MIMAP Synthesis Report: Major Conclusions and Policy Implications

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INTRODUCTION

Pakistan has implemented various structural change and stabilisation programmes over the last twelve years with a view to improving the levels of efficiency and consequently higher levels of output and employment. Evaluation of the impact of Structural Adjustment and Stabilisation Programme (SAP), that entails broad range of policy conditionalities and envisage changes in a large number of variables is quite complicated and tools of partial equilibrium analysis are hardly sufficient. This is because the effects of the SAP in the context of simultaneous changes engendered by extraneous powerful influences, comparing the pre-and post SAP situation without controlling for factors other than SAP, may not yield very meaningful results.

The impact of SAP may be discerned by examining the counterfactual. Often the procedures used under this approach involve either comparison of the performance of SAP and non-SAP countries or within a country the actual performance with the expected performance in the absence of SAP implementation. Such expected level of performance is not a straightforward option as it may rely on historical functional relations to evaluate the performance of a period characterised by massive structural changes. Computable General Equilibrium (CGE) models currently used to evaluate the effects of SAP are also sensitive to 'closure rules'. It defines the manners of market clearing rules and feedback effects of decision taken or shocks, in all types of markets.

Despite the imperfections and complications in the evaluative procedures, the effects of SAP have been assessed in many developing countries. Research carried out by the PIDE-based project "Micro Impact of Macro Adjustment Policies" (MIMAP)[1] is a pioneering venture that assesses the impact of various versions of SAP implemented by Pakistan since the mid-1980s. The general objective of the MIMAP project has been to facilitate the formulation of policies aimed at growth and improved welfare levels

[1]The project has been implemented with financial assistance from International Development Research Centre (IDRC), Canada.

particularly of vulnerable groups, in Pakistan. The three specific objectives include:

(1) To highlight and quantify the impact of macroeconomic and adjustment policies on poverty levels thereby yielding policy relevant insights;

(2) To achieve the above specific objective through the use of sample household survey, the use of existing secondary socio-economic data sources, and the development of a micro-macro modelling exercise; and

(3) To disseminate the project's results within the country and to other MIMAP groups through technical publications, policy papers and seminars.

In order to operationalise these objectives, the project was divided into two integrated but stand-alone components: poverty monitoring and modeling. Under the poverty-mentoring component, a nationally representative survey was carried out, while the modeling component was designed to develop Social Accounting Matrix (SAM) and Computable General Equilibrium Models (CGE). During the first phase of the Pakistan MIMAP project in total 13 studies were completed.[2] The present study brings out major conclusions and policy implications based on these studies. It also sets out future direction for research.

ORGANISATION OF THE REPORT

The sample design of the household survey and its socio-economic and demographic characteristics are discussed in Section II, where a comparison has also been made with the results of the 1998-99 Pakistan Integrated Household Survey. Four research studies representing first round of analysis of the MIMAP data set are briefly summarised in Section III. Findings of five studies covering SAM and CGE models are discussed in Section IV, followed by presentation of findings of other three studies in Section V. The next section contains some suggestions for extension of research and modeling efforts to realise the objectives of ongoing MIMAP project. Conclusions and policy implications are presented in the last two section of the report.

[2] A list of these studies is given in Appendix 1.

Section II
HOUSEHOLD SURVEY

In the project proposal, household survey had two components: poverty survey and nutrition survey.[3] The poverty survey was to be conducted in 1200 households: 360 from slum areas in the four provincial capitals (Karachi, Lahore, Peshawar and Quetta) and 840 from rural areas of the four provinces, selecting one district from each province. The nutrition survey, however, was to include only 300 households (urban 90 and rural 210). The urban survey was to be completed in the first year, and the rural survey in the second year.

The sample size envisaged in the proposal was not nationally representative and could have not been used to get accurate estimates of poverty and comparison with previous studies would have been difficult. Similarly the one-year gap between the urban and rural surveys, as suggested in the MIMAP project proposal, would have made it difficult to combine two data sets to obtain consistent information at the national level. Furthermore, restricting poverty survey to only slum areas and excluding the high and middle-income localities from the household survey would have limited the scope of the study by rendering the survey results nationally unrepresentative thereby making it impossible to compare with the previous studies. Accordingly modifications were made in the survey design and they are detailed below.

Sample Design

The household survey was named as the '1998-99 Pakistan Socio-economic Survey' (PSES). Its universe consists of all urban and rural areas of the four provinces of Pakistan defined as such by 1981 population census excluding FATA, military restricted areas, districts of Kohistan, Chitral, Malakand, and protected areas of NWFP. The population of the excluded areas constitutes about 4 percent of the total population. The village list published by the population census organisation in 1981 was taken as sampling frame for drawing the sample for rural areas. For urban areas, sampling frame developed by the

[3]Details of the survey and its characteristics are provided in the study "An Introduction to the 1998-99 Pakistan Socio-economic Survey" by G. M. Arif, Syed Mubashir Ali, Zafar Mueen Nasir and Nabeela Arshad.

Federal Bureau of Statistics (FBS) was used. In this frame each city/town was divided into enumeration blocks of approximately 200 to 250 households. Cities having population of half a million or more such as Karachi, Lahore, Faisalabad, Rawalpindi, Multan, Hyderabad and Peshawar were treated as self-representing cities (SRCs). Islamabad and Quetta, being federal and provincial capitals respectively, were also considered as the SRCs. Each of these cities constituted a separate stratum and were further sub-stratified according to low, middle and high-income groups. The remaining urban population in each division of all the four provinces was grouped together to form a stratum. A division thus was treated as an independent stratum.

Rural population of each district in Punjab, Sindh and NWFP was grouped together to form a stratum. On the other hand in Balochistan province each division was treated as a stratum. Two stage stratified sample design was adopted for the 1998-99 PSES. Enumeration blocks in urban and Mouzas/Dehs/villages in rural domain were taken as primary sampling units (PSUs). Households within the sampled PSUs were taken as secondary sampling units (SSUs). Within a PSU, a sample of 8 households from urban domain and 12 households from rural domain was selected.

The survey was carried out in only those PSUs that were covered in the second quarter of the 1987-88 HIES, the last survey carried out before the commencement of Structural Adjustment Programme in 1989. The selection of PSUs that were covered in the pre-adjustment period helps in the analyses of the impact of adjustment programme on poor and vulnerable groups of the society. Distribution of the 1998-99 PSES sample by province with rural/urban breakdown is reported in Table 1. The PSES was carried out in 351 PSUs. The total size of the sample was 3564 households: 2268 from rural areas and 1296 from urban areas.[4] The PSES sample is representative at national level as well as for rural and urban areas of the country.

[4]The sample is approximately three time the sample proposed in the MIMAP project proposal.

Table 1

Distribution of the Sample PSUs and SSUs with their Urban/Rural and Provincial Break-down, 1987-88 HIES and 1998-99 PSES

Province	Number of Sample PSUs			Number of Sample SSUs		
	Total	Rural	Urban	Total	Rural	Urban
1998-99 PSES						
Punjab	189	110	79	1952	1320	632
Sindh	87	38	49	848	456	392
NWFP	50	27	23	508	324	184
Balochistan	25	14	11	26	168	88
Pakistan	351	189	162	3564	2268	1296
1987-88 HIES						
Punjab	756	440	316	9796	5696	4100
Sindh	348	152	196	4509	1963	2546
NWFP	200	108	92	2566	1386	1180
Balochistan	99	55	44	1273	716	557
Pakistan	1403	755	648	18144	8761	8383

Questionnaire Instrument

The questionnaire used in the 1998-99 PSES was divided into ten major sections: household roster, labour force and employment, income and expenditure, birth history of women aged 15–49 years, nutritional and immunisation status of children and pregnant and lactating women, health and health care status of all individuals, and housing conditions. Three sub-modules dealing with agricultural and non-agricultural establishments and community variables were also part of the PSES questionnaire. It was pre-tested in rural and urban areas of Rawalpindi district. This pre-testing provided an excellent opportunity to understand the field problems and shortcomings of the questionnaire. In general its structure was found to be good with minor problems in some parts of the questionnaire, which were removed, and the improved version of the questionnaire was used in the survey.

Field Operations and Data Processing

The field survey was sub-contracted to Federal Bureau of Statistics (FBS). The PIDE staff provided training to the enumerators, and were involved in supervision of the

field operations. The survey was launched in March 1999, and it was completed in four months. PIDE trained personnel performed editing of the filled-in questionnaires. In fact, most of the editors already participated in the pre-testing of questionnaires. The computer section of PIDE was entrusted with data entry and processing. The data were also subjected to consistency checks through computer programmes.

Quality of Data

(a) Variations in PSUs: As reported earlier, the data generated by the 1998-99 PSES is representative at the national level as well as for rural and urban areas of the country. The entire sample of the PSES has been drawn from those PSUs that were covered during the 1987-88 HIES. In 1987-88 the entire country was divided by the FBS into 18000 PSUs. In the 1990s this number has increased to 23000.[5] The major increase in PSUs is in the urban areas because of increase in number of dwellings in some PSUs or reclassification of urban areas. The boundaries of old PSUs were changed in such a way that on average each PSU consisted of 200 to 250 households wherein only few entirely new PSUs have been created. These minor adjustments in the sampling frame are not likely to affect the representativeness of the sample.

