both Sexes	69 (6)	59 (1)	34 (1)	34 (1)	25 (2)	22 (0)	13 (0)	12 (0)
Boys	64 (5)	55 (3)	37 (1)	36 (1)	30 (3)	25 (0)	15 (1)	14 (0)
Girls	76 (11)	65 (1)	26 (2)	30 (0)	18 (2)	18 (1)	6 (0)	6 (0)
Sind								
Both Sexes	31 (2)	36 (2)	23 (1)	29 (2)	20 (1)	24 (1)	12 (0)	18 (4)
Boys	44 (3)	53 (3)	22 (1)	28 (2)	25 (1)	29 (2)	12 (1)	19 (4)
Girls	21 (1)	25 (1)	28 (1)	41 (5)	16 (0)	19 (1)	9 (3)	10 (4)

Note: For Baluchistan, teachers are not available by levels.

Source: See Appendix A.

Examining the absolute rankings of student-teacher ratios by province during the Fifth Plan period, we notice Sind's ratios were lowest for the primary level (except rural girls' schools) and the highest at the secondary level. This picture is reversed for the NWFP. Once again the actual numbers representing the extremes are presented to make easier a grasp of them and to facilitate a comparison with some international norm.

TABLE-9

RANGES OF AVERAGE STUDENT-TEACHER RATIOS(1978/79-1982-83)

School Type	Range			
	Highest		Lowest	
Urban Primary, Boys.	NWFP	(61)	Sind	(53)
Urban Primary, Girls.	Punjab	(65)	Sind	(25)
Rural Primary, Boys.	NWFP	(50)	Sind	(28)
Rural Primary, Girls.	Sind	(41)	Punjab	(30)
Urban Secondary, Boys.	Sind	(29)	NWFP	(18)
Urban Secondary, Girls.	Sind	(19)	NWFP	(13)
Rural Secondary, Boys.	Sind	(19)	NWFP	(13)
Rural Secondary, Girls.	Sind	(10)	NWFP	(4)

Source: Table 8.

The latest available World Bank sector policy paper on education of cites student-teacher ratios for the lowest income countries (Pakistan fell into that category) for 1975 to be 38 and 21 for the primary and secondary level respectively.[9] By this standard, Pakistan ratios were clearly high for primary urban boys' schools and clearly low for secondary rural girls' schools.[10]

Earlier on we saw that the pressure of enrollments in secondary institutions was much greater than on primary institutions. Having introduced teachers into the picture we find that there are, as there should be, a compensatingly larger number of teachers in secondary schools. This should translate into a higher teacher-institution ratio at the secondary level, and Table 9 below indicates this is indeed the case.

Since Table 10 essentially contains information that can be gleaned from Table 6 and 8, so it is not discussed in much detail. However, presenting the data in this manner does provide some useful information at a quick glance. One glaring educational bottle-neck identifiable from the Table is that there are only two teachers per rural primary schools. This seems very low even adjusting for the low enrollment-institution ratios in rural primary schools.

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9. See World Bank [12, p.107].

10. The meagre qualitative information available about primary school teachers for selected backward districts (see United Consultants limited [11]) suggests that only about 12 percent had not attained matriculation. The encouraging information is that about 80 percent did have teacher training qualifications and 45 percent had attended refresher courses.

TABLE-10

AVERAGE TEACHER-INSTITUTION RATIOS BY PROVINCE, REGION, LEVEL AND SEX.

	Primary				Secondary			
	Urban		Rural		Urban		Rural	
	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83
NWFP								
Both Sexes	-	6	-	2	-	20	-	12
Boys	-	5	-	2	-	23	-	12
Girls	-	6	-	2	-	16	-	10
PUNJAB								
Both Sexes	6	5	2	2	18	20	10	11
Boys	6	5	2	2	20	21	11	11
Girls	6	5	2	2	17	18	9	9
Sind								
Both Sexes	9	8	2	2	16	17	7	7
Boys	5	5	2	2	12	13	7	7
Girls	16	16	2	1	24	24	7	7

Sources: See Appendix A.

So far in this section we have tried to identify what the critical bottlenecks or problem areas in the educational system were at the school levels over the last decade. By projecting past trends it may be possible to see what the problem areas would be in the future given no activist rectifying policy. Table 11 contains the annual average growth rates of enrollments, institutions and teachers over the Fifth Plan period.

