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## Trends in Polarisation in Pakistan

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This study analyses the trends in polarisation in Pakistan, in its rural and urban segments and its provinces, at the micro level during the period 1992-93 to 2001-02. Estimations are made by using the Bossert-Schworm measure (2006). The study finds fluctuating trends. In general, polarisation declined in all regions of Pakistan during 1996-97 and 2001-02, while 1998-99 is the period of maximum polarisation. Incorporating the household size reduces the extent of polarisation, implying that ignoring the household size overestimates polarisation. The comparison of trends in polarisation and income inequality shows that generally the trends in inequality and polarisation are similar.

*JEL classification:* D6, I3, D63, D31

*Keywords:* Polarisation, Income Inequality, Poverty, Welfare

### 1. INTRODUCTION

Economic growth has high importance in any society, and to measure economic growth the indicators used are real GDP or real per capita income. But both of these do not guarantee social welfare. Social welfare has much importance in our daily lives regardless of the social status of human beings. For welfare analysis of any society, issues like inequality and poverty need to be addressed. Much empirical analysis of these two dimensions of social welfare has been done, but another dimension is still ignored, i.e., polarisation, which implies the decline of the middle class.

The polarisation refers to the situation when the middle class gets clustered towards the poles or in other words the incomes of any income distribution get closer to one or both extremes. The empirical analysis of polarisation has huge importance in the economic policy making but by now it has been quite ignored rather un-explored through out the world. By now very few studies are conducted in this regard and most of the research has been done in western countries with an exception of India. The area is completely unexplored in Pakistan, which becomes the motivation of the present study.

In specific following are the objectives of the present study:

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- To measure the extent of polarisation in Pakistan, its rural and urban segment, its provinces and rural urban segments of each province at micro level during the period 1992-93 to 2001-02.
- To compare the trends in polarisation and income inequality in Pakistan, its rural and urban segment at micro level during the period 1992-93 to 2001-02.

This paper is planned as follows. Section 2 presents the framework of analysis covering the methodological issues in the measurement of polarisation. Results and discussions are given in Section 3, while the paper is concluded in Section 4.

## 2. FRAMEWORK OF ANALYSIS

In this section we will cover the methodological issues like data selection, choice of income unit and selection of polarisation measure.

### 2.1. Data

The data source of present study is Household Integrated Economic Survey (HIES) conducted and published by Federal Bureau of Statistics (FBS), Government of Pakistan. HIES data are available in two formats, i.e. aggregate data and micro data. Aggregate data are available in published form and provides the information in groups, so it suppresses important information such as within group dispersions in income, household size and household composition, etc. Micro data on the other hand provides grass root level information about each household and its members. Due to these limitations the present study will not use the published data for its analysis. It is based on micro data, which provides the grass root level information about each household and its members. The period of analysis covers four most recent survey years 1992-93, 1996-97, 1998-99 and 2001-02.<sup>1</sup>

The sample size varied from year to year. The number of secondary sample units, i.e., households covered in unrestricted rural and urban areas of all four provinces from 1992-93 to 2001-02 (excluding 1993-94) are summarised in Table 1. It may be noted that the province and rural-urban areas wise distribution in the sample follows the actual population share of the respective regions. The statistics show that during all the years more than 60 percent of the sampled households belong to rural areas of Pakistan. The province wise distribution shows that the maximum number of households belongs to Punjab, followed by Sindh, NWFP and Balochistan. Data were collected from the respondents by questionnaire based on direct interviews. Questionnaires have continuously been revised by FBS. The first major revision took place in 1990-91. In 1998-99 Household Integrated Economic Survey was merged with Pakistan Integrated Household Survey so the questionnaires was thoroughly revised and were split in two modules separately for male and female respondents. The rationale behind this sectioning was that none of either males or females is aware of all income and expenditure details. For instance a male may not be able to explain kitchen expenditures and a female may not be able to properly answer about household expenses.

<sup>1</sup>HIES data for the year 2004-05 has also been conducted, but is still not available to individual researchers.

Table 1

*Household Sample Size in HIES*

Region	1992-93	1996-97	1998-99	2001-02
Pakistan	14594	14261	14679	14536
Rural Areas	9008	8814	9152	9090
Urban Areas	5586	5447	5527	5446
Punjab	6596	6383	6265	6100
Sindh	3609	3401	3704	3708
NWFP	2678	2681	2695	2699
Balochistan	1711	1796	2015	2029

**2.2. Choice of Income Unit**

There can be at least three options in the choice of income unit, i.e. aggregate household, per capita household or per-adult equivalent. The aggregate household considers entire household as a single unit and thus ignores household size. Per capita household incorporates household size but gives same weight to all household members. But in reality all household members do not have the same economic needs or requirements. These requirements vary with age and gender of household members, for example a household with three children and two adults may be better off as compared to a household with five elder members with the same aggregate income. Moreover, large families reap economies of scale in consumption expenditures. The best solution is 'adult equivalence', which simply works out the number of male adult-equivalents in a family and each household member is expressed as a fraction of an adult male.

