Rural Poverty in Pakistan: Some Recent Evidence

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INTRODUCTION

Pakistan's growth record over the past two and a half decades has been impressive. Real income per person has almost doubled. This growth has been spurred on by a vigorous manufacturing sector, sustained by an innovative agricultural sector, and aided in the 1970s by large-scale remittances from Pakistanis in the Middle East. This is no mean record considering the high 3 percent per annum growth in population.

Open unemployment has remained low. Furthermore, increasing real wage-rates, brought on by the expanding domestic economy, the strong demand for agricultural labour following the green revolution in the earlier years, and migration of rural workers to the Middle East in the 1970s have managed to spread the gains from this growth. There is a consensus of opinion that this growth has translated into declining levels of poverty especially since the late 1970s [see, for example, de Kruijk and Leeuwen (1985); Malik (1988), Ahmad and Ludlow (1989) and Ercelawn (1989)].

Most studies on poverty in Pakistan are limited to estimating the head-count ratios for single years based on the available Household Income and Expenditure Surveys (HIES); the most recent studies use the 1984-85 data set. The earlier studies were additioinally limited by the grouped nature of the published data from these surveys and by the somewhat arbitrary basis on which poverty lines were set. Only recently, with the easier access to the original household level data tapes and the improving quality of the data sets, has more detailed work been undertaken.

We can now estimate poverty measures that allow, not only for incidence, but also for the intensity of poverty, and for maldistribution among the poor. We

can thus estimate the additively decomposable class of poverty measures[1] suggested by Foster, Greer, and Thorbecke (1984). Moreover, using the method developed by Kakwani (1990) we can estimate standard errors for the different poverty measures, so as to provide distribution-free asymptotic confidence intervals; this allows us to state the degree of certainty about changes in poverty measures, about differences among regions or groups, and about whether such differences have narrowed or widened.

This paper presents such estimates for rural Pakistan based on the full-sample HIES data sets for 1984-85 and 1987-88, the most recent year with the HIES data on tape. Estimates are obtained for region specific poverty lines based on per capita consumption.[2]

The two years have been chosen by necessity because of data availability. Can we say anything about general trends based on an analysis of data from the two survey years barely four years apart? Are the two years comparable, agro-climatically and in other relevant respects, in aggregate and for the poor in the different region? Are the changes over this four year period fluctuations, random events, or genuine trends?

No very confident answer can be given, as this would require analysis, within a consistent framework, of several cross-sections over a significant number of years; data to do this are not yet available. However, it may be helpful to review the economic conditions in the two years; 1984-85 and 1987-88. The relevant annual *Economic Survey* classifies 1984-85 as a good year, with real GDP growth at 8.4 percent and inflation at 5.6 percent, both appreciably better than in 1983-84 (one of the worst agricultural years in Pakistan's history).[3] The year 1987-88, however, was marred by a persistent drought, a smaller than usual wheat crop[4] and repeated violence and political strife in Karachi (the major port and largest industrial centre) reducing overall industrial production. Growth of real GDP (5.8 percent) was below trend and inflation was somewhat above trend (about 7 percent; due to reduced drought-affected supplies of certain perishable agricultural

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[1]Methodological details are presented in the Annexure.

[2]The poverty line is based on estimated calorie expenditure functions or 1984-85 where the calorie intake per adult equivalent is explained by the logarithm of the total expenditure per adult equivalent. The cut-off is 2550 calories per adult equivalent. Households are counted as poor if the expenditure per adult equivalent is below the poverty line.

[3]The year, 1984-85, had seen the installation of a government elected on a mandate of Islamising the economy, deregulating private industrial activity, providing energy and physical infrastructure and special attention to agriculture and rural development and the provision of health, education and other social services.

[4]I need to thank Gary Ender of USAID for pointing out that it is the previous year's wheat production that is consumed in the current year and as such the current year's crop is not relevant. Nevertheless, the overall economic performance during the year does determine the overall level of well-being of the people during that year.

commodities).[5] Thus overall, 1987-88 was a below-average year, and 1984-85 an above-average year, for aggregate economic performance. If the data show that poverty had nevertheless declined, on various measures, between two such years, then we may be fairly confident that these data are not overstating – are indeed probably understating – the trend of improvement in the well-being of the poor.

