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Estimating the Extent of Inequality in Access to Higher Education in Pakistan

Mohsin Ali[1] Russayani Ismail[2] Lim Hock Eam[3]

ABSTRACT

As the world's sixth most populous country with a significant proportion of youth, Pakistan is experiencing a drastic increase in the demand for higher education. Unfortunately, the limited supply of places in public institutions and high fees charged by the private providers hinder the academically able but poor students to get access to higher education. Realising the importance of equitable access to quality education, the Higher Education Commission of Pakistan (HEC) Vision 2025 had clearly stated equitable access as one of the core strategic aims. In ensuring the achievement of HEC Vision 2025, it is indeed necessary to analyse the current scenario *i.e*. the extent of inequality that persists in education in particular higher education. To measure the educational inequalities in Pakistan, the latest "Pakistan Social and Living Standard Survey" (PSLM) 2018-19 with 66,544 individual household's information is used, and the Donaldson–Weymark relative S-Gini is employed. Results reveal that the inequality in access to higher education is more severe among households with low levels of income. Specifically, for B40 households (bottom 40% income), the Gini value is 0.7521, substantially higher than 0.3913 of T20 households (top 20% income). The inequality level by gender shows a value of 0.5236 and 0.7451 for males and females, respectively. The regional comparison shows that educational attainment is more unequal in rural areas than urban areas, with Gini coefficients of 0.7109 and 0.5100, respectively. With the economic development of Pakistan showing positive progress and could provide more employment for the youth, ensuring access to higher education is indeed crucial as to allow the underprivileged youth to benefit from higher education that will lead to a more equal society, and this warrants a drastic policy reform.

[1] School of Economics Finance and Banking, University Utara Malaysia, Kedah, Malaysia. E-mail: mohsinpak@yahoo.com
[2] School of Economics Finance and Banking, University Utara Malaysia, Kedah, Malaysia. E-mail: russ1140@uum.edu.my
[3] School of Economics Finance and Banking, University Utara Malaysia, Kedah, Malaysia. E-mail: lheam@uum.edu.my

ملخص

باعتبارها سادس دولة في العالم من حيث عدد السكان مع نسبة كبيرة من الشباب، تشهد باكستان زيادة كبيرة في الطلب على التعليم العالي. ولسوء الحظ، تعيق محدودية العرض على مستوى الأماكن الشاغرة في المؤسسات العامة والرسوم المرتفعة التي يفرضها مقدمو الخدمات في القطاع الخاص الطلاب الفقراء القادرين على خوض التجربة الأكاديمية من الوصول إلى التعليم العالي. وإدراكا لأهمية الوصول العادل إلى التعليم الجيد، فإن رؤية لجنة التعليم العالي في باكستان (HEC) لعام 2025 قد نصت بوضوح على الوصول العادل كأحد الأهداف الاستراتيجية الأساسية.ولضمان تحقيق هذه الرؤية، من الضروري تحليل السيناريو الحالي، أي مدى عدم المساواة الذي يستمر في التعليم، وخاصة على مستوى التعليم العالي. ولقياس التفاوتات التعليمية في باكستان، تم استخدام أحدث "مسح للمعايير الاجتماعية والمعيشة في باكستان" (PSLM) لفترة 2018-19 باستخدام 66.544 معلومة بشأن الأسر المعيشية الفردية، وتم توظيف معامل Donaldson–Weymark relative S-Gin. وتكشف النتائج أن عدم المساواة في الحصول على التعليم العالي أكثر حدة بين الأسر ذات مستويات الدخل المنخفضة. وعلى وجه التحديد، بالنسبة للأسر B40 (دخل أدنى 40%)، تبلغ قيمة جيني 0.7521، وهي أعلى بكثير من 0.3913 من الأسر T20 (دخل أعلى 20%).ويظهر مستوى عدم المساواة حسب الجنس قيمة 0.5236 و 0.7451 للذكور والإناث على التوالي. كما تظهر المقارنة الإقليمية أن التحصيل العلمي أكثر تفاوتا في المناطق الريفية منه في المناطق الحضرية، حيث بلغ معامل جيني 0.7109 و 0.5100 على التوالي. ومع التطور الاقتصادي لباكستان الذي يظهر تقدما إيجابيا ويتيح إمكانية توفير المزيد من فرص العمل للشباب، فإن ضمان الوصول إلى التعليم العالي أمر بالغ الأهمية للسماح للشباب المحرومين بالاستفادة من التعليم العالي الذي سيؤدي إلى مجتمع أكثر مساواة، وهذا يتطلب إصلاح جذري للسياسة العامة.