There is a huge literature on adult equivalences. Jafri (2002) has given a summary of different adult equivalence scales used in different studies for Pakistan. Among them the most acceptable is the calorie intake approach. To workout adult-equivalents in a household, the present study will employ the calorie intake requirement chart designed by Pakistan (2002).<sup>2</sup>

The present study along with taking per-adult equivalents will also consider aggregate household as the income unit. Per-adult equivalent will provide the accurate and true picture of polarisation by incorporating household size, while household as the income unit will give good picture of polarisation among aggregate household incomes. Thus in specific we will workout two types of polarisations, i.e., household income polarisation and per-adult equivalent income polarisation.

**2.3. Measure of Polarisation**

Polarisation is relatively a new dimension in welfare economics and it is still a quite unexplored phenomenon all over the world. The empirical work on the measurement of polarisation was initiated by Wolfson in early nineties. Since then enough literature has accumulated presenting various measures of polarisation. The chief contributions in this regard are made by Foster and Wolfson (1992), Wolfson (1994), Esteban, *et al.* (1994), Zhang and Kanbur (1999), Wang and Tsui (2000), Baranko Milanovic (2000) and Bossert and Schworm (2006). The present study is based on the latest available measure of Bossert and Schworm (2006).

<sup>2</sup>The calorie intake requirement chart is given at Appendix-A.

### The Bossert and Schworm Measure

We use here the Bossert and Schworm (2006) measures.

Let  $Y_i$  be the income of income unit  $i$ ,  $n$  the number of income units and income are arranged in ascending order. Bossert and Schworm (2006) presented the following polarisation measure:

$$P_L = \frac{1}{2\bar{Y}} \left[ (\tilde{Y} - \bar{Y}_1)(1 - I_1) + (\bar{Y}_2 - \tilde{Y})(1 - I_2) \right] \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

where,

$$\bar{Y} = \text{Mean income, such that } \bar{Y} = \frac{\sum_{i=1}^n Y_i}{n},$$

$$\tilde{Y} = \text{Median income, such that } \tilde{Y} = \left( \frac{n+1}{2} \right) \text{th income}$$

$$\bar{Y}_1 = \text{Mean income of units which are lower to the median, such that } \bar{Y}_1 = \frac{\sum_{i=1}^m Y_i}{m},$$

$$\bar{Y}_2 = \text{Mean income of units which are higher to the median, such that}$$

$$\bar{Y}_2 = \frac{\sum_{i=m+2}^n Y_i}{n - (m+1)},$$

such that  $m$  income units are lower to the median and  $n - (m + 1)$  income units are higher to the median

$I_1$  = Inequality Index for units which are lower to the median,

$I_2$  = Inequality Index for units which are higher to the median,

Any normalised inequality index with limit of zero and one can be employed. The present study will employ Gini coefficient.

Gini coefficient is one of the most commonly used measures of income inequality, which is attributed to Gini (1912). There are many approaches to define it, according to most common approach called 'geometric approach' Gini coefficient is the ratio of the area between the line of absolute equality and the Lorenz curve to the total area below the line of absolute equality. Rao (1969) has given following formula to calculate Gini coefficient through geometric approach:

$$G = \sum_{i=1}^{n-1} (P_i q_{i+1} - P_{i+1} q_i) \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (2)$$

where,  $P_i$  is the cumulative population share and  $q_i$  is the cumulative income share corresponding to  $i$ th income unit, when all income units are arranged in ascending order of income.

The advantage of employing Bossert and Schworm measure (2006) is that it is a normalised measure having defined limits and it also incorporates income distribution of sub-groups in the calculation of polarisation.

### 3. RESULTS AND DISCUSSION

This section comprises of two sub-sections. In Section 3.1 we will discuss the trends in polarisation in Pakistan, its rural-urban segments and each province, along with the rural and urban segment of each province. Section 3.2 will present the comparison of trends in polarisation and income inequality for Pakistan and its rural-urban segments.

