

## Trends of Income Inequality and Polarisation in Pakistan for the Period 1990-2008

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### 1. INTRODUCTION

Trends of income inequality and polarisation previously were calculated by Arshad, *et al.* (2008) in Pakistan for the period of 04 years from 1992-93 to 2001-02, using Gini-coefficient and Bossert and Schworm (2006) measures respectively. Empirical analysis of polarisation has huge importance in the economic policy making. However, polarisation has been less probed, rather un-explored phenomenon. So far only a handful studies have been conducted on this topic and most of the covered western countries with an exception of India. This research area appears to be unexplored in Pakistan, except for a few studies which led to the foundation for the present study.

Problem statement is that in spite of handsome economic growth rates and the rate of industrialisation, income distribution continues to deteriorate in Pakistan and why masses have not been able to enjoy the benefits of economic development. For social welfare analysis, issues like inequality, poverty, per capita income and trickle-down effect need to be addressed. Much empirical studies have been conducted on these issues however it appears that per capita income is not appropriate measure of the welfare in any economy because it hides a wide range of fluctuation behind the score/value. However, still it is treated as one of the foremost indicator of the wellbeing of the economy.

Despite of the recent and more sophisticated tools to assess effectiveness of economic growth, development and economic advancement the historical importance and simplicity of per capita income as a measure of the average level of prosperity in an economy still stands valid.

In Pakistan, per capita income in Dollar terms has increased from \$586 in 2002-03 to \$10,466 in 2008-09. Real per capita income in rupee terms has also increased by 2.5 percent as compared to 0.3 percent growth last year (Government of Pakistan, , 2009). However, In Pakistan 30 to 35 percent of the population is living on one dollar a day as reported by World Bank (2002). For these people, it is very hard to provide three square meals a day for family members.

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At the same time, phenomena such as “the disappearing middle class” or “clustering around extremes” do not appear to be easily captured by standard measures of inequality such as the Gini coefficient. It is to characterise such phenomena that Esteban and Ray (1994), Foster and Wolfson (1992), Wolfson (1994), Tsui and Wang (1998), Esteban et al., (1999) have proposed alternative indices of polarisation. These indices seek evidence for clustering in the distribution of personal income at the lower and upper ends. It is claimed that, at least in theory, they represent a major departure from standard measures of inequality.

It has also been discovered that high inflation rate deteriorates income distribution. However, inflation may be a positive indicator for macroeconomic and fiscal stabilisation in an economy which are also pre-requisite for economic growth. Therefore, changes in food prices are used as a determinant of income inequality. Inflation rates were at 7.9 percent in 2005-06 [Pakistan (2009)] and as of 2010-11 it was 14.1 percent. The study at hand attempts to answer a critical question whether economic growth trickles-down to the poor and impact on income distribution.

In Pakistan a number of attempts have been made to estimate the income or expenditure inequality using the Household Income and Expenditure Survey (HIES) data. The debate on trends in income inequality during the 1990s, an era of stabilisation and structural adjustment has been wide-ranging in Pakistan. However, lesser attempts have been made to explore the extent of polarisation in Pakistan. Polarisation is a phenomenon that has attracted much attention in recent past. Polarisation refers to the situation where middle class gets clustered towards the poles or in other words the population based on income distribution gets clustered to one or the other income extremes. It has been observed that, polarised societies are prone to competitive rent-seeking activities and will have difficulty agreeing on public goods such as infrastructure, education and good policies [Bossort, *et al.* (2007)]. In recent years it has been agreed upon that income inequality and polarisation capture different features of distribution and can even move in opposite directions.

Existing measures of polarisation have been applied empirically in many countries. Polarisation of income distribution and its causes have been studied in Spain by Gradin (2000, 2002), in Italy by D’Ambrosio (2001), and in China by Zhang and Kanbur (2001). Duclos, Esteban and Ray (2004) estimated polarization for income distributions of 21 countries. Seshanna and Decomez (2003) study polarisation across various countries in the world. Ravallion (1997) estimate Foster and Wolfson calculated polarisation indices for 67 developing and transitional economies. Aighokan (2000) briefly alerts about the possible problem of Polarisation in Nigeria. Leonid (2002) estimated the regional inequality and polarisation in Russia. Arshad and Idrees (2008) briefly introduced trends in Polarisation in Pakistan.

The present study focuses on the patterns and trends of regional inequality and polarisation in Pakistan from 1990 to 2008. Study calculates these trends in overall Pakistan, its urban and rural segment and in the four (04) Provinces of Pakistan. For each component, the study derives per capita real consumption expenditures from the HIES/PIHS/PSLM data. Objectives of this study are as follows:

- (i) To explore the trends of income inequality and polarisation in Pakistan overall and its urban and rural segments during 1990 to 2008.
- (ii) To measure the relationship of income inequality and polarisation in all the provinces during the study period.

The study proceeds as the data set, unit of measurement and the methodologies are discussed in Section 2. Empirical analysis of Pakistan and its rural and urban segments are presented in Section 3, whereas Section 4 highlights the study results of Provinces. Section 5 concludes the study.

## 2. FRAMEWORK OF STUDY

The choice of data set, units of measurement and the methodologies used for the measurement of income inequality and polarisation are discussed in this section.

### 2.1. Data

The data set of present study has been collected from various issues of Household Integrated Economic Survey (HIES)<sup>1</sup> conducted and published by Federal Bureau of Statistics (FBS), Government of Pakistan. Statistics show that during all the years more than 60 percent of the sampled households belong to rural areas of Pakistan (Table B1). The province wise distribution shows that the maximum number of households belongs to Punjab, followed by Sindh, Khyber Pakhtunkhwa (KPK)<sup>2</sup> and Balochistan (Table B2). In 1998-99 Household Integrated Economic Survey (HIES) was merged with Pakistan Integrated Household Survey (PIHS), and the interrogation methodology was revised and 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. In 2005-06, PIHS was replaced with the Pakistan Social and Living Standards Measurement Survey (PSLM). PSLM incorporated the HIES as well as the Core Welfare Indicators (CWIQ). The survey consists of all urban and rural areas of the four provinces of Pakistan defined as such by the various population censuses concerned. The household and individual-level data used in the instant study has been collected from eight rounds of HIES (Table B3). For the purpose of this study, household and individual level data has been drawn from HIES 1990-91, HIES 1992-93, HIES 1993-94, HIES 1996-97, PIHS 1998-99, PIHS 2001-02, PSLM 2005-06 and PSLM 2007-08. Therefore, the data used in this study combine eight rounds of micro data from household surveys to make inference the trends in income inequality and polarisation in Pakistan.

### 2.2. Choice of Income Units

How the study use the data to manipulate the requisite outcome. There can be many options in the HIES/PIHS/PSLM data for the choice of income unit, i.e. aggregate household, per capita household income, or per-adult equivalent. The aggregate household covers the household as a single unit and thus ignores household size. Per capita household incorporates household size but gives same weight to all household members. Whereas 'adult equivalence' is a method based on the calories required by the males or females in different age groups. There is much literature on adult equivalence. Jamal (2006) 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.

<sup>1</sup>Most of the studies on inequality in Pakistan have used HIES data.

<sup>2</sup>KPK (Khyber Pakhtunkhwa) is a new name of NWFP, Which was changed in the 18<sup>th</sup> amendment of the Constitution of Pakistan, was passed by the National Assembly of Pakistan on April 8, 2010.