REVIEW OF PREVIOUS STUDIES ON POVERTY

The many earlier estimates of the poverty headcount used somewhat arbitrary (and different) poverty lines.[6] These estimates are very sensitive to the choice of poverty line, especially because these studies are based on grouped (HIES) data. So it is difficult to evaluate trends. This can be seen from Table 1. However, despite these shortcomings, Naseem (1973) concluded from his analysis of real *consumption* from 1963-64 to 1971-72 that "even though abysmal poverty has to some extent been reduced by the process of growth and by some sharing of the fruits of growth, the proportion of people (above) a sustainable expenditure level has not been appreciably affected". Allaudin (1975) extended Naseem's analysis to *real income*. She confirmed that extreme poverty was declining, and that the decline was spreading towards a slightly less extremely poor income/expenditure group. By the mid-1970s and early-1980s the focus of work shifted to estimating the extent as well as the trends in poverty related to the absorption of a minimum diet based on nutritional requirements. Naseem (1977) defined a poverty line in constant 1959-60 prices of a consumption basket yielding 2100 calories and constructed lines permitting the intake of 95 percent, 92 percent and 90 percent of the minimum required calories. He concluded that poverty when defined in more extreme and intolerable terms appears to have remained roughly unchanged between 1963-64 and 1971-72 at about 54 percent of the population using the 92 percent of recommended intake norm and around 45 percent using the 90 percent norm. Most of this earlier work suffers from two serious limitations: it is based on grouped data rather than actual observations; and the conversion of the surveyed distribution, of income/expenditure based on households, to one of per capita income/expenditure is built on fairly drastic assumptions.

[5]The *Economic Survey 1984-85*, (page VII) states that estimates suggest that "virtually the entire population enjoys a consumption level which while low by comparison to richer countries is nevertheless adequate to meet minimal levels of nutrition and to provide for the basic necessities of life". By 1987-88 (despite the relatively poor overall economic conditions in the country in that year), the situation according to the *Economic Survey 1987-88* (page XVIII) had improved so that "the average caloric intake by the lowest income groups has virtually reached the required nutritional standards", though "social services in the society have not reached the poor effectively".

[6]See Akhtar (1988), on which some of the following is based, for a detailed review.

Table 1

Evidence on Rural Poverty in Pakistan

Author		Poverty Line	Trends in Poverty				
			63-64	69-70	71-72	78-79	84-85
		Rupees					
Naseem (1973)	Per Capita Annual Expenditure Arbitrarily Fixed in 1959-1960 Prices						
			(Percent of Households)				
		250	43.1	26.0	19.2	–	–
		300	60.5	59.7	58.4	–	–
Allaudin (1975)	Per Capita Annual Income Arbitrarily Fixed in 1959-1960 Prices						
		250	56.5	35.6	41.6	–	–
		300	67.4	61.1	64.8	–	–
Naseem (1977)	95 Percent of Recommended 2100 Calorie Intake per Head:		72.0	68.0	74.0	–	–
	92 Percent		54.0	46.0	55.0	–	–
	90 Percent		45.0	36.0	43.0	–	–
Mujahid (1978)	Per Capita Annual Expenditure Arbitrarily Fixed in 1959-1960 Prices						
		250	27.4	35.0	–	–	–
		300	39.5	47.6	–	–	–
			(Percent of Population)				
		250	29.2	39.5	–	–	–
		300	41.6	52.6	–	–	–
Irfan and Amjad (1984)	Monthly per Capita Income Consistent with Minimum Intake of 2500 Calories in 1979 Prices						
	Rural Poor	109	40.9	54.5	–	41.2	–
	Very Poor	95	32.2	43.2	–	29.3	–
			(Percent of Households)				
Kruijk & Leeuwen (1985)	Monthly per Household Expenditure of Rs 700 at 1979 Prices						
			–	73.0	–	51.0	–

Continued—

Table 1–*(Continued)*

Malik M. H. (1988)	Monthly per Capita Consumption at 1984-85 Prices						
		159	36.79	44.24	–	29.23	24.10
		172	42.69	50.76	–	35.19	29.21
Akhtar (1988)	Per Capita Annual Expenditure Based on 1959/60 Estimates Converted to 1979 Prices						
		948	–	–	–	12.0	–
Ercelawn (1988)	Per Capita Annual Expenditure for 2550 Calories/Day/a.e. x 0.75; Current Prices						
		324	–	–	25.0	–	–
		960	–	–	–	19.0	–
		1716	–	–	–	–	20.0
Ahmad and Allison (1990)	Per Capita Monthly Expenditure in 1979 Prices (Updated to 1984-85 Using GDP Deflator from World Bank)						
		100	–	–	–	25.0	20.0
				(Percent of Population)			
		100	–	–	–	30.0	24.0
Ercelawn (1990)	Monthly per Capita Expenditure Consistent with Minimum Intake of 2550 Calories/Day/ a.e.; in Current Prices.						
				(Percent of Households)			
	Punjab	150	–	–	–	–	21.0
	Sindh	170	–	–	–	–	21.0
	NWFP	145	–	–	–	–	10.0
	Balochistan	160	–	–	–	–	31.0
	Pakistan (Average) Rural	–	–	–	–	–	20.0

Notes: (i) a.e. = adult equivalent.

(ii) In Ercelawn (1988) the different poverty lines all represent 0.75 of the annual expenditure required to consume 2550 calories per day per adult equivalent.

(iii) Ercelawn (1990): Tables V.3.1 and V.3.3, pp. 44-45 – percent households below province specific poverty lines.