#### 3.1. Trends in Polarisation

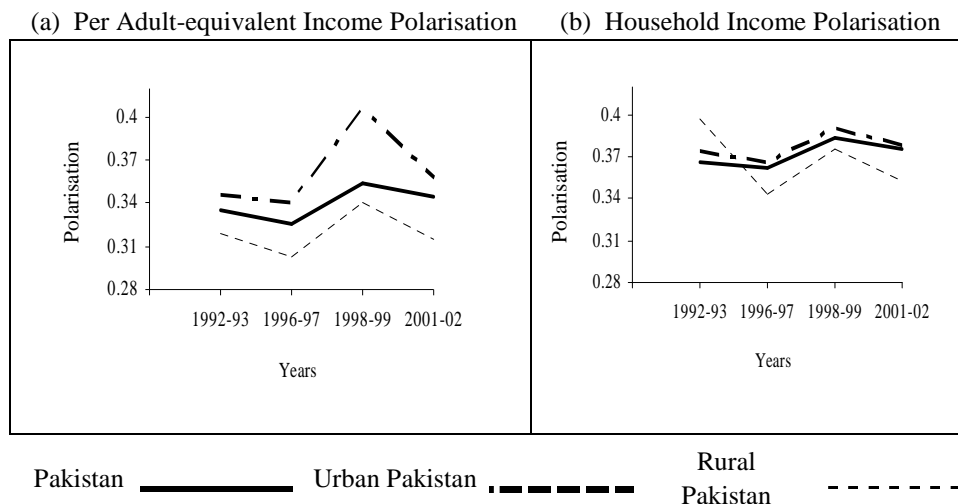
This section presents results on polarisation based on micro data for Pakistan, its rural-urban segments and each province, along with the rural and urban segment of each province for a period of approximately ten years. We have measured polarisation for 1992-93, 1996-97, 1998-99 and 2001-02 in two ways, first for aggregate household income, without incorporating household size and composition, second, with respect to per adult-equivalent income incorporating household size and composition. The utilised measure of polarisation is one proposed by Bossert and Schworm (2006). For easy viewing and better comparative analysis the results of polarisation are presented in figures. The statistical tables are shown as Appendix-B

This section comprises of two sub-sections. In Section 3.1.2 we shall discuss the results of the polarisation in Pakistan and its rural-urban segments. The same discussion for provinces is carried out in Section 3.1.2.

##### 3.1.1. Trends in Polarisation in Pakistan

The results of polarisation in Pakistan and its rural-urban segments are presented in Figure 1. The Figure separately presents the estimates of polarisation with respect to per adult-equivalent incomes and with respect to aggregate household income.

**Fig. 1. Time Profiles of Polarisation in Pakistan  
Based on the Bossert-Schworm Measure**



The estimates of Bossert-Schworm measure of polarisation with respect to per adult-equivalent for Pakistan, throughout the period of analysis fluctuated between 0.326 and 0.354. It has shown that initially from 1992-93 to 1996-97, polarisation declines but it has followed a rising trend quite sharply in the later year. The initial decline indicates that the adverse effects of the floods of 1992-93 on middle class eliminates to some extent as middle class strengthens during 1996-97. Another cause can be the impact of economic reforms addressing the rural poor segments such as exemptions of import taxes on a variety of agricultural machinery, which helped the rural poor to reduce the cost of production and hence achieve economic efficiency. The availability of agricultural funds for the productivity enhancement programme has increased. Besides this, new schemes for generating job opportunities has started to enable lower economic segments to be economically strengthened. The most important of these include Public Transport Scheme and Self-employment Scheme. This included the Yellow Cab scheme to cater to the lower-income segments, generating the employment for the unemployed and semi-skilled labour force [Pakistan (1992-93)].

Moreover, this decline in polarisation could be due to effective policies of the first phase of the Social Action Programmes (SAP-I), which strengthened the middle class. Contrary to SAP-I, the second phase of the Social Action Programmes (SAP-II) does not strengthen the polarisation and has caused a decline of the middle class, shown by a rising trend in polarisation. This rising trend is also accompanied by the slower economic growth due to the experimentation of nuclear tests followed by economic sanctions affecting the government's programmes and the repercussions like freezing of accounts, in order to stabilise Pakistani currency. Also, the investors were reluctant to invest in Pakistan due to critical economic situation, which kept the level of spending very low. Along with this, the poor stock market condition has affected the middle class of the country. Moreover, the burden of indirect taxes was disproportionately applied on lower income groups. Furthermore the reduction in development expenditure has also contributed in increasing the level of poverty and declining of middle class [Pakistan (Various Issues)]. For the upcoming years a declining trend in polarisation is observed i.e. during 1998-99 till 2001-02. This decline in polarisation has lot of factors involved i.e. helping of world's economics giants in favour of Pakistan because of fight against terrorism, the re-scheduling of loans etc. furthermore the present government has also worked a lot on poverty alleviation programmes like the commencement of Poverty Reduction Strategy Paper (PRSP) collaborated with the international agencies aiming to help poverty alleviation in Pakistan and improving the factors involved in social indicators. Due to increase in tax base by the present government, the burden of tax was some what shifted to companies and industrial sector as compared to the salaried class, which helped in strengthening of middle class. Similarly, substantial increase in the wages of government employees who constitute a significant proportion of middle class, also play vital role in declining polarisation and thus strengthening middle class. Also, the emergence of new sectors in the economy such as IT and Telecom has improved the market wage rate for both skilled and semi-skilled labour force. Due to which, the poor segments have also managed to live a better standard of living and thus strengthening of middle class.