Income does not always necessarily reflect the true living standards. The households with high per capita income do not always necessarily enjoy high living standards. Under such cases, consumption expenditure can be a better indicator of living standards. Moreover there are less chances of under reporting in consumption expenditures as compared to income levels. In the present study it was, therefore, felt worthwhile to measure consumption inequalities.

### 2.3. Methodology

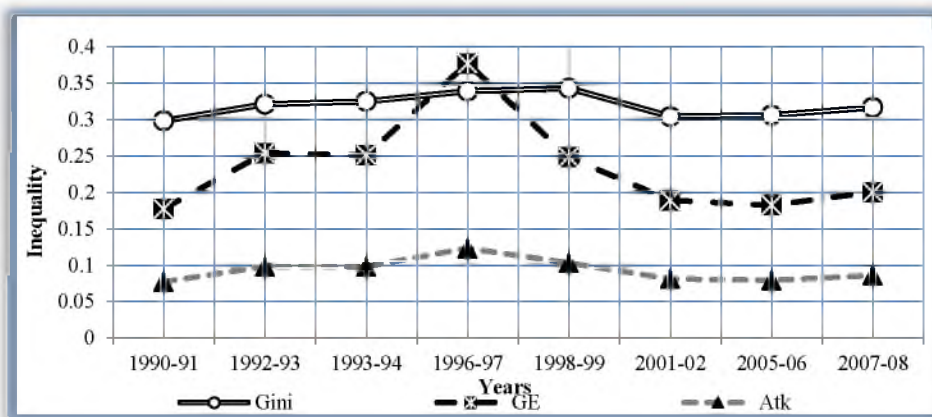
The study calculates trends in income inequality by two Lorenz-consistent inequality measures, namely the Gini coefficient [Cowell (1995)] and the Generalised Entropy [Shorrocks (1984)]. The Gini coefficient is used because it is the most commonly referred to measure of inequality and, therefore, can provide good benchmarking values. The Generalised Entropy (GE) measure is used as it will introduce some measures discussed later in this study. The Atkinson index of income inequality is also used in the subject study. The study also measures and discusses polarisation, which is a concept distinct from income inequality as elaborated by the Generalised Esteban, *et al.* (1999) and Foster and Wolfson (1992).

## 3. EMPIRICAL ANALYSIS AT NATIONAL LEVEL

### 3.1. Trends in Overall, Urban and Rural Income Inequality in Pakistan at National Level

Gini coefficients, Generalised entropy and Atkinson measure of inequality for Pakistan as a whole as well as for urban and rural areas of Pakistan have been estimated and explained in this section (Table A1). Gini coefficient of overall Pakistan increases with the sluggish pace from 1990-91 to 1998-99 almost 05 percentage points i.e from 0.298 to 0.343. Later, from 1998-99 to 2005-06 it declines 04 percentage points i.e. 0.343 to 0.306 followed by an increasing trends in 2007-08 vide Figure 3.1. The results of Gini coefficients as calculated by Jamal (2006) also show that Gini increases from 1990-91 to 1998-99 and later on it decreases till the study year 2001-02. Pakistan, Government of (2001), FBS also explain that Gini coefficient decreases from 1998-99 to 2001-02.

Fig. 3.1. Inequality Measures of Overall Pakistan

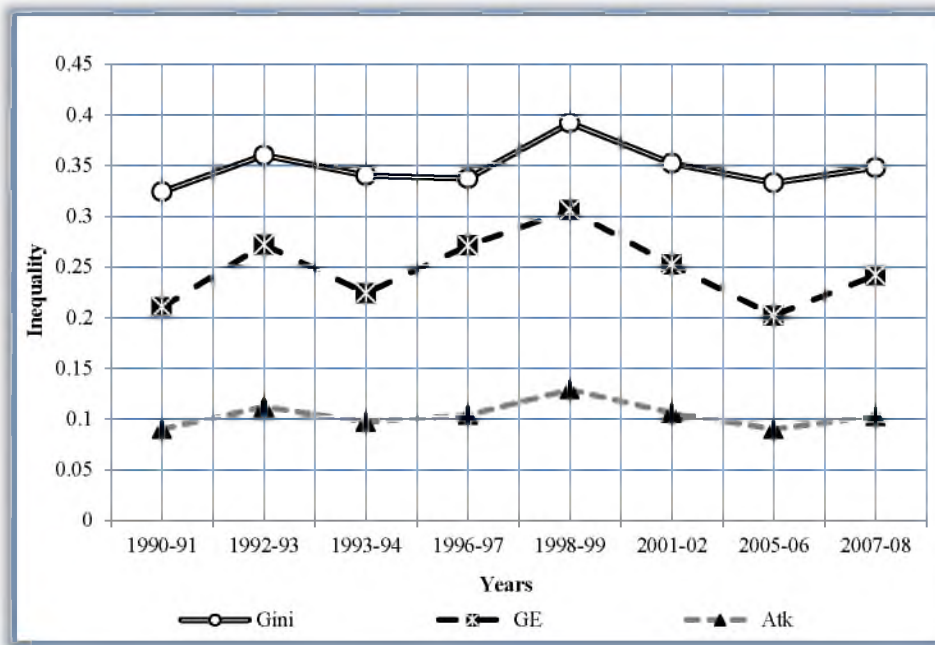


The overall Generalised entropy increases with an energetic pace from 1990-91 to 1996-97 almost 20 percentage points i.e. from 0.177 to 0.377. Subsequently from 1996-97 to 2005-06 it decreases 19 percentage points i.e. 0.377 to 0.182 followed by an increasing trends in 2007-08.

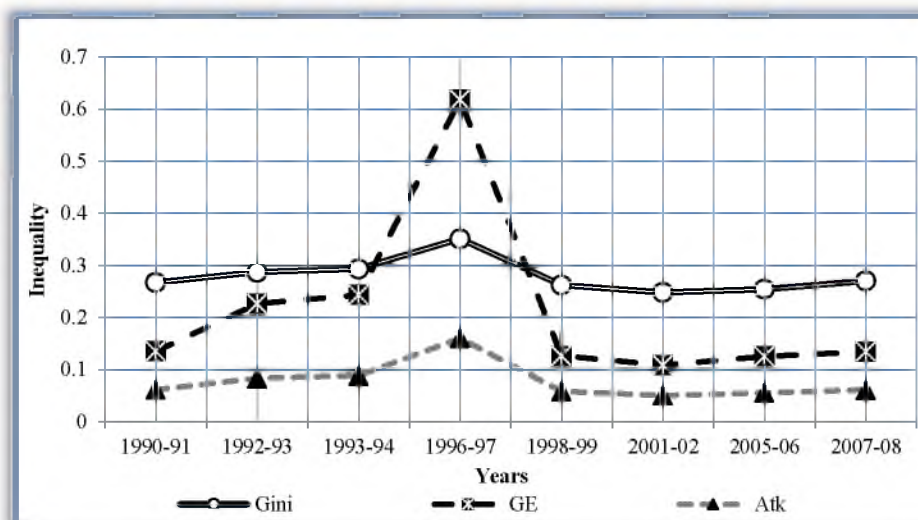
The Atkinson measure of inequality shows the same trend as the generalised entropy but with lesser variation. It increases from 1990-91 to 1996-97. According to World Bank (2002) for the same time period household income inequality rose from 0.26 to 0.47 Gini points; and the dynamics are similar to this study. After that from 1996-97 to 2005-06 it decreases.