ABSTRAITE

As the world's sixth most populous country with a significant proportion of youth, Pakistan is experiencing a drastic increase in the demand for higher education. Unfortunately, the limited supply of places in public institutions and high fees charged by the private providers hinder the academically able but poor students to get access to higher education. Realising the importance of equitable access to quality education, the Higher Education Commission of Pakistan (HEC) Vision 2025 had clearly stated equitable access as one of the core strategic aims. In ensuring the achievement of HEC Vision 2025, it is indeed necessary to analyse the current scenario *i.e*. the extent of inequality that persists in education in particular higher education. To measure the educational inequalities in Pakistan, the latest "Pakistan Social and Living Standard Survey"

(PSLM) 2018-19 with 66,544 individual household's information is used, and the Donaldson–Weymark relative S-Gini is employed. Results reveal that the inequality in access to higher education is more severe among households with low levels of income. Specifically, for B40 households (bottom 40% income), the Gini value is 0.7521, substantially higher than 0.3913 of T20 households (top 20% income). The inequality level by gender shows a value of 0.5236 and 0.7451 for males and females, respectively. The regional comparison shows that educational attainment is more unequal in rural areas than urban areas, with Gini coefficients of 0.7109 and 0.5100, respectively. With the economic development of Pakistan showing positive progress and could provide more employment for the youth, ensuring access to higher education is indeed crucial as to allow the underprivileged youth to benefit from higher education that will lead to a more equal society, and this warrants a drastic policy reform.

Keywords: Inequality, Higher education, Access

JEL Classification:

1. Introduction

In the 2018 Human Development Report, Pakistan is ranked 136th for having just 49.9% educated population. Even though the overall enrolment of students in higher education institutions has increased about 300 percent over the 15 years period (from 0.276 million in 2001-2002 to 1.298 million by 2014-2015) but in terms of the Gross Enrolment Ratio (GER), the value stood at 10% (2015 -2016) which is the worst among other developing countries in South Asia (HEC Vision-2025, 2017). For instance, the GER in India at this level of education is 24%, followed by 13% in Bangladesh, 21% in Sri Lanka, and 16% in Nepal (UNESCO, 2016). The studies conducted around the world has shown that the rate of return for higher education is the highest as compared to the other levels of education (Mitchell, Leachman, & Masterson, 2016). Skilled human capital is vital for economic growth, and education is essential for the formation of productive and skilled human capital. Well-trained and highly educated people play a significant role in building the future of a nation, a prerequisite to reducing poverty and enhancing productivity and living standards. Even though inclusive growth is significant to a country's development, one of the most well-known structural problems faced by developing countries is greater inequality in the distribution of economic resources (Abdulkarim & Ali, 2019).

In the case of Pakistan, inequality in the distribution of income and attainment of education, ownership of land, and other economic disparities remain fundamental challenges, similar to other developing countries (Arshed, Anwar, Kousar, & Bukhari, 2018). Notwithstanding the importance of ensuring equitable distribution of education at each level, *i.e.*, primary, secondary, or tertiary, the problem of inequitable access is more prominent at the tertiary level as compulsory education generally applies to the other two levels of schooling. In the National Assembly, Pakistan's Ministry of Education stated that the funds are essential in raising the enrolment in higher education to 15% of the age cohort by 2025. Financial resources constraint is one of the significant hurdles for students to access higher education and thus, creating inequality in access to higher education distribution worldwide (Craft, 2018). The Pakistan Social and Living Standard Measurement Survey (PSLM) 2016-2017 indicated that higher education is the most expensive item, compared to the secondary and primary education. Universities get about 40% of their budget from students' fees and other sources of income. By and large, the limitation in government funding served as an obstacle in fulfilling the educational needs of economically disadvantaged students. Meanwhile, most parents could not afford to pay the fees, especially in getting access to private universities.

