AN EMPIRICAL ANALYSIS OF EDUCATIONAL INEQUALITIES IN PAKISTAN

MUHAMMAD IDREES AND ANWAR SHAH*

Abstract. The present paper aims to provide detailed analysis of inequality in education across Pakistan. The analyses are conducted for rural and urban areas of all provinces and Islamabad capital territory for 2014-15. In specific, we measure educational inequality across the whole population and across the employed population. The analyses are conducted separately for male and females having age equal to15 years or above and are not enrolled in any educational institute. We find that in general educational disparities are exceptionally high across the population. However, the intensity of educational inequality is relatively lower across employed population. Educational disparity is relatively better in urban areas as compared to rural areas. We also find that educational disparities are more severe among female than male. The region wise comparison reflects that inequalities are less in Islamabad but are more in Baluchistan and Sindh.

Keywords: Education, Inequality, Earnings

JEL Classification: I24, D63, E24

*The authors are respectively Associate Professor and Assistant Professor at School of Economics, Quaid-i-Azam University, Islamabad-Pakistan.
  Corresponding author's e-mail: midrees@qau.edu.pk

I. INTRODUCTION

Human capital is one of the fundamental factors for economic development in a country. Witzke (1984) states that neither land nor physical capital but human capital and other human quality components are key factors for economic development. Schultz (1961) has also emphasized the importance of investment in human capital. A large number of studies has revealed that human capital is one of the most important factors for economic growth [see for example: Pelinescu (2015), Riley, (2012) and Mankiw *et.al*. (1992)]. We know that education is an essential ingredient for human capital. Hence, sustainable investment in human capital in the form of education is a prerequisite for sustainable economic growth. Pelinescu (2015) emphasizes that targets of high growth cannot be realized without a good education and training system. Education helps in the formation of human capital by making individuals more productive via increasing the potential of their earning.

A large number of studies have shown a positive impact of education on earning. [see for example; Nasir & Nazli (2000), Blundell, *et.al*. (2004), Devereur, & Fan (2011), Turcinkova & Stavkova (2012) and Heckman, *et.al*. (2016)]. Likewise, is the situation in Pakistan. The statistics in Table 1 show that on average more educated people earn more. The calculation is based on micro data of Pakistan Social and Living Standards Measurement survey (PSLM) for the year 2015-16.

TABLE 1

Average Earnings and Education in Pakistan

Education (measured in years)	Average Monthly Earnings in PKR
0 – 4	9,957
5 – 9	13,474
10 – 13	18,708
14 – 15	27,178
16 and above	34,582

Source: self-computation from PSLM (2015-16)

In addition, one can observe from Table 1 that the average earning increases with the level of education. For instance, the average earnings

of graduates are 3.5 times larger than the average earning of illiterate earners [1] This apparently seems to be a reasonable difference, but if the cost of education including time cost, opportunity cost and monetary cost is considered then the difference between average earnings of illiterates and graduates is not much high. One possible reason could be the earnings due to non–educational factors, such as in Pakistan a significant number of illiterates are small or medium level farmers. Likewise, some of them own established businesses through inheritance. Thus, the earnings of such people, which are much higher, cause an upward shift in the average earnings of illiterates.

The earnings of people with education level of primary (5–9) are about half more than the average earnings of illiterate people. This shows that, on average, every next level of schooling matter in term of productivity.

Education is the fundamental determinant of earning, so difference in education is among the root causes of differences in earnings. Estimates based on micro data of PSLM (2015-16), show that the Gini coefficient of earning inequalities in Pakistan is 0.474, which is too high [2]. The statistics presented in Table 1 also indicate that difference in educational attainments is a key source of earning differentials.