The measures of inequality in Urban Pakistan illustrate that all the inequality measures increases from 1990-91 to 1992-93 followed by a decreasing trend in 1993-94. After that inequality increases till 1998-99 as shown by all measures. Afterward the urban inequality decreases till 2005-06 but it increases swiftly in 2007-08 see Figure 3.2.

**Fig. 3.2 Inequality Measures of Urban Pakistan**



The measures of inequality in Rural Pakistan illustrate that all the inequality measures increases from 1990-91 to 1993-94 with the sluggish pace followed by a dynamic pace in 1996-97. After that income inequality decreases in 1998-99 with an active pace followed by a lethargic pace in 2001-02. After that the rural inequality increases till 2005-06. After that the rural inequality increases till 2007-08 vide Figure 3.3. The rural Pakistan shows the different pattern with more deviations. It is also observed that there is very high level of income disparities in the year of 1996-97, in which there is a very high level of income heterogeneity and income disparities which is exceptional.

**Fig. 3.3. Inequality Measures of Rural Pakistan**

Pakistan (2001) FBS show that overall, urban and rural Gini coefficient increases from 1992-93 to 1998-99. World Bank (2003) also indicates the same results in overall and urban Pakistan whereas, rural poverty decreases very minor from 1992-93 to 1998-99. Arshad, *et al.* 2008 also concluded that from 1992-93 to 1998-99 the overall, urban and rural income inequality increases whereas, from 1998-99 to 2001-02 it decreases. The present study also shows the similar trends as above cited studies indicate.

One possible explanation for the results could be that rural incomes are more human labour based than urban incomes. That is why movement from household based data to persons based data has reduced the value of Gini coefficients more in rural areas than in urban areas. In other words high income households in rural areas are those which have more people living in those households and low income households are those which have less people living in them. That is why when incomes were re-divided on persons or per capita basis the inequality fell as high incomes of larger families were divided among more people and small incomes of smaller households were divided among people living in smaller households [Ahmed (2000)].

Another aspect is that the floods of 1992-93 had severe effect in the rural areas. The effects of destructive floods of 1992-93 were eliminated in year 1996-97 (Table A1). Consumption of rural population especially agricultural dependent persons went up again in rural areas. Secondly, the government after floods of 1992-93 gave special attention to the agriculturists [Arshad, *et al.* (2008)].

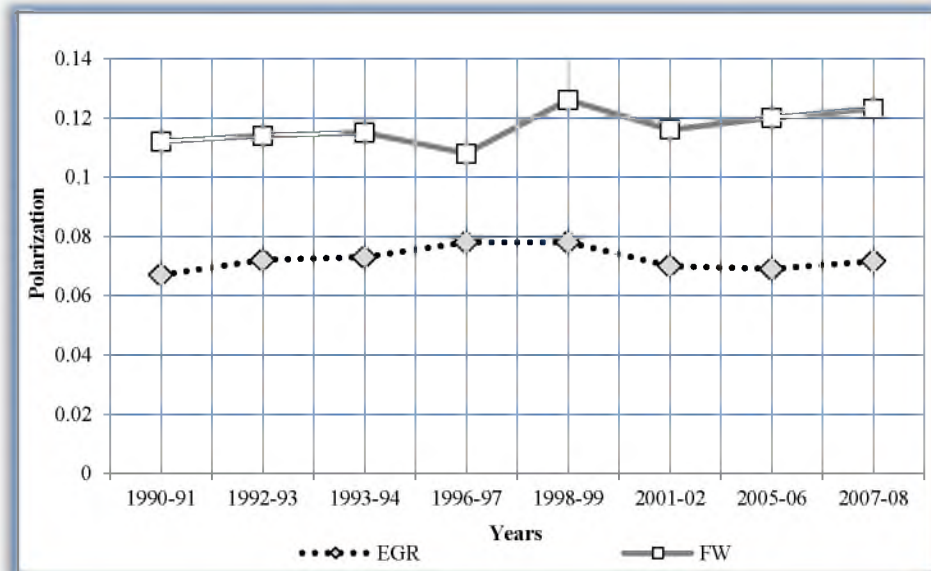
In urban areas on the other band, huge profits of stockiest, importers and constructors were eliminated. These reversed the situation of inequalities in urban and rural segments of the country. Increasing trends in inequalities are recorded till 1998-99. This period is critical with reference to the Structural Adjustment Programme. Kemal (2003) also concluded that "overall poverty and inequality increased during the adjustment phase" [UNDP Pakistan Report (2009), Brief-3].

The year of 1996-97 is the period of maximum inequality in overall as well as in rural Pakistan, whereas, 1998-99 was the period of maximum inequality in urban Pakistan. This was the period during which Pakistan opted for nuclear explosions. As an after effect, many developed nations imposed sanctions on Pakistan by stopping foreign aid and other assistance. As a result poor segment of the society got affected adversely and thus inequalities rose in Pakistan and its urban segment. These statistics indicates that the sanctions of 1998-99 had more adverse effects on low-income groups of urban Pakistan, and thus reduced their consumption considerably deteriorating consumption inequalities in overall Pakistan. Urban areas saw more adverse effects due to the fact that most people of urban areas are employed in service departments and multinational companies, which dropped their investments. Prices of daily food items rose drastically and thus adversely affected the consumption levels of urban citizens. On the other hand, as people of rural areas mainly depend upon agriculture and most of them are not purchaser of major food items such as rice, wheat, etc., from markets, so the inequality level of low income groups did not significantly affect the rural areas of Pakistan.

### 3.2. Trends of Overall, Urban and Rural Polarisation Measures in Pakistan at National Level

The estimation of polarisation calculated and described by two different methods i.e., Generalised Esteban, *et al.* (1999) and Foster and Wolfson (1992) in Pakistan and its rural-urban segments in this section (Table A1). The trends of polarisation in Pakistan estimated by Arshad, *et al.* (2008) using the Bossert-Schworm measure (2006) and finds the same result as calculated by Foster and Wolfson (FW) measure of polarisation in the present study. While, Generalised Esteban, *et al.* (EGR) measures show a different results.

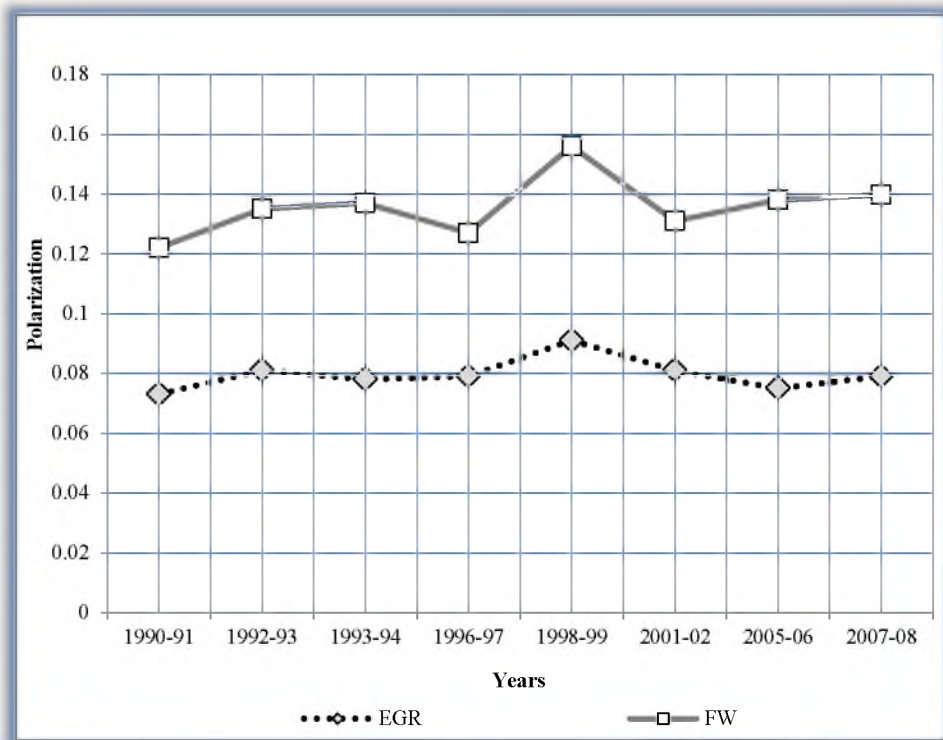
Fig. 3.4. Polarisation Measures of Overall Pakistan