To operationalize the reform agenda, the Higher Education Commission (HEC) of Pakistan was established in September 2002. HEC is responsible for monitoring the higher education progress, including the equity dimensions. According to HEC (2017), the financial constraint hinders equitable access for higher education in Pakistan and to a larger extent the country is striving to develop a widely accessible, high-quality, and equitable higher education. HEC Vision 2025 had clearly stated that equitable access to quality education as one of the core strategic aims.

Against this backdrop, the current paper attempts to analyse the extent of the inequality in access to higher education in Pakistan based on several dimensions such as gender, location and income group. As an addition to the previous studies, the current paper attempts to estimate the extent of inequality in access to higher education based on the income group *i.e.* the bottom 40, the Middle 40 and the Top 20 percent of the income distribution. In addition, this study also employed the latest available data of Pakistan Social and Living Standard Survey" (PSLM) 2018-2019, as

to allow for more recent changes in socio demographic of the population in Pakistan.

Nevertheless, the empirical studies on Pakistan's equality of higher education access are rare, in general and by some important socio-demographic characteristics such as levels of income. Thus, this paper aims to fill this gap by estimating the extent of inequality in access to higher education in Pakistan using a state-of-art Gini coefficient. This Gini coefficient is designed specifically to measure inequality across a distribution which answers the research question of the present study, i.e., extent of inequality in higher education of Pakistan. Further explanations on the Gini coefficient are provided in the Section 3, Research Methodology.

Following the introduction, the second section will present the review of literature. Section three will discuss the methodology employed, followed by findings and discussion in section four. The final section will conclude the paper with few policy recommendations.

2. Literature Review

Like other developing countries, Pakistan is fighting with the social, economic, and educational challenges, and the education sector in Pakistan is facing serious issue of resource constraints (Khan & Mohammad, 2018). It is a well-known fact that education is the fundamental determinant of earning, in which differences in education will lead to differences in earnings. The role of higher education is unmatchable for the inclusive growth of any country economically (Bawazir et al., 2021). In addition, various studies found that income equality leads to higher equality in the distribution of education.

The lesser the human development of a country, the higher will be poverty and income inequality. In essence, poverty and income inequality are closely and inversely related to human development (Hayakawa & Venieris, 2019). Education is the core trait of human capital. Human capital investment on higher levels of education is expected to provide a better return in terms of wages and GDP that benefits individuals and society. Human Capital Theory (HCT) has a wide range of applications in economics, education, and sociology. The main aim of HCT is to investigate the notion that education increases earnings and as a result will

decrease the extent of inequality. Likewise, HCT provides a framework to examine the relationship between economic growth, education, and social well-being (Becker, 1962; Schultz, 1962).

In the case of Pakistan, inequality in the distribution of income and attainment of education, ownership of land and other economic disparities remain to be important challenges, similar to other developing countries (A. Khan & Mohammad, 2018). Estimates based on the micro data of PSLM (2015-16), show that the Gini coefficient of earning inequalities in Pakistan is 0.474, which is high (Idrees & Shah, 2018). The study also found that 78% of public education institutions share in the overall education sector, and in urban areas, private institutions are attended mainly by high-income group students. In the case of Pakistan, equitable access to higher education is becoming more critical as the economy is expanding. The Higher Education Commission (HEC) published a report in 2017 indicating that the education sector is facing multifarious challenges. Among them are inequitable access, resource constraints and distributional inequalities at all levels of education. Critically, resource constraints and unequal distribution of income in rural and urban areas are creating huge gaps in access to higher education.

In Pakistan, very few studies were conducted on inequalities measurement of the education distribution. Studies on inequality in education indicate significant educational disparity at all dimensions such as for male & female, rural and urban areas province level, earner and non-earner and different socioeconomic groups of Pakistan (Arshed et al., 2018; Idrees & Shah, 2018; Kemal, 2006; M. Khan, Rahman, & Chaudhry, 2015; Sarmad, Husain, Zahid, & Sahibzada, 1988). The previous studies also highlighted and raised policy discussion on the issues of unequal access to education distribution between different regions. For example, the educational inequalities are predominant in Sindh and Baluchistan compared to Punjab and Khyber Pakhtunkhwa (Kpk) (Idrees & Shah, 2018).

