Measuring Inclusive Growth in Education and Health: Evidence from Pakistan

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Abstract
The present study seeks to assess the Opportunity Index and Equity Index of Opportunity by using the social opportunity function approach for the two important dimensions of human development i.e. Education and Health. The study used Pakistan Social and Living Standards Measurement surveys of 2005-06 and 2019-20.The results for the Opportunity Index indicated an increase in the average opportunities in education between two time periods. While the equity index of opportunity depicted an improvement for literacy and at both the primary and secondary levels of education. Access to health opportunities in terms of access to immunization and treatment for diarrhea has increased, along with an improvement in their Equity index of opportunities. The findings of the study show an increase in the average opportunities among the two aforementioned dimensions as compared to the base period, yet there is a need to pay more attention on the equitable distribution of such opportunities among the whole population.
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Introduction
In the recent two decades, a number of developing economies in the world have shown some impressively high growth rates along with reduction in extreme poverty. Still many of these economies are facing problems in combating issues related to many income and non-income dimensions of development such as lower standards of basic education, health and access to public facilities. Despite of some quite visible progress in terms of growth rates, these economies are experiencing a sort of a polarization in their society in terms of rising levels of income inequalities among the rich and poor segments.

The Asian nations particularly China and India have kept up a quick and feasible economic growth. The twofold digit development of these giant economies on one hand shocked the world with the increment in their Gross Domestic Product (GDP), and per capita income, yet they did not proved

enough to affect their poverty statuses and the way the distribution of such gains took place (Ali, 2007). The literature credits the ascent for such changes to three factors: globalization, emphasis on skillful technical labor, and the diminishing power of the labor to bargain. Due to these rising levels of income and non-income inequalities, inclusive growth has emerged as a new touchstone for assessing a country's economic development. As the name suggests, inclusive growth is a sort of growth which is inclusive of the masses in a country where the focus is largely on the poor and destitute segments. High levels of growth itself do not guarantee that the fruits of this increased

Growth are fairly distributed among all the people. Such ascending levels of income and non-income inequalities not only hinder the impact of a given growth process on poverty reduction but also causes political disequilibrium and social cohesion (Ali & Son, 2007). Growth is said to be inclusive when it allows all the individuals in a society to participate in the growth process without reference to their circumstances (Ali & Zhuang, 2007).

With 90's reaching to their end, the discussion regarding growth and inequality shifted and the notion of pro-poor growth came into spot light. The previous expectations about growth resulting in alleviating poverty and affecting the distribution were dismissed. The academia also agreed that poverty had to be tackled through some specific bunch of economic and social gauges. On the other hand the global financial institutions have also come to claim that poverty has many destructing effects leading to economic and social vulnerability (Saad-Filho, 2010). Pro-poor growth was initially defined in two ways by Nanak Kakwani and Martin Ravallion. The former defines it as that growth would be pro-poor poverty reduce more if income of everyone grew at identical rates instead of on in identical rates (Ravallion, 2004a).

The literature does not provide a unified definition of Inclusive growth. Although different organizations have defined it distinctly, The United Nations Development Programme (UNDP) chief economist Thangavel Palanivel defines inclusive growth as "A growth process is said to be inclusive when it occurs in such domains where poor work, takes place where they live, results in the attrition of prices of such goods that they consume and in the sphere of factors of production that they use such as agriculture, backward areas with scarce resources, food clothing fuel and in proficient labor respectively.'' According to OECD "Inclusive growth not only creates productive opportunities for all but also makes the distribution of the fruits of such expansion equitable in income and non-income terms." The International Policy Centre for Inclusive Growth (IPC-IG) agrees to the UNDP's and OECD's concepts of inclusive growth.

Objectives of the Study

The general objective of this piece of research is to measure inclusive growth in Pakistan by using Pakistan Social and Living Standards Measurement survey (PSLM) for two time periods (2005-06 and 2019-20). The specific objectives are as follows:

i. To investigate the role of education and health in inclusive growth in Pakistan.
ii. To measure the opportunity index (OI) and equity index of opportunity (EIO) for Pakistan in the two dimensions mentioned above.
iii. To find out which of the two components (i.e.,) OI and EIO contribute more to inclusive growth.

Literature Review

Inclusive growth has caught the eye by the policy makers in the recent two decades and has been adopted by a number of countries as a development policy. Due to its universal nature, it has gained much attention in the modern academia where a number of studies have been conducted with respect to various economies with impressive results.

White and Anderson (2001) highlighted the distributional aspect of growth in comparison with growth itself. The authors analyzed the patterns of growth for various economic domains around the world and that too for different time periods. The results of growth regressions on different proportions of population i.e., quintiles seconded the existence of trade off among growth and distribution, indicating that emphasizing more on the distribution could prove out to be more fruitful for the poor as compared to growth.

Ali and Zhuang (2007) argued that inclusive growth is inevitable for the long term and consistent growth of developing Asia along with decreasing inequalities. The authors argue that inclusive growth requires two key elements e.i. an immense and sustained level of growth coupled with social inclusion. The former requires the governments to ensure macroeconomic and political stability, provide a friendly environment for private and foreign investment and to combat different institutional and policy challenges where as the latter requires investment in education, health, social safety and promoting justice and good institutions.

Ali and Son (2007) did a seminal work by developing an approach to measure inclusive growth. The underlining idea of social opportunity function was inspired by the microeconomic concept of social welfare function. Growth according to this measure is said to be inclusive if the social opportunity function increases which in turn depends on two components: (1) Opportunities available to the population averagely (2) How the distribution of these opportunities take place. The measure was divided into two approaches i.e. partial and complete.