Arshad, *et al.* (2008) estimates that polarisation decreases from 1992-93 to 1996-97 and then it increases from 1996-97 to 1998-99 followed by a decreasing trend in 2001-02 in overall, urban and rural Pakistan. The identical results in the current study are also shown by the Foster and Wolfson measure in the same time period (Table A1). The estimation of overall polarisation by Generalised Esteban, *et al.* (1999) indicates that there is a consistent increase till 1996-97 and then it decreases with the same pace. Whereas, the Foster and Wolfson measure of polarisation shows more fluctuations as presented above in Figure 3.4.

The trends of urban polarisation from 1990-91 to 1992-93 increased in urban Pakistan by a dynamic pace as estimated by either of the two measures of polarisation. This increasing trend continues in urban Pakistan as shown by the measure of Foster and Wolfson while, Generalised Esteban *et al.*, show a declining trend. Then from 1996-97 to 1998-99 the urban polarisation increased as shown by both measures. Later on it decreases till the end of the study period (Figure 3.5).

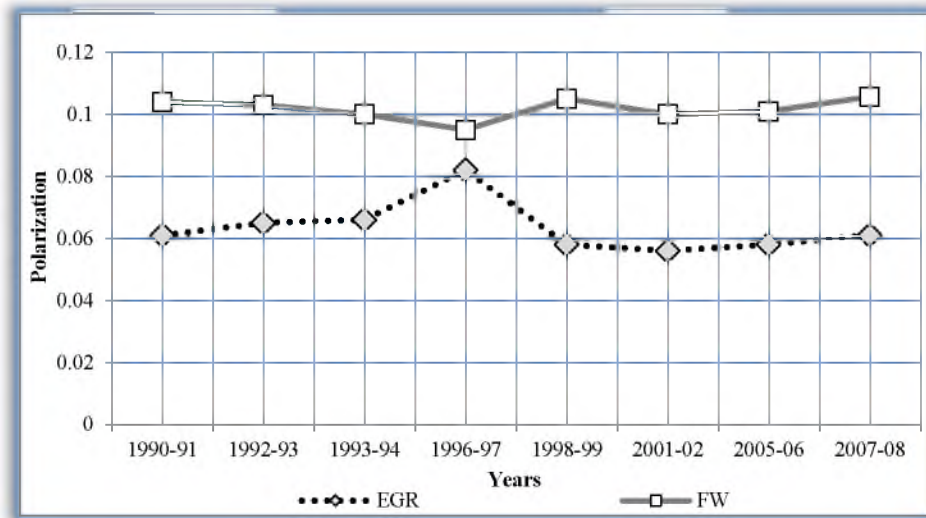
**Fig. 3.5. Polarisation Measures of Urban Pakistan**



The rural polarisation explains a very steady trend over the study years. First it increases from 1990-91 to 1996-97 as shown by Generalised Esteban, *et al.* (1999) measure whereas, Foster and Wolfson measure shows an opposite trend in the same study period. Afterward, from 1996-97 polarisation measure of Generalised Esteban, *et al.* (1999) decreases till 2005-06 while, Foster and Wolfson measure shows a contrary trend (Figure 3.6).



Fig. 3.6.



The increasing trend of polarisation with the dynamic pace from 1990-91 to 1992-93 indicates that the middle class weakened due to the adverse effects of flood in 1992-93. After that from 1992-93 to 1998-99 polarisation increases with the sluggish pace. The rising trend in the later years shows that the middle class strengthens over the years with little fluctuations till 1998-99. Afterward, polarisation decreases with a dynamic pace from 1998-99 to 2005-06. This declining trend is observed mostly by all the polarisation measures. 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 government of this period 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 somewhat shifted to companies and industrial sector as compared to the salaried class, which helped in strengthening of middle class [Arshad, *et al.* (2008)].

### 3.3. Trends of Income Inequality vs. Polarisation of Overall, Urban and Rural Pakistan

The trends of income inequality and polarisation in overall, urban and rural Pakistan have been explained in detail in Sections 3.1 and 3.2 respectively. In this sections, an attempt has been made to correlate the two concepts. To begin with, it must be understood that there is a wide difference between the concept of polarisation and income inequality. Income inequality looks at the distribution of income among all income units while, polarisation focuses on the strengthening or weakening of middle class. So the magnitudes of these measures are not comparable at all. The only significance is of their mutual trend. The estimates show that the Gini coefficients, Generalised Esteban, *et al.* (1999) and the Atkinson measures have approximately same

trend whereas, Generalised entropy and Foster and Wolfson measures shows the different pattern. Three features are immediately apparent from the measure of income inequality and polarisation (Table A1 and Figures 3.1 and 3.4). First, the overall trend for both inequality and polarisation measures increases but at substantially different rates. Second, although there is an overall upward trend, this is not uniform, from 1998-99 to onward, inequality and polarisation has actually declined. Third, the distinction between the three inequality measures is greater than the two polarisation measures.

Figures of urban Pakistan illustrate that all the measures have a consistent trend in the study period. The magnitude of the fluctuations is approximately similar as shown by all the measures of income inequality and polarisation. In case of urban Pakistan, the result of income inequality and polarisation shows that from 1990-91 to 1992-93 it increases followed by a decreasing trend from 1992-93 to 1996-97 except the Foster and Wolfson measure. The result shows that the estimates from 1996-97 to 1998-99 increased followed by a decreasing trend till the end of the study period. Whereas the Foster and Wolfson polarization measure shows a different trend as compare to other measures.

This proves that decreasing inequalities do not ensure decreasing polarisation. As from 2001-02 to 2005-06 all the inequality measures decreases, while the Foster and Wolfson measure of Polarisation increases. After that from 2005-06 to 2007-08 all the measures increases (Figure 3.2 and 3.5). Though inequalities have increased from 2001-02 to 2007-08 still the proportion of middle class has increased. The dispersion in incomes even in the middle-income groups can increase or there may be a wider gulf in the incomes of the lesser than before proportion of people at the poles.

Three features are revealed by the results of inequality and Polarisation measures. First, the overall trend for both inequality and polarisation measures increases but at substantially different rates. Second, although there is an overall upward trend, this is not uniform, from 1998-99 to onward inequality and polarisation has actually declined and from 2001-02 to 2007-08 it increases. Third, the distinction between the three inequality measures is greater than the two polarisation measures (Figure 3.3 and 3.6).