Irfan and Amjad (1984) improves upon earlier work by deriving estimates of the proportion of rural people in 'poverty' in 1979, using a poverty line that assumes 2550 calories per day per adult equivalent as a requirement [as suggested by the Nutrition Cell of the Planning Division of Pakistan see Khan and Khan (1980)], and actual observations instead of grouped data. These authors translated the detailed information available in the Micronutrient Survey of 1977 to determine an income-based poverty line of Rs 109 per capita per month in 1979 prices and then used this and a Rs 95 rupees per capita per month line to obtain head-count measures for the year 1979 (based on the first quarter 1979 HIES which was one of the four modules of the Population Labour and Migration Survey). In order to obtain a 'consistent' time series on poverty the authors recalculated poverty estimates for the years 1963-64, 1966-67 and 1969-70 based on the published grouped HIES data. The authors concluded that the percentage of the very poor (those with monthly per capita income below Rs 95) increased from slightly over 32 percent in 1963-64 to over 43 percent in 1969-70 and then declined to slightly above 29 percent in 1978-79 by which time it was rather close to the 1963-64 level.

Kruijk and van Leeuwen (1985), using the HIES for 1969-70 and 1979 show that there was a significant decline in poverty.

Malik (1988) in a study of the published grouped data from the Household Income and Expenditure Surveys from 1963-64 to 1984-85 shows that the percentage of poor and very poor households (and population) increased during the 1960s and then declined, confirming the pattern observed by Irfan and Amjad (1984).

Akhtar (1988) used the 1979 HIES data to compute a series of poverty inequality indices. Based on her definition of the poor as the bottom 10 percent of the population rank in terms of the per capita expenditure distribution she concluded that poverty incidence in Pakistan is overwhelmingly rural, and is found mainly in Punjab and Sindh.

The large number of different estimates available show the sensitivity of the poverty measure to the choice of the poverty line. An effort to clarify this is the analysis by Ahmad and Ludlow (1989), on which part of Ahmad and Allison (1990) was based. This paper presented estimates of the head-count and the Sen index for four selected poverty lines termed "low", "medium", "medium-high" and "high", computed from the full sample data of the Micronutrient Survey of 1976-77 and the HIESs for 1979 and 1984-85. These lines were based on total per capita expenditure per month and represent Rs 80, Rs 90, Rs 100, and Rs 110 respectively for rural Pakistan for 1979. These authors termed the choice of

the caloric cut-off point of 2550 Kcals per adult equivalent used by Irfan and others as "absurdly high"; but it lies between their medium and medium-high lines.

Their results, as presented in Table 1, are based on their "medium high" poverty line and record a reduction in rural poverty between 1979 and 1984-85; with the headcount measure declining from 25 percent to 20 percent for the rural sector. Although these authors presented estimates within a consistent framework based on actual household level data it is impossible to test statistically for the significance of this decline because they did not present any standard errors of their poverty estimates.

Ercelawn (1990) analyses of the 1984-85 HIES data set, uses a concept of "under nourishment to define absolute poverty", and presents estimates of the incidence and intensity of absolute poverty in Pakistan with provincial, rural and urban (towns/cities) breakdown. He estimates calorie expenditure functions for provinces, rural areas, towns and cities.[7] Taking the implied poverty line as the monthly expenditure per adult equivalent that a household needs to make to achieve the daily calorie intake of 2550 calories per adult equivalent, he develops a set of location and province specific poverty lines for 1984-85. Not surprisingly, these lie within the range of estimates produced by Ahmad and Allison (1990). Their poverty line of Rs 100 per capita for 1979 inflates to Rs 155 per capita for 1984-85, which lies within Ercelawn's range of province-specific poverty lines. He concluded that the incidence of poverty for Pakistan as a whole may have been quite modest and that Pakistan is "quite fortunate particularly as regard acute poverty with the risk of starvation and malnourishment". He found the overall rural headcount to be 20 percent of all households: 21 percent for rural Punjab and Sindh, only 10 percent for NWFP, but 31 percent in Balochistan.

The general pattern that emerges is that there was an increase in poverty during the 1960s, but (according to almost all the studies) a decline in poverty ever since about 1970.

THE DATA SETS

The Household Income and Expenditure Survey data tapes for the years 1984-85 and 1987-88 are used in the following analysis. These surveys cover both

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[7]The calorie-expenditure function was estimated separately for provinces, rural areas, towns and cities. To confirm underlying differences in the function, dummy variables for towns and cities were used in a regression based on the pooled (rural and urban) sample. An additional regression with dummy variable for cities was run on the pooled urban sample. Results suggested that a distinction, between rural and urban and between towns and cities could be maintained with a high degree of confidence [Ercelawn (1990), p. 26].

rural and urban households in all the four provinces of Pakistan, excluding tribal areas, military areas, and certain districts in the North West Frontier Province. The surveys are spread over the four quarters of the fiscal year from July to June for 1984-85 and 1987-88 respectively. Each household is interviewed in a single visit. The sample covers substantially more urban households, and slightly more Sindh and NWFP households, than their share in the 1981 Census. The data tapes therefore also contain "raising factors" designed to correct for this over-sampling. This permits nationally representative estimates. The HIES for 1984-85 covers 16,541 households and that for 1987-88 covers 18,143 households.[8]