Tandon and Zhuang (2007) threw light on China's growth pattern for the past thirty years and questioned its inclusion properties with regards to its population health outcomes. Firstly, the authors examined the relationship between People's Republic of China's (PRC) life expectancy and its per capita income for the aforementioned period along with an assessment of its health outcomes by comparing it with some of its regional fellow economies. To check the progress in the health outcomes, data at household and provincial level was used so that comparisons could be made out in order to determine

inter-provincial and inter-household levels of inequality. The results indicated that although growth in PRC has been quite rapid, yet the improvement in health sector lags behind. The results also showed that there lies a difference in access to health care facilities between rural and urban regions of the country. The analysis also found a positive relation between income and access to health care indicating a gap between rich and the poor segments.

Habito (2009) attempted to identify the main ingredients that are responsible for the explicit variations in the inclusiveness of growth of different economies in Asia, depicted by the GDP growth resulting in poverty reduction. The outcomes depicted that quality of governance and public expenditures visibly affected the social services along with contribution of agriculture and manufacturing in the inclusiveness of growth.

Klasen (2010) proposed that inclusive growth is a non-partisan kind of growth that reduces disadvantages. Such growth is supposed to have two aspects; one is the process of growth by which it takes place i.e. the number of people who took part in that process, the other is focused on how the benefits of such growth are felt i.e. it is supposed to benefit a huge sum of population.

Asghar and Javed (2011) attempted to measure the inclusive growth for Pakistan for the time span 1998-99 and 2007-08. The data was taken from the PSLM surveys on education and employment components of development. The methodology that has been opted is extracted from Ali & Son (2007). The study firstly evaluates the overall changes and access to education and employment opportunities during the two time periods via opportunity index (OI) and then assess how equitable the distribution of these opportunities have been among the population via equity index of opportunities (EIO).

Naqvi (2012) discussed the progress in development policies that have been witnessed overtime in the world since the industrial revolution and how the idea of inclusive growth and development emerged. The author puts together three major components in defining inclusive growth (i.e.,) growth in income per capital coupled along with the distribution of income and status of poverty. The author argues that the policies adopted by some prominent fast emerging economies should be taken under consideration by developing countries while deciding on their strategies for economic development which includes the encouragement of savings by people leading to increased investment and more emphasis being put on export rather than imports.

Asif and Sultan (2013) made an attempt to test the long run relationship between per capita planned public spending on the Health Care sector and per capita domestic income in India with the use of Johensen's cointegration analysis. The results of the study found out that there doesn't exists a long run relationship between per capita income and planned health expenditures, as they both are integrated at different orders thus, rejecting the hypothesis that they both share a positive relationship.

Winters (2014) pin pointed the role of globalization and infrastructure in relation to inequality and how this overall scenario affects inclusive growth. Trade and infrastructure together tend to make it feasible for people to improve their income standards via interchange of goods and services. Those who are fortunate enough to find themselves an opportunity from such exercise are able to increase their income profiles. Therefore, policies regarding trade liberalization and infrastructure should be intuitively planned so that their beneficiaries are those of low income classes and less well off people.

Tirmazee and Haroon (2015) found the inclusiveness of growth for Pakistan using the methodology of concentration curves defined by a social welfare function proposed by Anand et.al (2013), for two time periods i.e. 2008-09 and 2010-2011 using data from PSLM on household data. The results of the study indicate that the growth in Pakistan has been achieved at the expense of equity. The social mobility index and income equity index both reflected the prevalence of high levels of income inequalities specifically in the rural areas.

Abdennour and Alwagdani (2016) took into perspective the education component in relation to inclusive growth by probing the causality among the expenditures on education and inclusive growth in Saudi Arabia for the time span of 1981-2013. For this concern, Structural Vector Auto Regressive (SVAR) model has been employed. To measure inclusive growth the Inequality adjusted human development index (HDI) has been adopted while that for education, Human Resource Development Expenditure to GDP ratio has been used. Education has been pin pointed as a major determinant in improving the participation rate of the masses as it empowers them (Mesagan & Dauda, 2016).

Data and Methodology

The present study undertakes cross-sectional data from (PSLM) for the two time periods (i.e.,) 2005-06 and 2019-20 where the former is said to be the base line periods with which the comparisons would be made. The PSLM surveys are conducted every alternate year for district and provincial levels for a number of social as well as economic indicators which help the government in directing its policies for various development programs and also help in the assessment of ongoing programs with respect to the SDG's.

Based on the methodology developed by (Ali & Son, 2007), this piece of work proposes to measure inclusive growth in Pakistan using the concept of social opportunity function that stems out from the micro-economic concept of social welfare function. The social opportunity function is based on two components: (1) the number of average opportunities available to the population. (2) How the distribution of these opportunities take place among them. The social opportunity function allots greater weight to the opportunities being availed by the poor i.e; the poorer an individual is, more will be the weight. Such idea of weighting would make sure that the opportunities that come into being for the poor are more

significant than those for the non-poor i.e. if a transfer of opportunity from a person to a poorer person increases the social opportunity function, then growth would become more inclusive.

