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**Article**

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## **Estimating Inequality of Opportunities in Punjab (Pakistan): A Non-Parametric Approach**

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### **Abstract**

This paper attempts to estimate inequality of opportunities in Punjab, Pakistan by using non-parametric approach. Household level data of Multiple Indicator Cluster Survey 2014 has been analyzed for this purpose. Household head's income has been taken as an outcome. Three parental characteristics of household head have been used as circumstances. These characteristics include region of residence (rural/urban), wealth status and education level of household head's father. Equalization of circumstances has been done by dividing our sample into different groups on the basis of above mentioned circumstances. Then within-group and among-groups inequality of income has been calculated. Within-group inequality has been attributed to the differences in the efforts of household heads. Among-group inequality has been attributed to the difference of circumstances and has been termed as inequality of opportunities. Our results indicate that up to 28% variation in income is due to the differences of circumstances. Among different circumstances, father's education has the most significant contribution in explaining the variation of income of household heads. The study highlights the significance and need of compensatory government policies to cope with the problem of inequality of opportunities in Punjab (Pakistan). Provision of equal access to educational opportunities for all segments of the society is recommended as an important public policy measure to mitigate inequality of opportunities.

**Keywords:** Income inequality, inequality of opportunities, socioeconomic background, inter-generational mobility, inequality of efforts, inequality of circumstances.

### **1. Introduction**

The issue of income inequality has attracted the attention of policy makers as well as researchers due to its important ramifications for any society. Its implications, particularly in political economy context, have been discussed intensively in economic literature and it has led towards a consensus among development economists that income inequality can work as a hindrance in the achievement of number of development goals including economic growth (Alesina & Perotti, 1994; Alesina & Perotti, 1996; Alesina & Rodrik, 1994; Benhabib & Rustichini, 1996; Perotti, 1996; Persson & Tabellini, 1994;

Rodrik, 1999). The origins and sources of income inequality are of multidimensional nature and can vary across countries. Different factors such as history of colonial rule, proprietorship rights, the distribution of land and other natural resources and redistributive policies in historical context can contribute to income inequality. Individuals may have different income outcomes because of inequality of opportunities. Inequality of opportunities is a situation where people's opportunities to attain some social position are affected by their family background and social class (Rawls, 1971). A society can achieve the goal of equality of opportunities when nourishment, health, happiness and self-respect are equal for all individuals (Sen, 1985, 1988).

Factors beyond the control of individuals such as race, region, gender and socioeconomic background of parents are considered as circumstances. Inequality arisen due to differences in individuals' circumstances is termed as inequality of opportunities. Whereas inequality arisen due to factors such as choice between leisure and work, choice of profession, investment in education and investment in health is termed as inequality of efforts (Dworkin, 1981; Roemer, 1993; Roemer, 1998a). Income inequality arisen from inequality of circumstances (inequality of opportunities) is considered intrinsically unfair because it is an indication of the weaknesses of existing institutions which have failed to eradicate social exclusion. Therefore, government intervention is suggested as a tool to address such kind of inequality through different kinds of compensatory government policies. Reduction in inequality of opportunities is socially desirable because it is an indication of the existence of effective institutions and improvement in the social welfare. On the other hand, income inequality arisen due to the differences of individuals' choice and ability to work is termed as inequality of efforts. Unlike inequality of opportunities, inequality of efforts is not considered intrinsically unfair. In such situation, compensatory policies cannot be considered as an appropriate tool of government intervention and may not work well to eliminate income inequality (Barros & Lam, 1996; Behrman & Taubman, 1976; Paes de Barros et al., 2009; Peragine, 2004).