Since the rural population accounts for more than 65 per cent of total population [Pakistan (2007)] it is worthwhile, to compare the measures of inequality and polarisation for rural Pakistan. Again, the Generalised Esteban, *et al.* (1999) exhibits a similar pattern to the Gini coefficients. This time, Foster and Wolfson index and Atkinson index have the slightest increase during the whole period and they show different patterns in 1996-97, 2005-06 and 2007-08 from other measures. The Generalised entropy measure rises much faster than the Gini coefficients, suggesting the different sensitivities of these two measures to changes in different parts of the distribution. Because of its sensitivity to the median value, the Foster and Wolfson index may fluctuate more rapidly when the median value and its associated group change. But an important aspect is that on the whole, polarisation and the inequality measures agree on the trend over the sample period.

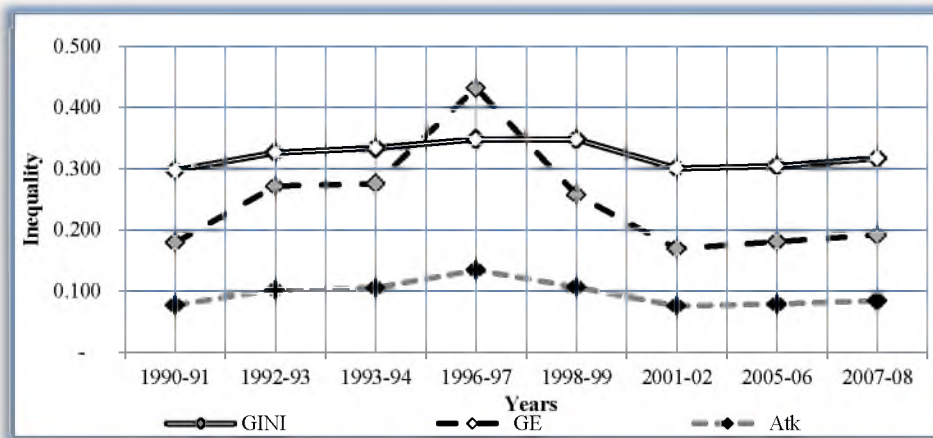
#### **4. COMPARISON OF THE TRENDS OF INCOME INEQUALITY AND POLARISATION IN ALL PROVINCES OF PAKISTAN**

In this section the study compared the trends of income inequality and polarisation of all the provinces over the study period. The trends of income inequality and polarisation in all the Provinces have been depicted in detail in previous section. The

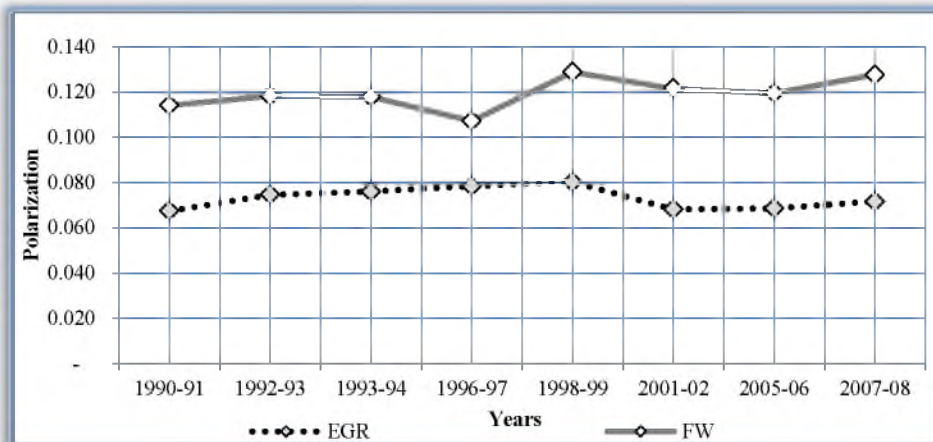
main focus of this section is a comparison of income inequality and polarisation in all provinces.

The estimates of income inequalities and polarisations of Punjab have been presented and explained in Figures 3.7 and 3.8 respectively. The Gini coefficients, Generalised entropy, Atkinson and Generalised Esteban, *et al.* (1999) measures show approximately the same trend whereas, Foster and Wolfson measure differs from other measures in the period from 1993-94 to 1998-99. Three features are immediately apparent from Figures 3.7 and 3.11. First, the overall trend for both inequality and polarisation measures increases but at substantially different rates till 1996-97 except the Foster and Wolfson measure. Second, although there is an overall upward trend, it is not uniform, from 1998-99 to onward inequality and polarisation actually decline. Lastly, the distinction between the three inequality measures is greater than the two polarisation measures.

**Fig. 3.7. Inequality Measures in Punjab**

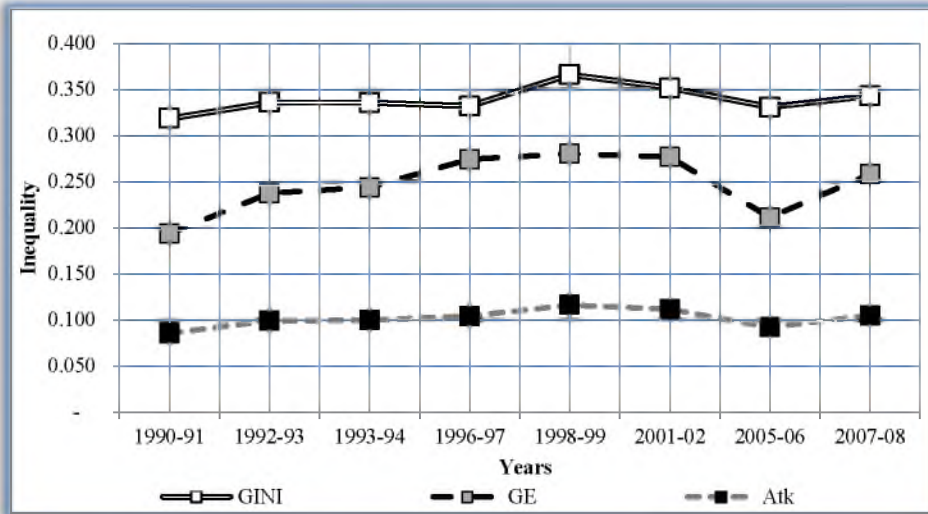


**Fig. 3.8. Polarisation Measures in Punjab**



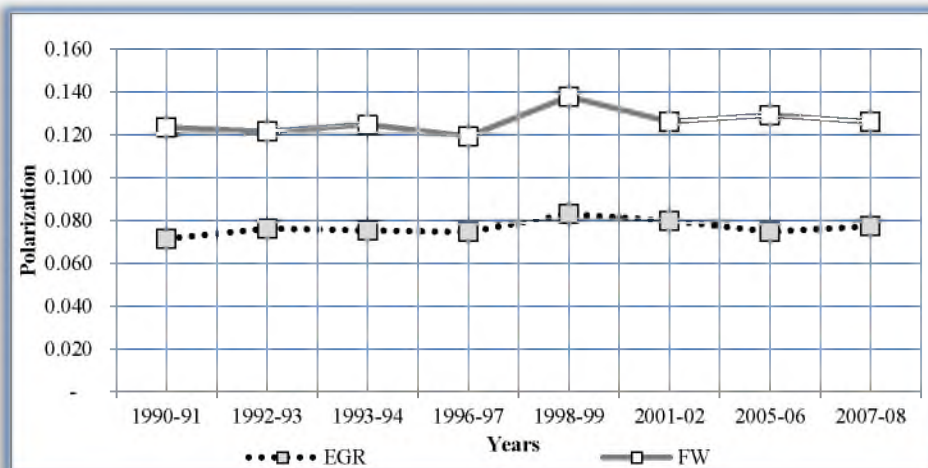
The trends of income inequality and polarisation in the province of Sindh are illustrated in Figures 3.9 and 3.10. The Gini coefficients, Generalised entropy, Atkinson and Generalised Esteban, *et al.* (1999) measures show approximately the same trend whereas, Foster and Wolfson measure differs from other measures in the period from 1993-94 to 1998-99 and from 2005-06 to 2007-08.