PROVINCE-SPECIFIC POVERTY LINES

The poverty lines used in this study are based on Ercelawn (1990), who estimated calorie expenditure functions of the form

$$C = a + b \ log \ E$$

where C is the calorie intake per adult equivalent and E is the monthly consumption expenditure per adult equivalent. In a series of estimations using location-specific dummies, he found significant differences between rural areas, towns, and cities. Using dummies he showed that province functions are statistically different.[9]

Moreover, he found that effects of location in a province are significant only in rural areas; inter-provincial differences on urban calorie expenditure are not statistically significant. Using the calorie expenditure functions and a cut-off of 2550 calories per adult equivalent, Ercelawn obtained following rural poverty lines:

Province	Poverty Line (Expenditure in Rs per Month) per Adult Equivalent	
	Rural	Overall
Punjab	180	185
Sindh	190	210
NWFP	190	185
Balochistan	200	200

[8]Previous studies using these data tapes have tended to "clean" the data for outliers. For example, Ercelawn uses only 15,399 out of the total of 16,541 households, throwing out over 1,100 observations, approximately 7 percent of the sample. The present study does not undertake such a cleaning exercise.

[9]His provincial calorie-expenditure function for provinces [reported in Ercelawn (1990), p. 30] in which he uses both slope and intercept dummies for provinces has an R^2 of 0.33 and all the estimated coefficients are significantly different from zero.

There are no regional price indices available to update the 1984-85 poverty lines to 1987-88. In order to obtain these indices we use the methodology outlined below. This methodology allows, as far as possible for variations in the prices facing the poor among provinces.

We use the per capita expenditure rural poverty lines for 1984-85 for the provinces and the country as a whole suggested by Ercelawn. We then *update* these to 1987-88 by computing a price index (Fisher index) as follows:

$$F_{87-84} = \sqrt{\frac{\Sigma_i P_i^{87}.Q_i^{84}}{\Sigma_i P_i^{84}.Q_i^{84}} \cdot \frac{\Sigma_i P_i^{87}.Q_i^{87}}{\Sigma_i P_i^{84}.Q_i^{87}}} \times 100$$

where P_i^t, Q_i^t refers to the price and quantity consumed respectively of good i in year t.

The quantity weights are taken from the HIESs for 1984-85 and 1987-88 and reflect the consumption of the lowest expenditure categories in the published data which are available by expenditure groups. Prices are averages for the province taken from the Table of Prices of Selected Commodities by Major Cities in Pakistan (Table 17.3 of the *Pakistan Statistical Yearbook*). For Punjab, the average of prices in Lahore, Faisalabad, Rawalpindi and Multan was taken and then transformed into Rs per kg., liter, etc. For Sindh, the average of prices in Karachi, Hyderabad, Sukkur and Larkana was taken. For Balochistan, only Quetta was available. Finally, for NWFP, prices for Peshawar were used.[10]

The indices so computed are reasonable. Our index for the nation as a whole increased 13 points in the period from 1984-85 to 1987-88. The consumer price index (combined), reported in the *Economic Survey 1988-89* of the Government of Pakistan, increased slightly over 14 points over this period.

CLASSIFICATION OF DISTRICTS OF PAKISTAN, BY AGRO-CLIMATIC ZONE

In addition to comparing poverty indicators according to the traditional break-down into provinces and rural urban sectors, the present analysis is also conducted by grouping districts into agro-climatic zones. Such a grouping, besides the obvious advantage of highlighting poverty differences in a predominantly agrarian economy, provides a basis for comparison of poverty rankings with a ranking of development indicators computed from district-level indices available in the existing literature. This grouping of districts into agro-climatic zones is also necessitated by the small

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[10]Details of the commodity classification and weights are available with the author.

number of observations in the HIES data sets (at the sectoral level) in certain
districts making it difficult to obtain statistically meaningful estimates at that level.

The districts of Pakistan are classified into nine agro-climatic or crop zones.
Rainfed (barani) Punjab, so classified, includes only the districts of Attock, Jhelum,
and Rawalpindi/Islamabad, which are unusually integrated with the urban centres;
a large proportion of the rural population draws its income from service and
related sectors. The other, more agro-based barani districts are classified as low-
intensity Punjab. The classification of Districts is as below. The size and location
of these zones is given in Figure 1.