Pakistan's rural and urban sectors also depict almost the same scenario. Pakistan's urban areas have dominated the over all trends. The magnitude of polarisation is found to

be larger in urban areas than in rural ones. The main reason can be the rapid urbanisation, increase market liberalisation and flourishing private sector causing wage differentials in urban areas.

The estimates of the Bossert-Schworm measure of polarisation with respect to aggregate household incomes show relatively higher polarisation. Throughout the period of analysis these estimates fluctuate between 0.361 and 0.384, whereas this range for polarisation with respect to per-adult equivalent income is between 0.326 and 0.354. Hence it is observed that aggregate household polarisation is greater in magnitude as compare to the polarisation measured with per adult equivalences. By these it appears that ignoring household size enlarges the magnitude of polarisation and thus overestimates the extent of polarisation. However, the trends in general with exception of rural Pakistan during 1992-93, are same as observed in polarisation with respect to per adult-equivalent incomes. This ends our discussion regarding the incidence of polarisation in Pakistan and its rural-urban segments. Now we shift the situation of polarisation in the four provinces of Pakistan

### **3.1.2. Trends in Polarisation in Provinces**

This section will cover the polarisation trends in all four provinces. The results of polarisation in provinces of Pakistan and their rural-urban segments are presented in Figure 2. The Figure separately presents the estimates of polarisation with respect to per adult-equivalent incomes and with respect to aggregate household income. We start with the most populated province Punjab, followed by Sindh, NWFP and Balochistan.

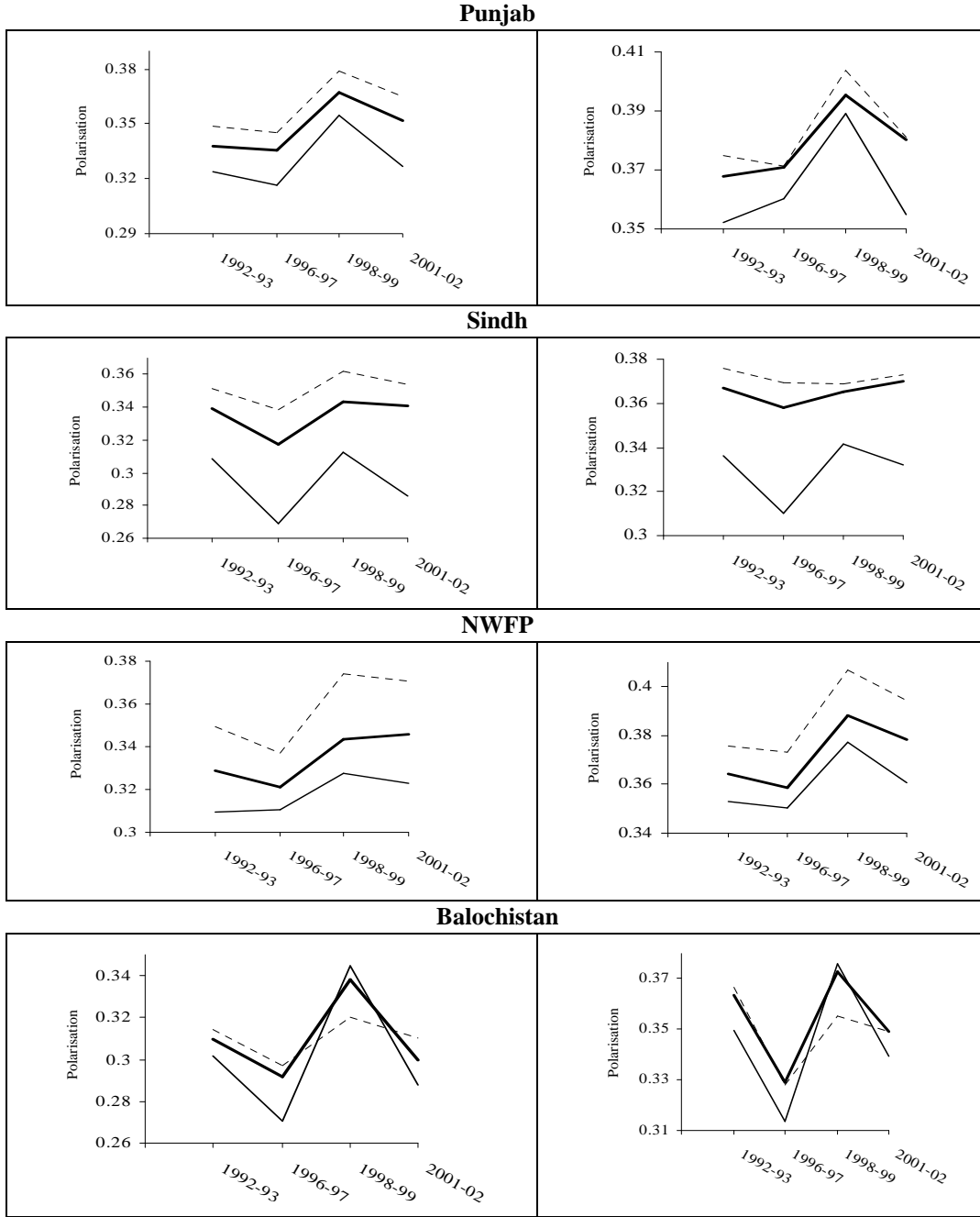
The province of Punjab has generally dominated the trends in provinces. The estimates of polarisation with respect to adult-equivalent incomes shows that during 1992-93 till 1996-97 polarisation has declined in all segments of Punjab. The Figure 2 shows that polarisation with respect to aggregate household incomes in general show the same trends except for the time period 1992-93 till 1996-97 in which rural segments have a rising trend in polarisation and has dominated the over all situation of Punjab. Like Pakistan the estimates of polarisation with respect to aggregate household income over estimates the extent of polarisation in all regions of Punjab.