**Fig. 3.9. Inequality Measures in Sindh**



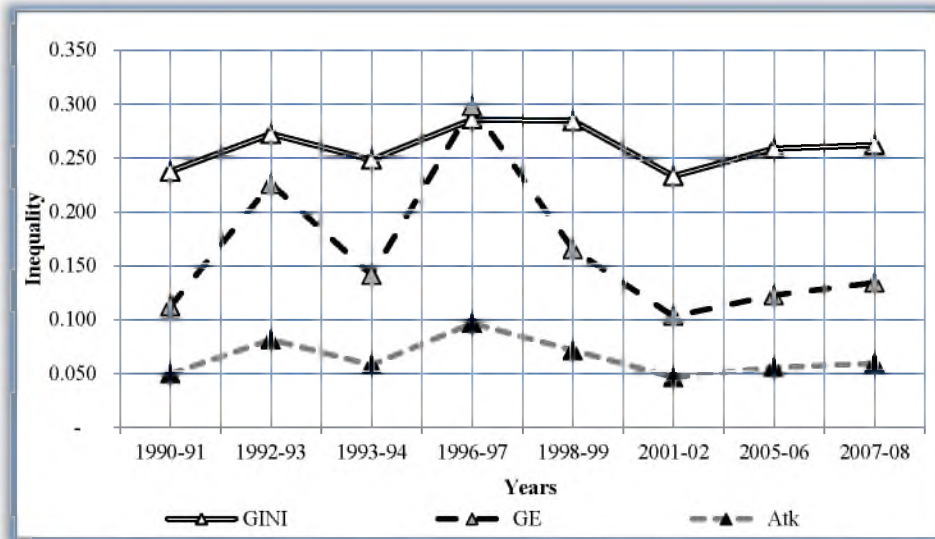
There are two phases first, the trend for both inequality and polarisation measures increases but at substantially different rates till 1998-99 except the Foster and Wolfson measure. Secondly, from 1998-99 to onward inequality and polarisation has decreasing trends. Lastly, these measures increase in 2007-08 except Wolfson measure.

**Fig. 3.10. Polarisation Measures in Sindh**

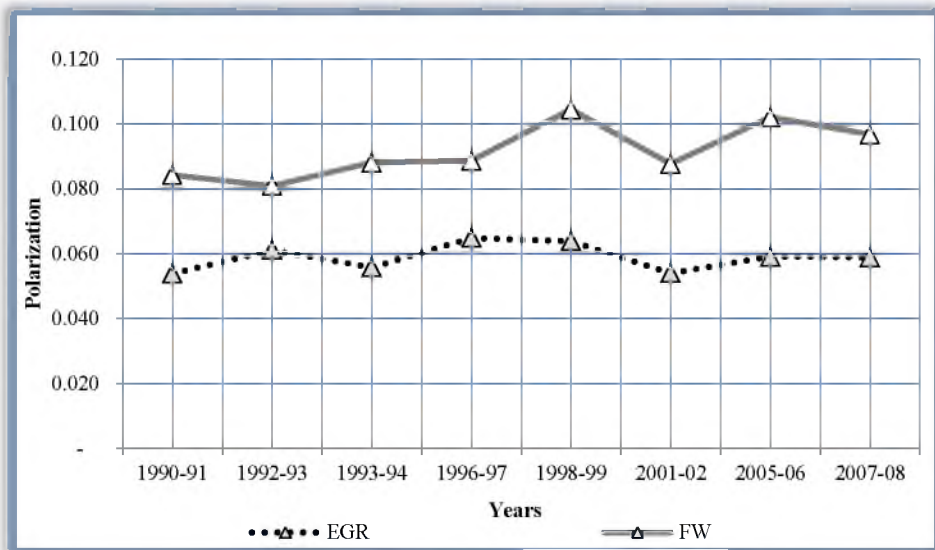


The trends of income inequality and polarisation in the province of Khyber Pakhtunkhwa are presented and explained by the help of Table A2 and Figures 3.11 and 3.12. Gini coefficients, Foster and Wolfson and Generalised Esteban, *et al.* (1999) measures have the approximately same trend whereas, Generalised entropy and Atkinson shows the similar trends. All the measure shows the cyclical trends, however there magnitude and pace is different. Due to cyclical trends there are many phases however, looking at the trends it is obvious that as the inequality increases polarisation also increases.