The research on the theme of inequality of opportunities got fame after the work of Roemer (Roemer, 1993; Roemer, 1998a; Roemer, 1998b). Subsequently, different authors, as mentioned in next section of the paper, have tried to analyze the issue of inequality of opportunities in the context of different countries and regions of the world by using parametric as well as non-parametric approaches. Both parametric and non-parametric approaches are subject to some advantages and disadvantages. Parametric approach is less data intensive and hence may be considered suitable even in case of small data set. However, it requires a well-defined functional form and may be subject to the imposition of certain assumptions. On the other hand, non-parametric approach may be more flexible in its nature as it does not require any well-defined functional form (Singh, 2010). For the analysis of inequality of opportunities with the help of non-parametric approach, people having same kind of circumstances are placed in the same group. These groups are generally formed on the basis of socioeconomic characteristics and parental background of people such as gender, race, ethnicity, parental wealth status, parental education, parental profession and parental region of residence. By doing so, it is assumed that people belonging to same group face same kind of circumstances. This

exercise of formulation of groups based upon different circumstances is termed as “equalizing circumstances” in literature. Then inequality of income (or any other outcome) is measured within each group and among different groups. Within-group inequality is attributed to the differences of individuals’ efforts and termed as inequality of efforts. Among groups inequality is attributed to the differences of circumstances and termed as inequality of opportunities. Hence, it can be measured that to what extent inequality of income (or any other outcome) is due to differences of efforts and difference of circumstances. This decomposition can be helpful for policy makers to formulate appropriate policies.

Pakistani society is entangled with numerous types of inequalities including regional inequality, gender inequality, inequality of education and inequality of health. People belonging to different classes, regions and ethnic groups do not have same kinds of circumstances that have led to generate inequality of opportunities in the country. The literature on inequality of opportunities is rare in case of Pakistan. An earlier study conducted by Shehzadi et al. (2012) has used Pakistan Social and Living Standards Measurement Survey (PSLM) 2005-06 data to study inequality of opportunities in urban Punjab by using methodology proposed by Roemer (1998a). Moreover, one recent paper (Shaheen et al., 2016) has studied inter-temporal variations in inequality of opportunities in Pakistan with the help of same methodology of Roemer by utilizing data of PSLM 2005-06 and PSLM 2010-11. However, income or wealth status of parents has not been considered as a circumstance by both of these studies. The present study aims to fill this gap by using parental wealth status as an important dimension of circumstances because it may have significant effect on inequality of opportunities. By using theoretical framework put forward by Roemer (Roemer, 1998a; Roemer, 2004) and following the methodology of Checchi and Peragine (2010) and Singh (2010), this study is an attempt to estimate inequality of opportunities in Punjab (Pakistan) by using non-parametric approach. Despite being perceived as one of the most developed province of the country, inequality of circumstances are quite observable in Punjab. There are enormous socioeconomic gaps among people belonging to different income groups (Akram, 2016) and living in different regions of the province (Qasim et al., 2017). Hence analyzing the inequality of opportunities can be an interesting case study to understand the dynamics of socioeconomic inequalities in Punjab (Pakistan). The analysis will reveal the relative significance and contribution of circumstances and efforts in the earnings of individuals.

The rest of the paper is structured as following. Next section has briefly discussed the relevant literature. Hereinafter, a brief description of the methodology used for this paper is presented. After methodological section, empirical results of the paper have been presented. Last section of the paper contains conclusion of the study and policy suggestions.

## **2. Literature Review**

A series of publications by Roemer (1993; 1998a; 1998b; 2002; 2004; 2006, 2013) on the issue of inequality opportunities has significantly contributed to the literature on this theme. Although the theme of inequality of opportunities got fame in research after the work of Roemer yet its roots can be traced in some of the earlier writings of Rawls

(1971), Arneson (1989) and Cohen (1989). Besides this, the literature on intergenerational mobility ( see for example, (Behrman & Taubman, 1976; Bowles, 1972; Van de Gaer et al., 2001) among others and Solon (1999) for a survey on empirical literature on intergenerational mobility) has also focused on the parental characteristics in the determination of next generation's income.

Following Roemer's work, different research studies have been conducted by researchers to find out the contribution of inequality of circumstances and inequality of efforts in the determination of income inequality. Parametric, non-parametric and semi-parametric approaches have been used by these studies. The contribution of circumstances and efforts in income inequality varies among these studies. Here, we present only a brief summary of already conducted research studies.

Bourguignon et al. (2007) have analyzed inequality of opportunity for case of Brazil by using parametric approach. They have further divide their sample into various age cohorts and have calculated the share of circumstances and efforts in income inequality. Their findings suggest that 25% to 30% variation in the earnings of individuals in Brazil are due to the differences of parental occupational background. However this share may be larger if some other indicators related with circumstances such as parental wealth and income status are also taken into account. Parents' schooling explains 30% to 40% variation in the years of schooling of their children.