In the literature, we find that unequal distribution of education has a negative impact on per capita income. For example, Castello, and Domenech (2002) show that inequality in education is associated with lower investment rate and lower income growth rates. The study suggests that policies for promoting growth must take into account, both the level and distribution of education. Later on Hassan and Shehzad (2007) explore the impact of educational inequality in Pakistan on economic

---

[1] As per Government of Pakistan (2008) literacy is defined as "Ability to read and write simple statements in any language and to be able to do simple calculations". In this study we have considered all those as illiterates whose years of schooling are blow 5 (which is primary education). The rationale behind this categorization is that primary is the basic level of education and education below primary do no really affect the earning potential of an individual. For instance, earners without any formal education and with education of 1 to 4 years are treated equally in the job market as this minor level of education does not increase their productivity.

[2] These are author's self-computations.

growth. The study finds that educational inequalities hamper economic growth. Yet in another study Demet, (2010) explores the relationship between human capital inequalities and economic growth for the provinces of Turkey and finds that educational inequality is a key factor in explaining variations in output growth. Recently Ibourk & Amaghouss (2013) also show that educational inequalities have negative impact on economic growth. Keeping in view the key role of educational inequality in growth, the present study aims to analyze the inequality in the distribution of education across Pakistan.

In Pakistan only few studies are conducted on the measurement of educational inequality. In this regard studies by Sarmad *et.al*. (1988), Madiha, (2005), Saeeda, (2009) and Khan, *et.al*. (2015) are notable. However, the focus of our study is different. We measured educational inequalities among male, female and combined population for rural and urban segments of four provinces and the capital territory of Islamabad. The focus of our study is on the population having 15 years of age and above and who are not enrolled in any educational institute. The same exercise is repeated for the employed population.

The rest of the paper is organized as follows. The methodological issues in the measurement of educational inequalities are addressed in Section 2. Section 3 explains the results. Summary and conclusion are given in Section 4.

II. METHODOLOGICAL ISSUES

MEASURES FOR ESTIMATING EDUCATIONAL INEQUALITY

There is no specific measure to estimate educational inequalities. Different researchers like Thomas and Wang (1999), Adelbaki,(2012) and Ibourk, & Amaghouss (2013) transformed Gini coefficient of income inequality for measuring educational inequalities. Gini Coefficient is one of the most commonly used measures of inequality, which is attributed to Gini (1912). Geometrically it is defined as the ratio of the area between the line of absolute equality and the Lorenz curve to the total area below

the line of absolute equality[3] The transformed Gini coefficient, as a measure of educational inequalities is written as:

$$G_E = 1 - \sum_{i=1}^{n} p_i \left(cy_i + cy_{i-1} \right)$$

where, G_E is the educational Gini coefficient based on the educational attainment of individual, p_i is the population share and cy_i is the cumulative educational share of the individual i, when all individuals are arranged in ascending order for years of schooling.

There are few advantages of employing Gini coefficient, such as it is invariant to proportional change in the education levels of all persons; it is independent of personal identity of a person and has interpretable limits. It lies between zero and one, where zero represents perfect equality and 1 represents perfect inequality.

DATA AND VARIABLES

The present study is based on the latest edition of micro level data of Pakistan Standard of Living Measurements (PSLM) for the year 2014-15. PSLM is periodically conducted by Pakistan Bureau of Statistics (PBS), Government of Pakistan. PSLM (2014-15) contains detailed information of 78,635 households comprising 513,945 individuals of which 295,310 are of age 15 years and above and among these 11,4500 are earners.[4]

We measure the educational attainment level by the successful years of schooling of an individual. Hence, we take 0 to 18 years of education as a measure of educational attainment. In our analysis, 0 represent illiterates, 1 represents 1 year of schooling, and so on. For degree in agriculture, computer and engineering total years of schooling are 16

---

[3] For detailed description of Gini Coefficient see Idrees & Ahmad (2017)

[4] The present study has confined itself to individuals of age 15 years and above due to the reason that at this age a large number of individuals enter the labor market and are not considered child labor. Moreover, first we shall focus on the entire population of this age group and then confine our analysis to earners only. By earners we mean all those individuals who are employed during the survey period. The comparison will enable us to understand the dynamics of educational inequality across all individuals and earners.

years. For degree in medicine we took 17 years of education and for M.Phil we took 18 years of education.[5] Moreover, we select only those individuals who have completed their education and are not currently enrolled. The reason is that comparing education of those who are currently enrolled might provide understated situation regarding educational inequalities.