Suppose there n individuals with incomes $x_1, x_2, \ldots\ldots, x_n$, where x_1 and x_n indicate poorest and richest person respectively. The social welfare function is defined as:

$$W=W(x_1,x_2,\ldots\ldots\ldots\ldots,x_n) \quad (3.1)$$

Similar to the above function, social opportunity function can be defined where y_i indicates the opportunity being availed by ith person with x_i income and y_i can take on values 0 and 100, showing deprivation and non-deprivation of opportunities respectively.

$$O=O(y_1,y_2,\ldots\ldots\ldots\ldots,y_n) \quad (3.2)$$

The average opportunities available to the populations can be shown as:

$$\bar{y}=\frac{1}{n}\sum_{t=1}^{n} y_t \quad (3.3)$$

Equation (3.1) is showing the percentage of individuals having the given opportunity. The social opportunity function is required to be an increasing function of the arguments it contains so that an increase in the opportunity of a person results in an increase in the function. This may be called the necessary requirement for the achievement of inclusive growth but cannot be in any way be sufficient. Inclusive growth may not only be responsible for the increment in opportunities on average basis but should also play its part in the distribution of such opportunities. This development model does not totally emphasizes on maximizing the $\bar{y}$ but also takes into account the distribution process that requires the transfer principle to be met (i.e.,)

A transfer of opportunity from a poor person to the non-poor must decrease the social opportunity function and vice versa, which is depicted by the following equation: The transfer of t opportunity from a poor person to the rich leaves the poor with $y_1 - t$ opportunities while the rich with $y_2 + t$ opportunities.

$$O(y_1 - t,\ y_2 + t,\ y_3,\ldots\ldots,y_n) \leq O(y_1,\ y_2,\ y_3,\ldots\ldots,\ y_n) \quad (3.4)$$

The opportunity distribution vector $Q(t)$ can be denoted by:

$$Q(t) \approx (y_1 - t,\ y_2 + t,\ y_3,\ldots\ldots,y_n) \quad (3.5)$$

The equations (3.4) and (3.5) demonstrate the fact that $Q(0)$ is superior to $Q(t)$, as the former provides a more equal distribution of opportunities than the latter provided for all non-negative values of t. A cumulative distribution of equation (3.5) is shown as:

$$Q^c(t) \approx \left(y_1 - t, \frac{y_1+y_2}{2}, \frac{y_1+y_2+y_3}{3}, \ldots\ldots\ldots\ldots, \frac{y_1+y_2+\cdots\cdots+y_n}{n}\right) \quad (3.6)$$

Equation (3.6) may be called the generalized concentration curve of the above distribution. Similarly, the generalized concentration curve for Q(0) may be written as:

$$Q^c(0) \approx \left(y_1 - t, \frac{y_1+y_2}{2}, \frac{y_1+y_2+y_3}{3}, \ldots\ldots\ldots\ldots, \frac{y_1+y_2+\cdots\cdots+y_n}{n}\right) \quad (3.7)$$

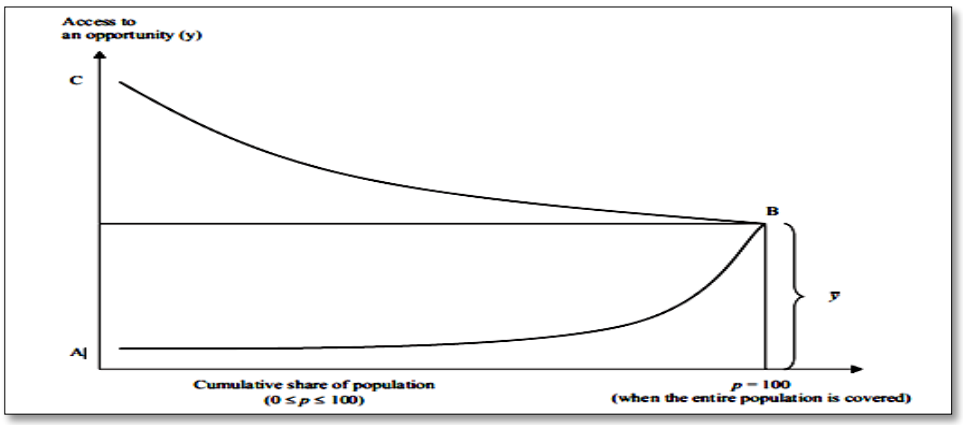
Comparing the equations (3.6) and (3.7), it can be seen that $Q^c(0)$ *is* superior to $Q^c(t)$, which depicts that if y distribution is opportunity superior to y* distribution, then their concentration curves would be ordered likewise. This in turn also reflects that the distribution being called as superior which is y in this case, would always have a superior opportunity function. Therefore, the concentration curves of any distribution are a reflection of the social incentives they contain provided that they don't intersect one another.

To bring the aforementioned idea in operation, the problem is formulated in a continuous distribution. Suppose the arrangement of the population takes place in an ascending order of their income. The average opportunity being availed by the bottom p percent of the population is $\bar{y}_p$ where p ranges from 0 to100 while $\bar{y}$ represents the average opportunity which is available to the whole population, $\bar{y}_p$ and $\bar{y}$ would be equal when p = 100 depicting that it includes the whole population.

As $\bar{y}_p$ changes along with p, a curve $\bar{y}_p$ can be derived for various values of p. We may call it as a generalized concentration curve of opportunity given that the population has been arranged according to their incomes in ascending manner. Such a curve is given a name of opportunity curve which being higher represents a superior opportunity function. Growth is said to be inclusive when it shifts this curve upward at all ranges. The shifting of the entire curve represents that everyone in the society has been entertained with an equal number of opportunities including the poor; such a kind of growth is inclusive in all meanings. The extent of such growth being inclusive depends on two facts (1) To what extent the curve is shifting (2) exactly in which segments of the curve that shift has taken place.

The direction of the slope of opportunity curve is also a depiction of how distribution has been done. A downward sloping curve depicts that the distribution has been pro-poor (i.e.,) they have more opportunities to avail and a upward sloping curve indicates an anti-poor distribution.

Figure 3.1 Opportunity Curves



Source: Ali and Son (2007)

Figure 3.1 contains two opportunity curves (i.e.,) AB and CB. The downward sloping curve (CB) is a representative of equitable distribution which shows the poor have more chances available at the end than non-poor while the curve sloping upward (i.e.,) (AB), is a depiction of a non-equitable distribution where poor are more deprived of the opportunities.