Carneiro (2008) concludes that family background has significant effect on education of next generation, which can affect their wages. Hence, creation of human capital through some compensatory government policies can be an important instrument to handle the issue of inequality and poverty of present and as well as next generation.

Sapata (2009) examined the inequality of opportunities in Spain. The results suggested that indicators related with family background such as parental education, parental wealth, geographical region and gender were important determinants of income inequalities and educational inequalities in Spain. Before tax and after tax income was used in the analysis and it was concluded that fiscal policy was an effective source to reduce the income inequalities.

Pistolesi (2009) examined the relationship of circumstances and earnings in United States by using longitude data from 1968 to 2001. The study confirms the important and crucial role of circumstances for earning differentials. In case of China, parental earnings and occupation were found to be the most important variables to explain income inequality, whereas the role of parental education was minor (Zhang & Eriksson, 2010). These results are contrary to some other studies (Bourguignon et al., 2007; Palomino et al., 2016) where differences of parental education play the most significant role to determine income inequality.

Bjorklund et al. (2012) investigated the relationship between opportunities and distribution of long-run income in Sweden. The finding showed that 30 % inequality of income was due to circumstance whereas 70 % inequality was a result of differences of efforts.

In India, the relationship of inequality of opportunities with consumption and income of individuals was studied by Singh (2010, 2012). Social background (parental education, parental occupation, caste, religion, and place of birth) was found to be important determinant of the differences of consumption and income. The results provided the evidence that the parental education was significant factor in urban areas. In rural areas, caste and geographical region were found to be important determinant of income inequality.

The phenomenon of inequality of opportunity, by using homogenous database of 23 European countries, was studied by Marrero and Rodriguez (2012) and findings showed that wages were largely influenced by efforts and merit, rather than circumstances. Subsequently, the same authors (Marrero & Rodriguez, 2013, 2014) have confirmed that meritocracy (people get reward due to efforts) is important factor for determination of income in United States. However, Calo-Blanco and Garcia-Perez (2014) argue that difference in the incomes among European countries are largely due to the differences of the circumstances that individuals have in their lives. Same kind of results have been reported by Hufe et al. (2017) who have found that for the case of United States and United Kingdom, circumstances (parental socioeconomic background, region and ethnicity) significantly matter for inequality of income.

Son (2013) has analyzed the issue of inequality of opportunities for a set of selected Asian countries. Different variables such as location of residence of household (rural/urban), per capita expenditures of household, size of household, gender, age and education of household head have been used as circumstances whereas, primary school attendance among children aged 6–11 years, secondary school attendance among children aged 12–17 years, access to safe drinking water, access to electricity and access to sanitation have been used as outcome variables. The findings of the study suggest that location of residence of household (rural/urban) and per capita expenditures of household play an important role to determine household's access to basic facilities of infrastructure and education. The study conclude that household's poverty is crucial to define its access to basic services. Demand for such services may be lower in poor households because of their inability to pay for services.

Zeufack et al. (2015) have investigated the contribution of circumstances in the determination of income in Tanzania. By using parametric approach, different factors such as gender, age, education of father and mother, age at which father and/or mother died, and region of birth were found to be important determinant of income.

Chen (2015) have investigated the effects of circumstances on health outcomes in United States. Three indices named as self-rated health, physical component score and mental component score have been used as proxy for health outcomes whereas gender, race and parental education have been used as circumstances. Parental education has been found an important determinant of differences of health outcomes of individuals.

Golley and Kong (2016) have examined the effect of inequality of opportunities on education in China by using both parametric as well as non-parametric technique. Different variables related with circumstances such as father's education, gender, membership of communist party, family size, region of residence (urban/rural) and

ethnicity have been identified as important determinant of educational attainments of individuals. Checchi et al. (2015) argued that differences of circumstances which people face at household level and institutions are key to the differences of their incomes. By using different personal as well as parental characteristics such as gender, country of birth, race and ethnicity as variables to reflect circumstances, and gross as well as net income as outcome variables, Martinez et al. (2017) have found that circumstances are crucial to determine the differences of incomes among individuals.