The study of Khan, Rehman, and Rehman (2015) conducted in Pakistan measures inequalities in different socio-demographic categories. The result suggests that the unequal distribution of income impacts the distribution of education. Gender inequality also persists, and one of the primary reasons is that people are not willing to send their daughters to the co-education system in different areas. Other reasons are limited

opportunities for females in the job market and insecure working environments. Education at all levels, and specifically, higher-level education, is vital for Pakistan's growth and representation as a civilized society in the community of nations (PNHEP, 2017).

The government of Pakistan continues to acknowledge the importance of higher education in its quest to develop the country economically and socially. Due to financial constraints, higher education in Pakistan is inaccessible for students who belong to low-income family backgrounds. The opportunity for higher education is mostly limited to the elite class. The government recovery cost (tuition fee) on education is exorbitant, which is nearly 40% (UNESCO, 2016). The data obtained through the Household Income & Expenditure Survey 2013-2014 & 2015-2016 which revealed the level of income and expenditures both in urban and rural areas suggesting that the low level of income and saving may discourage access to higher education for the poor but bright students (Table 1). Furthermore, resource constraints and unequal distribution of income and education in rural and urban areas are creating more gaps in access to higher education, thus indicating the critical social and economic situation of the higher education sector in Pakistan (Ilie & Rose, 2016).

Based on the Household Income and Expenditure Survey, the data reflects the extent of limitation of income to be spent and the ability to save for higher education. As a result, equitable access to quality higher education will be hard to achieve without any financial support from the government. This is supported by the fact that the gross enrolment rate for 2017-2018 is still at 10%, which is not compatible with other developing countries.

Despite all these challenges, the government of Pakistan is committed to developing an equitable, high quality and widely accessible education system in the country with the objective to reduce the disparity in the attainment of education between male and female, rural and urban areas and between different economic backgrounds. To achieve this, Pakistan needs a comprehensive study that provides the essential inputs regarding inequality of access to higher education.

Table 1: Average monthly household income and expenditure by quintiles and areas (Pakistan)

Quintiles	**Average monthly household income (PKR)**					
	2013-2014			**2015-2016**		
	Urban	**Rural**	**Total**	**Urban**	**Rural**	**Total**
1st	17414	16428	16583	20441	19625	19742
2nd	21744	20015	20436	25292	23392	23826
3rd	26228	23273	24188	28940	27613	28020
4th	29225	29275	29255	34407	33170	33668
5th	57850	46424	53001	65950	52008	60451
Total	38923	26452	30999	45283	30110	35662
Average monthly household expenditure (PKR)						
1st	17500	15889	16142	19542	18321	18496
2nd	20616	19769	19975	24255	22465	22874
3rd	25070	23111	23718	28326	25988	26705
4th	28215	26153	26987	33100	30150	31337
5th	46290	37699	42645	58584	44189	52907
Total	33581	24094	27553	41529	27414	32578

Source: Household Income & Expenditure Survey 2015-2016
Note: 1 PKR is equivalent to the US $ 0.0054 (April 2022).

3. Data and Methodology

3.1 Data used

To measure the educational inequalities in Pakistan, the latest "Pakistan social and living standard survey" (PSLM) 2018-19 data is used. Pakistan Bureau of Statistics periodically conducted this survey to assess the living standards of Pakistani households. The survey information contains 159,949 individuals from all over Pakistan. Those individuals whose age are 24 years old and above are included as we assume that is the ordinary age for individuals to complete their higher education (Pakistan Employment Trends, 2018). After the exclusion, 66,544 individuals are available to be analysed in which 29,579 (44.45%) are income earners (persons who are employed and having income during the survey period). Based on the education system in Pakistan, an individual will have to

attend a minimum 16 years of schooling until he/she graduates with a bachelor degree. Therefore, in this study years of schooling will take the value of 0 to 18 years as a measure of educational accomplishment. In the analysis, 0 denote illiterates, 1 represents one year of schooling, etc. For degrees in law, accountancy, engineering, and agriculture, the total years of education are 16 years. For a degree in medicine, the period is usually 17 years. For M.Phil. and master degree, an individual needs 18 years of schooling.