If the growth trends over the past plan period continue into the future then, at the primary level, only Punjab would find itself in a satisfactory position in both the rural and urban areas because enrollments growth rates were comfortably exceeded by that of institutions and teachers. This is not true for rural girls schools but enrollment-institution ratios were very low in this category for the Fifth Plan. Thus enrollment growth exceeding that of institutions into the future should have a benign effect where excess capacity is evident i.e rural girls' schools. Matters may also be expected to improve in Sind urban girls' schools since the institution growth rate is almost double enrollment growth rate. The most alarming scenario is that of Baluchistan's; particularly for urban schools where the zero growth rate of institutions suggest that the problem of heavily overcrowded classes will worsen.

On the secondary level, the likely situation appears promising all around once again for only the Punjab. The anticipated performance for boys' schools in NWFP also seems reasonable but not that for girls' schools. The very high growth rate in enrollments in rural Sind suggests that the problems of very low student teacher ratios and low enrollment-institution ratios would rectify themselves if past growth trends were to continue. This would also be true for enrollment-institution ratios in rural Baluchistan-information on teachers in Baluchistan by level disaggregation were not available.

TABLE-11

AVERAGE ANNUAL GROWTH RATES OF INSTITUTIONS, ENROLLMENTS AND TEACHERS DURING ME FIFTH FIVE YEAR PLAN (1978/79-82/03) .

	Primary											
	Urban						Rural					
	Boys			Girls			Boys			Girls		
	I	E	T	I	E	T	I	E	T	I	E	T
Baluchistan	0.0	9.1	-	0.0	8.6	-	4.4	10.7	-	1.1	5.3	-
NWFP	3.2	7.8	4.0	9.6	8.5	7.0	3.9	10.8	5.9	7.5	10.3	10.4
Punjab	9.8	6.0	8.4	8.9	6.4	5.8	7.7	4.8	6.6	3.9	6.5	6.1
Sind	3.2	5.9	3.5	8.2	4.2	1.1	1.8	5.6	0.8	8.4	12.3	4.4
	Secondary											
Baluchistan	0.7	6.2	-	1.3	7.7	-	5.0	9.6	-	9.9	51.1	-
NWFP	7.1	2.6	5.7	3.7	0.9	1.2	5.1	3.1	5.6	4.8	7.1	3.6
Punjab	4.6	4.2	4.1	3.6	5.5	4.3	2.6	2.0	3.1	6.8	8.2	7.0
Sind	2.0	6.3	2.2	0.9	5.0	1.4	0.8	13.8	0.1	1.0	30.2	-0.4

I : Institutions

E : Enrollments

T : Teachers

Sources: See Appendix A.

In the next section we have employed this same line of simple analysis to examine the internal consistency of target setting in the Sixth Plan period using the benchmark data given in the Plan itself.

3. An Assessment of the Sixth Plan Targets

Although the main focus in this section is on an assessment of the Sixth Plan enrollment targets, by way of background we begin with a presentation of what the actual experience was in attaining the Fifth Plan targets.

TABLE-12

TARGETED AND ACTUAL ENROLLMENT RATES IN THE TERMINAL YEAR (1982/83) OF THE FIFTH PLAN BY PROVINCE, LEVEL AND SEX.

	Target		Actual		Target/Achievement Ratio	
	Boys	Girls	Boys	Girls	Boys	Girls
Primary						
Baluchistan	74	25	33	7	44	28
NWFP	99	33	63	15	64	45
Punjab	88	51	59	39	67	76
Sind	94	45	62	27	66	60
Secondary						
Baluchistan	18	5	8	3	44	60
NWFP	40	7	20	3	50	43
Punjab	39	12	28	11	72	92
Sind	36	20	26	15	72	75

Source: For targets see Pakistan, / 4, pp.65-87/for, actuals see Appendix A.

In most cases target achievement was from the moderate to the low side. Also, the weaknesses in the national educational scene seem to have been reinforced considering that Baluchistan and girls in NWFP have the lowest target-achievement ratios. Unfortunately, the planning was not carried to a regional disaggregation, so it was not possible to identify the success rate for the most backward regions.