**Fig. 3.11. Inequality Measures in Khyber Pakhtunkhwa**

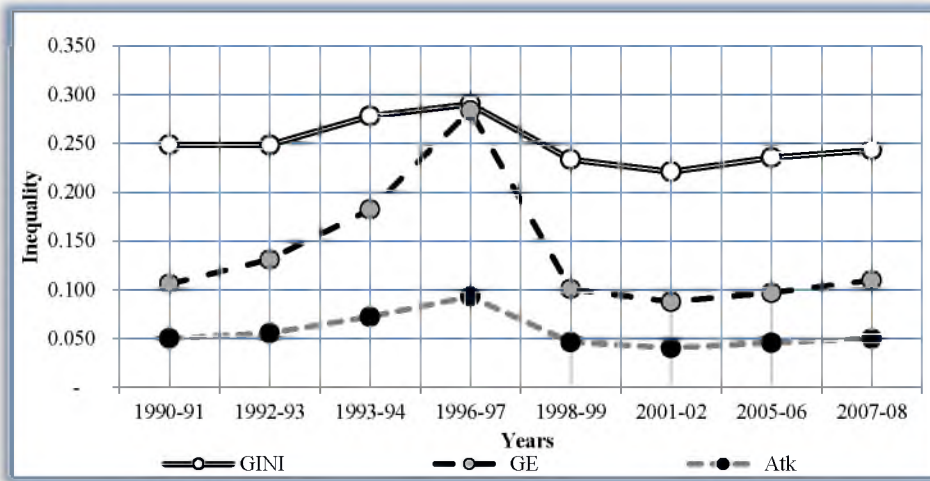


**Fig. 3.12. Polarisation Measures in Khyber Pakhtunkhwa**

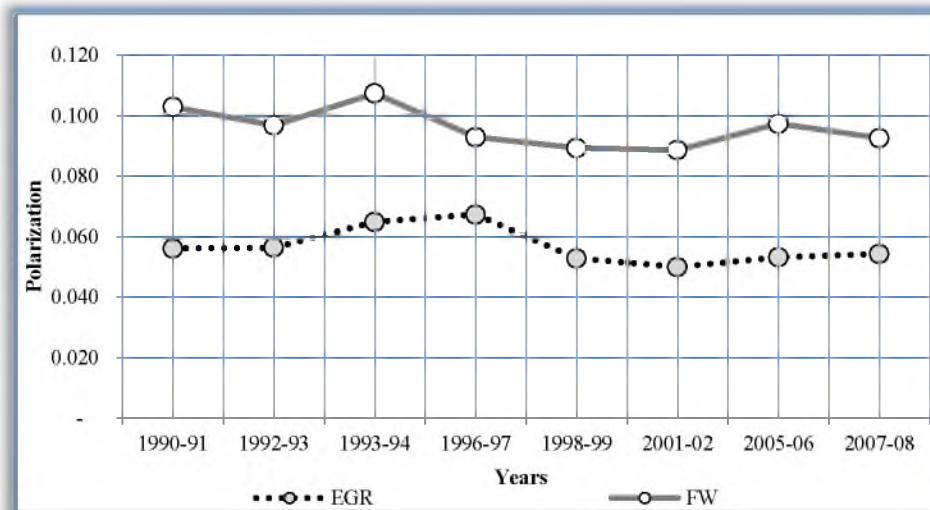


Figures 3.13 and 3.14 illustrate the trends of inequality and polarisation in the province of Baluchistan. Gini coefficients, Atkinson and Generalised Esteban, *et al.* measures have the approximately same trend whereas, Generalised entropy and Foster and Wolfson measure illustrate the different trends. Generalised entropy is a measure which shows the greater magnitude of the fluctuations. It shows that there are three phases. In first phase Inequality and polarisation measure as Gini coefficients, Atkinson and Generalised Esteban, *et al.* (1999) increases till 1996-97 indicating that as the inequality increases the middle class become weak. From 1996-97 to 1998-99 the inequality decreases by strengthens the middle class. In the last study years inequality and polarisation increases again.

**Fig. 3.13. Inequality Measures in Balochistan**



**Fig. 3.14. Polarization Measures in Khyber Balochistan**



## 5. CONCLUSION

The main purpose of this study is to calculate the trends of income inequalities and polarisation in Pakistan as a whole and its urban-rural segments as well as in its four provinces. The calculations of the study show that Pakistan is fairly optimistic in terms of its distribution of income.

The highest level of inequity is seen in Sindh and lowest level of inequality is seen in Baluchistan. The fluctuation ratios in rural Pakistan are more than in urban Pakistan indicating a very important phenomenon in rural versus urban Pakistan i.e. the rural incomes are more human labour based than urban income. In other words high-income households in rural areas are those which have greater number of family members and low income households are those which have less family members. Therefore, when re-divided, income among persons or on per capita basis the inequality fell as high incomes of larger families are divided among larger number of people and small incomes of smaller households are divided among smaller number of people.

The same phenomenon is observed in all provinces of Pakistan but a bit higher in Sindh and Khyber Pakhtunkhwa. The overall trends in inequalities and polarisation in Pakistan and its provinces are varying i.e. from 1996-97 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. In Brief, although the two polarisation measures are theoretically different from standard inequality measures, empirically the new measures of polarisation do not give us very different results from the standard measures of inequality. Simply looking at the trends of these measures will not help us capture the distinctive concerns about polarisation versus increasing inequality in Pakistan.

Moreover, the study also concludes that there is no trickle-down effect of the growth rate and the inequality moved upward or downward during the high growth rate years as it stirred in 1996-97 up and 2001-02 down. High inflation rate play an important role to enlarge the gap between rich and poor. Inequality increase briskly as the inflation rate goes in two digits indicating that the inequality is growing in the era of the present Government.

## APPENDIX "A"

Table A1

*Trends of Income Inequality and Polarisation of Overall, Urban and Rural Pakistan*

| Years   | Description | Inequality |       |       | Polarisation |       |
|---------|-------------|------------|-------|-------|--------------|-------|
|         |             | Gini       | GE    | Atk   | EGR          | FW    |
| 1990-91 | Overall     | 0.298      | 0.177 | 0.077 | 0.067        | 0.112 |
|         | Urban       | 0.324      | 0.210 | 0.090 | 0.073        | 0.122 |
|         | Rural       | 0.267      | 0.135 | 0.061 | 0.061        | 0.104 |
| 1992-93 | Overall     | 0.321      | 0.254 | 0.098 | 0.072        | 0.114 |
|         | Urban       | 0.360      | 0.272 | 0.112 | 0.081        | 0.135 |
|         | Rural       | 0.287      | 0.226 | 0.083 | 0.065        | 0.103 |
| 1993-94 | Overall     | 0.325      | 0.251 | 0.098 | 0.073        | 0.115 |
|         | Urban       | 0.340      | 0.224 | 0.097 | 0.078        | 0.137 |
|         | Rural       | 0.293      | 0.243 | 0.088 | 0.066        | 0.100 |
| 1996-97 | Overall     | 0.339      | 0.377 | 0.123 | 0.078        | 0.108 |
|         | Urban       | 0.337      | 0.271 | 0.104 | 0.079        | 0.127 |
|         | Rural       | 0.351      | 0.618 | 0.160 | 0.082        | 0.095 |
| 1998-99 | Overall     | 0.343      | 0.248 | 0.103 | 0.078        | 0.126 |
|         | Urban       | 0.392      | 0.306 | 0.129 | 0.091        | 0.156 |
|         | Rural       | 0.262      | 0.126 | 0.058 | 0.058        | 0.105 |
| 2001-02 | Overall     | 0.304      | 0.189 | 0.081 | 0.070        | 0.116 |
|         | Urban       | 0.352      | 0.252 | 0.106 | 0.081        | 0.131 |
|         | Rural       | 0.248      | 0.108 | 0.050 | 0.056        | 0.100 |
| 2005-06 | Overall     | 0.306      | 0.182 | 0.079 | 0.069        | 0.120 |
|         | Urban       | 0.333      | 0.202 | 0.090 | 0.075        | 0.138 |
|         | Rural       | 0.254      | 0.125 | 0.055 | 0.058        | 0.101 |
| 2007-08 | Overall     | 0.316      | 0.200 | 0.086 | 0.072        | 0.123 |
|         | Urban       | 0.348      | 0.242 | 0.103 | 0.079        | 0.140 |
|         | Rural       | 0.270      | 0.134 | 0.061 | 0.061        | 0.106 |

Source: Calculated by author from various issues of HIES/ PIHS/ PSLM.