The next province is Sindh. The estimates of per adult-equivalent income polarisation in Sindh have also the similar trends as for Pakistan. The Figure 2 shows that the polarisation has declined in Sindh and the rural-urban segments during 1992-93 till 1996-97 but has increased during 1996-97 till 1998-99. This increasing trend has reversed in late nineties and till the start of present century i.e. 1998-99 till 2001-02 in Sindh and the both regions.

The estimates of polarisation in Sindh and its rural and urban regions, measured by taking aggregate household as a unit of measurement in general, show the same pattern. The urban segments show these trends all over Sindh, though there exists a difference in the magnitude. The rural segment of Sindh has observed lower polarisation during 1992-93 till 1996-97 and 1998-99 till 2001-02 but in between these years polarisation has increased, i.e., during 1996-97 till 1998-99. The urban segments of Sindh has shown declining pattern since 1992-93 onwards with an exception of 2001-02. The over all Sindh has shown some variation and is dominated by both rural and urban regions though in different years.

**Fig. 2. Time Profiles of Polarisation in Provinces of Pakistan  
Based on the Bossert-Schworm Measure**

(a) Per Adult-equivalent Income Polarisation (b) Household Income Polarisation



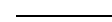
Overall



Urban



Rural





Now coming towards the situation of polarisation in NWFP. Here in general the urban segments have dominated the trends. During 1992-93 till 1996-97 the trends in polarisation declines in NWFP and in the urban areas and increases in rural areas. The increase has continued in 1996-97 till 1998-99 and now NWFP and the urban segments have also observed the rising trend. This rise in polarisation trends could not keep its pace and polarisation declines in rural and urban segments however for NWFP it remains some what stable. With reference towards the policy implication it is quite evident that like other provinces the successful commencement of SAP-I has a positive impact on income distributions; however, but here ignoring the rural areas. Whereas the SAP-II has affected the income distributions in a negative manner as polarisation has increased during 1996-97 till 1998-99.

The later years, i.e., 1998-99 till 2001-02, a slight decline in polarisation has observed resulting from increase in developmental expenditures especially after 9/11 and economic help by economic unions.

The estimates of polarisation in the NWFP, in the rural and urban segments, by taking aggregate household as a unit of measurement as in Punjab and Sindh, in general show trends similar to those of per adult-equivalences with the exception of the rural NWFP in 1996-97. The figure shows that polarisation from 1992-93 until 1996-97 in the NWFP and in the rural and urban segments has declined.

Lastly, the trends in polarisation in Balochistan are various. Figure 2 shows that polarisation during the initial years is severe in urban Balochistan, and later on, after 1996-97, it got more severe in rural Balochistan. The trends are quite typical, i.e., from 1992-93 to 1996-97 the trends in polarisation in Balochistan, in the rural-urban segments, are declining unlike the increasing trends from 1996-97 till 1998-99. The polarisation trends decline during the end-nineties and the start of present century, i.e., from 1998-99 to 2001-02. These trends show the role of government's efforts in stabilising the middle class of the country. Only the government during 1996-97 to 1998-99 remains some what unsuccessful in complete trickle down effect and the income distributions are distorted during these years. However the commencement of developmental projects through out the province of Balochistan during the present century has resulted in the strengthening of middle class.

Like other provinces of Pakistan, the estimates of aggregate household polarisation have followed the pattern of polarisation with respect to per-adult equivalent incomes.

The polarisation results of provinces are quite overlapping, i.e., they have in general followed the same trend. The province of Punjab has dominated the trends and has the highest magnitude of polarisation whereas converse is true for the province of Balochistan. Polarisation has shown fluctuating pattern in all provinces, for instance it has declined in all provinces till 1996-97, however the decline is relatively blunt in Punjab. A sharp rise has been observed from 1996-97 to 1998-99. However during 2001-02 polarisation has increased slightly in NWFP and declines for Punjab and Balochistan in a sharper manner and for Sindh it remains slightly consistent. Moreover like Pakistan all provinces have shown that polarisation is over estimated when households are not adjusted for their size. This ends our discussion on the incidence of polarisation in Pakistan and its provinces.