The methodology consists of a partial and a full approach. The partial approach comprises of the derivation of opportunity curve from the concentration curves, which helps in tracing out the pattern of the distribution of opportunities (equitable or not), but does not captures the accurate magnitude of the changes that have occurred with time. The full approach in this regard comes up to rescue for such shortcomings of partial approach by capturing the exact magnitude of change in distribution and equity of opportunities over time which are measured by the opportunity index (OI) and equity index of opportunities (EIO).

In order to make possible the measurement of exact changes occurred over time, a new and a simple version of social opportunity function can be accessed via calculating an index from the area lying beneath the opportunity curve as shown below:

$$\bar{y}^* = \int_0^1 \bar{y}_p \, dp \qquad (3.8)$$

Equation 3.8 Depicts the Opportunity Index (OI) that has been proposed, where the greater magnitude of $\bar{\boldsymbol{y}}^*$ would be a reflection of the fact that population has more opportunities available at their end. One of the objectives of the research also focuses on the maximization of the $\bar{\boldsymbol{y}}^*$.

The manner in which $\bar{\boldsymbol{y}}^*$ and $\bar{\boldsymbol{y}}$ mend their ways from each other would decide whether the distribution of opportunities has been equitable or not among the population. In this regard three possibilities can be witnessed:

(1) $\bar{\boldsymbol{y}}^* = \bar{\boldsymbol{y}}$; equal distribution
(2) $\bar{\boldsymbol{y}}^* > \bar{\boldsymbol{y}}$; equitable / pro-poor distribution
(3) $\bar{\boldsymbol{y}}^* < \bar{\boldsymbol{y}}$; inequitable / anti-poor distribution

In order to take into account that how the distribution is taking place, Equity Index of Opportunity is proposed (EIO):

$$\varphi = \frac{\bar{y}^*}{\bar{y}} \qquad (3.9)$$

i. If $\boldsymbol{\varphi > 1}$, equitable distribution
ii. If $\boldsymbol{\varphi < 1}$, inequitable distribution

Following from Equation 3.9, Equation 3.10 can be derived

$$\bar{y}^* = \varphi \bar{y} \qquad (3.10)$$

For inclusive growth to be achieved, $\bar{\boldsymbol{y}}^*$ needs to be maximized which requires that either the number of average opportunities rises (i.e.,) $\bar{\boldsymbol{y}}$ or the equity index of opportunity rises (i.e.,) $\boldsymbol{\varphi}$ or both of them increase . For this purpose equation (3.10) is differentiated on both the sides that resulted in equation (3.11):

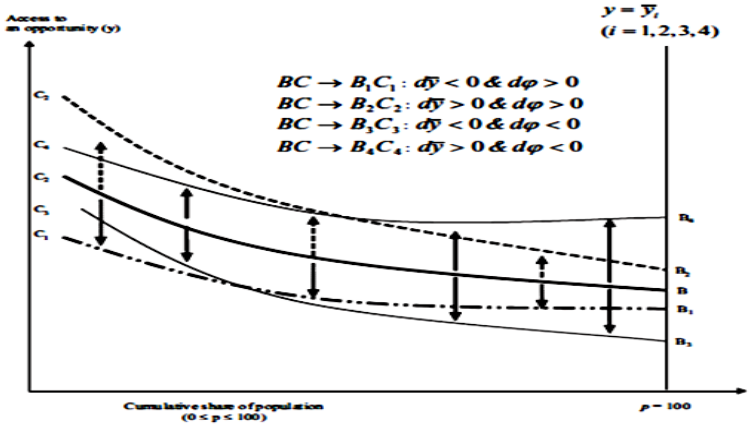
$$d\bar{y}^* = \varphi d\bar{y} + \bar{y} d\varphi \qquad (3.11)$$

$d\bar{y}^*$ measure the change in inclusiveness of growth. Growth is said to be inclusive if $d\bar{y}^*>0$. The first term on the right hand side shows the share of changing the average opportunities in inclusive growth provided that the relative distribution of opportunities remains unchanged, while the second term on the right hand side measure the effects of changes in the distribution of opportunities given that the average opportunity remains unchanged. If both the terms are positive, growth is totally inclusive and vice versa. If one is positive and the other negative, one outweighs the other.

Equation (3.11) is carrier of two main policy perspectives and shows how a government while planning its strategies can design them in a way that would lead to inclusiveness in growth. For instance, if the second term stated in equation (3.11) on the right hand (i.e.,) $\boldsymbol{\varphi}$ is found out to be greater than the one lying first, then such government policy is designed in such a manner that emphasizes on the creation of opportunities that would benefit the poor instead of increasing the number of average opportunities for everyone. Similarly, if the first term on the right side of equation (3.11) (i.e.,) $\bar{\boldsymbol{y}}$ is increased, then an increase in the number of opportunities on average basis would be observed while neglecting the fact that how these opportunities are being distributed amongst all in society. So a trade-off might be observed in the two situations, where one would be achieved at the expense of other.

Figure 3.2 is an illustration of different situations where such trade-off can be observed. A shift of opportunity curve from AC to A_4C_4 is a depiction of the case where $\bar{\boldsymbol{y}}$ is positive while $\boldsymbol{\varphi}$ is negative which means that the focus of the policy maker is to increase the overall number of opportunities while making their distribution equitable or not has not been taken into consideration. Likewise, the opposite case where the focus has been on making the distribution fair instead of increasing the average opportunities, the case where $\boldsymbol{\varphi}$ is positive and $\bar{\boldsymbol{y}}$ is negative can be shown with the shift of opportunity curve from AC to A_1C_1.