(b) Seasonality: In case of surveys such as the Household Integrated Economic Survey (HIES) and Labour Force Survey (LFS), sample from the selected PSUs, is grouped into four equal parts and each part of the PSUs is enumerated in one quarter. By distributing the sample in the whole year, both the HIES and LFS take care of the seasonal variations. The data sets generated by these surveys hence are representative for the whole year. However, the 1998-99 PSES was completed in only four months, March 1999 to June 1999 and as such may suffer from seasonality. While these variations are not likely to affect the major part of the data set generated by the PSES, it may have affected some variables such as employment and health. Seasonal unemployment particularly is induced by fluctuations in the demand for labour. The demand for agricultural workers generally declines after the planting season and remains low until the harvest season. The PSES was carried out at the time of wheat harvesting in most part of

[5]Whether or not this change in the total number of PSUs has affected the representativeness of the PSES sample remains unclear.

the country and cotton sowing in Punjab and Sindh provinces. The seasonal variations may also affect the incidence of certain diseases; for example, diarrhoeal morbidity in the rainy season as compared with the other seasons is usually higher [Arif and Ibrahim (1998)]. Since the 1998 PSES sample was not drawn during the whole year, the information on the incidence of those diseases that are likely to be affected by the seasonal variations may not be representative for the survey year.

(c) Non-deployment of Female Interviewers: The FBS did not deploy female interviewers. This non-deployment may have had adverse implications in particular in case of the demographic and health variables. Male respondents from the household were relied upon for data pertaining to live births, anthropometric measures of female children and food habits of the pregnant women. The likelihood, that quality of data under these probing procedures may have been somewhat impaired cannot be ruled out. PIDE in the second round of the survey would, therefore, resort to outsourcing of the field operation only under exceedingly exceptional circumstances and that too under extensive supervision of PIDE staff.

PSES Sample Characteristics

Since the 1998-99 PSES survey data have been subjected to detailed analysis to assess the status of poverty, unemployment, mortality and nutrition, which are summarised in the next section; only a brief description of the sample characteristics is made in this section. These characteristics have also been compared in Table 2 with the characteristics as reported by the 1998-99 Pakistan Integrated Household Survey (PIHS). Of the households covered in these two surveys, household size appears to be roughly similar: 6.5 in the PSES and 6.8 in the PIHS. However, the proportion of female-headed households is higher (8.2 percent) in the PSES than in the PIHS (6.5). Females who head their households in Pakistan are mainly widowed/divorced or they are heading households because their husbands are working somewhere else within the country or overseas.

The illiteracy rate was also similar in the two surveys: 44 percent in the PSES and 45 percent in the PIHS. A perusal of the primary school enrolment data suggests

substantial male/female differentials. In the PSES, the enrolment rate was reported to be 75 percent for males and 55 percent for females. In comparison, the PIHS displayed relatively high enrolment rates for both males and females, 76 and 60 percent respectively.

The PSES data show that the rate of open unemployment in 1998-99 was 6 percent. While the PIHS data set does not provide information on labour force, the unemployment rates estimated from the PSES have been compared in Table 2 with the 1996-97 LFS, which shows unemployment rate (6.1 percent), again very close to the results of the PSES. Unemployment ratio was higher in urban areas as compared to rural areas. However, the PSES shows relatively higher level of urban unemployment (8.0 percent) than the level as shown by the LFS (7.2 percent). The gender specific unemployment reflect higher incidence for females than for males (not show in Table 2). Gender differentials are more pronounced in urban areas. The average number of earners is 1.5 in the PSES and 1.6 in the 1996-97 HIES.

Information relating to facilities such as water, toilet and sanitation reflect a widespread deprivation. For instance, only 37 percent of the PSES sampled households have an access to tap water. According to the PIHS, this percentage was as low as 20 percent. Similarly, less than half of the households have the facility of toilet with flush. About one-fifth of the households, according to the PSES, were connected with underground drain. The corresponding percentage was 16, as shown by the PIHS data sets (Table 2). In short, it appears that the PSES has generated data set comparable with the other nationally representative data sources.

Table 2

Sample Characteristics of the PSES, Compared with the PIHS, 1998-99

Characteristics	PSES 1998-99	PIHS 1998-99
Average Household Size	6.5	6.8
Household Headed by Female (%)	8.2	6.5[a]
Literacy Rate (Both Sexes) (%)	44.0	45.0
Primary School Enrolment		
Male	67.1	76.0
Female	54.9	60.0
Mean Number of Earners per Household	1.5	1.6[b]
Unemployment Rate (%)		
Rural	5.1	5.6[c]
Urban	8.0	7.2[c]
Total	6.0	6.1[c]
Source of Drinking		
Water Tap	37.0	20.0
Hand Pump/M. Pump	58.4	75.0
Well	4.4	3.0
Others	0.2	2.0
Toilet Facilities		
Toilet with Flush	41.8	44.0
Toilet without Flush	10.9	2.0
No Toilet	47.3	54.0
Sanitation (Connected with)		
Under Ground Drain	22.2	16.0
Open Drain	30.6	34.0
No System	47.2	50.0

Note: [a]refers to the 1996-97 Pakistan Fertility and Family Planning Survey (PFFPS).

[b]refers to the 1996-97 Household Integrated Economic Survey (HIES).

[c]refers to the 1996-97 Labour Force Survey (LFS).

Section III
STUDIES BASED ON THE 1998-99 PSES

Profile of Poverty in Pakistan: 1998-99

A major contribution of the PSES 1998-99 is the provision of data set to facilitate the estimation of poverty levels during the late 1990s. It may be noted that the latest available HIES data to estimate levels of poverty pertained to 1993-94. In this section poverty levels estimated for 1998-99 and their comparison is reported.[6]

Poverty Line

The study is based on absolute poverty line wherein two main methods are applied to compute the poverty line, the food energy intake (FEI) and the cost of basic needs (CBN). Poverty lines have been determined on the basis of estimated cost of food consistent with a calorie intake of 2550 per adult equivalent per day of rural areas. A daily intake of 2295 calories per adult equivalent is considered for urban areas of the country. The recommended level of calorie intake was converted into the requisite food expenditure using the following regressions results:

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

Where C is a daily calorie-intake per adult equivalent and E is the monthly food expenditure per adult equivalent. Separate poverty lines were constructed for rural and urban areas. While constructing the poverty lines, data were cleaned up for outliers: households which had a food share below 5 percent and greater than 90 percent of total consumption, as well as those with calorie intake of less than 1,000 calories per person and more than 5,500 calories per person were excluded from the analysis. They constitute less than 3 percent of the 1998-99 PSES sample. However, in determining the incidence of poverty all households were included.

[6]For details see the study "Profile of Poverty in Pakistan: 1998-99" by S. K. Qureshi and G. M. Arif.

At the national level, the poverty line so derived is (Rs 361.74) per month (Table 1). It is worth reporting that this poverty line shows the amount needed to meet the food requirement only. It is about 51 percent of the average per capita total expenditure. The basket of 'basic needs' used in this study consists of food, clothing, housing, health, education, transportation and recreation. The cost of food component of this basket was equal to the food poverty line. The cost of non-food elements of the basket was determined by using three approaches. Under approach 1, it is assumed that those households whose food expenditure were equal to the food poverty line would also satisfy their other basic needs. The average expenditure of these households on non-food components of the basket was taken as the estimated cost of non-food items. In approach 2, the average expenditure of non-food items of those households whose food expenditures was 5 percent higher or lower than the food poverty line was taken as the estimated cost of non-food component of the basket of 'basic needs'. In approach 3, the cost of non-food items was estimated from the average expenditure of those households whose food consumption was 10 percent higher or lower than the food poverty line. Food and non-food expenditures were added up to get the poverty lines based on basic needs approach. Separate lines were computed for rural and urban areas. Differences in the poverty lines (FEI and CBN) are large. On average the poverty line based on the basic needs approach 1 was 1.9 times the food poverty line. In the case of urban areas it increased to 2.3 times the food poverty line, reflecting high cost of living in urban areas of the country.

Table 3

Poverty Lines (Per Capita) Based on Calorie Intake and Basic Need Approaches by Rural and Urban Areas

Poverty Lines	Year	Approach	Pakistan	Rural	Urban
Food Poverty	1998-99 PSES	361.74	353.73	378.77	
	1993-94 HIES	206.80	202.20	216.60	
Basic Needs	1998-99	Approach 1	692.26	672.50	874.13
Poverty Lines	HIES	Approach 2	705.96	676.31	898.94
		Approach 3	715.32	686.38	870.62

Source: Qureshi and Arif (1999).