III. RESULTS AND DISCUSSION

In this section we present the results of our analysis. We have already explained that the focus is on individuals who have completed their education and are not currently enrolled. We present the estimates of Gini coefficient for educational attainments in Table 2.

The statistics reported in Table 2 portray the presence of significant educational inequalities in all regions of Pakistan with the exception of Islamabad. Moreover, the statistics reveal that variations in educational attainment drop considerably for earners. For instance, the Gini coefficient measuring inequalities in education attainment among population ranges from 0.418 to 0.929 and among earners it ranges from 0.315 to 0.853. This decline is quite understandable, as earners are usually more educated as compared to non-earners, and thus variations in education shrinks between earners. The data reveal that average years of schooling for earners is around 5, while for non-earner the average years of schooling is around 2.24. Moreover 72% of population are illiterate while, this is 47% for earners. These statistics support relatively low educational variations among earners.

---

[5] HIES reports M.Phil. and Ph.D. collectively, so it is not possible to separate them, moreover duration of Ph.D. is not fixed. So for this category we have taken 18 years of schooling on the perception that 18 years is the minimum level of education for this group. It is also to be noted that the proportion of this category is less than one percent. Further, informal education is undefined as the years of schooling of informal education are not specified in the data. We consider informal education equivalent to primary. It is also to be mentioned that the proportion of people with informal education is also insignificant.

TABLE 2

Educational Inequalities in Pakistan

Region		Population age 15 years & above			Earners age 15 years & above		
		Overall	Male	Female	Overall	Male	Female
Khyber Pakhtoonkhwa	Rural	0.768	0.650	0.871	0.583	0.559	0.815
	Urban	0.644	0.539	0.744	0.431	0.418	0.535
Punjab	Rural	0.682	0.591	0.767	0.609	0.552	0.832
	Urban	0.531	0.479	0.582	0.424	0.402	0.533
Sindh	Rural	0.780	0.675	0.889	0.660	0.642	0.853
	Urban	0.597	0.520	0.677	0.460	0.443	0.615
Baluchistan	Rural	0.802	0.685	0.929	0.663	0.648	0.835
	Urban	0.699	0.569	0.840	0.489	0.477	0.588
Islamabad	Rural	0.490	0.418	0.556	0.359	0.315	0.528
	Urban	0.487	0.453	0.522	0.348	0.324	0.442

As mentioned above that educational inequalities are low in the federal capital that is Islamabad. The probable reasons are that it is one of the well planned regions within Pakistan. Here, on average, equal opportunities of education are available. Almost all sectors and areas within Islamabad have schools and colleges. Likewise, basic infrastructure and transport facilities are available to all citizens. Hence, education is relatively more accessible. In addition, households of Islamabad are relatively more conscious about the education of their children. It is also to be noted that Islamabad houses many government, semi-government and private organizations such as ministries, banks, NGO's, universities and foreign embassies. In all such organizations, the proportion of literate people is more than illiterate. This leads to higher demand for education, and is supplied as well.

The rural–urban comparison shows that educational attainment is more unequal in rural areas. This reflects that education facilities are not adequate in rural areas. Primary and secondary schools are though available in most of the villages, but colleges are rarely located in rural areas. Moreover, there is almost no concept of universities in rural areas of Pakistan. Consequently, a large proportion of individuals terminate their education after 10 years of schooling (Matric). Furthermore, the rural households are mainly engaged in agriculture and live-stock related activities. Such engagements do not require higher education and thus people might have little urge for higher education. Those, who are

interested and can afford, send their dependents to cities for getting higher education, but their proportion is too small. Eventually, a large educational disparity appears in rural areas.