### 3.2. Comparative Analysis of Polarisation and Inequality

The polarisation merely focuses on the middle class of the society and is unable to cover the entire distribution covering other dimensions of welfare aspects. To look at the entire distribution the measurement of inequality is not only required but is also desirable. This section will cover the comparative analysis of Pakistan and its rural urban segments analysing the polarisation and inequality trends. Though large number of studies have worked on the measurement of inequality by computing Gini coefficients and other measures of inequality. To make the analysis of the present study comparable we rely on our own estimates of Gini coefficient. Like polarisation the Gini coefficient is also calculated in two ways, i.e., for per-adult equivalent income and aggregate household income. Following the same approach the results are in the form of graphs however the tables are mentioned as Appendix-B. The results are presented in Figure 3. The Figure separately presents the estimates of polarisation and inequality with respect to per adult-equivalent incomes and with respect to aggregate household income.

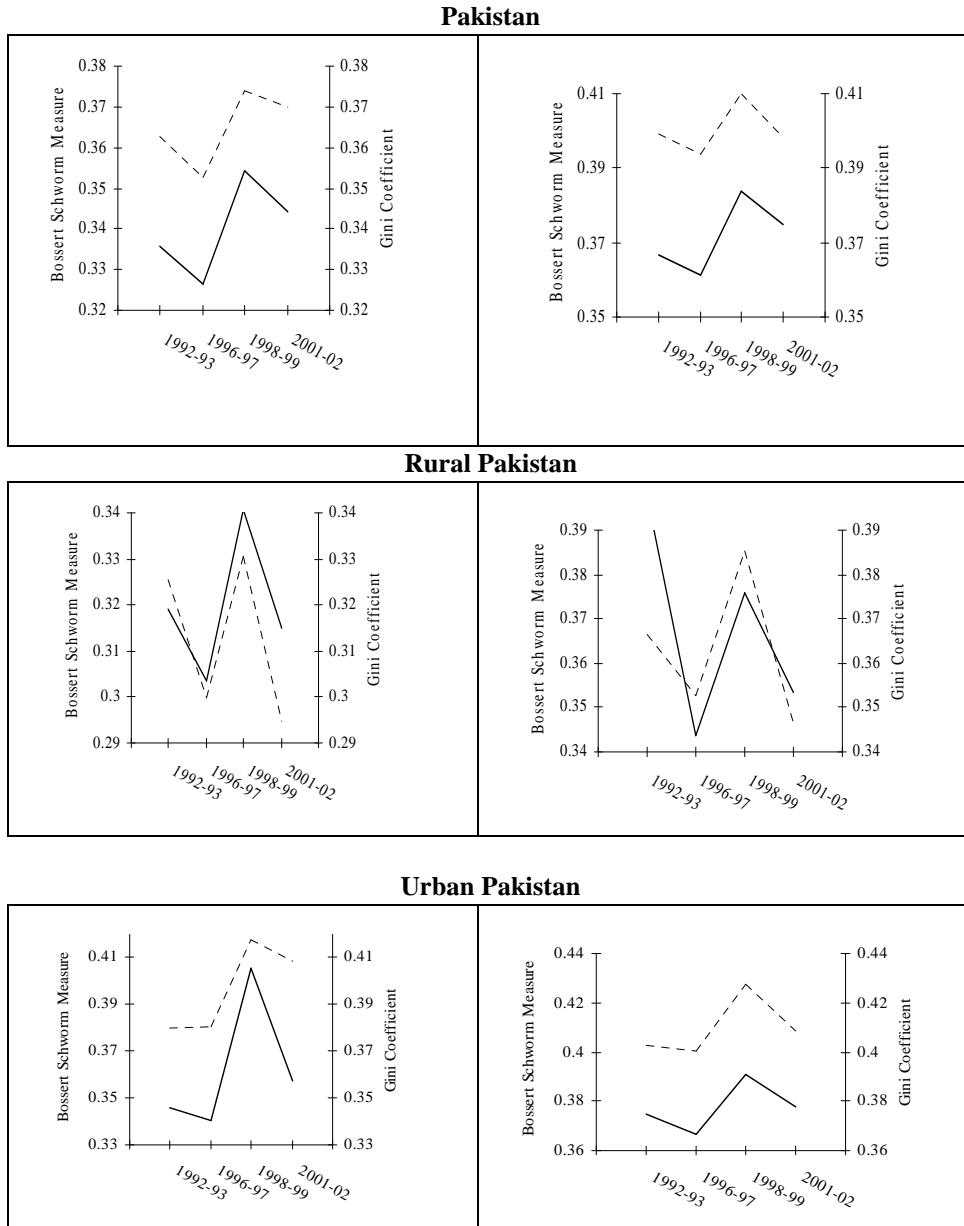
Looking at the estimates of per-adult equivalent income inequality and polarisation for Pakistan it is quite clear that the trends in polarisation and inequality show somewhat coinciding pattern. Both inequality and polarisation declines during 1996-97, rises in 1998-99 and finally falls during 2001-02. The figures show that for Pakistan the magnitude of inequality is higher than that of polarisation, but since both measures look into the income distribution from different angles, so their magnitude is not really comparable. The comparison of aggregate household income inequality and polarisation also reveal same results, showing that both polarisation and inequality have same directions.