Poverty Incidence, 1998-99

The incidence of poverty in 1998-99 at the national level as well as for rural and urban areas is presented in Table 4. At the national level the incidence of food poverty was approximately 33 percent. It means that about one-third of the sampled households were living below the food poverty line. The incidence of food poverty was higher in rural areas, about 35 percent, than in urban areas, 26 percent. Table 4 also provides information on the incidence of poverty based on the alternative higher poverty lines as shown in Table 3, reflecting the basic needs approaches. According to the approach 1 as defined above, at least 35 percent of households were below the poverty line in 1998-99. Under the approach 3, the level of poverty increased to 38 percent. The incidence of poverty was higher in rural areas than in urban areas, a result in tandem with the one based on food poverty. This indicates that a large proportion of households in Pakistan are unable to meet their basic needs including food, clothing, housing, education and health. In this context the rural households are particularly vulnerable.

Table 4

Proportion of Poor Household (Head-count Ratios) by Rural and Urban Areas, 1998-99

Poverty	Approach	Pakistan	Rural	Urban
Food Poverty Method		32.6	34.8	25.9
Poverty Based	approach 1	35.2	39.8	31.7
On Basic Needs Method	approach 2	36.6	40.3	33.0
	approach 3	37.9	40.8	31.7

Source: Qureshi and Arif (1999).

Poverty Trends

Inter-temporal comparison of poverty levels at national or sub-national levels suffers from number of limitations. First and foremost poverty lines used to estimate poverty levels in principle happen to be arbitrary. Equally problematic is the specification of poverty lines used in different studies in terms of food expenditure, or income per adult equivalents. From the same data set different specification can yield different estimates. In case of Pakistan, for instance, most of the studies prior to 1987-88 used income equivalences. Secondly, the type of data used also matters. The estimates based on

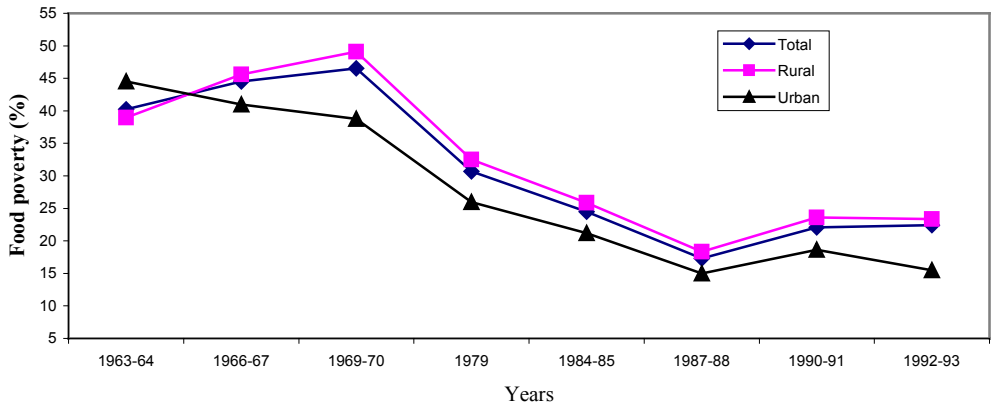
household level data can be dissimilar from the ones based on published HIES even if one uses the same poverty line. It may be noted that household data contained in HIES were generally used since early 1980s. Finally, time trend analysis can also suffer from the fact that sample surveys of FBS are not in fact random sample survey as is often believed. The design and clustering bears upon the randomness [Howes (1997)]. While interpreting poverty trends in Pakistan the limitations mentioned above need to be taken into consideration.

In general, there appears to be a consensus amongst the studies conducted for the period 1963-64 – 1987-88. Poverty levels increased between 1963-64 and 1969-70 overall as well as in rural areas, while it declined in urban areas, but in the 1969-70 – 1979 period, poverty declined in both rural as well as urban areas. This declining trend in poverty continued till 1987-88. For the period since 1987-88 there has been a lack of consensus among researchers. For instance, Malik (1992) and Amjad and Kemal (1999) using income equivalences for poverty estimation report worsening poverty situation during the 1987–93 period. Percentage of poor (Head count ratio) rose from 17.3 percent in 1987-88 to 22.4 percent in 1992-93 according to the latter study (Figure 1).

Jafri (1999) on the other hand using poverty line in terms of food expenditure per adult equivalent found a persistent decline in poverty levels during 1987-88 and 1992-93 with a marginal rise during 1993-94 (Table 5). The findings of a recent study of the World Bank are similar to the findings of Jafri, and showing further that poverty declined again in 1996-97 [World Bank (2000)].

An important finding of the study by Qureshi and Arif conducted under MIMAP pertains to resolution of the above-cited controversy. The study demonstrates that this divergence in poverty trends primarily owes to the peculiar adjustment made by Jafri. Using the same procedure and poverty line in terms of food expenditure, the authors found that Jafri's results for 1993-94 present a serious underestimate thereby rendering his entire analysis of poverty trend somewhat suspect. Subject to availability of data the authors must try to reconstruct the temporal profile of poverty since 1987-88 using Jafri's procedure. This will facilitate a trend analysis based on food poverty to be compared with the one based on income.

Fig. 1. Trends in the Incidence of Poverty.



Source: Amjad and Kemal (1997).

Table 5

Trends in Food Poverty, 1984-85 — 1998-99

Year	Pakistan	Rural	Urban
1986-87	26.9	29.4	24.5
1987-88	26.4	29.9	22.7
1990-91	23.3	26.2	18.2
1992-93	20.3	22.5	16.8
1993-94	20.8	24.4	15.2
1993-94[a]	23.6	26.3	19.4
1998-99[a]	32.6	34.8	25.9

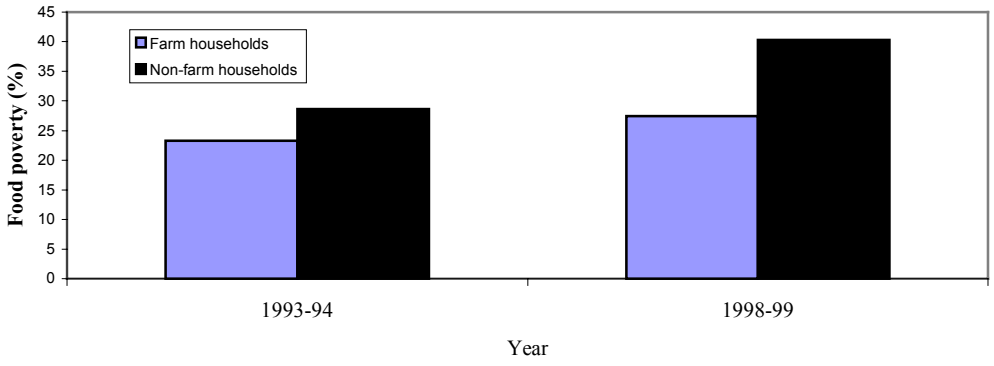
Source: Jafri (1999).
[a]Qureshi and Arif (1999).

Understanding Poverty Differentials and Correlates

Attempts aimed at assessing the correlates of poverty, generally household or head of household characteristics have also been made in the paper. A major innovation, however, is the distinction between farm and non-farm households in rural areas. It would have been instructive if the urban sample had been classified in terms of metropolitan, large and small cities. The results based on food poverty with farm/non-

farm distinction provided in Figure 2 highlight the plight of non-farm households that they suffered more than the farm households during 1994-98 is also borne out under the basic need approach.

Fig. 2. Incidence of Food Poverty in Pakistan by Farm Status of Rural Household.



Source: Qureshi and Arif (1999).

Multivariate regression analyses were carried out to identify the determinants of poverty. Two models were estimated: model 1 focused on food poverty; and model 2 on the basic needs approach. The dependant variable in these models takes the value of one if poor and zero otherwise. These models had ten explanatory variables. As the dependant variable in both the models was binary, logistic regression was used. The results (odds ratios) are presented in Table 6. A logit estimate was considered to be significant if it was at least double the associated standard error value. At the bottom of each column of the table are the relevant number of cases and the value of –2 log likelihood.

Table 6

Logistic Regression Effects of Predictors on Being Poor *(Odds Ratios)*

Predictors	Model 1 Food Poverty	Model 2 Basic Needs
Age of the Head of Households (Years)	0.98*	0.98*
Sex of the Head of Household (Male = 1)	0.97	0.99
Household Size		
1-4	1.00	1.00
5-6	2.78*	2.93*
7-8	4.62*	5.81*
9+	8.34*	10.86*
Education of the Head of Household		
Illiterate	1.00	1.00
Primary (1-5 Years Schooling)	0.74*	0.77*
Middle (6-9 Years Schooling)	0.54*	0.45*
Matriculation & above (10+ Years Schooling)	0.24*	0.22*
Technical Education (Yes = 1)	1.12	0.84
Farm status of households (Farm = 1)	0.55*	0.61*
Duration of Continuous Residence (Head Only)		
Since Birth	1.00	1.00
< 10 Years	1.08	0.99
≥ 10 Years	0.96	0.85**
Place of Residence (Urban = 1)	0.56*	0.31*
Number of Earners in a Household	0.89*	0.96
Remittances (Receiving = 1)	0.69*	0.63*
–2 Log Likelihood	3963	3852
(N)	3544	3544

Source: Computed from the 1998-99 PSES primary data set.