3.2 Method

The Donaldson–Weymark relative S-Gini is employed in the present study to estimate the extent of educational distributional inequalities in Pakistan (Donaldson & Weymark, 1980). Other inequality measurements indeed have their good properties; for example, Theil Index has the benefit of existence additively decomposable, *i.e.*, able to decompose into the between and within partitions of the observational units and offers a desirable quality for both the analytical and arithmetic reasons (Umar, Ismail, & Eam, 2014; Wu, Yuan, Li, & Li, 2018). The sources of inequality can be identified, producing an insightful result (Ravallion, 2018). However, the measurements have no or limited ability to deal with the different value results, such as providing appropriate weights to the lowest and highest distribution values (Gisbert, de la Vega, & Urrutia, 2010). They cannot assign appropriate weights in response to income transfers between people in opposite tails or middle of the income distribution. This limitation, however, can be handled by the Donaldson-Weymark relative S-Gini measures.

The Donaldson–Weymark relative S-Gini index is a generalized single parameter Gini index family that incorporates a weighting distribution function, i.e., using the distributional sensitivity parameter. The Donaldson-Weymark relative S-Gini index is broadly discussed by other researchers (Duclos, 2000; Gisbert et al., 2010; Nakhaei Rad, Mohtashami Borzadaran, & Yari, 2016). The present study chooses the relative S-Gini measures for two main reasons. First, it inherits the good properties of the previous Gini coefficient measurements, such as the decomposition ability. Second, it solves the insensitivity issue to distribution changes of previous inequality measurements (Gisbert et al., 2010). Thus, by the decomposition and distributional sensitivity ability of the S-Gini index, we are able to answer the research question of the

present study: what is the extent of inequality of access to higher education in Pakistan, overall, and by dimensions of gender, age, location and income groups.

Conceptually, the equations below describe how the extent of educational inequalities within the regions are measured (Equation 1) and how the overall inequality can be decomposed into within and between parts (Equation 2).

$$T = \sum_{i=1}^{n} y_i \ log\left(\frac{y_i}{x_i}\right) \quad (1)$$

In the above equation, T stands for inequality index. At the same time, the indicator for individual and household data is represented by i and n, respectively; the relative share of education is defined by y. In contrast, population share is represented by *x*. The education share of an individual level attainment can be deduced by dividing individual education against the total education achieved by the population.

The equation below will allow for the decomposition, as mentioned earlier on.

$$T_D = \sum_{i=1}^{n} y_i \ log\left(\frac{y_i}{x_i}\right) + \sum_{k=1}^{m} Y_k \, T_k \quad (2)$$

Here, the subscript implies decomposition. The subscript *i* stands for a region (or State), and *n* represents the total number of regions in the country. The *y* and *x* are as defined before. Y_k is the population share of the region, in which *k* is the household for the whole population, whereas *k* represents the within-region inequality. The above two equations are adapted from (Karahasan & Uyar, 2009; Umar, Ismail, & Abdul-Hakim, 2013, 2014). These decomposed the inequality sources into national regions and rural and urban areas to differentiate the source of the country's inequality (Song & Zhou, 2019). This study explores the variability of educational human capital inequality measures across the various socio-demographic characteristics in Pakistan.

4. Findings and discussions

4.1. Descriptive statistics analysis

The results of descriptive statistics are reported in Table 2. In the observed data set, the number of households of 66,544 was selected, which is sufficient to observe the inequality level in the educational distribution in Pakistan. There are two types of income, i.e., earned and unearned income. The earned income reflects the permanent or contractual job source of income, and the unearned income consists of other means of sources of non-job income. From Table 2, it is found that only a handful of respondents have unearned income, with mean values of around Rs168,173, which is equivalent USD 902.69 (1 USD = Rs186.30). This is substantially lower than the mean value of earned income (around Rs236,902). It is important to note that there are high variations in the unearned and earned income. For unearned and earned income, the standard deviation is around Rs367,463 and Rs303,995.

Table 2: Descriptive statistics for continuous/discrete/ordinal variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	66544	42.57	14.49	24	99
Education Level	66544	4.2162	5.1336	0	18
Earned income	29578	236902.5	303994.7	500	1.80E+07
Unearned income	65	168173.2	367462.7	6500	2398200

Source: Authors' calculations using Pakistan Bureau of Statistics data PSLM (2018-19)

The years of schooling that ranges from 0 (no formal education) to 18 (being the highest education level equivalent to M.Phil. or above) is found to have a mean value of 4.21. This implies on average, these individuals attend around 4 years of schooling. The standard deviation is 5.13; thus, compared to the mean value of 4.21, it shows a high variation in access to education. The distribution of education obtained is presented (see Table 3).

