

# Estimating Poverty in Pakistan: The Non-food Consumption Share Approach

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## 1. INTRODUCTION

Poverty alleviation is the most persistent challenge facing Pakistan since its inception. The underlying factors that create and perpetuate poverty involve a number of dimensions, e.g. income inequality, unemployment or underemployment, inadequate access to basic services and resources by the poor; inequitable distribution of assets, technology and socioeconomic opportunities; and underdeveloped infrastructure, etc. The persistence of poverty, moreover, reflects the poor's varying state of vulnerability coupled with deprivation. The destitute differ in economic, social, geographic, physical and other characteristics so that reliance on increasing income alone is not likely to lead to sustained poverty alleviation in the country. Poverty in Pakistan has many dimensions and requires a multi-strategy solution.

Although Pakistan's growth rate (6 percent) has been impressive for much of the last four decades but it has failed to trickle down to the masses. The pattern of income distribution has worsened. This disparity in income shows that lowest 20 percent of households received only 7 percent of income share, while upper 20 percent received highest ever income share of 49.4 percent in 1996-97. The literature based on HIES data shows (Table 1) that in 1969-70 overall 46.53 percent population were poor as compared to 40.24 percent poor in 1963-64 due to significant changes in the agrarian structure. The magnitude of poverty is higher in the rural areas as compared to urban areas. Then between 1969-70 and 1979, the absolute poverty declined at all levels due to the start of large-scale overseas migration to Middle East. Moreover, in the 1980's, it saw a continuous decline until around 1987-88, after which for the most part there has been another rise in the incidence of poverty in the country. By 1992-93 the number of absolute poor rose to 22.40

percent of total population [Amjad and Kemal (1997)]. It is an unfortunate fact, that there has been a significant increase in poverty in the 1990s in Pakistan on account of sluggish growth, destabilising macro-economic imbalances, absence of social safety nets, decline in the flow of remittances from overseas Pakistani workers, shedding of surplus labour by state owned enterprises and deterioration in the quality of governance. The estimates based on both the HIES 1993-94 (27.4 percent poor), 1996-97 (29.6 percent poor) and 1998-99 PSES<sup>1</sup> (35.2 percent poor) also confirmed the facts that the increasing trends in poverty continued during the whole decade of 1990s. In terms of Human Development Index Pakistan ranks 135 out of 174 countries with life expectancy at birth 64.4, adult literacy rate 44 percent and 31 percent poor population living on the very margins of life, on less than US\$ one per day in 1998 [UNDP (2000)]. The increase in poverty on this vast scale can have a significant inhibiting impact on growth.

Table 1

*Trends in Poverty*

Years	Total	Rural	Urban
1963-64	40.24	38.94	44.53
1966-67	44.50	45.62	40.96
1969-70	46.53	49.11	38.76
1979	30.68	32.51	25.94
1984-85	24.47	25.87	21.17
1987-88	17.32	18.32	14.99
1990-91	22.11	23.59	18.64
1992-93	22.40	23.35	15.50
1993-94*	27.40	29.90	23.10
1996-97*	29.60	31.60	27.40
1998-99**	35.20	39.80	31.70

Source: Amjad and Kemal (1997).

\*Arif *et al.* (2001).

\*\* Qureshi and Arif (2001).

<sup>1</sup>Pakistan Socio-economic Survey see Arif *et al.* (2001).

Much has been written about poverty in Pakistan over the last two and half decades. The following three major approaches may be distinguished in the history of research studies on poverty in Pakistan.

- (i) To be poor is feeling that you do not have enough to get along.
- (ii) To be poor is having less than others in society.
- (iii) To be poor is lacking some basic needs.

Poverty is taken as a subjective phenomenon in the first category. Poverty lines are determined on the basis that how people perceive poverty. This approach is, although, very popular in developed countries, Ahmed (1993) study is the only example in Pakistan.

The second approach, relative poverty, is being used to highlight the income inequality. The poverty lines are determined as a fraction of mean income. This concept was introduced by Akhtar (1988) in the poverty literature of Pakistan. The other important studies, in this regard, include Zaidi (1992) and Jafri (1999), etc.

The last class, poverty as absolute deprivation, includes minimum calories intake, basic need and a denial of opportunity, etc.

In the calorie intake approach, poverty line is determined on the basis of minimum calorie requirements. Using the relationship between calories intake and food expenditure, the cost of acquiring a certain amount of calories intake is estimated. This approach has been used in most of the earlier studies on poverty in Pakistan including among others are Naseem (1977), Irfan (1984), Cheema and Malik (1984), Ercelawn (1990), Havinga *et al.* (1989), Malik (1991), Mahmood *et al.* (1991), Shirazi (1993), and Jafri (1999), etc.