* Shows significance at 5 percent or lower level of confidence.

** Shows significance at 10 percent or lower level of confidence.

Table 6 suggests that the results of the two models are similar. Variables (or categories of variables) that turned out to be statistically significant in model 1 were also significant in model 2 except that duration of continuous residence which was insignificant is model 1 turned out to be significant at 10 percent level in model 2. Another variable, the number of earners that was significant in model 1 did not turn out to be significant in model 2. The results suggest that the age of the household head reduces the probability of the household being poor. This effect is statistically significant. Consistent with other studies [see, for example Baulch and McCulloch (1998)], the sex of the household head had no significant effect on poverty status. A household is more likely to be poor if it has a large number of members. More precisely households with 9 or more members were 8 times more likely than households with 4 or less members to be poor. The number of earners had a significant and negative impact on the probability of being poor.[7] It appears from the effects of household size and the number of earners on the poverty status that dependency

[7]According to another study of the MIMAP project carried out by Zafar Mueen Nasir (1999), poverty was also associated with irregular work.

ratio may be quite high in large households. Schooling of household head was very influential on the probability of poverty. If the head of the households had at least 10 years of schooling, it was 0.24 times less likely to be poor than the illiterates. Primary and middle level education also had a significant negative effect on the probability of being poor. Table 6 further shows that farm status of household had an independent effect on the poverty status. Farm households are less likely than non-farm households to be poor. The residence in urban areas was negatively associated with the poverty status. Finally, households that received remittances from abroad or within the country were less likely than non-receiving households to be poor.

Poverty and Child Mortality

The nexus between poverty and child mortality is rather important even though the latter very often is regarded to be a component of vector of poverty.[8] Using the PSES data, the nature of relationship child mortality bears with well-known correlates has also been assessed. About 26 percent of mothers covered by survey reported the incidence of child mortality, and it was higher in rural areas than in the urban areas. Infant mortality rate around 95 per thousand during the late 1990s is suggestive of little improvement made by the initiatives under Social Action Programme initiated in 1992-93.[9]

Mortality differentials by households and individual (mother's) characteristics have been examined through cross-tabulations. The analysis was extended through the use of Multiple Classification Analysis (MCA) wherein the dependent variable is the number of children died. The analysis suggests that incidence of child mortality is higher among working than non-working women (Table 7). Less educated mothers and poor households (in urban areas only) similarly display higher level of incidence than their counterparts.[10] Housing conditions (person per room), quality of water, and type of toilet facilities used by households generate wide mortality differentials.

As reflected by the results of MCA, most of the predictor variables have expected signs but distinction between rural and urban sample is reflective of region specific relationships. For instance, while poor households are afflicted with higher incidence of child mortality the relationship is insignificant in case of rural areas. Similarly, the relationship between mother's education, sources and cleanliness of water and faecal contamination and mortality appears to be region specific.

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[8]By for details see the study 'Poverty and Child Mortality' by Syed Mubashir Ali.

[9]In the early 1990s the infant mortality rate was also around 95 percent.

[10] Effect of food poverty on the incidence of child mortality in rural areas was insignificant.

Table 7

Multiple Classification Analysis of Child Mortality and Selected Predictor Variables Controlling for Age and Age at Marriage

Variable + Category	N	Predicted Mean: Unadjusted Values	Eta	Adjusted Values	Beta
			Pakistan		
Phone Connection					
Yes, Connection	323	0.1439		0.2580	
No, Connection	2600	0.3428	0.112	0.3286	0.040
Current work					
Working	553	0.4790		0.4501	
Not Working	2370	0.2839	0.137	0.2906	0.112
Mother's Education					
Uneducated + 4 Classes Passed	2297	0.3657		0.3411	
Primary and Above	626	0.1560	0.155	0.2463	0.070
Room Crowding					
≤2 Persons per Room	706	0.2370		0.2620	
> 2 – 4 Persons per Room	1354	0.3270		0.3314	
> 4 Persons per Room	863	0.3796	0.094	0.3522	0.062
Housing Sanitation					
Available	424	0.1822		0.2671	
Not Available	2499	0.3443	0.103	0.3299	0.040
Food Poverty					
Below or on Poverty Line	1116	0.3725		0.3421	
Above Poverty Line	1807	0.2889	0.073	0.3076	0.030
Multiple R					0.290
Multiple R Squared					0.084
			Urban		
Phone Connection					
Yes, Connection	261	0.1426		0.2375	
No, Connection	782	0.3064	0.136	0.2747	0.031
Current Work					
Working	86	0.2873		0.2744	
Not Working	957	0.2634	0.013	0.2646	0.005
Mother's Education					
Uneducated + 4 Classes Passed	603	0.3634		0.3135	
Primary and Above	440	0.1310	0.221	0.1994	0.108
Room Crowding					
≤2 Persons per Room	303	0.1641		0.2060	
>2 – 4 Persons per Room	478	0.2988		0.2973	
>4 Persons per Room	262	0.3215	0.126	0.2757	0.075
Housing Sanitation					
Available	404	0.1793		0.2374	
Not Available	639	0.3198	0.132	0.2831	0.043
Food Poverty					
Below or on Poverty Line	362	0.3837		0.3405	
Above Poverty Line	681	0.2025	0.166	0.2255	0.105
Multiple R					0.341
Multiple R Squared					0.116
			Rural		
Electricity Connection					
Yes, Connection	1246	0.3465		0.3583	
No, Connection	650	0.3609	0.012	0.3381	0.017
Current Work					
Working	470	0.5153		0.4999	
Not Working	1426	0.2974	0.164	0.3025	0.149
Mother's Education					
Uneducated + 4 Classes Passed	1709	0.3665		0.3598	
Primary and Above	187	0.2139	0.079	0.2749	0.044
Room Crowding					
≤2 Persons per Room	408	0.2882		0.2922	
>2 – 4 Persons per Room	887	0.3442		0.3522	
>4 Persons per Room	601	0.4050	0.074	0.3905	0.061
Housing Sanitation					
Available	20	0.2414		0.2544	
Not Available	1876	0.3526	0.020	0.3525	0.017
Food Poverty					
Below or on Poverty Line	750	0.3704		0.3553	
Above Poverty Line	1146	0.3390	0.027	0.3489	0.005
Multiple R					0.268
Multiple R Squared					0.072

Source: The 1998-99 PSES.

Poverty and Labour Market Linkages

The linkages between poverty and labour market outcomes such as unemployment and under-employment are examined in this section.[11] Household income distribution worsened during 1990s though the rise in Gini-coefficient is marginal between 1993-94 (0.40) to (0.41) in 1998-99 (Table 8). Household income distribution appears to have worsened more in rural areas than in urban areas, Gini coefficient in rural areas increased from 35 to 37. While the share of the lowest 20 percent of the households has declined, those at the top experienced a gain, which resulted into rising highest to lowest income ratio.

Table 8

Household Income Distribution by Region

	Area	Household Gini Coefficient	Household Income Shares		Ratio of Highest 20% to Lowest 20%
			Lowest 20 %	Highest 20 %	
1993-94	Pakistan	0.40	9.2	40.2	4.4
	Urban	0.40	9.4	40.9	4.4
	Rural	0.35	10.6	34.6	3.3
1998-99	Pakistan	0.41	8.1	42.3	5.2
	Urban	0.41	8.2	42.5	5.2
	Rural	0.37	7.2	36.2	5.0

Source: HIES 1993-94, PSES 1998-99.

Real wages of all types of workers (public as well as private) at best reflect stagnation during the decade under review. This is despite the fact that there was an increase in per capita income, though low compared to earlier periods, but living conditions of the wage earners in the society deteriorated.

Time trend on labour market indicator shows higher level of activity rate yielded than the previous labour force surveys.[12] However, unemployment rate over time suggests worsening labour market situation (Table 9). Unemployment rates provided by PSES and LFS 1996-97 are higher than the previous surveys. Underemployment, defined to be those who work less than 35 hours per week, displays similar trends. An examination of the age-specific un- and under-employment contained in PSES is suggestive of the fact that teenagers and youth suffer from higher level of unemployment than the remaining age cohorts.

[11] For detail see the study 'Poverty and Labour Market Linkages' by Zafar Mueen Nasir.

[12] It could be statistical artifact given the variation in the reference period and seasonality factor associated with PSES or that it could net the labour force participation more accurately.

Table 9

Regional Distribution of Unemployment Rates

Year	Pakistan	Urban	Rural
1992-93	4.7	5.8	4.3
1993-94	4.8	6.5	4.2
1994-95	5.4	6.9	4.8
1996-97	6.1	7.2	5.7
1998-99	6.4	8.9	5.0

Source: LFS 1992-97 and PSES 1998-99.

Poverty and labour market interlinkages are investigated through disaggregation of household population and workers by poverty status. There is an association between inactivity and poverty but mostly in the rural areas. Similarly, the labour force belonging to poor households exhibited higher level of unemployment and underemployment than their counterparts in non-poor households. Controlling for the poverty status of the households, the association between employment structure and poverty suggests that workers from poor households are disproportionately absorbed in informal and farm sector whereas the reverse holds for relatively richer households who are employed in formal sector, government as well as non-government (Table 10).