Figure 3.2 Shifts in Opportunity Curves



Source: Ali and Son (2007)

To conclude if the growth has been inclusive or not depends on which of the two components dominates the other, but the inclusiveness of growth does not necessarily lies on such trade-off. They can change in accordance with each other which mean it might happen that both φ and $\bar{y}$ are positives making growth completely inclusive and vice versa.

The above methodology has been deployed to investigate the access to and equity of Education, and Health in Pakistan. The Table 3.1 below contains the description of the variable used in the study in the respective dimensions.

Table 1: Dimension, Variables with Description

Dimensions	Variables with Description
Education	**NER (Net enrollment rate)** refers to the proportion of students enrolled in a specific level of education with required age of that level of education.
	NER at Primary level: Number of children aged 5-9 years attending primary level (classes 1-5) divided by total number of children aged 5-9 years multiplied by 100.
	NER at secondary level: Number of children aged 10-14 years attending secondary level (classes 6-10) divided by number of children aged 10-14 years multiplied by 100.
	Literacy is taken as an ability to read a newspaper and write simple letter. Literacy is the population that is literate, expressed as percentage of the total population aged between 15-60 years.
Health	Proportion of sick people having access to health facilities.
	Types of health facilities utilized by sick individuals: services Provided by government, private clinics, RHU's and BHS's.
	Access to Government and private hospitals and private clinics
	Access to rural health centers and Basic health stations.

Results and Discussions

In order to assess whether the growth has been inclusive or not in an empirical sense, two major approaches have been proposed (1) partial approach and (2) full approach where the former works via an opportunity curve and the later deals with it through an index which is quantified via the area lying under this opportunity curve. Under the first approach, the determination of whether the opportunities are distributed equitably or not lies on the slope of opportunity curve at a specific point in time, which when sloping downward gives an indication of an equitable distribution (i.e.,) people belonging to the lower income class have better access to opportunities as compared to those belonging to the upper one. When the

slope of opportunity curve is upward it means that the distribution has not been equitable and those belonging to the upper class have better access to opportunities. Also, if an upward shift in the curve takes place over time at all levels, growth would say to be inclusive. The full approach on the other hand fills the gap left out because of the partial approach as it only tells the pattern of growth, by quantifying a specific magnitude of the changes taking place in distribution and equitableness of opportunities over time. For this purpose, Opportunity index (OI) and Equity Index of Opportunity (EIO) is calculated.

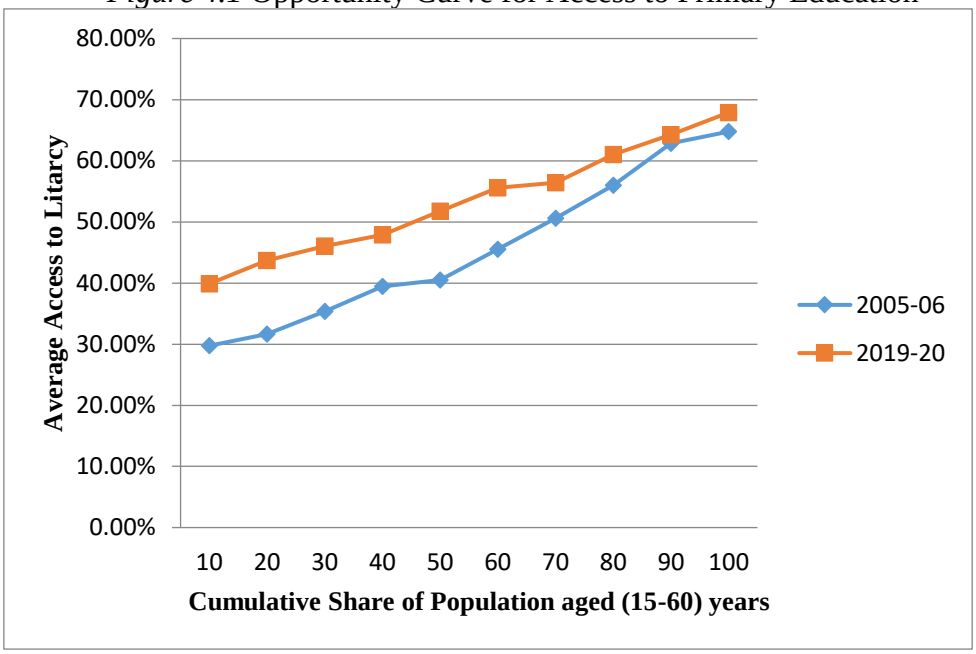
The following sections contain the results obtained through the aforementioned two approaches assessing the equity of education, health and employment opportunities over the time span of 2005-06 to 2019-20. The estimations are based on the datasets extracted from PSLM surveys of 2005-06 and 2019-20.

4.1 Access to and Equity of Education Opportunities

Education is said to be the source of bringing equity in a society by making it more socially mobilized, which is why often the state is also seen intervening in this sector. The two approaches can be applied in order to determine the status of equitableness in this sector one by the average access to education of the school age children and two by the distributional aspect based on the income deciles. The present section throws light on the average access to and equity of education opportunities for the indicators such as: Net Enrollment Rate (NER) at primary as well as secondary level along with Literacy Rate (LR). In order to determine the level of access people belonging to different income slabs have towards the education opportunities, the previously proposed methodology is applied. Opportunity curves for the two time spans (i.e.,) 2005-06 and 2019-20 of access to education opportunities have been shown in figures 4.1, 4.2 and 4.3. If the curve is seen shifting upward at all points, growth would be said inclusive pointing towards the fact that each member of the society is benefiting from the overall increment in the opportunities. Apart of the overall shift in the curve, the exact magnitude of change can be figured out by examining that by what extent the curve is shifting and exactly in which income groups.