Basic needs poverty line reflects the cost of the minimum bundle of basic needs consisting of food, clothing, housing, health, education etc. Malik (1988), Jafri and Khattak (1995), Ali (1995), World Bank (1995) and Bhatti (1996) etc., have used this approach.

The purpose of this analysis is to illuminate poverty by applying the third approach, which also includes non-food consumption share approach. It was first developed by Orshansky

(1965) and was discussed by e.g. Watts (1968), and Huppi and Ravallion (1991), etc. The non-food consumption approach is better one to look into the severity of poverty as HIES shows that more or less fifty percent of total consumption expenditure goes for food and rest is allocated for clothing and footwear, housing, fuel, furniture and fixture, education health and miscellaneous items. As there is no dispute about the importance of calorific requirements yet they are not the only human needs. Lack of warmth and shelter is as bad as undernourishment. This study is an attempt to examine the structure of poverty by principal sector of employment, how the profiles changed during 1987-88 to 1993-94. A certain non-food share in total consumption expenditure is taken as a cut-off point. The households having lower non-food share than this threshold level are considered as poor.

This paper is organised as follows. After introduction in Section 1, Section 2 outlines methodology. Section 3 discusses data set and its limitations. Section 4 presents the estimates of the prevalence of poverty. The paper ends with some concluding remarks in Section 5.

## **2. METHODOLOGICAL ISSUES**

According to Engel's law of consumption "the poorer a family, the greater the proportion its total expenditure that must be devoted to the provision of food" or "that the greater the income, the smaller the relative percentage of outlays for subsistence," [Stigler (954)]. So the non-food consumption share is generally found to be increasing function of real income, and thus can be considered a valid welfare indicator. On the other hand, family welfare is also positively related with income. Hence the non-food share can be used as a proxy for family welfare [Huppi and Ravallion (1991)]. The non-food consumption share approach has certain advantages to the commonly used basic needs approach in Pakistan. First, the problem of determining the composition and quantum of bundle of minimum basic needs is avoided. Second, instead of restricting the choice set

of a household, it makes the use of actual pattern of expenditure for determining the poverty line.

A certain non-food share in total consumption expenditure is taken as a poverty threshold. Households having non-food share lower than this threshold level are considered to be poor. An obvious deficiency of this method is the arbitrary fixation of threshold level. Ali (1995) estimated minimum expenditure on all needs food as well as non-food by using Extended Linear Expenditure System and reported that 51 percent of total expenditure is allocated for food and 49 percent goes for non-food expenditure. So in this study three different threshold levels; i.e. 40 percent, 45 percent and 50 percent of non-food share to total consumption expenditure are being used to reflect the varying degree of poverty. These cut-off points are taken to be 5 percent higher in each alternative case. The poverty estimates of all the given range of poverty lines will be discussed at national, urban and rural levels. But the sectoral results of only 45 percent threshold level are being discussed as this is the average minimum level of non-food expenditure at provincial level i.e. Balochistan in 1993-94.

### **Non-food Consumption Share**

$$NFS = \frac{NFE}{TE} * 100 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

where,  $NFS$  represents the percentage of non-food consumption share,  $NFE$  is interpreted as non-food consumption expenditure, and  $TE$  total consumption expenditure.

### **The Head-count Index**

The most commonly use measure of poverty, the head-count-index and share of poor households based on this measure is included in this paper. The head-count index  $P_0$  can be defined as follows:

$$P_0 = H/N * 100 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (2)$$

$P_0$  measures the percentage of households that falls below the specified poverty line.  $H$  is the total number of households below the poverty line.  $N$  is the total number of households.

For sectoral analysis the head-count index is described as:

$$P_i = H_i/N_i * 100 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (3)$$

$P_i$  measures the percentage of households in sector  $i$  having less than 45 percentage of consumption share that falls below the poverty line.  $H_i$  is the total number of households in sector  $i$  who are below the poverty line in households size  $N_i$ . This measure allows us to easily assess variation in the incidence of poverty across sectors. While it is a simple measure to interpret, the head-count index has the disadvantage that it is entirely insensitive to changes below the poverty line.

### **Distribution of Poor**

The distribution of poor households is given as;

$$D_i = H_i/H * 100 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (4)$$

$D_i$  is the percentage distribution of poor households in sector  $i$ ,  $H_i$  is the absolute number of poor households in sector  $i$  and  $H$  is the total number of poor households in Pakistan.

### **Location Index**

Location index  $L_i$  can be derived as:

$$L_i = P_i/P_0 * 100 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (5)$$

where,  $P_i$  is the percentage of poor households in sector  $i$  and  $P_0$  is the overall percentage of poor households in the country.

if  $L_i=100$ , equal share of poor in sector  $i$  relative to the proportion of poor  $P_0$  in total population.