The literature on inequality of opportunities is rare in the case of Pakistan. Shehzadi et al. (2012) has used Pakistan Social and Living Standards Measurement Survey (PSLM) 2005-06 data to study inequality of opportunities in urban Punjab by using methodology proposed by Roemer (1998a). The findings of the study suggest that meritocracy (people get reward due to efforts) is important factor for determination of income of households. The study has used parental occupation (agriculture or non-agriculture) as an indicator of circumstances. However, people belonging to same profession may not have same circumstances because of within occupation inequalities of circumstances. Moreover, inequality of circumstances arises not only due to parental profession but also due to differences in the parents' wealth status, income and education level etc. Therefore, the contribution of inequality of circumstances in the determination of inequality seem to be under-reported by Shehzadi et al. (2012).

Shaheen et al. (2016) have studied inter-temporal variations in inequality of opportunities in Pakistan with the help of methodology of Roemer by utilizing data of PSLM 2005-06 and PSLM 2010-11. They have used a set of variables such as education of father and mother, father's occupation, region of residence, and gender as circumstances whereas income per capita and labour earnings of household have been used as outcome variables. However, they have ignored income or wealth status of parents as an important variable related with circumstance. Their findings indicate that over the period (2005-06 to 2010-11), inequality of opportunity in labour earnings has declined by 11 percentage points in Pakistan. Whereas the inequality of opportunity, for household income per capita, has declined by 16 percentage points for Pakistan during the above mentioned period. Among all circumstances, gender is the highest contributor followed by region of residence, father's education, and father's occupation.

The relative contribution and significance of circumstances and efforts, as reported by different research studies conducted in different countries and regions, is different because such contribution and significance is largely contextual specific. The role of efforts is expected to be more prominent and significant in the egalitarian societies which have fair chances of upward economic mobility for all segments of society. On the other hand, the role circumstances may be crucial in less egalitarian societies.

### **3. Methodology and Data**

Theoretical foundations of literature on inequality of opportunities can be traced in the theory of social justice (Rawls, 1971), according to which, people cannot be held responsible for their circumstances. This is so because circumstances are generally related with parental socioeconomic characteristics and are beyond the control of

individuals. However these circumstances do play an important role to determine the different outcomes such as income, education and health of individuals. Hence, people having different circumstances are likely to have different outcomes in their lives. Roemer's work, as cited in the previous section, is considered as pioneer work in the literature on inequality of opportunities. His work is mainly focused to analyze the relative contribution and significance of circumstances and efforts in the determination of different socioeconomic outcomes. Following the theoretical framework put forward by Roemer (1998a; 2006), and methodology proposed by Checchi and Peragine (2010), we have used non-parametric approach for our analysis. Non-parametric approach has been considered suitable for our analysis because of its flexible nature, as it does not require a well-defined functional form (Singh, 2010). For the analysis of inequality of opportunities with the help of non-parametric approach, people having same kind of circumstances are placed in the same group. These groups are generally formed on the basis individuals' socioeconomic characteristics such as their gender, race and ethnicity, wealth status of their parents, parental education, profession and region of residence. By doing so, it is assumed that people belonging to same group face same kind of circumstances. This exercise of formulation of groups based upon different circumstances is termed as "equalizing circumstances" in literature. Then inequality of income (or any other outcome) is measured within each group and among different groups. Within-group inequality is attributed to the differences of individuals' efforts and termed as inequality of efforts. Among-groups inequality is attributed to the differences of circumstances and termed as inequality of opportunities.

For our analysis, we have used data from *Multiple Indicator Cluster Survey (MICS) Punjab 2014* conducted and disseminated by Bureau of Statistics, Government of the Punjab (2016) with the collaboration of UNICEF. This survey provides data of all urban and rural parts of Punjab province. The sample size consists of 41000 households among which 25520 households are from rural areas while 15480 are from urban areas of the province. Data of those households has been utilized for which the information of all variables required for our empirical analysis was available. Income of household heads has been treated as outcome which can be affected by their circumstances and efforts (Roemer, 1998a; 2004; 2006). Following literature on inequality of opportunities (see for example Singh, 2010 and by(Checchi & Peragine, 2010), our sample has further been divided into three age cohorts. The first cohort is for the household heads having age between 22 years and 32 years, second cohort consists of the household heads having age between 33 years and 42 years and third cohort is for household heads having age 43 years and above. This division of sample into age cohorts is done because age may be considered as an important determinant of earnings (Card, 1999).