To assess the access to primary education on average basis, population belonging to age group of 5-9 years has been arranged in ascending manner of the income slabs they belong to. As can be seen in figure 4.4, the upward shift of the opportunity curve shows that the overall access towards primary education has improved during the time span of 2005-2020 which in other words mean growth has been inclusive. Regardless of the upward shift in the curve, the upward slope of the curves present that the distribution of these opportunities has not been equitable and children belonging to higher income deciles have more access as compared to those of lower income deciles. The figure 4.1 also makes it clear that $d\bar{y} > 0$ as opportunities in primary education have increased over time.

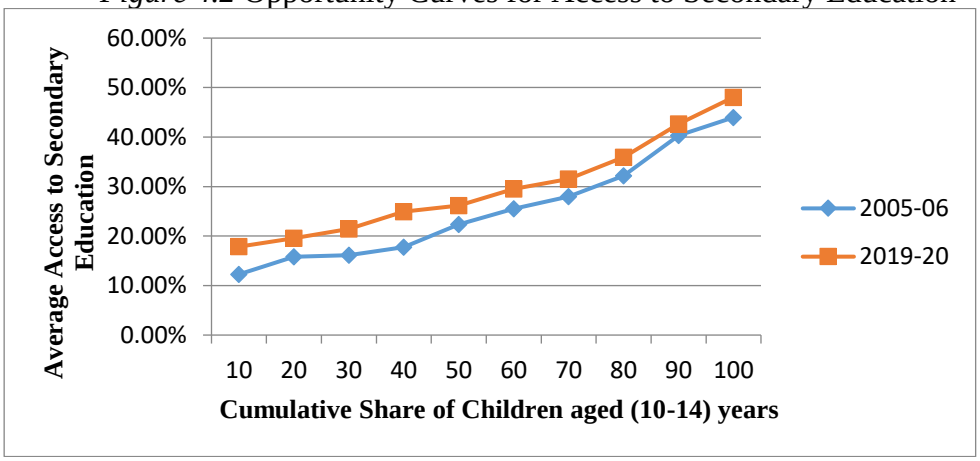
Figure 4.1 Opportunity Curve for Access to Primary Education



Source: Author's own calculation.

In similar fashion, the average access to secondary education has been depicted in figure 4.2 where the population aged 10-14 years of age has been arranged in ascending manner of the income deciles they lie in. The upward shift in the curves over time shows that opportunities have increased as access towards the secondary education has improved ($d\bar{y} > 0$), although the direction of slope of the curves being upward shows that the distribution has not been equitable among the population. Both the figures 4.1 and 4.2 are a depiction of existence of a positive relation between the enrollment of the population and the deciles they belong to, as those belonging to upper end of income domains have more access to such opportunities.

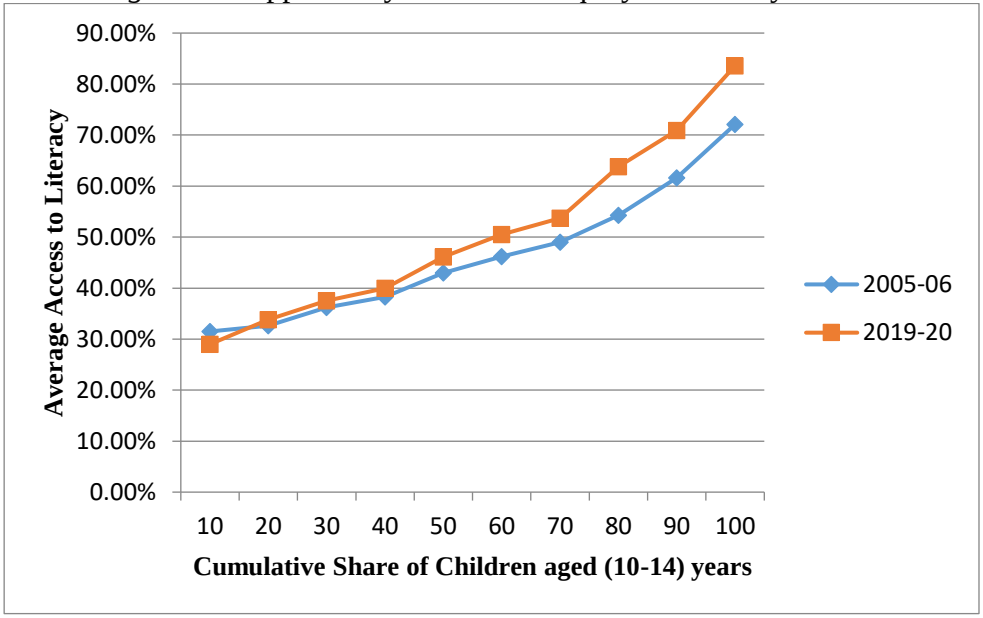
Figure 4.2 Opportunity Curves for Access to Secondary Education



Source: Author's own calculation

Figure 4.3 shows the average access to literacy where the upward shift in the curves reflect an overall increase in literacy rate ($d\bar{y} > 0$), where the horizontal axis contains the population aged 15-60 years for various income deciles in ascending manner. The overall increase although does not mean the distribution has been equitable as the slope of the curves are directing upward as seen in the previous two cases.

Figure 4.3 Opportunity Curves for Equity of Literacy



Source: Author's own calculation

4.1.1 Access to Education Opportunities: Opportunity Indices

The previous section provided the results only for the partial approach where the opportunity curves threw light on the pattern of growth in the study period. To address the full approach Opportunity Index ($\bar{y}^*$)(OI) and Equity Index of Opportunity (φ) (EIO) are estimated in Table 5.1, where the results for these two indices would help in tracing the exact magnitude of changes occurred in the said time period.