The rural and urban Pakistan has shown that through out the period of analysis, inequality and polarisation follows the same trends for both units of measurement, i.e., per-adult equivalents and aggregate household.

Hence, in general, inequality and polarisation have the same trends and only the differences in magnitude have been observed, which is surely not a matter of concern. The same trends are helpful in explaining a relationship between the two important dimensions of welfare economics, i.e., between polarisation and inequality. It is very clear the years in which inequality has declined, has also caused the decline in polarisation and vice versa. This can be also related to the fact that lower inequality means lower disparity and the inability of income distribution to have extreme polar movements. In other words when polarisation rises, i.e., when middle class declines; it causes the income distribution to move towards the extreme poles causing disparity in income distribution and thus higher inequality. With reference to the policy implication it is very important to undertake the movements with in and between income distributions into consideration in order to have better policy implementations as the policy lowering the inequality is desirable as it strengthens the middle class, whereas the policy which causes middle class to decline is undesirable.

**Fig. 3. Time Profiles of Polarisation and Income Inequality in Pakistan Based on the Bossert-Schworm Measure of Polarisation and Gini Coefficient**

(a) Per Adult-equivalent Income Inequality and Polarisation      (b) Household Income Inequality and Polarisation



#### 4. SUMMARY AND CONCLUSIONS

Polarisation had been quite unexplored dimension of welfare all over the world; especially not even a single study is conducted in Pakistan. The present study estimates the trends in polarisation in Pakistan by using Bossert-Schworm measure. For in depth analysis the polarisation is measured in two ways, i.e., polarisation with respect to per-adult equivalent incomes and polarisation with respect to aggregate household income. The region of analysis is Pakistan, its rural-urban segments and each province, along with the rural and urban segment of each province. The analysis are based on micro level data of HIES for 1992-93, 1996-97, 1998-99 and 2001-02.

The overall trends in polarisation in Pakistan and its provinces are varying i.e. for some years the polarisation has declined and for few it has increased. More specifically during 1996-97 polarisation has declined, i.e., middle class has strengthened during this time. However during 1998-98 polarisation has increased sharply. The trends have reversed during 2001-02 and again polarisation declines during this period. In general 1998-99 is the period of maximum polarisation in all segments of Pakistan, while least polarisation is observed during 1996-97.

The decline in 1996-97 indicates that the adverse effects of the floods of 1992-93 on middle class eliminates to some extent as middle class strengthens. The decline in polarisation also indicates that first phase of Social Action Programmes (SAP-I) has positive impact on middle class. 1998-99 is period of economic sanctions which has weakened the middle class. The Year 2001-02 has once again showed decline in polarisation. This decline in polarisation has lot of factors involved, i.e., helping of world's economics giants in favour of Pakistan because of fight against terrorism, the re-scheduling of loans etc. further more the present government has worked a lot on poverty alleviation programmes like the commencement of Poverty Reduction Strategy Paper (PRSP) collaborated with the international agencies aiming to help poverty alleviation in Pakistan and improving the factors involved in social indicators. Furthermore the substantial increase in the wages of government employees who constitute a significant proportion of middle class also play vital role in declining polarisation and thus strengthening polarisation.

As far as rural and urban segments of Pakistan are concerned, the trends are same as for Pakistan, however polarisation in general is more severe in urban Pakistan.

The trends in polarisation in all four provinces and rural urban areas are similar to that of Pakistan's. Punjab has generally dominated the polarisation trends in provinces as having the highest magnitude of polarisation whereas the Balochistan is on the contrary. With reference to the rural-urban segments, the urban segments of provinces have dominated the trends though with slight exceptions and have relatively higher magnitude than the rural segments.

The evaluation of polarisation with two different units of measurement has resulted in difference in magnitude though trends are same. Incorporating the household size reduces the extent of polarisation, implying that ignoring household size over estimates polarisation.

The comparison of trends in polarisation and income inequality has shown that generally the trends in inequality and polarisation are similar. This implies that strengthening the middle class has positive effects on income distribution.

This study is a gateway towards the measurement of polarisation in Pakistan and there exists enough room for further research, such as measuring polarisation in Pakistan with other socio-economic units of well being, decomposition of polarisation from different dimensions. Further to analyse the direction of polarisation, i.e., on which side middle class has moved.