Fig 1. Agro-climatic Zones of Pakistan

1. Rice/Wheat Punjab
2. Mixed Punjab
3. Cotton/Wheat Punjab
4. Low-intensity Punjab
5. Barani Punjab
6. Cotton/Wheat Sindh
7. Rice/Other Sindh
8. Other NWFP
9. Other Balochistan
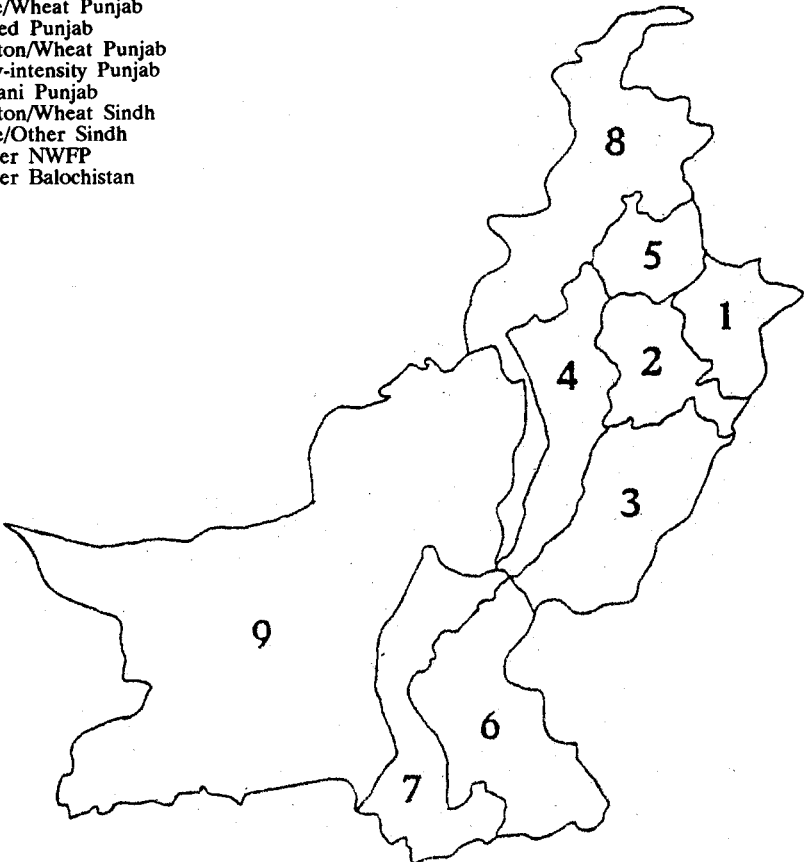
Note: Punjab, Sindh, North-West Frontier Province (NWFP), and Balochistan are the four prov-
inces of Pakistan.

Zone	District	Zone	District
Rice/Wheat Punjab	Sialkot Gujrat Gujranwala Sheikhupura Lahore/Kasur	Mixed Punjab	Sargodha/Khushab Jhang Faisalabad/T. T. Singh Okara
Cotton/Wheat Punjab	Sahiwal Bahawalnagar Bahawalpur R. Y. Khan Multan/Vehari	Low-intensity Punjab	D. G. Khan/Rajanpur Muzaffargarh/Leiah Mianwali/Bhakkar D. I. Khan
Barani Punjab	Attock Jhelum Rawalpindi/ Islamabad	Cotton/Wheat Sindh	Sukkur Khairpur Nawabshah Hyderabad Tharparkar
Rice/Other Sindh	Jacobabad Larkana Dadu Thatta Badin Shikarpur Nasirabad Karachi		
Other NWFP Except D. I. Khan			
Other Balochistan Except Nasirabad			

This classification allows us to disaggregate the poverty measure to much lower levels than before.

ESTIMATES OF POVERTY MEASURES

We estimate the headcount measure (P0), the poverty gap (P1) and the Foster-Greer-Thorbecke measure (P2) based on the full sample HIES data sets for 1984-85 and 1987-88. Details of the methodology are presented in the Annexure. The estimates are presented in Table 2. These estimates pertain to the rural sector for the country as a whole, in each province and agro-climatic zone within each.

Focussing first on the headcount measures of poverty rural poverty we note that our estimates are marginally different from those of Ercelawn (1990) primarily

Table 2

Headcount, Poverty Gap, Foster-Greer-Thorbecke Poverty Measures by Province and Agro-climatic Zone 1984-85 and 1987-88

Provinces	Headcount Measure (P0)		Poverty Gap Measure (P1)		Foster-Greer-Thorbecke Measure (P2)		Kakwani's Test Stat P0
	1984-85	1987-88	1984-85	1987-88	1984-85	1987-88	1984-85 to 1987-88
Pakistan							
Overall	0.183	0.131	0.034	0.021	0.010	0.005	444.12
Rural	0.211	0.155	0.040	0.027	0.012	0.007	428.67
Punjab							
Rice/Wheat							
Rural	0.143	0.082	0.025	0.012	0.008	0.003	144.28
Mixed							
Rural	0.227	0.159	0.047	0.027	0.015	0.007	184.84
Cotton/Wheat							
Rural	0.293	0.220	0.059	0.040	0.018	0.011	249.41
Low Intensity							
Rural	0.280	0.271	0.061	0.050	0.019	0.013	91.22
Barani							
Rural	0.057	0.039	0.009	0.005	0.003	0.001	29.13

because we did not 'clean' the data. We also note that these estimates are remarkably close to those reported by Ahmad and Allison (1990). Overall twenty one percent of the rural households could be classified as poor in 1984-85. On the provincial level rural poverty is highest in Balochistan followed by Sindh and Punjab with NWFP showing the lowest percentage of poor households. Within agroclimatic zones rural poverty is highest at 29.3 percent in cotton wheat zone of Punjab followed by the low intensity zone of Punjab at 28 percent and lowest at 5.7 percent for the barani Punjab. This low figure for barani Punjab may seem rather strange at face value but the rural sectors of the districts of Attock, Jhelum and Rawalpindi/Islamabad, that form this zone, are closely integrated with their urban sectors having strong linkages with the services sector. Moreover, these districts are amongst the most developed in the country.