Table 4.1

Opportunity Indices for Access to Education Opportunities

DECILES	Literacy	Literacy	Primary	Primary	Secondary	Secondary
	2005-06	2019-20	2005-06	2019-20	2005-06	2019-20
10	31.50%	29.00%	29.75%	39.89%	12.27%	17.86%
20	32.60%	33.80%	31.65%	43.70%	15.79%	19.59%
30	36.20%	37.50%	35.36%	46.04%	16.14%	21.47%
40	38.30%	40.00%	39.45%	47.87%	17.74%	24.93%
50	43.00%	46.10%	40.49%	51.77%	22.33%	26.19%
60	46.20%	50.50%	45.53%	55.58%	25.49%	29.52%

70	49.00%	53.70%	50.58%	56.41%	28.00%	31.54%
80	54.30%	63.80%	56.02%	61.02%	32.18%	35.92%
90	61.60%	70.90%	62.84%	64.29%	40.30%	42.65%
100	72.10%	83.60%	64.77%	67.89%	43.97%	48.05%
Opportunity Index ($\bar{Y}$*)	46.48%	50.89%	45.64%	53.45%	25.41%	29.77%
(Φ)	0.86	0.90	0.88	0.93	0.90	0.96
Comments	Not Equitable	Not Equitable	Not Equitable	Not Equitable	Not Equitable	Not Equitable

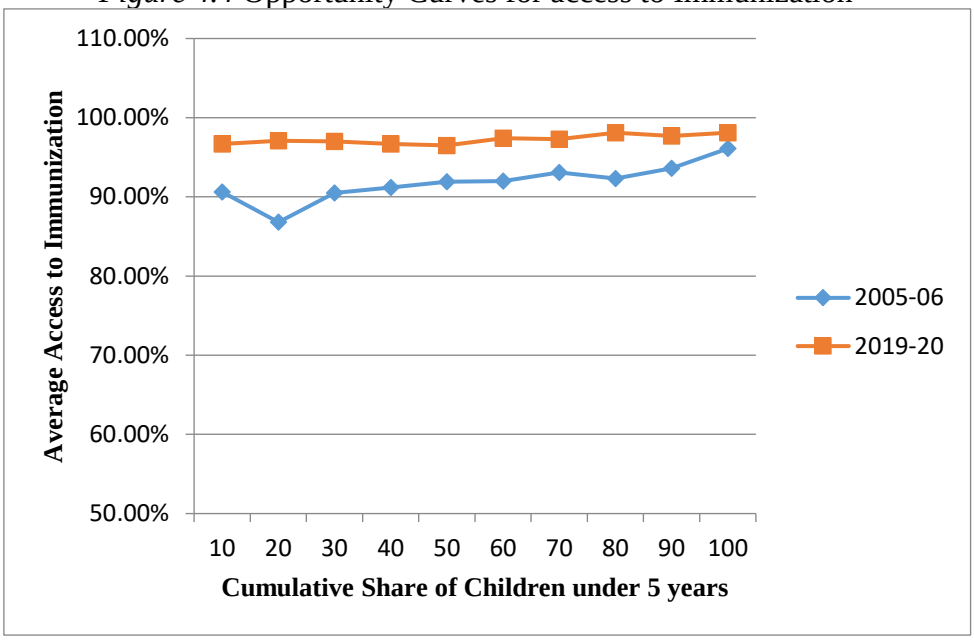
Source: Author's own calculations

As evident from the above table, the EIO for education turned out to be less than one for all indicators under taken for the said time span i.e. 2005-20, giving an impression that the distribution in this regard proved to be inequitable. Although while comparing the EIO in the two time periods for all three indicators i.e. education at primary and secondary level and literacy rate has improved which means ($d\varphi > 0$). On the other hand, the OI ($\bar{y}$*) has also improved for all the indicators. For growth to be said inclusive, either the number of opportunities should increase OI ($\bar{y}$*), or the EIO should increase or both of them. Keeping in view the above criteria, the results are suggestive of the fact that the inclusive growth perquisites have been fulfilled in all three dimensions of education. Regardless of these results, it can also be observed that the policies over the said decade (i.e.,) 2005-2020 were more focused on increasing the number of such opportunities instead of making their distribution more equitable. The equity element of the study also highlights the fact that those coming from the lower income slabs have less access to such incentives throwing light on the gap that exists amongst the various income groups.

4.2 Access to and Equity of Health Opportunities

Health is considered to play a vital role in boosting an economy's productivity and makes it socially stable. It is considered to act as a mediator between education and employment, as a healthy child is able to perform efficiently in his/her academics and then eventually becomes an efficient part of the labor force later. The preset section takes into consideration two indicators to assess whether there has been an equitable access to these health opportunities by the masses or not. The first indicator is to see how children who are aged less than 5 belonging to different income slabs had access to immunization for the period of 2005-20. The second considers the percentages of children under 5, for various income deciles, who were able to get treatment for diarrhea for the said time span.