$L_i > 100$ , greater concentration of poor in sector  $i$  relative to the proportion of poor  $P_0$  in total population.

$L_i < 100$ , smaller share of poor in sector  $i$  relative to the proportion of poor  $P_0$  in total population.

### 3. DATA AND ITS LIMITATIONS

This study is based on the micro data of Household Income and Expenditure Survey (HIES) for 1987-88 and renamed Household Integrated Economic Survey (HIES) 1993-94. HIES data are quite comprehensive and representative as they are based on an intensive probing questionnaire and a considerably large sample size. To present this sample at population level, raising factor is applied. Since the unit of account of HIES is a household, in case of more than one earner in a household and belonging to different industries, it is not easy to determine the industry at household level. As 50 percent earners are the heads of the households, we have taken the industry of the head of household as a proxy for the industry of the household as a whole. In such cases where the head of the household are not found economically active, the industry of the next earning member with higher income than other earners in the family is taken as a proxy for industry of the household. Despite the above mention limitations, HIES data sets are the best available source to analyse incidence of poverty in Pakistan.

Here major sectoral distribution is given as:

1. Agriculture and Fishing.
2. Mining and Quarrying.
3. Manufacturing.
4. Electricity, Gas and Water.
5. Construction.
6. Trade and Hotel/ Restaurant.



7. Transport and Storage.
8. Finance and Real Estate, etc.
9. Community Services, etc.

#### 4. EMPIRICAL ANALYSIS

The results given in Table 2 show that the head-count indices are very sensitive to the choice of non-food share poverty line. In 1987-88, poverty incidence doubles in almost all the three levels i.e. urban, rural, national, when 45 percent non-food share is chosen instead of 40 percent. It implies that a considerable proportion of population falls in this range. Contrary to the basic needs approach used by Jafri and Khattak (1995), non-food share poverty lines show higher incidence of poverty in rural areas as compared to urban areas. These results are consistent with Engel's law of consumption that the poorer family spends greater proportion of its total expenditure on food so a small proportion of expenditure remains for non-food consumption; clothing, housing, fuel, education and health, etc. Thus the incidence of poverty is higher in rural areas as the level of income is low hence the level of consumption is low [Haq (1997)]. All the three poverty lines show an increasing trend in head count index over the reference period.

Table 2

*The Head-count Index: Non-food Consumption Share Approach\**

Years	1987-88			1993-94		
Threshold Level	40 %	45 %	50 %	40 %	45 %	50 %
Pakistan	17.05	34.50	49.75	22.0	38.7	55.21
Urban	7.05	18.75	35.89	9.8	21.9	40.7
Rural	20.96	40.65	52.12	32.1	52.8	65.01

\*Based on the given percent of non-food shares in total consumption expenditure.

Table 3 shows that the magnitude of increase in poverty

incidence decreases as the threshold level increases. As the non-food consumption share is generally found to be increasing functions of real income, it implies that the lowest income group suffered the

Table 3

*Percentage Change in Poverty Incidence during 1987-88 to 1993-94*

Threshold Levels	40%	45%	50%
Pakistan	29.03	12.17	10.97
Urban	39.00	16.81	13.40
Rural	53.3	29.88	24.73

most during the period under study. While the estimates of poverty have been increased, the inflation in food (8 percent to 11 percent) and non-food (4.6 to 11.5 percent) items has also increased during the same period. Thus, the poverty levels for 1993-94 are not simply a blown up (price-inflated) version of the poverty incidence in 1987-88 but also an element of change that has occurred in the proportion of minimum levels of expenditure. In Pakistan income distribution during this period became worsen as the household Gini co-efficient rose from 0.31 to 0.40. During the same period rate of unemployment also increased from 3.13 percent to 4.84 percent. Remittances have shown a declining trend from US\$ 2012.6 million in 1987-88 to US\$ 1445.56 million in 1993-94. During this period the tax incidence has increased most for the lowest income group while the incremental burden goes on falling as income rise [Kemal (1994)].

Table 4 contains information about the extent of poverty in the various employment sectors, which are based on 45 percent non-food consumption share poverty line. The estimates of the head-count index show an increasing trend in poverty incidence in all the sectors except the finance sector. The ranking of these nine sectors are not changed dramatically in both the years under study. The highest concentration of poverty is found among households of the agriculture sector, who at the same time make up the largest population proportion. During this period real wages of unskilled labour and casual labour did not show a smooth increasing trend. The growth rate of the agriculture sector

increased from 2.7 percent to 5.2 percent with large fluctuation of –5.29 percent in 1992-93. The sectoral share in real GDP declined from 25.5 percent to 24.3 percent.