Table 10

Percentage Distribution of Workers by Establishments

	Poor			Non-Poor		
Establishments	Pakistan	Urban	Rural	Pakistan	Urban	Rural
Farm	43.62	4.45	50.26	37.69	5.09	60.75
NF.NFE <10	37.96	68.42	34.38	25.11	43.37	24.58
NF.NFE > 10	5.78	7.69	4.93	17.44	24.88	3.56
Govt.	4.30	6.75	3.14	12.10	16.14	5.47
Other	8.34	12.69	7.30	7.66	10.52	5.64

Source: The PSES 1998-99.

Nutritional Status in Pakistan

The current nutritional status of pre-school children in the country has been carried out by taking three common indicators, namely, stunting (height-for-age), underweight

(weight-for age) and wasting (weight-for-height).[13] In order to examine the status of child malnutrition, a comparison with a reference child of the same age and sex is made.[14] In this regard, Z-score method is widely recognised to analyse the anthropometric data. Z-score is calculated by using the median value and standard deviation (SD) of the reference population. The percentage of children whose Z-score falls below a defined cut-off point i.e., –2SD from the median of the international reference population is identified malnourished children.

Owing to non-deployment of female interviewers, the male respondents from the households were relied upon for the anthropometric measures pertaining to female children. In addition, the data have some limitations relating to age misreporting of children and a probable inclusion of children with oedema as no detailed information was collected on oedema (swelling of the lower limbs), which may have influenced the estimation of Z-scores. Out of the total number of 3256 children under five years of age the data could be used in only 1614 children due to the non reporting of month of birth.

The results of the study suggest that 38.8 percent children are underweight, 60.1 percent stunted and 9.5 percent are wasted. This indicates that a substantial proportion of children are living in poor socio-economic conditions at high risk to disease exposure. Mean and standard deviation of height and weight by age groups from four surveys pertaining to different time periods are reported in Table 11. An improvement in mean weight and deterioration in mean height for all ages over time appears to be the major finding. This table shows an improvement in height after the age of 12 months[15] while a decline in mean weight of children under ages 6 months. This not only implies the high incidence of malnutrition among children of this age group but also indicates the prevalence of malnutrition in their mothers. All other age groups show an improvement in mean weight over time.

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[13] For detail see the study 'Nutritional Status in Pakistan' by S.K. Qureshi, Hina Nazli and G. Y. Soomro.

[14] The growth reference of the United States National Center for Health Statistics is commonly used as basis for this comparison.

[15] It is observed that the height of nearly 30 percent of the children fall in age groups 0 to 6 months is less than 50 centimetres whereas height of all the children of age group 7 to 12 is less than the reference height of that age group.

Table 11

Mean and Standard Deviations of Height and Weight by Age Groups

	Weight (kgs)				Height (cms)			
Age Group	1976-77	1985-87	1990-91	1998-99	1976-77	1985-87	1990-91	1998-99
All	9.85	9.93	10.07	10.26	77.81	78.28	78.76	77.6
	(3.39)	(3.64)	(3.3)	(3.63)	(13.99)	(14.94)	(13.25)	(15.71)
0–5 mons.	5.09	4.87	5.21	5.13	56.65	56.82	58.3	53.89
	(1.68)	(1.83)	(1.66)	(1.4)	(7.27)	(8.54)	(7.24)	(6.19)
6–11 mons.	6.69	7.13	7.33	7.54	64.35	65.84	66.93	61.78
	(1.85)	(2.5)	(1.85)	(1.52)	(6.9)	(10.21)	(6.72)	(4.94)
12–23 mons.	8.13	8.7	8.81	9.35	69.93	72.44	73.12	74.19
	(2.06)	(2.63)	(1.87)	(1.53)	(7.26)	(9.78)	(6.48)	(6.88)
24–35 mons.	9.86	10.23	10.62	11.49	78.16	78.93	80.85	83.71
	(2.19)	(2.6)	(1.99)	(2.0)	(8.31)	(9.93)	(6.9)	(5.36)
36–47 mons.	11.41	11.68	12.19	12.56	85.28	85.69	87.34	89.53
	(2.23)	(2.7)	(2.23)	(2.43)	(8.49)	(10.29)	(7.95)	(5.79)
48–59 mons.	13.4	13.09	13.56	14.77	92.9	92.47	93.8	97.38
	(2.52)	(2.84)	(2.23)	(2.19)	(9.44)	(10.33)	(8.21)	(4.44)

Source: Malik and Malik (1993), PSES (1998-99).

Figures in parenthesis are standard deviations.

Table 12 presents a comparison of the child current malnutrition with that in 1976-77. This table also indicates an improvement in the incidence of malnutrition over time and a decline in underweight children from 52 percent in 1985-87 to 38.8 percent in 1998-99. Stunting or height-for-age indicates chronic or long-term malnutrition. Table 12 shows a decline in the percentage of stunted children during 1980s. However, in 1990s, this indicator shows an increasing trend. It has increased to 50 percent in 1990-91 and further to 60.1 percent in 1998-99. This indicator is associated with poor socioeconomic conditions and increased risk of frequent exposure to illness. The high incidence of malnutrition can partly be explained by the increasing trend of poverty in 1990s [Qureshi and Arif (1999)]. The increased level of food poverty coupled with unfavourable socioeconomic conditions and inappropriate feeding practices has resulted in an increase the incidence of chronic malnutrition.

Table 12

Trends in the Prevalence of Malnutrition

(%)

Data Year	Height-for-age (Stunted)	Weight-for-height (Wasted)	Weight-for-age (Underweight)
1976-77	42.9	8.6	–
1985-87	41.8	10.8	51.5
1990-91	50.2	9.2	40.4
1998-99	60.1	9.5	38.8

Source: Micronutrient Survey (1977).
National Nutrition Survey (1988).
Pakistan Demographic and Health Survey (1990-91).
PSES (1998-99).
– implies not available.

The effect of various socio-economic factors on the growth pattern of children less than five years of age using regression framework has also been examined. Mother's education and the proxy for modernisation effect appeared to be consistent with the *a priori* expectation about their negative impact on malnutrition. It highlights the importance of breast-feeding in reducing short-term malnutrition. Interestingly, the role of per capita caloric intake was insignificant in this context. This is rather esoteric that household food security is irrelevant for the nutritional status of the children. This aspect needs to be examined further and may have been the result of the relatively poor quality of these data, as already discussed.

Section IV
MODELLING EXERCISES

Salient Features of Social Accounting Matrix of Pakistan for 1989-90: Disaggregation of the Households Sector

The modelling component of the MIMAP project has produced five studies. The first study entitled "Salient Features of Social Accounting Matrix of Pakistan for 1989-90: Disaggregation of the Households Sector" was carried out by Zafar Iqbal and Rizwana Siddiqui. It explains salient features of social accounting matrix (SAM) with possible disaggregation of urban and rural households based on income levels. Within SAM framework, the preferred classifications of various accounts are undertaken according to the policy objectives and later model building. Furthermore, SAM 1989-90 also provides the analysis of impact multipliers of socio-economic linkages in Pakistan's economy. The multipliers for all endogenous accounts show degree of integration of different accounts. The study also provides backward and forward linkages in production, consumption, distribution and accumulation accounts of the economy.

Distributional Impact of Structural Adjustment on Income Inequality in Pakistan: A SAM-based Analysis

The second paper entitled "Distributional Impact of Structural Adjustment on Income Inequality in Pakistan: A SAM-based Analysis" was carried out by Rizwana Siddiqui and Zafar Iqbal. It uses a simple static fixed-price SAM-based model to analyse distributional outcome of various structural adjustment policies on incomes of rural and urban households in Pakistan. Simulation exercise is performed using fiscal policies i.e., reduction in subsidies, reduction in total public expenditure, reduction in public expenditure on education and health.

Critical Review of Literature on Computable General Equilibrium Models

In the third paper, entitled "Critical Review of Literature on Computable General Equilibrium Models", Zafar Iqbal and Rizwana Siddiqui reviewed previous endeavours

carried out in Pakistan and elsewhere. While evaluating the CGE models the authors caution as the selection of benchmark year and the quality of data and models built on these data. Also the authors point out that CGE models are static in character and grounded in neo-classical framework.

Tariff Reduction and Functional Income Distribution

The impact of tariff reduction, a major trade liberalisation policy, on functional income distribution to households in examined in two more studies. The first study by Zafar Iqbal and Rizwana Siddiqui, entitled "Tariff Reduction and Functional Income Distribution" suggests that a tariff reduction by 80 percent on industrial imports results into worsening of income distribution because the income of poor declines relatively more than the rich. A. R. Kemal, Rehana Siddiqui and Rizwana Siddiqui at disaggregated levels further extended this line of enquiry in their paper entitled, "Distributional Impact of Tariff Reduction in Pakistan: A CGE-based Analysis". The following is based on the latter study.