Table A2

*Inequality and Polarisation Measures of all the Provinces of Pakistan*

| Provinces   | Ineq. and Pol Measures | Years   |         |         |         |         |         |         |         |
|-------------|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
|             |                        | 1990-91 | 1992-93 | 1993-94 | 1996-97 | 1998-99 | 2001-02 | 2005-06 | 2007-08 |
| Punjab      | Gini                   | 0.297   | 0.326   | 0.334   | 0.348   | 0.348   | 0.300   | 0.304   | 0.317   |
|             | GE                     | 0.179   | 0.271   | 0.275   | 0.432   | 0.257   | 0.169   | 0.181   | 0.191   |
|             | Atk                    | 0.077   | 0.102   | 0.105   | 0.134   | 0.106   | 0.075   | 0.078   | 0.084   |
|             | EGR                    | 0.067   | 0.075   | 0.076   | 0.078   | 0.080   | 0.068   | 0.068   | 0.072   |
|             | FW                     | 0.114   | 0.118   | 0.118   | 0.107   | 0.129   | 0.121   | 0.119   | 0.128   |
| Sindh       | Gini                   | 0.319   | 0.336   | 0.336   | 0.332   | 0.366   | 0.352   | 0.331   | 0.343   |
|             | GE                     | 0.194   | 0.237   | 0.244   | 0.274   | 0.280   | 0.277   | 0.211   | 0.258   |
|             | Atk                    | 0.085   | 0.099   | 0.100   | 0.104   | 0.116   | 0.111   | 0.092   | 0.105   |
|             | EGR                    | 0.071   | 0.076   | 0.075   | 0.075   | 0.083   | 0.080   | 0.075   | 0.077   |
|             | FW                     | 0.123   | 0.121   | 0.125   | 0.119   | 0.138   | 0.126   | 0.129   | 0.126   |
| KPK         | Gini                   | 0.238   | 0.272   | 0.248   | 0.286   | 0.284   | 0.233   | 0.259   | 0.262   |
|             | GE                     | 0.112   | 0.226   | 0.141   | 0.298   | 0.165   | 0.103   | 0.123   | 0.134   |
|             | Atk                    | 0.050   | 0.082   | 0.058   | 0.097   | 0.072   | 0.047   | 0.056   | 0.059   |
|             | EGR                    | 0.054   | 0.061   | 0.056   | 0.065   | 0.064   | 0.054   | 0.059   | 0.059   |
|             | FW                     | 0.084   | 0.081   | 0.088   | 0.089   | 0.104   | 0.088   | 0.102   | 0.097   |
| Balochistan | Gini                   | 0.249   | 0.248   | 0.278   | 0.290   | 0.233   | 0.221   | 0.235   | 0.243   |
|             | GE                     | 0.106   | 0.131   | 0.182   | 0.284   | 0.101   | 0.088   | 0.097   | 0.110   |
|             | Atk                    | 0.050   | 0.056   | 0.072   | 0.093   | 0.046   | 0.040   | 0.045   | 0.050   |
|             | EGR                    | 0.056   | 0.056   | 0.065   | 0.067   | 0.053   | 0.050   | 0.053   | 0.054   |
|             | FW                     | 0.103   | 0.097   | 0.107   | 0.093   | 0.089   | 0.089   | 0.097   | 0.093   |

Source: Calculated by author from various issues of HIES/ PIHS/ PSLM.



Table A3

*Inequality, Growth and Inflation Rate*

| Survey Years | Overall Inequality <sup>1</sup> |       |       | Growth Rate <sup>2</sup> | Inflation Rate <sup>3</sup> |
|--------------|---------------------------------|-------|-------|--------------------------|-----------------------------|
|              | Gini                            | GE    | Atk   |                          |                             |
| 1990-91      | 0.298                           | 0.177 | 0.077 | 4.459                    | 9.051                       |
| 1992-93      | 0.321                           | 0.254 | 0.098 | 7.835                    | 4.851                       |
| 1993-94      | 0.325                           | 0.251 | 0.098 | 1.258                    | 9.825                       |
| 1996-97      | 0.339                           | 0.377 | 0.123 | 4.847                    | 10.789                      |
| 1998-99      | 0.343                           | 0.248 | 0.103 | 1.014                    | 11.803                      |
| 2001-02      | 0.304                           | 0.189 | 0.081 | 1.865                    | 4.41                        |
| 2005-06      | 0.306                           | 0.182 | 0.079 | 7.672                    | 9.276                       |
| 2007-08      | 0.316                           | 0.200 | 0.086 | 5.638                    | 7.771                       |

Source: <sup>1</sup>Calculated by author from various issues of HIES/ PIHS/ PSLM.

<sup>2,3</sup> IMF.

**APPENDIX "B"**

Table B1

*Percentage of Distribution of Household in Urban and Rural Areas by Survey Years*

| Survey Years | Percentage of HH Sample Size |       |       |
|--------------|------------------------------|-------|-------|
|              | Urban                        | Rural | Total |
| 1990-91      | 31.9                         | 68.1  | 100   |
| 1992-93      | 28.4                         | 71.6  | 100   |
| 1993-94      | 30.4                         | 69.6  | 100   |
| 1996-97      | 31.2                         | 68.8  | 100   |
| 1998-99      | 29.5                         | 70.5  | 100   |
| 2001-02      | 29.2                         | 70.8  | 100   |
| 2005-06      | 33.6                         | 66.4  | 100   |
| 2007-08      | 32.8                         | 67.2  | 100   |

Source: Calculated from HIES, PIHS, PSLM (various issues).

Table B2

*Percentage of Distribution of Household by Survey Years Province Wise*

| Survey Years | Percentage of HH Sample Size |       |      |             | Total |
|--------------|------------------------------|-------|------|-------------|-------|
|              | Punjab                       | Sindh | KPK  | Baluchistan |       |
| 1990-91      | 61                           | 23.5  | 12.6 | 2.9         | 100   |
| 1992-93      | 59.1                         | 22.6  | 14.2 | 4.1         | 100   |
| 1993-94      | 58.4                         | 23.8  | 13.3 | 4.5         | 100   |
| 1996-97      | 59.4                         | 20.7  | 16.6 | 3.3         | 100   |
| 1998-99      | 56.7                         | 23.5  | 14.1 | 5.7         | 100   |
| 2001-02      | 56.3                         | 25.3  | 14   | 4.4         | 100   |
| 2005-06      | 55.8                         | 24.8  | 14.5 | 4.9         | 100   |
| 2007-08      | 57.9                         | 23.5  | 13.8 | 4.8         | 100   |

Source: Calculated from HIES, PIHS, PSLM (various issues).

Table B3

*Distribution of Household by Survey Years*

| Survey Years            | HH Sample Size |
|-------------------------|----------------|
| HIES 1990-91            | 6516           |
| HIES 1992-93            | 14593          |
| HIES 1993-94            | 14668          |
| HIES 1996-97            | 14261          |
| PIHS 1998-99            | 14820          |
| PIHS 2001-02            | 14831          |
| SLM 2005-06             | 15453          |
| PSLPM 2007-08           | 15512          |
| <b>Total Households</b> | <b>110654</b>  |

Source: HIES, PIHS, PSLM (various issues).

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### *Comments*

It is an important paper which takes into account not only inequality but also polarisation as it takes both ends of income groups. Polarisation is associated with disappearance of middle class. If income concentrated around two opposite distributive poles, the size of the middle class decreases. Sizeable middle class is a source of new entrepreneurs, high saving, promote human capital and creates demand for quality consumer goods which boost overall investment and productivity. Therefore high level of polarisation affect growth negatively.

Following are few comments on the paper:

- (1) The authors had taken consumption expenditure as a proxy of income. So the title should be restricted to “Trends in Inequality .....
- (2) The study had taken into account per capita expenditure as a unit of measurement which gives equal weights to all members of households and the economies of scale disappeared. Instead of it Adult Equivalent Scale (AES) can be used giving different weights to households members i.e. earner= 1, adult =0.8 and children <18 years=0.8.
- (3) For measuring inequality the authors had used different inequality indices i.e. Gini coefficient, generalised entropy and Atkinson index. They had not discuss significance of these measures as different inequality measures give different weights to changes in the income (extreme end or mean or lower end of distribution).
- (4) Also give significance of two measures of polarisations.
- (5) Need correction of Fig. 14. It is written as Khyber Balochistan.
- (6) In graphical presentation a spike is found for the year 1996-67 for Pakistan and its different regions for GE index as this index takes into account the transfer of income on both ends but this trend is not seen in polarisation indices. Needs some discussion and look for the authenticity of data for this particular year.
- (7) The economic interpretation in analysis would help in improving the readability of the paper.
- (8) A proper citation style should follow using software, Endnotes X7.
- (9) Finally, needs a through look at text for minor corrections.

Overall, this paper is good contribution in the literature of distributional issues.

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