In order to analyze the role of circumstances and efforts in the determination of income, first we have measured the inequality of income for our whole sample. Then, we have done the exercise of equalization of circumstances by utilizing the socioeconomic background features of parents of household heads. As the data for socioeconomic background features of mothers of household heads is very rare in our sample, hence we have used only socioeconomic background features of fathers of household heads for the equalization of circumstances. In doing so, we have placed household heads which have



same kind of circumstances in the same group. The equalization of circumstances has been done on the basis of following parental characteristics of household heads.

- (i) Father's educational level: Five different levels of education have been used i.e. no formal education, primary school education, middle school education, secondary school education and higher education
- (ii) Father's wealth status: Whether father of household head belongs to lowest first quantile of wealth, second quantile, third quantile, fourth quantile or top fifth quantile of wealth. This distribution is based upon the score of Wealth Index. Wealth Index and quantiles have been reported in MICS data.
- (iii) Father's region of residence: Whether father belonged to urban or rural area of the province.

Above-mentioned characteristics have been used for the equalization of circumstances. First type of groups have been formulated on the basis of father's education level. Household heads with same "parental education level" (father's education) have been placed in same group. It has resulted five different groups with a further subdivision of each group into three cohorts. Second type of groups have been formulated on the basis of father's education and wealth status. Household heads with same "father's education level" and same "wealth status of father" have been placed in the same group. Third type of groups have been formulated on the basis of "father's education level" and "region of residence". Fourth type of groups have been made on the basis of father's education, wealth status and region of residence. Household heads with same "father's education level", same "wealth status of father" and same region of residence have been placed in the same group. Then among-groups and average within-group inequalities of income have been calculated. Within-group inequalities have been termed as inequality of efforts and among-groups inequalities have been termed as inequality of circumstances. Then we have calculated the percentage share of both of these inequalities (inequality of circumstances and inequality of efforts) in overall income inequality.

Among different available measure of inequality, we have used Mean Log Deviation as a measure of inequality because, it can be the most suitable measure when we are interested in within-group and among-groups inequality. Despite being very commonly measure of inequality, Gini Index may not be an appropriate measure to use in such situation (Bourguignon et al., 2007; Checchi & Peragine, 2010; Ferreira & Gignoux, 2011; Jenkins, 1991a, 1991b; Shorrocks & Wan, 2005; Shorrocks, 1980; Singh, 2010). Although Gini Index is a measure of inequality which satisfies the four standard axioms of anonymity principle, population principle, mean independence or scale invariance principle and the Pigou-Dalton principle of transfers but two additional axioms of additive subgroup decomposability and path independence are not satisfied by Gini Index Whereas Mean Log Deviation, satisfies all above mentioned six axioms. The two additional axioms are important for our study because we aim to decompose the total inequality of income into between-group and within-group inequality (Shorrocks, 1980).

**4. Empirical Results**

Table 1 provides the results of income inequality measured by mean log deviation in three different age cohorts of our sample.

**Table 1: Income Inequality in Different Age Cohorts**

Age Cohort	Income Inequality (Mean log deviation of monthly income)
First Cohort 22 Years to 32 Years	0.31582
Second Cohort 33Years to 42 Years	0.38536
Third Cohort 43 Years and above	0.44554

The results show an increasing trend of inequality as we move from youngest cohort to older cohort. It implies that income inequality goes on to increase over time and individuals who start from a lesser extent of income inequality at their earlier age would experience higher income inequality in their old age. Thus, instead of squeezing, income differences among individuals would diverge over time.

Table 2 presents the results of our analysis when circumstances are equalized based on parental education (father’s education). Table shows inequality of efforts (within-group inequality of income), inequality of circumstances (among-groups inequality of income), overall inequality of income and percentage share of inequality of efforts in overall inequality and percentage share of circumstances in overall inequality of income.