These planning targets in the Sixth Plan are presented on even a more aggregate basis. If past experience is anything to go by, then even if one takes into account the recent recognition in policy making circles of the importance of education, the growth rates in enrollments required to meet the Sixth Plan terminal year targets seem impossibly high. This point is established below in Table 13 by estimating the growth rates in ERs that would be required to meet the targets, using the Planning Commission's own benchmarks for 1982/83.

TABLE-13

PROSPECTS OF ENROLLMENT RATE TARGET ACHIEVEMENT FOR THE SIXTH PLAN

	Targets (1987/88)			Required Enrollment Growth for Target Achievement		
	Total	Boys	Girls	Total	Boys	Girls
Primary						
Pakistan	75	90	60	12.6	10.9	15.9
Urban	95	98	93	8.2	8.5	9.6
Rural	70	88	50	15.2	11.8	22.0
Secondary						
Pakistan	28	37	16	8.9	9.0	8.6
Urban	53	63	42	6.0	5.9	6.2
Rural	17	27	6	13.3	12.6	18.2

Source: For targets see Pakistan [5, p. 344].

The required growth rates to meet the Plan targets are way beyond the actual growth in ERs that were attained during the Fifth Plan (see Table 11). Once again,the targets least likely to be met are those that have a low benchmark to begin with i.e rural girls' schooling. Judging from the required growth rates, it is also evident that primary target setting is more realistic than that at the secondary level and urban as compared to rural target setting.

If enrollment-institution and teacher-student ratios in the terminal year of the Plan were to be the same as in the benchmark year, teacher and institution growth rates would have to correspond with the required growth rates for ERs. Since growth in enrollments have generally exceeded growth in teachers or institutions in the past (see Table 11) such correspondence is unlikely.

The Sixth Plan does present an aggregate all Pakistan target figure for the number of institutions and this works out to a 9.1 percent target growth rate based on their 1982/83 benchmark for institutions. We re-estimated the target institutions on the assumption that the 1982/83 enrollment-institution ratio would be maintained and found that the targets under/the state needed institutions by about 21 percent at the primary level and 12 percent at the secondary level. By using our own data sources we bifurcated the Planning Commission benckmark year institutions by region and then found that to maintain the enrollment-institution ratio constant the urban and rural institution growth rates would have to be 8.2 and

15.2 percent respectively at the primary level and 6.0 and 13.3 percent respectively at the secondary level.

It has been earlier observed that such high growth rates will be difficult to achieve. Even apart from that, judging from the existing student-institution ratios in the benchmark years, an attempt to reverse the regional institution growth pattern would have been well advised. Our reason for asserting this is that the benchmark urban enrollment-institution ratios were 305 and 412 at the primary and secondary level while the rural ratios were 63 and 125. The aggregate picture suggests over-crowding in urban areas and excess capacity in rural areas.

One outcome of this paper is that of illustrating the shortcomings of using an aggregate analysis for policy because the provincial (even district) and regional variations can be so great. Thus one reservation we have about the planning exercises is that these important dissaggregations are neglected. Our other reservation is that not enough attention is devoted to spelling out in adequate detail the precise assumptions underlying the target formation.

Summary and Conclusion

The main objective of the paper is to analyse the enrollments structure at the school level in Pakistan over the last decade by provincial, regional and sex disaggregations. The other objective is to study the adequacy of facilities provided by the educational system.

We find that there were large differences in educational attainment by province, region and sex. Within provinces, Sind had the largest differential by region and NWFP by gender. In the urban areas Sind had the highest ERs for boys at the primary level and for girls at the secondary level, whereas the reverse was true for the Punjab. However in the rural areas Sind's achievement in this respect was worse than that of the Punjab and NWFP. In the rural areas Punjab led for both sexes at both levels. While in NWFP boys' ERs were at par with the other provinces, its girls' ERs lagged way behind, particularly in the rural areas. In general Baluchistan had the lowest ERs although for urban areas they were closer to those in the other provinces. Baluchistan's progress was certainly retarded by a very high growth rate of the target school going populations.

The most important provisions of the educational system are institutions and teachers. To guage their adequacy, we research the student-institution, student-teacher and teacher-institution ratios. Using student-institution ratios to arrive at a proxy for average class size, we find these were very high in the urban areas at both the levels. This implies that the institutions in the urban areas were overcrowded or alternatively that the supply of institutions were not sufficient.