### APPENDIX–A

Table A1

*Per Day Minimum Calories Requirement Chart*

Age Groups	Male	Female	Female as a Proportion of Male
01 to 04 Years	1304	1304	1.000
05 to 09 Years	1768	1786	1.010
10 to 14 Years	2816	2462	0.874
15 to 19 Years	3087	2322	0.752
20 to 39 Years	2760	2080	0.754
40 to 49 Years	2640	1976	0.748
50 to 59 Years	2640	1872	0.709
60 Years and Above	2146	1632	0.760

Source: Pakistan (2002).

## APPENDIX-B

Table A1

### *Polarisation in Pakistan and Its Provinces*

		Polarisation in Household Incomes				Polarisation in Incomes Per Adult-equivalent			
		1992-93	1996-97	1998-99	2001-02	1992-93	1996-97	1998-99	2001-02
<b>Pakistan</b>	Overall	0.367	0.361	0.384	0.375	0.336	0.326	0.354	0.344
	Rural	0.398	0.343	0.376	0.353	0.319	0.303	0.341	0.315
	Urban	0.375	0.367	0.391	0.378	0.346	0.340	0.395	0.357
<b>Punjab</b>	Overall	0.368	0.371	0.395	0.380	0.338	0.335	0.367	0.352
	Rural	0.352	0.360	0.389	0.355	0.324	0.316	0.355	0.327
	Urban	0.375	0.371	0.404	0.381	0.349	0.345	0.379	0.365
<b>Sindh</b>	Overall	0.367	0.358	0.365	0.370	0.339	0.317	0.343	0.341
	Rural	0.336	0.310	0.341	0.332	0.308	0.269	0.313	0.286
	Urban	0.376	0.369	0.369	0.373	0.351	0.338	0.362	0.354
<b>NWFP</b>	Overall	0.364	0.359	0.388	0.379	0.329	0.321	0.343	0.346
	Rural	0.353	0.350	0.378	0.361	0.310	0.311	0.328	0.323
	Urban	0.376	0.373	0.407	0.395	0.350	0.337	0.374	0.371
<b>Balochistan</b>	Overall	0.363	0.329	0.373	0.349	0.310	0.292	0.338	0.300
	Rural	0.350	0.314	0.376	0.339	0.301	0.270	0.345	0.288
	Urban	0.366	0.328	0.355	0.349	0.314	0.297	0.320	0.311

Table A2

### *Income Inequality in Pakistan*

		Inequality in Household Incomes				Inequality in Incomes Per Adult-equivalent			
		1992-93	1996-97	1998-99	2001-02	1992-93	1996-97	1998-99	2001-02
<b>Pakistan</b>	Overall	0.399	0.394	0.410	0.398	0.363	0.352	0.374	0.370
	Rural	0.366	0.353	0.385	0.347	0.325	0.300	0.330	0.295
	Urban	0.403	0.400	0.428	0.408	0.380	0.381	0.418	0.408

*Note:* The estimates of Polarisation based on the Bossert-Schworm measure, and the estimates of income inequality are based on Gini Coefficient.

## REFERENCES

- Bossert W. and W. Schworm (2006) Measures of Polarisation. Presented in Australasian Meeting of the Econometric Society, 4-7 July. <www.esam06.anu.edu.au>
- Esteban J., *et al.* (2004) Polarisation: Concepts, Measurement, Estimation. *Econometrica* 72:6, 1737–1772.
- Esteban, J. and D. Ray (1994) On the Measurement of Polarisation. *Econometrica* 62:4, 819–851.
- Foster, J. E., and M. C. Wolfson (1992) Polarisation and the Decline of the Middle Class: Canada and the U.S. Vanderbilt University. (Mimeographed.)
- Gini, C. (1912) Measurement of Inequality of Incomes. *Economic Journal* 31, 124–126.
- Jafri, S. M. Y. (2002) *Issues in Measuring Poverty*. Islamabad: Centre for Research and Poverty Reduction and Income Distribution, Planning Commission, Government of Pakistan.
- Pakistan, Government of (2002) *Average Daily Calorie Requirement*. Islamabad: Nutrition Cell, Planning Commission.
- Pakistan, Government of (Various Issues) *Economic Survey*. Islamabad: Finance Division.
- Pakistan, Government of (Various Issues) *Household Integrated Economic Surveys*. Islamabad: Federal Bureau of Statistics.
- Rao, V. M. (1969) Two Decompositions of Concentration Ratio. *Journal of the Royal Statistical Society* 132:3, 418–425.
- Wang, You Qiang and KaiYuen Tsui (2000) Polarisation Orderings and New Classes of Polarisation Indices. *Journal of Public Economic Theory* 2:3, 349–363.
- Wolfson, Michael C. (1994) When Inequalities Diverge. *American Economic Review* 84:2, 353–358.
- Zhang, Xioabo and Ravi Kanbur (2001) What Difference Do Polarisation Measures Make? An Application to China. *Journal of Development Studies* 37:3, 85–98.