This exercise explores functional and household's personal income distribution across four different income groups in both the urban and rural areas[16]. Three different simulation exercises are conducted to analyse the impact of trade liberalisation policies on the performance of the economy as a whole and on income accruing to households in different income groups from different sources, which ultimately affects consumption pattern and welfare of households. Utilising the framework developed by Decaluwe *et al*. (1996), this study explores the impact of tariff reduction on income distribution. For this purpose the study by Siddiqui and Iqbal (1999) has been extended in three directions. First, the households are disaggregated by four income categories in urban and rural areas. Second, the Cobb-Douglas production framework is replaced by Constant Elasticity of Substitution (CES) production function. Third, three simulation exercises are conducted for analysing the impact of 40 percent, 60 percent and 80 percent reduction in tariff duty on industrial imports.

It is well known that difference in assumptions and closure rule play a very important role in market adjustment mechanism. Adjustment to external shock through

[16] This analysis will be extended to the disaggregated households i.e., four income groups for urban and rural areas of Pakistan.

price change, devaluation or through fiscal retrenchment can be different for an economy with different degree of financial and trade liberalisation. Each agent encompasses constraints that country may face during adjustment. Simulation exercises show that assumptions about the macro economic closure and behavioural parameters matter a great deal in determining the productive and distributive effects of a shock and a country's adjustment to that shock.

Following assumptions are made in the paper:

1. Full employment
2. Labour is mobile across sectors while capital is sector specific and does not move across sectors.
3. Domestically produced goods absorbed in the domestic market are imperfect substitutes of imports.
4. World import/export prices and current account balance is exogenously determined.

Computable General Equilibrium Model for Pakistan

This neo-classical framework contains six blocks with more than two hundred equations. Exchange rate acts as numeraire. The theoretical background of the equations in each block of CGE model is discussed below:

1. **Production Sector:** Domestic production is disaggregated into five sectors, viz., agriculture, industry, health education and others. Like most empirical studies, gross output has separable production function for value added and intermediate consumption, CES production functions for value added and Leontief technology between intermediate and value added and also within intermediates.
2. **Factor Demand:** Assuming perfect competition and market clearing, labour demand function for *i*th sector is derived from CES production function. Capital is sector specific and it is assumed to be given in the short run. Changes in factor prices play important role in explaining the issue of functional income distribution.
3. **Foreign Trade Sector:** In this sector, the model has equations for exports and imports. It is assumed that domestic sales and exports with the same sectoral

classification represent goods of different qualities. Constant Elasticity of Transformation CET function describes the possible shift of sectoral production between domestic and external markets. For import function, we assume that domestically produced goods sold in the domestic market are imperfect substitute of imports. Constant Elasticity of Substitution (CES) import aggregation function presents demand for composite goods (imported and domestically produced goods).

4. **Income, Saving and Consumption:** Institutions receive income from different sources. The endowment of primary factors and their rental values determine the institutional income from factors of production. All income of institutions is used for consumption and rest is saved. Relevant equations are given in income and saving block of the model.
5. **Households:** The functional distribution of income is analysed among different income groups and institutions. It shows that all wage income accrues to households. Similarly households receive share of capital income from total capital income from different activities. They also receive income from firms as dividends, transfers from government as social security benefits, and transfers from the rest of the world.
6. **Firms:** Firms receive income from operating surplus and transfers from government. Transfers from the government are given exogenously. Its expenditure includes tax payments to the government, dividends to *h*th households, and transfers to the rest of the world. While residual is saved.
7. **Government:** Third institution i.e., government, receives income from the following sources, i.e., direct taxes (income tax from households, corporate taxes from firms), indirect taxes (from production sector), import duties (tariff), export duties (subsidies), and transfers from the rest of the world. Government saving is calculated as a residual after subtracting consumption expenditure from total revenue.

Findings

The simulation exercises suggest that the impact of reduction in tariff rates lowers the price of imported goods, which in turn affect the domestic relative output price and input price structure and hence supply and demand of all commodities. The tariff

reduction increases the gap between the rich and poor as the results show that share of capital and labour in GDP has increased and declined, respectively. Consequently, Gini coefficients show worsening income distribution. But impact on income distribution is marginal (Table 13).

Table 13

Factors Share in GDP and Income Distribution

	Before Simulation	After Simulation
Factors Share in GDP		
Labour Share	0.28	0.27
Capital Share	0.72	0.73
Income Distribution		
Gini-coefficient		
Pakistan	0.3911	0.3913
Urban	0.3784	0.3791
Rural	0.4005	0.4008

The results also reveal that consumption of each household group has increased. But increase in consumption of rich is greater than the increase in consumption of poor. This implies that the policy change favours rich class and benefits more to rich as compared to poor in terms of income as well as consumption. Decline in government revenue is responsible for low investment, which ultimately affect economic activities adversely (Table 14).

Table 14

Share of Different Sectors in GDP

	Contribution to GDP	
Sectors	Before Simulation	After Simulation
Agriculture	0.2844	0.2852
Industry	0.2006	0.1995
Health	0.0080	0.0081
Others	0.4838	0.4835
Education	0.0232	0.0238

Section V
OTHER RESEARCH STUDIES

During the phase I of the MIMAP project, three more studies concerning poverty and rural credit and poverty alleviation policies were also undertaken. These include.

1. "Poverty and Rural Credit: The Case of Pakistan" by S. J. Malik.
2. "Rural Poverty and Credit Use: Evidence from Pakistan" by Sohail J. Malik and Hina Nazli.
3. "Government's Poverty Alleviation Policies: An Overview" by S. K. Qureshi.

Poverty and Rural Credit: The Case of Pakistan

This study is based on household-level survey data from rural Pakistan. The study indicates that credit use has a direct and positive welfare impact through efficient consumption smoothing in addition to facilitating increased farm productivity. An analysis of the source structure of rural credit across households in different expenditure quintiles reveals that (i) both the amount and the number of loans from institutional sources increases markedly from the lowest to the highest expenditure quintiles; (ii) proportion of loans from institutional sources as a percentage of loans from all sources indicates the reliance of the poorer households on non-institutional sources; (iii) poorer households rely to a much greater extent on loan from other private sources; and (iv) friends and relatives are an important source of credit. The study also shows that the institutional credit from different sources has been unequally distributed across the provinces over time. The large farmers generally dominate the access to this highly subsidised credit. The loan limit and the overall institutional credit disbursement process need to be reviewed. The study suggests that there is a need to make the procedure for obtaining a loan easier and less complicated. In particular, it calls for promotion of co-operatives and as such rural population may be provided information on how to set up and run co-operatives.

Rural Poverty and Credit Use: Evidence from Pakistan

This study examines the key characteristics of credit use patterns by rural households at different levels of poverty and looks at the source structure of such borrowing; thereby highlighting inadequacies in policy and governance of institutional rural credit in Pakistan. The findings of this paper confirm the welfare enhancing and poverty reducing linkages of rural credit use in Pakistan. The availability of credit plays important role in allowing households, especially poor ones, to smooth consumption, while at the same time, the adoption of modern technology requires that credit be available to finance the purchase of inputs and to allow farming households to bear more risk.

Government's Poverty Alleviation Policies: An Overview

It reviews government's poverty alleviation policies during the last 50 years. It shows that the Government has always tried to give a high priority to social welfare and providing basic facilities such as food, health, shelter etc. to the poor. During last 50 years various policies, programmes such as Rural Development Programmes, Village-AID Programme (1952-61), Basic Democracies (1959-70), Rural Works Programme (1963-72), People's Works Programme (1972-82), Special Development Programme or Five-point Programme (1985-88), People's Programme (1989-90), Tameer-e-Watan Programme (1991-93) and Network of Rural Support Programmes have been introduced to alleviate poverty by the Government. Many other policies like land reforms, food distribution and price mechanism, employment creation schemes based on directed credit, social welfare programme, targeted income transfer schemes, social security scheme, employees old-age benefits scheme, Pakistan poverty alleviation fund and other macro-economic policies were also made in order to reduce poverty.

The study concludes that the past development efforts have not succeeded in vast improvement in the living conditions of rural poor. These policies have positive impact on raising the production in rural sector but this has not brought about a real qualitative change in the rural life. Over centralisation has adversely affected these policies. Improvement in education, health, nutrition, housing, population planning not only increases human capital but also makes their share in national income larger and helps

ultimately in achieving better income distribution and reduction in poverty. The past plans also failed due to low awareness of benefits of human capital growth and inadequate financial resources. To address these problems, government has initiated Social Action Programme that has completed Phase I and Phase II and is in progress. In addition, the government has set up an independent and professionally managed fund, Pakistan Poverty Alleviation Fund. Its focus is on institution and capacity building for enhancing outreach of the existing NGOs and poverty alleviation organisation.

Section VI
FUTURE DIRECTION OF RESEARCH

MIMAP, essentially being an inter-disciplinary approach, focuses upon the twin issues of the link between macroeconomic policies and the household and the response structure or feedback. The latter has the potential to bear upon the efficacy and design of the policies. The transmission mechanism from macro to micro, the feedback effects and interplay of various groups necessitates a general equilibrium approach for modelling.