**Table 2: Inequality of Opportunities on the Basis of Father's Education**

Age Cohort	Inequality of Circumstances (Among-Groups Inequality of Monthly Income)	Inequality of Efforts (Within-Group Inequality of Monthly Income)	Overall Inequality of Monthly Income	Percentage Share of Circumstances in Overall Inequality of Monthly Income	Percentage Share of Efforts in Overall Inequality of Monthly Income
First Cohort (22-32 Years)	0.00741	0.25292	0.26033	2.846	97.154
Second Cohort (33-42 Years)	0.00980	0.37556	0.38536	2.543	97.457
Third Cohort (43 Years & above)	0.06933	0.37621	0.44554	15.561	84.439

Results presented in table 2 shows that overall inequality of income ranges from 0.26033 in the first cohort to 0.44554 in the third cohort. Thus, income differences among individuals have a tendency to increase with increase in their age. In other words, instead of decreasing, inequality goes on to increase over time. Inequality of efforts ranges from 0.25292 in the first cohort to 0.37621 in the third cohort. Inequality of effort has also a tendency to increase with increase in age. Inequality of circumstances ranges from 0.00741 in first cohort to 0.06933 in third cohort. Like overall income inequality and inequality of efforts, inequality of circumstances has also a tendency to increase with increase in age. Percentage share of efforts in explaining income differences are 97.154 percent in first cohort, 97.457 in second cohort and 84.439 in third cohort. The share of circumstances in explaining income differences are 2.846 percent in first cohort, 2.543 in second cohort and 15.561 in third cohort. Percentage share of efforts is highest in middle age (second cohort) and lowest in third cohort. Percentage share of circumstances is highest in third cohort and lowest second cohort. Thus, relative importance of circumstances is high either in the age when individuals start their career or when they are getting older.

Table 3 provides the results of decomposition of income inequality into inequality of circumstances and inequality of efforts when circumstances are equalized on the basis of parental education (father's education) and region of residence. Value of overall inequality of income, inequality of efforts (within-group inequality of income), inequality of circumstances (among-groups inequality of income), and percentage share of inequality of efforts in overall inequality and percentage share of circumstances in overall inequality of income have been presented.

**Table 3: Inequality of Opportunities on the Basis of Father's Education and Region of Residence**

Age Cohort	Inequality of Circumstances (Among-Groups Inequality of Monthly Income)	Inequality of Efforts (Within-Group Inequality of Monthly Income)	Overall Inequality of Monthly Income	Percentage Share of Circumstances in Overall Inequality of Monthly Income	Percentage Share of Efforts in Overall Inequality of Monthly Income
First Cohort (22-32 Years)	0.01212	0.24821	0.26033	4.656	95.344
Second Cohort (33-42 Years)	0.01812	0.36724	0.38536	4.703	95.297
Third Cohort (43 Years & above)	0.07035	0.37519	0.44554	15.790	84.210

Results presented in table 3 indicate that parental education and region of residence explain 4.656 percent to 15.790 percent variation in monthly income of household heads. Percentage share of circumstances in overall income inequality rose from 2.846 percent to 4.656 percent in first cohort, 2.543 percent to 4.703 percent in second and cohort and 15.561 percent to 15.790 percent when besides parental education, region of residence has also been taken into account for equalization of circumstances. A very slight increase in inequality of circumstances and its percentage share in overall income inequality for third cohort shows that region of residence does not matter a lot for income differences when people get older. However a notable increase in inequality of circumstances and its percentage share in overall income inequality can be observed for second and third cohort when besides parental education, region of residence has also been taken into account for

equalization of circumstances. Thus, region of residence works an important circumstance when people at their early stages of career.

Table 4 presents contains the results where circumstances are equalized based on parental education (father’s education) and wealth status (father’s wealth status). Table shows inequality of efforts (within-group inequality of income), inequality of circumstances (among-groups inequality of income), overall inequality of income and percentage share of inequality of efforts in overall inequality and percentage share of circumstances in overall inequality of income.