The differences across provinces show that the educational disparity is maximum in Baluchistan followed by Sindh. One of the possible reasons is that the dynamics of these two provinces are different from Punjab and KPK. For example, the rural areas of Baluchistan and Sindh are mostly dominated by informal political system of Sardar/Vadara, who usually have least priority for education. They, thus, avoid improving educational system. It is interesting to note that during FY2016 Baluchistan and Sindh decrease funds allocated for new development projects of education, while the other two provinces significantly increased these funds. This is evident from the report of Economic Survey of Pakistan (2015-16). According to this survey Punjab and KPK increased the funds by 15.02% and 32.3% respectively, while Baluchistan and Sind decreased the funds by 11.5% and 1.5% respectively. Moreover, the numbers of educational institutions in Baluchistan are about 20 times less than the educational institutions in Punjab. It is worth mentioning that the population of Baluchistan is around 8 times less than population of Punjab.[6] The non-availability of educational institutions leaves a large proportion of population to terminate their education before entering to the next phase. Only well-offs (rich class) in these provinces afford to travel long for getting higher education. Consequently, educational disparities multiply in these provinces.

Table 2 also shows educational inequalities across gender. The same trend is found in all provinces and Islamabad. One of the probable reasons might be the strong family system in Pakistan. In a family system all economic responsibility is on male, while female is not supposed to earn and spend within a family. Hence, the education, whose main purpose is to secure a job and earn, might be male focused. In addition, the cultural values in Pakistan do not support free mobility of female. They have to take company of male members of family for travelling. Thus, the preferences for educating female drop within a family. Such

---

[6] Statistics extracted from Provincial Development Statistics (various issues)

values are stronger in rural areas; hence education appears to be a luxury good for girls in rural areas. Consequently, a large number of females discontinue education after exhausting the available facility at home town leading to educational disparities.

IV. SUMMARY AND CONCLUSIONS

Education is one of the main ingredients of human capital that leads to growth and development. Education empowers people by increasing their opportunities of participation in labor market. Higher is the education, lower is the probability to be among the poor. Hence, difference in education is likely to be one of the causes of poverty and income inequality. In this paper, we attempt to measure educational inequalities across Pakistan. We also compare the difference in educational inequality across rural and urban areas of all four provinces and capital territory. The analysis is based on the individuals from PSLM (2014-2015) having 15 years of age and above as well as who are not enrolled in any educational institute. PSLM (2014-2015) contains information related to education of 2,95,310 individuals having age 15 and above. Out of this population 38.8% are employed, while the rest are unemployed.

The findings show a significant presence of educational disparities across all population. Likewise, we find notable educational disparity in both rural and urban areas of all provinces in Pakistan. The estimated value of Gini coefficient for the entire population is higher than 0.417, which shows a significant educational disparity across Pakistan. The estimates of Gini Coefficient for employed population also show considerable educational inequalities. Nevertheless, the level of intensity of educational inequality in employed population is relatively low.

The level of educational inequalities, on average, remains high in rural areas as compared to urban areas. Likewise, educational disparities among female population are high as compared to male population. The level of educational disparities is highest in Baluchistan and Sindh followed by KPK and Punjab. The situation in Islamabad is significantly different from the rest of the country, where, educational disparities are relatively low.

The presence of educational disparities suggests that the policy makers must provide utmost importance to education in all regions of

Pakistan for both genders. In particular, necessary steps for improving access to education in Baluchistan and Sindh are required.

The present study is a preliminary effort for the measurement of educational inequalities in Pakistan. Future research can improve this work by removing the following limitations. We measured educational disparities based on the successful years of schooling, but we do not consider the quality and type of education. Likewise, we measure educational disparities based on the formal education, as PSLM does not report years of schooling for informal education. In addition, we did not find sectoral disparities, thus, future scholars can examine educational inequalities across various sectors of Pakistan.