Implications of the often-used flexibility assumptions pertaining to intersectoral mobility of labour however have to be examined in the context of Pakistan. Not only in general the labour markets are dualistic but it is important to specify the connection between tradable and non-tradable sectors in this context. Furthermore, under neo-classical framework unemployment can be modelled as search unemployment only thereby ruling out Keynesian unemployment. Similarly, the relationship between actual unemployment and real wage levels is difficult to be handled. Labour market dynamics has been generally glossed over by MIMAP exercises despite a close link between poverty and unemployment and central importance of labour market in the context of structural adjustment. Studies contained in Horton *et al.* (1994) can be used as a starting point in this context.

Similarly, there is a need to analyse (using the Household Survey data) shift of labour from non-tradeables, to tradeables. Flow of workers between status of being unemployed to employed and vice versa during a given period controlling for the industrial category can shed some light on the reemployment of workers in the wake of industrial restructuring. Also there is a desperate need to analyse the evolving wage structure classified by formality and informality and industrial categories to discern the labour market performance under structural adjustment.

Major objective of the MIMAP type exercise is to assess the impact of structural adjustment on welfare indicators. Poverty levels and trends, being such major indicator

have been subject of special focus. Numerous studies in Pakistan have been conducted in the past to document the poverty levels and trends. However, there is a need to improve upon their comparability. In particular, for the period since 1987-88, poverty levels may be estimated using both expenditure as well as household income per adult equivalent. Household survey to be conducted under the phase II of the project MIMAP covering the same households will provide a unique opportunity to examine and differentiate between the households afflicted with chronic poverty from those of transient.

Exhaustive examination of the data made available through the two surveys be ensured to understand the impact on mortality. Interventions made by the government through the provision of hospitals etc. should not be glossed over. Similarly, information on other community variables need to be utilised to understand their influence on mortality.

Access to credit appears to have been elevated as a major policy intervention for the poverty alleviation. Curiously enough the information on borrowings collected in the PSES remained unutilised. It will be instructive to examine the role of credit on poverty alleviation from these household surveys conducted under MIMAP.

Finally, there is a merit in mounting a focussed study on remittances. It may be noted that Kemal and Amjad (1997) did find in their study a significant effect on poverty in their inter-temporal analysis of poverty in Pakistan. Extension of this analysis on household and sub-regional levels appears imperative. Also relationships between balance of payment, investment and public sector expenditure and the inflow of remittances need to be examined in this context.

Section VII
CONCLUSIONS

The present study examines the Impact of Structural Adjustment and Stabilisation Programmes on poverty, income distribution, nutrition and employment. The study is based on 13 studies carried during the phase I of the MIMAP project. The main conclusions are summarised in the following:

1. To determine the incidence of poverty in 1998-99, four poverty lines have been estimated by using the PSES. Firstly, poverty line is drawn on the basis of estimated cost of food consistent with calorie intake of 2550 and 2295 per adult equivalent per day for the rural areas and urban areas, respectively. The poverty lines so derived are Rs 378.8 and Rs 357.7 per month per capita for urban and rural areas respectively. Secondly, Poverty line has been drawn that meets the minimum basic needs including food, clothing, housing, education, transportation, and recreation. The poverty lines come out to be Rs 672.50 and Rs 874.13 per capita per month respectively for rural and urban areas. Thirdly, poverty lines are drawn to ensure adequate availability of basic needs and differs from the second in the sense of the estimated cost of non-food components of the basket of 'basic needs'. In the second poverty line it was assured that those households whose food expenditure was equal to the calorific poverty line would also satisfy their other basic needs. In the third poverty line the average expenditure of non-food items of those household whose food expenditure was 5 percent higher or lower than the food poverty line was taken as the estimated cost of non-food components of the basket of basic needs. Poverty lines so defined comes out to be Rs 676.31 and Rs 898.04 for rural and urban areas. Fourthly, the average expenditure of non-food items of those household whose food expenditure was 10 percent higher or lower than the food poverty line was taken as the estimated cost of non-food components of the basket of basic needs. Poverty lines so defined comes out to be Rs 666.36 and Rs 870.62 for rural and urban areas respectively.

2. The poverty incidence in 1998-99 shows a sharp increase over time. Compared to 17.8 percent persons falling below poverty levels in 1987-88, and 22.4 percent in 1992-93, the incidence of poverty has increased to 32.6 percent according to calorific poverty line. The incidence increases to 35.2, 36.6 and 37.9 percent if the poverty lines corresponding to three definitions of basic needs are applied. The incidence of poverty (food) in rural areas is 34.8 percent compared to 25.5 percent in the urban areas. On the basis of poverty lines corresponding to basic needs approaches, the incidence in rural areas was 39.8, 40.3 and 40.8 percent and in the urban areas it was 31.7, 33.0 and 31.7 percent.
3. Poverty is more widespread amongst the non-farm households than the farm-households in the rural areas. Similarly having larger household was associated with higher incidence of poverty. Those having low levels of education and skills form major proportion of the poor. The remittances have positive income on the poverty alleviation. Not only those households whose member have gone abroad have moved out of poverty, but their relatives may have also received some remittances. In any case households which obtained supplementary income like remittances, show lower levels of poverty. Poverty is also associated with unemployment, under-employment and irregular work.
4. While the per capita income growth did fall, yet it did rise by roughly 10 percent between 1993-94 and 1998-99 period. However, it has been accompanied with worsening distribution of income. The ratio of the income of the highest 20 percent to the lowest 20 percent increased from 4.4 percent in 1993-94 to 5.2 percent in 1998-99. Gini coefficient also increased from 0.40 in 1993-94 to 0.41 in 1998-99.
5. Unemployment has increased sharply. Compared to 4.7 percent unemployment in 1992-93, it was 6.4 percent in 1998-99. Moreover, it is much higher in the urban areas where it has increased form 5.8 to 8.9 percent and in rural areas from 4.3 to 5.0 percent over 1992-93 to 1998-99 period. Teenagers and youth suffer from higher level of unemployment than others. The under-employment has also increased from 11.5 to 18.4 percent over the same period.
6. There is an association between inactivity and poverty especially in the rural

areas. Similarly, the labour force belonging to poor households exhibit higher levels of unemployment and under-employment than their counterparts in non-poor households. The workers from poor households are disproportionately in the informal sector.

7. Rising level of unemployment has also affected the wage rates. Real wages of all types of workers at best reflected stagnation and in most of the cases real wages have fallen. Since the poor form larger proportion of the working class, both decline in employment possibilities and fall in real wages have been responsible for rising poverty levels.
8. The child mortality is higher in the rural areas than in urban areas. The determinants differ across urban and rural areas.
9. In the urban areas incidence of child mortality is higher among working than non-working women, less educated mothers and the poor households. Housing conditions, quality of water and type of toilet facilities also are associated with differentials in mortality. In the rural areas, poverty of the households, mother's education, source of drinking water and sanitation also are not correlated with incidence of child mortality. The study suggests that the Social Action Programme initiated in 1992-93 has very little impact on the mortality rates.
10. The nutritional status was examined by using three indicators, stunting (height-for-age), underweight (weight-for-age) and wasting (weight for height). About 38.8 percent children are underweight, a number very similar to the proportion of the poor persons. That as many as 60.1 percent had less height for their age, i.e. stunted, is rather worrisome. About 9.5 percent had less weight for height, i.e. wasted. All this indicates a substantial proportion of children living in poor socio-economic conditions at higher risk to disease exposure.
11. A decline in mean weight of children under six months is a cause for concern. It not only indicates a high incidence of malnutrition among the children of this group but also of their mothers. Mother's education and modernisation affect positively the nutrition levels.
12. Using the SAM, CGE Models with various simulations were carried out by changing the variables that have been influenced by the Structural Adjustment

Programmes. The 1989-90 SAM is used as the basis to provide the counter factual, and impact of tariff reduction and fiscal deficit has also been examined.

13. Tariff reduction lowers the price of imported goods, which in turn affect the domestic relative output price and input price structure and hence supply and demand of all commodities. Contrary to the expectations, fall in tariff rates results in falling labour share. This may be due to certain assumptions in the model, but most importantly the allocation of resources may have been towards more capital intensive non-traded goods sector. It may also be due to the fact that services are generally in the informal sector and their incomes are considered as profits and not wages. In any case share of wages show decline from 0.28 to 0.27. Income distribution also worsens i.e., Gini coefficients show that income distribution has worsened. But impact on income distribution is very marginal. The results also reveal that consumption of each household group has increased. But increase in consumption of rich is greater than the increase in consumption of poor. This implies that the policy change favours rich class and benefits more the rich as compared to poor in terms of income as well as consumption. Decline in government revenue is responsible for low investment, which ultimately affect economic activities adversely.

Section VIII
POLICY IMPLICATIONS

The results of MIMAP studies show quite clearly that during the period over which structural adjustment and stabilisation programmes have been implemented in Pakistan, there was an increase in the levels of poverty. This is against the expectation that structural adjustment would help in improvements in productivity levels, promote employment and shall be pro-poor. Why the programmes did result in an increase in poverty? What are the characteristics of the poor? Why nutrition level is low? What is the relationship between work and poverty? These issues have been examined in MIMAP study and can be used to come up with a strategy to alleviate poverty.