Rural poverty declined remarkably from 1984-85 to 1987-88. In terms of the headcount measure (P0) it declined to 15.5 percent for the country as a whole. The decline was highest in Balochistan followed by Punjab. The data for Balochistan were checked and rechecked. It seems that there is a problem with the new sample for 1987-88 in that Province. However, in the absence of alternative data little can be said with certainty. In Punjab rural poverty declined to 12 percent and in Sindh to about 15 percent. In the NWFP it went from 9.9 percent in 1984-85 to 6.6 percent in 1987-88. The Kakwani test statistics reported in the last column of Table 2, confirming this decline, are all statistically significant at the 99 percent level.

The poverty gap measure is small to start with and is declining between the two years reported in Table 2. So is the Foster-Greer-Thorbecke measure. This implies that the gap between the poverty line and the expenditures of those below it is small and declining overtime. The most disadvantaged are also getting better off.

THE LOCATION OF THE POOR

An advantage of computing the poverty measures at the disaggregated agroclimatic zone level is that it permits a more precise assessment of the location of the poor than the traditional provincial breakdown. This can be done by constructing percentage distributions of the poor households in rural Pakistan. However, such a measure is biased because of the uneven size of the different zones. Larger (in terms of population) zones or areas may exhibit a larger percentage of poor. This bias can be neutralised by constructing an index that incorporates the relative weight of the total number of households in the category in the grand total of households in the country. If the percentage share of the

poor households in each category (zone and province) is divided by the corresponding percentage share of the category in the grand total of households in the country, it yields a measure that indicates whether that specific category has more than, equal to or less than its share of the poor. A value of 100 for this indicator implies that the share of poor households in the category is equal to the share of overall households in the category.

The percentage distribution of rural poor along with values of this index are presented in Table 3. In absolute terms, Punjab has the greatest number of poor households; and within Punjab the cotton wheat zone has the largest number of poor. This pattern is true in both years. In 1984-85 rural Punjab overall had slightly

Table 3

Distribution of the Rural Poor by Province and Agro-climatic Zone

Provinces and Agro-climatic Zones	1984-85			1987-88		
	Percentage Share Poor	Percentage Share Popn.	Index	Percentage Share Poor	Percentage Share Popn.	Index
Pakistan	100.00	100.00	100	100.00	100.00	100
Punjab	64.56	63.81	101	66.92	62.22	108
Rice/Wheat Punjab	11.18	15.80	71	9.23	16.93	55
Mixed Punjab	15.81	14.06	112	15.05	14.27	106
Cotton/Wheat Punjab	24.71	17.04	145	24.97	17.11	146
Low Intensity Punjab	11.19	8.06	139	15.91	8.46	188
Barani Punjab	1.73	6.15	28	1.76	6.67	26
Sindh	17.98	16.39	110	22.33	17.06	131
Cotton/Wheat Sindh	9.11	8.98	101	11.93	9.49	126
Rice/Other Sindh	8.87	7.37	120	10.39	7.57	137
N.W.F.P. (Except D. I. Khan)	6.65	14.76	45	7.73	14.16	55
Balochistan	10.92	7.75	141	2.77	5.25	53

Source: HIES, 1984-85; 1987-88.
Notes: The poverty line represents the expenditure required to consume 2550 cals./adult equivalent/day.

	1984-85	1987-88
Households in poverty:	2,194,131	1,192,091
Households total:	11,989,788	12,041,326

more than its share of poor, while Sindh had relatively more and Balochistan substantially more. The cotton wheat zone of Punjab had the highest share of poor followed by low intensity Punjab. In 1987-88 the share of poor based on this index increased relative to 1984-85 for Punjab, Sindh and NWFP. It declined notably for Balochistan. While this share remained more or less constant and high for the cotton wheat zone of Punjab it rose markedly for the low intensity zone of Punjab.

CONCLUSIONS

There is a consensus of opinion that growth of incomes in Pakistan has translated into declining levels of poverty especially since the late 1970s. While different estimates of the numbers of poor are available for differnt years these are difficult to compare because of differing assumptions underlying the analyses. Moreover, such estimates are only available for years up to 1984-85. This paper presents estimates of poverty for rural Pakistan based on the full-sample HIES data sets for 1984-85 and 1987-88, the most recent year with the HIES data on tape. We estimate poverty measures that allow, not only for incidence, but also for the intensity of poverty, and for maldistribution among the poor. We estimate the additively decomposable class of poverty measures suggested by Foster, Greer, and Thorbecke (1984). Moreover, using the method developed by Kakwani (1989) we can estimate standard errors for the headcount poverty measure, so as to provide distribution-free asymptotic confidence intervals; this allows us to state the degree of certainty about changes in the poverty measure, about differences among regions or groups, and about whether such differences have narrowed or widened.