REFERENCES

Abdelbaki, H.H. (2012) "An Analysis of Income Inequality and Education Inequality in Bahrain," Modern Economy, Volume: 3, Number: 5, 675-685

Batool, S. (2009) "The Non-Income dimensions of Inequality in Pakistan" NUST Journal of Business & Economics, Volume: 2, Number: 2

Blundell, R. L. Dearden and B.Sianesi (2004) "Evaluating the Impact of Education on Earnings in UK: Models, methods and results from NCDS" Working Paper: 03/20, The Institute of Fiscal Studies.

Castello, A. and R. Domenech (2002) "Human Capital Inequality and Economic Growth: Some New Evidence," Economic Journal, Royal Economic Society, Volume: 112, 187-200.

Demet, G.N. (2010) "Education, Human Capital Inequality and Economic Growth: Evidence from Turkey", Regional and Sectoral Economic Studies, Volume: 10 – 2, 53-71

Devereur, P.J. and W.Fan (2011) "Earnings Return to the British Education Expansion" Economics of Education Review, Volume: 30, Issue: 6, 1153-66.

Government of Pakistan (2008), Ministry of Education, Letter No F.1-2/2006SS Dated 12th July 2008 to Population Census Organization.

Heckman, J.J., J.E. Humphries and G. Veramedi (2016) "Returns to Education: The Casual Effect of Education on Earnings" IZA Discussion Paper: 9957, The Institute for Studies of Labour, Germany.

Hassan, R. and M.M. Shehzad (2007) "Education Inequality and Economic Growth: Framework for the Evaluation of Pakistan's Education Policy" International Journal of Human Development, Number: 1, 37-60.

Ibourk, A. and J. Amaghouss (2013) "Inequality in Education and Economic Growth: Empirical Investigation and Foundation – Evidence from MENA Region", International Journal of Economics and Finance, Volume:5, Number: 2, 111-124.

Idrees, M. and E. Ahmad (2017) "Measurement of Income Inequality – A Survey", Foreman Journal of Economics Studies, Volume 13, 1-32.

Khan, M.Z., S. Rehman and A.R. Chaudhary (2015) "Education and Income Inequality in Pakistan", Management and Administrative Sciences Review, Volume: 4, Issue: 1, 134-145.

Madiha, K. (2005) "Education Inequality in Pakistan". Unpublished Thesis, Quaid-i-Azam University, Islamabad.

Mankiw N. G; Romer D, Weil D.N (1992) "Contribution to the Empirics of Economic Growth", The Quarterly Journal of Economics, Volume: 107, Number: 2, 407-437.

Nasir, Z.M. and H. Nazli (2000) "Education and Earnings in Pakistan" Research Report: 177, Pakistan Institute of Development Economics, Islamabad.

Pelinescu, E. (1992) "The Impact of Human Capital on Economic Growth", Procedia Economics and Finance, Volume: 22, 184-190.

Riley G, (2012) "Economic Growth - The Role of Human & Social Capital, Competition   &   Innovation", http://www.tutor2u.net/economics/revisionnotes/a2-macro-economic-growth-capital.html

Sarmad, K., Hussain, F. & Zahid G.M (1988) "Investment and Inequality in Pakistan`s Education Sector". The Pakistan Development Review, Volume: 27, Number: 4, 677-684.

Schultz, T.W. (1961) "Investment in Human Capital," American Economic Review, Volume: 51, Number: 1, 1-17

Thomas V., Y. Wang and X. (1999) "Measuring Education Inequality: Gini Coefficient of Education" Policy Research Working Paper. 2525, The World Bank, Washington DC.

Turcinkova, J. and J. Stavkova (2012) "Does the attainment level of Education affect the Income situation of Household" Procedia Social and Behavioral Sciences, Volume: 55, 1036-1042.

Witzke, H. W. (1984) "Poverty, Agriculture, and Economic Development: A survey". European Review of Agricultural Economics, Volume: 11, Number: 4, 439-453.