On the other hand, we find the institutions in the rural areas were underutilised. This suggests that instead of increasing the quantity of institutions in the rural areas, steps should be taken to improve the quality of the existing institutions.

Student-teacher ratios were also high at the primary level except for girls in urban Sind. At the secondary level, these ratios were reasonable. The corresponding teacher-institution ratios were expectedly low at the primary level. On average, primary schools in the rural areas were staffed by two teachers whereas in the urban areas by about five or six. Teachers were thus in short supply at the primary level, particularly so in the rural areas. At the secondary level, a reasonable number of teachers were available.

Realisation of the Sixth Plan ER targets requires high growth rates in absolute enrollments. Judging from the actual growth rates in the Fifth plan period, it appears that these targets will be difficult to achieve. Similarly, we find the growth rate of institutions implicit in the target setting to be unrealistically high.

To sum up, the main problem areas we identified for educational planners are as follows: the low ERs for Baluchistan; the large gender gap in NWFP, the large regional gap in Sind; the low rural secondary girls' ERs; the simultaneous overcrowding in urban areas and excess capacity in rural areas; the exceedingly low teacher-institution ratios in rural schools, particularly at the primary level.

By suggesting these findings as important benchmarks to assist future planning, we are also simultaneously urging that it be conducted at a much more disaggregated level than has been true in the past. As an aid to researchers (who may want to have an input into planning)

we suggest that these levels of disaggregation be the minimal requirements for future data publishing by the provincial Directorates. To help avoid the problems we confronted in getting accurate estimates, we suggest that a clear distinction be made between levels and units in the data collection of enrollments, institutions and teachers (e.g some secondary level schools have primary units) and that data be provided by both categories. In this regard, enrollment data by age or age group (5-9 and 10-14) would also be required.

APPENDIX-A

Data Sources and Adjustment

As far as we know, there is no published source of complete and consistent time series data covering education by regional(urban-rural) disaggregation covering the last two plan periods.

Punjab is the only province which publishes educational statistics annually. Hence the statistics on the number of institutions, enrollments and teaching staff in these institutions were taken from these publications /7 /. For the years 1980/81 and 1981/82 such statistics were not yet published and therefore the data was taken from the files of the Bureau of Education,Lahore.

For the Punjab, enrollments are given by school and not by levels, so we added the enrollments of the relevant classes to get the enrollment by levels. But the regional breakdown of the enrollments given by class levels were not available before 1976/77. We bifurcated the available data on total enrollments on the basis of the percentage distribution by urban and rural areas for the later years.

For Sind, two sets of published school statistics with a regional disaggregation have very recently become available (see Sind / 9 /and / 10 /). These cover the period 1974/75 - 1983/84. Prior to 1974/75, the data is still not available by regional disaggregation. For these earlier years, the same method of bifurcating the available totals was used as in the case of the Punjab.

For NWFP and Baluchistan published statistics by regional disaggregation are as yet not available. The information we needed was kindly made available to us from the files of the respective Directorates of Education.

The NWFP educational statistics have been revised by the Directorate for the period after 1975/76. Thus the data prior to 1975/76 were no longer comparable to the revised series. We therefore decided to use only the revised statistics and have not reported any finding in the text for the earlier plan period.

Baluchistan's educational statistics in the form given us appeared to require certain adjustments. The main difficulty arose from what appeared to us to be urban rural switches in the data reporting for some years. Using our judgement, we rectified what we belived to be a reporting error. Occassonally, some district were reported as having what seemed as impossible figures for some years or for some classes. We substituted for the problem cases the average of the preceeding and following years taking into consideration the number of institutions. Data were found problematic only for the earlier years; the statistics for the Fifth Plan period were taken as reported and no adjustments were made.

APPENDIX-B

TABLE 1

ENROLLMENT RATES BY LEVEL, PROVINCE, REGION AND SEX .