Table 3: Years of schooling

Years of schooling	Freq.	Percent %
0	35,396	53.19
1	137	0.21
2	460	0.69
3	714	1.07
4	836	1.26
5	6,245	9.38
6	898	1.35
7	863	1.3
8	4,411	6.63
9	782	1.18
10	7,130	10.71
11	171	0.26
12	3,454	5.19
13	1,645	2.47
14	553	0.83
15	643	0.97
16	1,956	2.94
17	156	0.23
18	94	0.14
Total	66,544	100

Source: Authors' calculations using Pakistan Bureau of Statistics data PSLM (2018-19)

According to the years of schooling, it is found that around 53.19% never attended any formal schooling. The result also shows that as the number of years of schooling increases the number of people or percentage decreases. These results indicate that the issue of access to education is severe, especially for higher education. This causes concern since equality in access to higher education is very important for the growth of any economy.

The sampling is designed to reflect the regional and provincial characteristics. Provinces consist of different sizes of population and area, and based on that, the sample was selected according to the size of the province population proportion. Table 4 shows each province's sample size, geopolitical location, and rural and urban areas. Since the number of respondents was selected according to the proportion of the population in each province, the Punjab province reflects 45.6% of the total population of Pakistan. It is considered a more populated area in Pakistan, with the

mean value of years of schooling of 4.69, which is the highest as compared to other provinces. The data shows that 51.7% are females and 48.3% are males with 62.7% are from rural area and the rest coming from the urban area. In terms of the years of schooling, the mean value is higher (5.53) for males as compared to females (2.98). The mean years of schooling is also higher in urban areas (6.05) compared to the rural areas (3.12).

Table 4: Descriptive statistics for categorical variables

Variable	category	Freq	%	Education level (mean)
Province	Khyber Pakhtunkhwa	12,987	19.52	3.8509
	Punjab	30,346	45.6	4.6998
	Sindh	16,413	24.66	4.2787
	Baluchistan	6,798	10.22	2.6047
Region	Rural	41,765	62.76	3.1282
	Urban	24,779	37.24	6.0501
Gender	Male	32,163	48.33	5.5334
	Female	34,381	51.67	2.9840

Source: Authors' calculations using Pakistan Bureau of Statistics data PSLM (2018-19)

4.1 Educational Inequality Analysis

The Gini coefficient of zero means perfect equality, and one means imperfect equality. However, there is no clearly defined cut-off values interpretation. As a widely recognized rule of thumb, values of more than zero but less than 0.2 means "absolute equality", the value of 0.2-0.3 is known as "relative equality", 0.3-0.4 is "proper inequality", 0.4-0.5 is "large inequality," and more than 0.5 is called "severe inequality" (Babuna, Yang, & Bian, 2020). Thus, 0.4 is the threshold level of the Gini coefficient for the extensive and severe inequality. Table 5 presents the educational inequality in Pakistan across various socio-demographic characteristics.

Table 5: Educational inequality in Pakistan by different categories

	Categories	**Gini coefficient**
Overall		0.6799
Region	Rural	0.7109
	Urban	0.5100
Gender	Male	0.5236
	Female	0.7451
Province	Khyber Pakhtunkhwa	0.5839
	Punjab	0.6407
	Sindh	0.7844
	Baluchistan	0.7109
Age cohort	age>23 & age<30	0.5395
	age>28 & age<35	0.5533
	age>33 & age<40	0.5835
	age>38 & age<45	0.6259
	age>43 & age<50	0.6563
	age>48 & age<55	0.7219
	age>53 & age<60	0.7237
	age>58 & age<65	0.7470
	age>63 & age<70	0.7861
	age>68 & age<75	0.8168
	age>73 & age<100	0.8511
Earned income	Top 20%	0.3913
	Middle 40%	0.4998
	Bottom 40%	0.7521
Unearned income	Top 20%	0.3867
	Middle 40%	0.5519
	Bottom 40%	0.5823

Source: Authors' calculations using Pakistan Bureau of Statistics data PSLM (2018-19)

Table 5 shows a severe inequality in Pakistan's education distribution over the various socio-demographic characteristics. Overall, there is severe inequality found in the distribution of education, with Gini coefficient of more than 0.6 which is far beyond the "severe inequality" level of 0.5. Severe inequality also exists based on different categories, except for the top 20% of earned and unearned income categories where proper inequality level is observed with Gini value of 0.39 and 0.38 for earned and unearned income, respectively. The severity of inequality varies across the provinces, regions, gender, and income groups. Specifically, in terms of the province, Gini coefficients range from the lowest value of 0.583 to the highest value of 0.784. This indicates a severe inequality in the provinces. The distribution of education for the Khyber Pakhtunkhwa province is more equal compared to the other provinces. This is because

KPK has been more developed in the last decade and more priority has been given to education.