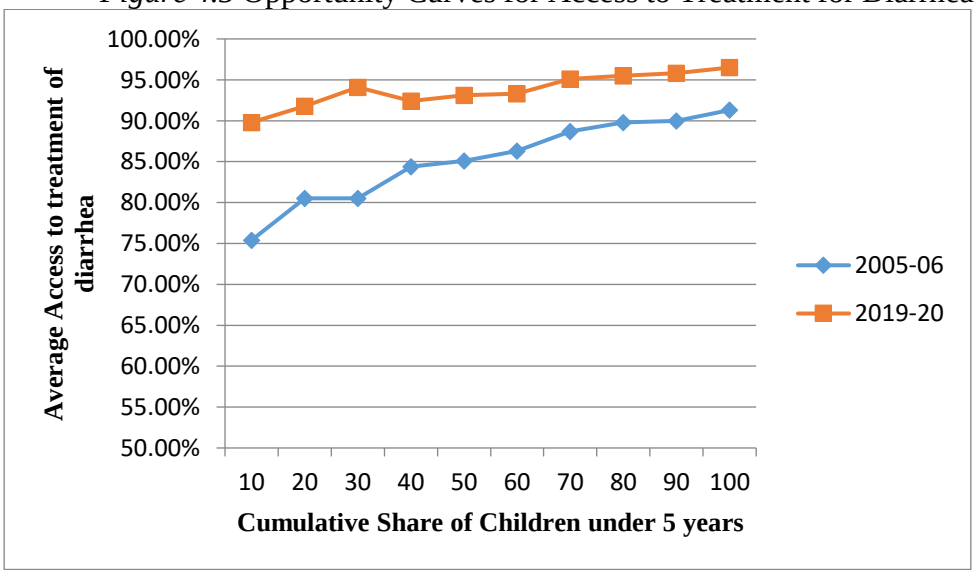
Figure 4.4 Opportunity Curves for access to Immunization



Source: Author's own calculations

Figure 4.4 exhibits the opportunity curves for access to opportunities for immunization availed by children under 5 for the two time periods 2005-06 and 2019-20. The curves are reflecting an equal distribution of this opportunity among the masses as the curves are seen to be more or less flatter rather than sloping upward or downward. The two curves also have a negligible gap between them showing an overall improvement in the distribution and making it inclusive.

Figure 4.5 Opportunity Curves for Access to Treatment for Diarrhea



Source: Author's own calculations

Figure 4.5 shows the opportunity curves for the access for treatment of diarrhea where the sampled population is of children aged fewer than five. The results show an overall improvement between the two time periods as the curves can been shifting upward, thus making the distribution more equitable and inclusive. The curve for 2019-20 is showcasing a rather more equitable distribution of this opportunity among the population belonging to different income streams.

5.2.1 Opportunity Indices for Access to Health Opportunities

The present section contains the opportunity indices for the two indicators of health discussed in the previous section.

Table 4.2

Opportunity Indices for Access to Health Opportunities

Deciles	**Immunization**	**Immunization**	**Diarrhea**	**Diarrhea**
	2005-06	**2019-20**	**2005-06**	**2019-20**
10	90.60%	96.70%	75.40%	89.80%
20	86.80%	97.10%	80.50%	91.80%
30	90.50%	97.00%	80.50%	94.10%
40	91.20%	96.70%	84.40%	92.40%
50	91.90%	96.50%	85.10%	93.10%
60	92.00%	97.40%	86.30%	93.30%
70	93.10%	97.30%	88.70%	95.10%
80	92.30%	98.10%	89.80%	95.50%
90	93.60%	97.70%	90.00%	95.80%
100	96.10%	98.10%	91.30%	96.50%
Opportunity Index ($\bar{Y}^*$)	91.81%	97.26%	85.20%	93.44%
Equity Index of Opportunity (Φ)	1.00	1.00	0.96	1.00
Comments	**Equitable**	**Equitable**	**Not Equitable**	**Equitable**

Source: Author's own calculations

Table 4.2 shows the results for Opportunity Index (OI) and Equity Index of Opportunity for access to immunization and treatment of Diarrhea. The results show that the (OI) ($d\bar{y}>0$) has increased over the time period and

its distribution has been recorded to be equitable ($d\varphi > 0$) making growth for this indicator inclusive. The OI for treatment of diarrhea also shows increment thereby suggesting that ($d\bar{y} > 0$) and distribution in the current period can also be seen to be equitable (i.e.,) ($d\varphi > 0$). The overall health results show that the growth in this dimension has been equitable and inclusive for the said time span.

Conclusion and Policy Implications

Pakistan being a developing economy requires such tool of development that could make sure to utilize country's rising population for enhancing economic growth and making such growth fruitful for all segments equitably that could help the country in combating the disease of inequality among classes. This dire need of creating a more equitable socio-economic environment requires the country to adopt such growth policies that could help in declining inequality along with increment in economic growth. The new inclusive growth paradigm not only boost the process of economic growth but also takes in account the developmental aspect of growth by targeting the destitute and marginalized groups of society while making it feasible for the masses to have maximum access towards the opportunities created as result of such growth activity. This piece of work seeks to address the growth inclusiveness by assessing whether the opportunities created during the time span of 2005-06 to 2019-20 were accessible to all segments of the society on equitable basis or not in terms of education and Health thus emphasizing on their distribution pattern. The empirical findings have been achieved by using the data from PSLM surveys of two time periods (i.e.,) 2005-06 and 2019-20.

Based upon the above findings, following policy implications are made:

i. From a policy point of view, the results disclose that there exists an urgency to address the health and education services that would eventually help in fulfilling the needs of the marginalized groups or specific regions in the country.
ii. There is a need to design policies that would target on the equitable distribution amongst the primary and secondary education levels which would help in increasing the access of those belonging to lower income slabs towards decent sources of earnings. Thus, improving the overall condition of employment in the country.
iii. Such policies need to be put forward that would make the contribution of masses possible in the growth process by engaging them in higher levels of education and better employment opportunities.
iv. Other than the proposed dimensions, this specific research can be used by the government in other fields as well as tool for suggesting effective policies that would help it in reaching out to the poor segments of the society and reducing poverty.

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