Rural poverty in Pakistan declined remarkably from 1984-85 to 1987-88. In terms of the headcount measure (P0) it declined from 21.1 percent to 15.5 percent for the country as a whole. The decline was highest in Balochistan followed by Punjab. In Punjab rural poverty declined to 12 percent and in Sindh to about 15 percent. In the NWFP it went from 9.9 percent in 1984-85 to 6.6 percent in 1987-88. The poverty gap measure is small to start with and is declining between the two years. So is the Foster-Greer-Thorbecke measure. This implies that the gap between the poverty line and the expenditures of those below it is small and declining overtime. The most disadvantaged are also getting better off.

The cotton wheat zone of Punjab had the highest share of poor followed by low intensity Punjab. While this share remained more or less constant and high for the cotton wheat zone of Punjab it rose markedly for the low intensity zone of Punjab.

REFERENCES

Ahmad, E., and C. Allison (1990) Poverty, Growth and Public Policy in Pakistan. (Draft Paper.)

Ahmad, E., and S. Ludlow (1989) Poverty, Inequality and Growth in Pakistan. World Bank, Background paper for the 1990 World Development Report.

Akhtar, S. (1988) Poverty in Pakistan. Islamabad: World Bank. (Draft Mimeographed.)

Allaudin, T. (1975) Mass Poverty in Pakistan – A Further Study. *The Pakistan Development Review* 14:4.

de Kruijk, H., and M. van Leeuwen (1985) Changes in Poverty and Income Inequality in Pakistan during the 1970s. *The Pakistan Development Review* 24: 3–4.

Ercelawn, A. A. (1986) Poverty in Pakistan: A Study of Villages. In I. Nabi (ed) *The Quality of Life in Pakistan*. Vanguard.

Ercelawn, A. A. (1988) Tables presented at World Bank Seminar. May.

Ercelawn, A. A. (1989) Poverty in Pakistan: Choice of Poverty Criteria. (Draft Paper.)

Ercelawn, A. A. (1990) Absolute Poverty in Pakistan: Poverty Lines, Incidence, Intensity. Applied Economics Research Centre, University of Karachi. (Draft Paper.)

Foster, James, Joe Greer, and Erik Thorbecke (1984) A Class of Decomposable Poverty Measures. *Econometrica* 52:3 761–766.

Havinga, I. C., *et al.* (n. d.) Poverty and Inequality in Pakistan. Seminar on Poverty Statistics in the European Community. The Netherlands.

Irfan, M., and R. Amjad (1984) Poverty in Rural Pakistan. In A. R. Khan and E. Lee (eds) *Poverty in Rural Asia*. ILO/ARTEP.

Kakwani, Nanak (1989) Testing for Significance of Poverty Differences: With Application to Cote d'Ivoire. Washington, D. C.: The World Bank. (LSMS Working Paper No. 62.)

Khan, M. A., and M. A. Khan (1980) Nutritional Standards of Growth for Infants and Young Children and Recommended Dietary Allowances of Pakistani Population. Planning and Development Division, Government of Pakistan.

Malik, M. H. (1988) Some New Evidence on the Incidence of Poverty in Pakistan. *The Pakistan Development Review* 27:4 509–515.

Malik, S. J. (Forthcoming) Poverty in Pakistan: 1984-85 to 1987-88. In M. Lipton and Jacques van der Gaag (eds) *Including the Poor*. IFPRI/World Bank.

Mujahid, G. B. S. (1978) A Note of Measurement of Poverty and Income Inequalities in Pakistan: Some Observations on Methodology. *The Pakistan Development Review* 17:3.

Naseem, S. M. (1973) Mass Poverty in Pakistan: Some Preliminary Findings. *The Pakistan Development Review* 13:4.

Naseem, S. M. (1977) Rural Poverty and Landlessness in Pakistan. In ILO Report on Poverty and Landlessness in Asia. Geneva: ILO.

Pakistan, Government of (1978) *Micro-Nutrient Survey of Pakistan.* Islamabad: Planning and Development Division, Nutrition Cell.

Pakistan, Government of (1979) *Household Income and Expenditure Survey.* Islamabad: Federal Bureau of Statistics.

Pakistan, Government of (1984-85) *Household Income and Expenditure Survey.* Islamabad: Federal Bureau of Statistics.

Pakistan, Government of (1987-88) *Household Income and Expenditure Survey.* Islamabad: Federal Bureau of Statistics.

Pakistan, Government of (1987) *Economic Survey, 1989-90.* Islamabad: Ministry of Finance.

Sen, A. (1976) Poverty: An Ordinal Approach to Measurement. *Econometrica* 44, 219–231.