	Primary								
	All Areas			Urban Areas			Rural Areas		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Baluchistan	11.5 (71.6)	18.5 (74.2)	4.3 (59.6)	37.7 (65.8)	51.7 (68.2)	22.6 (60.0)	7.3 (76.5)	13.0 (78.2)	1.3 (60.1)
NWFP	27.7 (61.7)	42.8 (64.0)	11.3 (52.0)	53.6 (58.0)	66.1 (60.3)	40.3 (53.9)	23.6 (63.0)	39.2 (65.0)	6.7 (50.3)
Punjab	30.7 (74.7)	39.6 (76.5)	20.9 (71.1)	49.6 (73.8)	53.9 (74.7)	44.8 (72.7)	23.7 (75.5)	34.4 (77.5)	12.0 (68.9)
Sind	35.8 (59.2)	43.5 (61.5)	27.7 (55.4)	71.0 (58.7)	76.9 (60.2)	64.7 (56.6)	13.4 (60.9)	22.0 (64.2)	4.6 (44.6)
	Secondary								
Baluchistan	5.8 (74.6)	8.4 (76.8)	2.3 (64.6)	19.3 (72.8)	25.7 (75.9)	11.3 (64.0)	3.6 (76.3)	5.7 (77.4)	0.7 (66.2)
NWFP	8.4 (75.1)	12.9 (76.3)	3.0 (68.6)	20.1 (75.3)	25.5 (77.4)	14.1 (70.9)	6.5 (74.9)	10.9 (75.9)	1.1 (64.3)
Punjab	13.0 (73.4)	16.9 (75.2)	8.4 (69.3)	26.3 (73.8)	29.9 (76.2)	22.2 (70.1)	7.8 (73.0)	11.9 (74.2)	2.9 (66.9)
Sind	20.8 (71.6)	24.5 (73.5)	16.3 (68.1)	39.6 (72.2)	44.4 (74.9)	34.3 (68.4)	5.8 (68.2)	9.5 (68.8)	1.3 (61.4)

Note: Paranthesgs contain the percentage of overage students.

Source: Pakistan [6].

APPENDIX-B

TABLE-2

ENROLLMENT RATES AT PRIMARY AND SECONDARY LEVELS
BY PROVINCE, REGION AND SEX.

		Primary		Secondary	
		1970/71	1978/79	1970/71	1978/79
		1977/78	1982/83	1977/78	1982/83
Baluchistan					
Both Sexes	a	20.0	19.4	5.7	5.5
	b	(1.7)	(0.7)	(0.3)	(0.2)
Boys	a	30.9	31.5	8.3	7.7
	b	(3.3)	(1.0)	(0.4)	(0.3)
Girls	a	8.5	6.9	2.2	2.5
	b	(1.5)	(0.8)	(0.3)	(0.3)
NWFP					
Both Sexes	a		35.0		12.7
	b		(3.0)		(0.4)
Boys	a		55.1		20.6
	b		(4.8)		(0.5)
Girls	a		13.4		3.3
	b		(1.1)		(0.1)
Punjab					
Both Sexes	a	44.6	46.0	19.8	19.3
	b	(1.0)	(2.0)	(1.2)	(0.4)
Boys	a	56.4	55.4	28.4	27.0
	b	(1.8)	(2.1)	(1.2)	(0.6)
Girls	a	31.4	35.8	9.0	10.3
	b	(2.4)	(2.0)	(1.4)	(0.4)
Sind					
Both Sexes	a	40.2	43.6	18.6	21.4
	b	(1.6)	(1.3)	(1.2)	(0.8)
Boys	a	56.4	60.0	22.0	25.9
	b	(2.4)	(2.1)	(1.10)	(1.4)
Girls	a	22.5	26.4	14.3	16.0
	b	(3.0)	(0.6)	(1.6)	(0.2)

Sources: See Appendix A.

APPENDIX-B

TABLE-3

PRIMARY (ACTUAL) ENROLLMENT-INSTITUTION AND STUDENT-TEACHER RATIOS

	Enrollment-Institution				Student-Teacher			
	Urban		Rural		Urban		Rural	
	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83	1970/71 1977/78	1978/79 1982/83
Baluchistan								
Male	266 (171)	624 (135)	27 (37)	31 (52)	-	-	-	-
Female	136 (142)	226 (158)	24 (12)	14 (33)	-	-	-	-
Punjab								
Male	304 (35)	211 (35)	62 (24)	60 (23)	48 (49)	40 (38)	30 (23)	29 (24)
Female	227 (101)	215 (61)	44 (9)	42 (24)	38 (100)	40 (60)	25 (12)	24 (25)

Note: The parentheses in this case contain the percentage of overstatement of Enrollment-Institution Ratios and Student-Teacher ratios presented in Table 6 and 8 in the paper over the actual's presented in the Table here.

Source: See Appendix A.

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