Increase in poverty in Pakistan may be attributed to a number of factors including the fall in growth rate of output and employment, decline in subsidies, changes in the tax structure, remittances, etc. While increase in output requires an increase in investment, improvement in allocative and x-efficiency can also result in higher output levels. It needs also to be examined why the poor have been denied the possible benefits of the structural adjustment and what may be required to enhance their participation.

Three major categories of the less developed segments of the population that need to be focused are:

1. Population that is likely to fall below poverty line because of unemployment or under-employment and consequently decline in real wages as a result of the reform and adjustment process.
2. The younger generation that have low quality of education and training; and
3. The poor inheritance including gender and low strata in the social structure with little or no access to basic needs.

Under the structural adjustment, government has reduced the rate of import duty with a view to exposing the domestic producers to the international market. This was expected on the one hand to increase the levels of x-efficiency and at the same time through higher levels of allocative efficiency to higher employment and output. However,

the computable general equilibrium exercises show that reduction in the tariff rates through consumption-induced effect may have resulted in lower level of labour share. If the manufacturing sector is broken down into small and large enterprises, an increase in the share of small-scale industries will more than offset the adverse impact on growth of employment and share of labour. This requires that small and micro enterprises are promoted and impediments in their way are removed.

The small and macro enterprises create more employment and result in higher level of output as they are productive users of capital. However, they suffer from inadequate credit and as is well known the credit is entitlement to resources. Unfortunately, credit has been pre-empted by larger producers. Besides others, the stringent requirements of collateral and guarantees have been responsible for this state of affairs. Moreover, credit is necessary but not sufficient for employment generation. Mere provision of credit may result in the indebtedness.

Most of the poor live in the rural areas and maximum incidence of poverty is amongst the landless. Similarly, maximum incidence in the urban areas is amongst the informal sector. These segments of population must be provided the credit and that must be accompanied with a package comprising of external and internal demand for the product, skill development, choice of activity etc.

The provision of credit and package may be done through NGOs and community based organisations. Community-based models, direct interventions, require time and investment to reach a scale sufficiently large to have a significant impact on the overall poverty scene. They can help in the local level infrastructure, as an incentive for promoting community organisations, being an essential part of the strategy. Also in training of female workers through informal and imparting of basic technical skills, in conjunction with availability of microfinance would be undertaken to increase their participation in the development process. They would also be helpful in clustering of small NGOs to build capacity and achieve low overhead costs.

Under the stabilisation programmes, the public investment tends to fall with a very strong multiple impact on employment and poverty as public investment focuses on construction projects that are labour-intensive. Accordingly, poverty strategy must

combine the elements of public investment and private sector investment allocation to labour intensive activities.

One of the main characteristics of the poor is lack of education and skills, resulting in confinement to subsistence type of activities. To enhance their productivity and transform them into a dynamic and fast growing workforce greater attention needs to be given to the development of their basic skills. The skills training should be geared towards labour market requirements and imparting practical and marketable skills. The private sector and NGOs involvement can ensure that. Special vocational training institutions need to be established for workers.

One of the main characteristics of the poor is that they have large families. Accordingly, government must accelerate the efforts at containing the growth rate of population. Various studies have shown that there is unmet demand of contraceptives. Accordingly, there is a need to integrate family planning services with the health services at the service delivery level.

Those having higher levels of education tend to have small families and in general are not poor. Universalisation of primary education in that direction can play an important role. Removing the gender and regional imbalances in the availability of education facilities and decentralisation of powers to the gross root level can be instrumental in realising the objective.

The nutrition and health are important component of the poverty reduction strategy. Accordingly, there is a need for a shift in policy to emphasise preventive, promotive and primary health care by upgrading existing facilities; removal of regional imbalances in the provision of facilities; reducing gender imbalance; creating public and private partnership in service delivery; food stamps/coupons for poor based on the nutritional status, income level, and household size; control of nutritional disorders through supplementation and fortification of food items; community based monitoring for young child and pregnant mothers; maternal nutrition intervention; and promotion of protection of breast-feeding.

Appendix 1
LIST OF STUDIES REVIEWED

1. Poverty and Rural Credit: The Case of Pakistan by Sohail Jehangir Malik (1999).
2. Distributional Impact of Structural Adjustment on Income Inequality in Pakistan: A SAM-based Analysis by Zafar Iqbal and Rizwana Siddiqui (1999).
3. Salient Features of Social Accounting Matrix in Pakistan for 1989-90: Disaggregation of the Households Sector by Rizwana Siddiqui and Zafar Iqbal (1999).
4. An Introduction to the 1998-99 Pakistan Socio-economic Survey by G. M. Arif, Syed Mubashir Ali, Zafar M. Nasir and Nabeela Arshad (1999).
5. An Overview of Government's Poverty Alleviation Policies by Sarfraz K. Qureshi (1999).
6. Critical Review of Literature on Computable General Equilibrium Models by Zafar Iqbal and Rizwana Siddiqui (1999).
7. Nutritional Status in Pakistan by Sarfraz Khan Qureshi, Hina Nazli and Ghulam Yasin Soomro (1999).
8. Poverty and Child Mortality in Pakistan by Syed Mubashir Ali (1999).
9. Poverty and Labour Market Linkages in Pakistan by Zafar Mueen Nasir (1999).
10. Profile of Poverty in Pakistan, 1998-99 by Sarfraz Khan Qureshi and G. M. Arif (1999).
11. Rural Poverty and Credit Use: Evidence from Pakistan by Sohail Jehangir Malik and Hina Nazli (1999).
12. Tariff Reduction and Functional Income Distribution in Pakistan: A CGE Model by Rizwana Siddiqui and Zafar Iqbal (1999).
13. Distributional Impact of Tariff Reduction in Pakistan: A CGE-based Analysis by A. R. Kemal, Rehana Siddiqui and Rizwana Siddiqui (1999).

REFERENCES

Amjad, R., and A. R. Kemal (1997) Macroeconomic Policies and their Impact on Poverty Alleviation in Pakistan. *The Pakistan Development Review* 36:1.

Arif, G. M., and Sabiha Ibrahim (1998) Diarrhoea Morbidity Differentials among Children in Pakistan. *The Pakistan Development Review* 37:3.

Arif, G. M., Syed Mubashir Ali, Zafar M. Nasir, and Nabeela Arshad (1999) An Introduction to the 1998 99 Pakistan Socio-economic Survey (PSES). Pakistan Institute of Development Economics, Islamabad.

Baulch, Bob, and Neil McCulloch (1998) *Being Poor and Becoming Poor: Poverty Status and Poverty Transitions in Rural Pakistan*. Brighton: Institute of Development Studies.

Decaluwe, B., and A. Martens (1988) CGE Modeling and Developing Economies: A Concise Empirical Survey of 73 Application to 26 Countries. *Journal of Policy Modeling* 10:4.

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

Horton, Susan, Ravi Kambur, and Dipak Muzumdar (1994) Labour Market in an Era of Adjustment (ed.) Economic Development Institute, The World Bank, Washington, D.C.

Howes, Stephen, and Jean Oslow Louow (1997) *Poverty Comparisons and Household Survey Design*. The World Bank, Washington, D. C. (LSMS Working Paper No.129.)

Jafri, S. M. Younis (1999) Assessing Poverty in Pakistan. In *A Profile of Poverty in Pakistan*. Islamabad: Mahbub ul Haq Centre for Human Development.

Malik, N., and S. J. Malik (1993) Reporting on the World Nutrition Situation: The Case of Pakistan. In *Second Report of World Nutrition Situation.* Vol. II. UN/ACC/SCN Geneva. March.

Malik, Sohail J. (1992) Rural Poverty in Pakistan: Some Recent Evidence. *The Pakistan Development Review* 31:4.

Nasir, Zafar Mueen (1999) Poverty and Labour Market Linkages in Pakistan. Paper Presented at the MIMAP Workshop held in Islamabad on November 9. Pakistan Institute of Development Economics, Islamabad.

Pakistan, Government of (1988) *National Nutrition Survey 1985-87.* Nutrition Division, National Institute of Health, Islamabad.

Pakistan, Government of (1996) *Household Income Expenditure Survey, 1993-94.* Statistics Division, Islamabad, Government of Pakistan.

Pakistan, Government of (1997) *Pakistan Integrated Household Survey 1996-97.* Federal Bureau of Statistics, Islamabad.

Qureshi, S. K., and G. M. Arif (1999) The Poverty Profile of Pakistan. Technical Report prepared for MIMAP Project, PIDE, Islamabad.

Siddiqui, Rizwana and Zafar Iqbal (1999) Social Accounting Matrix of Pakistan for 1989-90. PIDE, Islamabad. (Research Report Series No. 171.)

Thorbeck, E. (1991) Adjustment, Growth and Income Distribution in Indonesia. *World Development* 19:11.