Table 4

*Sectoral Structure of Poverty Incidence in Pakistan*

Industry	Head-count Index*		Distribution of		Location Index	
	1987-88	1993-94	Poor (%)		1987-88	1993-94
			1987-88	1993-94		
Agriculture	44.51	53.70	53.9	50.7	129.44	138.7
Mining and Quarrying	11.66	25.0	0.0**	0.1	33.79	64.5
Manufacturing	26.26	28.0	9.7	11.7	76.08	72.35
Elect, Gas, Water	16.85	20.0	0.4	0.4	51.95	51.6
Construction	32.98	43.2	8.2	9.9	95.91	111.6
Trade	27.73	26.3	12.2	10.5	80.69	68.0
Transport	27.03	34.8	5.2	5.7	78.55	90.0
Finance and Insurance	11.63	5.2	0.3	0.2	38.96	13.4
Com. Social Service	25.95	25.1	10.0	10.8	75.36	64.8
Overall	34.50	38.7	100.0	100.0	100.0	100.0

\*Non-food Share Poverty Line: 45 percent of Total Consumption Expenditure.

\*\* Not zero but negligible.

In terms of ranking in incidence of poverty the construction, transport and communication, manufacturing, trade and community and social services sectors have come respectively. The finance and insurance sector enjoyed the lowest head count ratio in both the years. The mining and quarrying sector has the lowest share in population but it has been observed the highest change in head-count index in terms of percentage points.

According to distribution of the poor criterion, agriculture sector is again at the top followed by manufacturing, community and social services, and trade sectors. Although the population share of agriculture sector decreased in 1993-94 but this sector is still the

main pocket of the poverty in Pakistan. The share of poor in all the other sectors slightly varies during this period.

Table 4 also presents the results of a location index, which shows the proportion of poor in each sector relative to the proportion of poor in the country. A value of one hundred for this indicator implies an equal share. The higher the value of this index from one hundred, the greater is the concentration of poor relative to population share. According to this index, all the sectors except agriculture sector have the value less than one hundred in 1987-88. The agriculture and construction sectors indicate a higher proportion of poor relative to its population share in 1993-94. These estimates also imply a smaller proportion of poor relative to the population share in other sectors. This index also shows an increase in poor relative to population share in the agriculture, construction mining and transport sector. Although the mining and quarry sector has lowest share in population in both the years but an increase in population share have increased this index. This shows that fraction of poor population has increased in this sector.

## 5. CONCLUSIONS

This paper presents a framework within which sectoral structure of absolute poverty can be analysed. The non-food consumption share approach is used to measure incidence of poverty, which can also be used as a proxy for family welfare. The considered analysis is based on micro data of HIES for the years 1987-88 and 1993-94. Three different threshold levels; 40 percent, 45 percent and 50 percent of non-food share in total consumption expenditure are taken as poverty thresholds. For the sectoral analysis only 45 percent threshold level is being discussed.

The result leads to the follow conclusions:

1. Incidence of poverty has increased at national level and that it is greater in rural areas than in urban areas.
2. Poverty has increased in almost all the sectors except the finance and trade sectors during the period under consideration.

3. There are wide variations in the incidence of poverty among different sectors.
4. The agriculture and construction sectors are found to be badly affected areas.
5. According to the distribution of the poor criterion, the agriculture sector is at the top followed by the manufacturing, trade and community and social services sectors.
6. Finally, location index also indicates that concentration of the poor is greater in the agriculture sector as compare to its population share.

Thus, this study identifies the sectors where the poor are concentrated. This identification will helpful in devising policies that are specifically targeted towards poverty alleviation A good way to devise a targeted program is to make the benefit contingent on work. In this regard, employment schemes should be specifically designed for the poor. Investments in human capital are a potentially powerful instrument for raising the productivity and earnings of the poor. Finally, poverty alleviation should not be seen as an act of charity but a necessity for the country to sustain economic growth. So there is a need for a comprehensive antipoverty strategy at national level that has support from a variety of socio-economic groups in order to implement it.

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### **ABSTRACT**

This paper provides a framework within which the sectoral structure of absolute poverty can be analysed. Non-food consumption share approach is used to measure incidence of poverty, which can also be used as a proxy for family welfare. Head-count index is used to examine the structure of poverty by principal sectors of employment. Location index is also presented to evaluate the concentration of the poor in each sector. The results lead to the conclusions that incidence of poverty has increased at all levels and that it is greater in rural areas than in urban areas. There are wide variations in the incidence of poverty among different sectors and it has increased in almost all the sectors except the finance and trade sectors during the period under consideration. The agriculture and construction sectors are found to be badly affected areas. According to the distribution of the poor criterion, the agriculture sector is at the top, followed by the manufacturing, trade, and community and social services sectors. Finally, location index also indicates that the majority of the poor in Pakistan is in the agriculture sector.

Thus, this report identifies the sectors where the poor are concentrated. This identification will be helpful in devising policies that are specifically aimed at poverty alleviation.