**Table 4: Inequality of Opportunities on the Basis of Father’s Education and Wealth Status**

Age Cohort	Inequality of Circumstances (Among-Groups Inequality of Monthly Income)	Inequality of Efforts (Within-Group Inequality of Monthly Income)	Overall Inequality of Monthly Income	Percentage Share of Circumstances in Overall Inequality of Monthly Income	Percentage Share of Efforts in Overall Inequality of Monthly Income
First Cohort (22-32 Years)	0.00741	0.25292	0.26033	2.846	97.154
Second Cohort (33-42 Years)	0.04167	0.34369	0.38536	10.813	89.187
Third Cohort (43 Years & above)	0.10044	0.34510	0.44554	22.543	77.457

Table 4 shows that percentage share of inequality of circumstances in overall income inequality varies from 2.846 percent in first cohort to 10.813 percent in second cohort and 22.543 percent in third cohort. Percentage share of circumstances in overall inequality increases when instead of father’s education and area of residence, father’s education and wealth status are considered as indicators representing circumstances. It implies that father’s wealth status is more important than his region of residence in the determination of next generation’s income.

Table 5 provides the results of decomposition of income inequality into inequality of circumstances and inequality of efforts when circumstances are equalized on the basis of

parental education (father’s education), wealth status and region of residence. Value of overall inequality of income, inequality of efforts (within-group inequality of income), inequality of circumstances (among-groups inequality of income), and percentage share of inequality of efforts in overall inequality and percentage share of circumstances in overall inequality of income have been presented.

**Table 5: Inequality of Opportunities on the Basis of Father’s Education, Wealth Status and Region of Residence**

Age Cohort	Inequality of Circumstances (Among-Groups Inequality of Monthly Income)	Inequality of Efforts (Within-Group Inequality of Monthly Income)	Overall Inequality of Monthly Income	Percentage Share of Circumstances in Overall Inequality of Monthly Income	Percentage Share of Efforts in Overall Inequality of Monthly Income
First Cohort (22-32 Years)	0.05498	0.20535	0.26033	21.111	78.880
Second Cohort (33-42 Years)	0.05818	0.32717	0.38535	15.098	84.901
Third Cohort (43 Years & above)	0.12618	0.31936	0.44554	28.321	71.679

Percentage share of circumstances range from 15.098 percent to 28.321 percent when parental education, area of residence and wealth status are used as circumstances. The role of circumstances is highest in third cohort and lowest in second cohort. Moreover, when parental education, area of residence and wealth status are used as circumstances jointly, the share of circumstances seem to be higher.

**5. Conclusion and Policy Suggestions**

This study has estimated the inequality of opportunities in Punjab province of Pakistan. We have used three indicators for equalization of circumstances in our analysis. These indicators include parental education, their wealth status and area of residence. The share of circumstances varies from 2.543 percent to 28.321 percent depending upon that which variable (or variables) used as circumstances. This share could be more if there are no

data limitations and more variables related with circumstances are taken into account for the equalization of circumstances.

It implies that circumstances do matter for income differentials. Individuals having favorable circumstance can have better chances to earn higher income. Income inequality, particularly when it is arisen from inequality of circumstances may have serious political economy implications. Tolerance for such inequality may be lesser in the society as compared with income inequality arisen due to inequality of efforts. It is so because inequality of income arisen from inequality of circumstances is deemed as intrinsically unfair. There can be some possible justification of differences of income resulting from differences of efforts but differences of income resulting from differences of circumstances can hardly be justified on ethical, philosophical or even on economic grounds. That's why inequality of opportunities can be catastrophic for social integration. It may deteriorate social cohesion in the society and consequences may be disastrous. Pakistani society is entangled with numerous kind of socioeconomic inequalities. Inequality of opportunities can pose a serious threat to its cohesiveness. Hence, there is a need to address the issue of inequality of opportunities through compensatory government policies. Equal opportunities of education and health for all segments of society may be opted as an important policy tool by policy makers. An effective delivery of education and health services should be ensured for people belonging to different social strata and living in different regions and areas. It would not only help to reduce inequality of income but also create a sense of belonging among individuals which would help to reduce the negative consequences of income inequality for cohesiveness of the society.

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