Comments on
"Rural Poverty in Pakistan: Some Recent Evidence"

This is really an illuminating and interesting paper. Its major contribution apparently lies in its employment of the Foster, Greer and Thorbecke poverty measure which, unlike several other available indices, is additively decomposable. The property of additive decomposibility relates sub-group poverty to total poverty. In other words, it considers total poverty as a weighted average of sub-group poverty-levels. Another notable feature of the paper is that three poverty indices have been computed on the basis of individual observations i.e. ungrouped data contained in household level data tapes of Household Income and Expenditure Surveys (HIES) pertaining to the years 1984-85 and 1987-88. Thus, the paper enjoys an edge over several existing studies based on grouped data as reported in the published HIES. The poverty measures computed by the author relate to the rural areas of the national economy, the rural sector of each province and agro-climatic zones of the provinces. The most surprising point to note is that the author has computed the Foster, Greer and Thorbecke index of poverty without making use of its decomposibility property.

The paper has used Adult Equivalent Households as the income spending units for poverty measurement. This involves the conversion of households/ families into a certain number of adult equivalents or conversion of families/ households into equivalent households by using equivalence scales. This kind of conversion, no doubt, takes into account differentials in size and composition of households yet any such conversion is liable to involve a lot of arbitrariness. The paper does not provide any clue regarding the equivalence scales used, therefore no discussion is possible on the plausibility of the equivalence scales used in this exercise. Besides the above, such conversions have been adjudged to be less suitable for any meaningful welfare comparisons. As argued by Sen (1979) "no matter how these equivalence scales are drawn up, there remains the further issue of weighting of families of different sizes....... The scale of equivalent adults indicates conversion factors to be used to find out how well-off members of that family are, but ultimately we are concerned with sufferings of everyone in the family and not of a hypothetical equivalent number".

A number of distribution sensitive methods of aggregation/poverty measurement have appeared in the recent literature. None of the various measures can claim absolute superiority over any other in view of the fact that all of them concentrate on different aspects of poverty. The choice among various measures

will, therefore, largely depend on the precise motivation underlying any exercise aiming at quantification of poverty scenario. Foster (1984) in a very comprehensive survey of various poverty measures reached the conclusion that "the choice of a single poverty measure involves a certain degree of arbitrariness". This, therefore, reflects the need for multi-index rather than a single-index approach for the purpose at hand. The author, therefore, could perhaps use a recent measure, with decomposable properties constructed by Rajan Ray (1989), to supplement his analysis. This new measure combines the ideas of poverty aversion, relative deprivation and additive decomposability axioms into a single measure of poverty. In particular, as a decomposable measure the weight attached to a sub-group's poverty reflects not only its population share, but also its share of the poor and its relative deprivation as measured by the ratio of its mean poverty gap to that of the whole population.

Malik has computed poverty measures using consumption expenditure data as given in the HIES data tapes. In a country like Pakistan, where a very large proportion of the population are maintaining an artificially higher standard of consumption than that warranted by their current income (the deficit being met through dissavings, sale of property and other income yielding assets, accumulation of debts and receipts of *Zakat* and *Ushr*) any estimates of poverty based on consumption expenditure are bound to understate the extent of poverty. Therefore, it may be appropriate if estimates of poverty based on consumption expenditure are supplemented by similar estimates derived from household income data.

The estimates of the exercise under review show that poverty has considerably declined over the years both for the country's rural sector as well as for the rural areas of the provinces. It is, however, surprising that the poverty estimates suggest that the NWFP has the lowest percentage of poor households. To me, this scenario is attributable to the fact that the HIES universe excluded the Tribal Areas and certain other districts of the NWFP which, besides being very poor, are largely rural in character. Thus, the magnitude of poverty seems to be grossly understated in the case of NWFP.

The author has located households suffering from poverty by identifying the agro-climatic zones to which they belong. This intra-regional dimension of poverty is no doubt important yet it would have been more interesting if the poor had been identified by their occupations, educational status, family size and related characteristics.

The author's critical review of the existing studies is also somewhat lacking. Instead of pinpointing the fundamental shortcomings and weaknesses of some of

these earlier studies (see Choudhary 1985), he has largely concentrated on criticising them for their use of grouped-data and arbitrarily chosen poverty lines. Ungrouped data, no doubt, can be expected to yield more accurate and unbiased estimates of poverty yet, as shown by Choudhary (1985), by using some appropriate methodology, one can even arrive at meaningful estimates of poverty on the basis of grouped data.

Except for these few comments and observations, the paper seems to have made an important contribution to our knowledge and understanding of the measurement and behaviour of poverty. The author, therefore, deserves to be complimented.

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REFERENCES

Choudhary, M. K. (1985) Measurement of Poverty in Pakistan. *The Kashmir Economic Review* 2:1.

Foster, J. E. (1984) On Economic Poverty: A Survey of Aggregate Measures. In *Advances in Econometrics* 3: 215–51.

Ray, R. (1989) A New Class of Decomposable Poverty Measures. *The Indian Economic Journal* 36:4.

Sen, A. (1979) Issues in Poverty Measurement. *Scandanevian Journal of Economics.*