The Gini coefficients by gender show a value of 0.523 and 0.745 for males and females respectively. Relatively, access to education is more equal for males as compared to females. This gender gap is associated with many reasons, such as society's perception that educated males will be more productive than educated females, and hence, society is willing to bear the extra cost for males' education. Other reason could be religious, where society feels that the social environment is not favorable for female education (Mehmood, Chong, & Hussain, 2018).

The inequality of access to education increases with the age cohort. The regional comparison shows that educational attainment is more unequal in rural areas than urban areas, with Gini coefficients of 0.710 and 0.510, respectively. The result reflects insufficient education facilities in rural areas, and these differences may cause problems for the less developed rural areas. Pakistan is a developing country, and constraints of resources in developing countries are pervasive. Primary and secondary schools are open in most rural communities, but colleges are hardly located in these areas. There is almost no concept of universities in rural areas of Pakistan. Therefore, many individuals withdraw from education after ten years of schooling (Manan, 2019).

There are two types of income used for assessing the inequality, one is 'earned income' which refers to income earned from regular job or employment sources, and the other 'is unearned income' which comprises other sources of non-job income. To draw the comparisons between income groups (e.g., top, middle and bottom income households), the percentile is used to classify the income into three groups, i.e., top 20% (T20), middle 40% (M40) and bottom 40% (B40).

The Gini coefficient for the individuals with earned income results are 0.3913 for T20, the lowest among the income groups. This shows a more equal access to higher education for those in the high-income group. The Gini value of M40 is 0.4998, and B40 is 0.7521. This indicates that inequality increases as we move from high to low-income groups. The same trend is found in unearned income. As income increases, the level of inequality goes down, as depicted by the results, 0.3867,0.5519 and 0.5823 respectively for T20, M40, and B40.

Furthermore, rural households are mainly engaged in livestock and agriculture-related activities. Such activities do not require higher education, and thus people might have little need for the costly higher education. Only those interested and can afford to send their dependents to cities for higher education, but their percentage is too small. Eventually, a significant educational inequality appears in rural areas. Thus, inequality in higher education access occurs in parallel with the inequality in income.

5. Conclusion and Recommendations

Education is the most critical component of human capital that leads to the growth and development of any country. Education enables people by increasing their prospects of contribution to the job market. The difference in educational attainment is one of the reasons for poverty and income inequality. Rising inequalities in society have been an essential concern for all. Among inequalities in different aspects, inequalities in education, and higher education, in particular, are seen as too concerned to ignore anymore. Investment in higher education act as an essential tool for reducing other inequalities such as gender, social groups, regional (rural and urban), and income.

The findings show a significant existence of educational inequalities across all populations in Pakistan. Likewise, we find notable educational disparity in rural and urban areas of all four provinces in Pakistan. The estimated value of relative S-Gini measures for the entire population is high, which shows a severe educational disparity across Pakistan.

The educational inequalities, on average, remain high in rural areas as compared to urban areas. Likewise, educational disparities among the female population are high compared to males, further concluding that men have a higher probability of attending higher education than women. The educational disparity is highest in Baluchistan and Sindh, followed by KPK, and lowest in Punjab. According to the age cohort, the situation is considerably different, and disparities increase as the age cohort increases. The presence of educational disparities suggests that the government must seriously consider the importance of access to education in all regions of Pakistan. In particular, necessary steps for improving access to education, especially for Baluchistan and Sindh, are needed.

It is essential for the government of Pakistan to further intensify the initiative to make education, significantly higher education accessible to all, regardless of socioeconomic background. This can be achieved with an appropriate financial resources being allocated to the education sector and a good policy on students' funding targeting the poor and the deprived areas of the country.

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