

DETERMINANTS OF EDUCATIONAL INEQUALITY: A CASE OF G-7 COUNTRIES

Naeem Ur Rehman*

naeem0521@gmail.com

PhD Scholar from university of Lahore

Afsheen Hashmat **

afsheenhashmat@gmail.com

PhD Scholar from university of Lahore

Abstract

Present study investigates the determinants of Educational Inequality in G-7 countries. In this study, panel data from 1990 to 2018. Gini coefficients for education and gender are used from HDR. On the value of the probability, FE is used. The determinants used in this study are (1) gender inequality (2) female labor participation and (3) consumption expenditures on final goods and services. Gender inequality is significant and positively related to educational inequality. Female labor participation is significant but having a positive sign. Expenditures on final goods and services are significant and negatively related with educational inequality. The study suggests that governments should provide equal opportunities for each and every person.

Keywords: educational inequality, gender inequality, economic growth, female labor participation, final consumption expenditures

1. Introduction

This article is written in view to check the impact of some variables on the educational inequality and see the relationships in G-7 countries. According to IMF (G7) is an international intergovernmental economic organization consisting of the seven countries Canada, France, Germany, Italy, Japan, the United Kingdom and the United States, which are advanced economies in the world. Much work has been done on European countries, USA. I have tried to find out the relationships existing in these countries. All these advanced countries have enhanced the human capital and have large economies and mostly the policies of these countries affect the world's economy.

Education is the most important tool for the development of any nation. Education inequality can be defined as a ratio of the average workers having more years of schooling to the average workers having less years of schooling. Educational inequality can be measured the efficiency of workers earning more or less. In the long-run, the individual worker's wish of having more education earn life-time earnings as their skills and trainings improved. Economic, Social, Political and other technological developments are due to education.

Different economists have worked to measure educational inequality like Thomas Fan, (2001) used Gini Coefficient by using data for 85 Countries to check the years of schoolings. Morrison and Murtin (2007) have also investigated the inequality in years of schooling for different Countries. Pfeffer (2008) have found impacts of parental education on their children for different nations Fan et.al (2000) viewed a positive association between gender gap and educational inequality. With the passage of time, gender-gaps showed stronger impacts. Lastly, per capita GDP was showing negatively impacts on educational inequality.

Gender inequality is a composite measure reflecting inequality in achievements between women and men in three dimensions: reproductive health, empowerment and the labor market. As Klasen (2009) focused on describing the effects of gender gaps in the shape of education and opportunities on the economic growth. Some studies have described that link of female's participation with their social and economic links with development. Seguino (2010) concluded that in a semi-industrial economy, gender inequality raises economic growth due to more investment. Klasen (2009) in another study viewed there was a great difference in the growth b/w Arabian, African countries and East Asian countries, there was a very low level of female participation in the economic growth in Arabian and African countries.

According to Gordon and Becker (2010), there is no changes in labor's income no share in 2007 as in 1950, but the income inequality happens due to gender differences, between 1979 to 2005. Wages of women working in different classes of middle-wage earner is low-wage earner. In USA, income inequality increased since the 1970's. After stability, it shows that the share of income of higher income household has increased, and this trend increased Educational inequality.

Female labor participation is another important determinant for increasing income inequality and education inequality. Now-a-days, the role of females has become very remarkable in an economy. In the earlier stages, female

have to work as a part-time job to fulfill their necessities. As child-care facilities are provided to them, they have to work outside. In the later stages of development, while the education opportunities increase the social and economic conditions improves, the role of female labor participation increases in the labor markets.

Females have to work both at homes and fields. As Goldin (1990) examined the U-shaped hypothesis which shows relationship b/w female labor participation and the development. The study founded that if income of a family is low and most people busy in agriculture activity, then females take part in the labor force. Fertility rates are high and women remain busy in their own farms or in the home work life. Some researchers supposed U-shaped link b/w female labor participation, female social and economic status.

Due to female's participation in labor force, income inequality decreases. But it takes a long period. Some researcher has revealed that as the role of female in the labor markets increases, it first increases educational inequality, but after a specific stage of development, it decreases inequalities in education.

Government expenditure refers to the purchase of goods and services, which include public consumption and public investment, and transfer payments consisting of income transfers (pensions, social benefits) and capital transfer. As governments spend more expenditures, it is beneficial for public and standard of living increase. As a result, people spend more on education. So, there prevails more equality in both income and education.

Mostly economists have focused only on income inequalities and neglect other factors having impact on educational inequalities, sociologists extensively studied to which extent parental education, occupational status or class influence children's educational achievements and attainment across countries and over time.

2. Literature Review

Mostly studies have focused on the income inequalities and neglect other factors having impact on educational inequalities. In this study, the impacts of other factors like female labor participation, government expenditures will also observe within and across the countries over time.

WU et al., (2020) worked on higher education and education inequality in China. The purpose of study was to find the relationship b/w higher education and inequality in education opportunities in the context of China. Also it tried to investigate the impact of education expansion on the difference between elites and non-elites. There was an expansion in the higher education especially after 2000. Expansion in higher education means more educational opportunities. Only in a few studies, it was observed the impact of education equality between elite and non-elite classes. Data was taken from Chinese General Social Survey (2015). The findings showed that after expansion of higher education, only gender inequality decreased but inequality of opportunities not decreased. Reasonable policy implications should be taken.

Bizenjo (2020) worked to find the low-cost private schools against the public schools in Pakistan and whether it had impacts on correcting the gender gap. The findings showed that boys had more opportunities to attend LCPSs than girls. The gender gap had increased in education opportunities. Also it showed that if girls were provided opportunities, they performed well than boys. The study also pointed that the education of fathers had a strong impact on the choice of schooling.

Wasim et al., (2018) tried to find the impact of the development on the income inequality in Pakistan. Time series data was used for this research from 1973 to 2012. ARDL, co-integration was used to find the long run relationship b/w education and income inequality. Higher education had a negative impact on income inequality in the long run, but showed no impact in short run. Furthermore, CUSUM and CUSUM of square test showed that there was no structural instability in the residuals of income inequality. The results also showed that there was the unidirectional casual relationship among higher education and income inequality in Pakistan. The study suggested that the development in education inequality option should be an important tool to control income inequality in Pakistan.

Reuben et al., (2017) viewed on education inequality and household income inequality. This study viewed that how education differ in different group of households and how it affected the distribution of income over time. The study used a cross-section data. It showed positive relationship b/w different groups of household's income and education inequality. However, the level differed with the level of education. At college's graduate level, the education inequality decreased. But, at higher level, education inequality increased and also it caused to increase income inequality.

Albert et al., (2015) worked on income inequalities, labor and education. The study used a time-series data for Philippines. It explained that usually poverty reduces due to economic growth, but it did not decrease in Philippines. The main reason revealed the unequal distribution of income. It showed that income inequality as well

as educational inequalities was the main hurdles in the participation of labor in growth processes. It showed that gaps b/w different aspects of a society like age, gender, rural-urban had increased inequalities. It also focuses on the opportunities available to different people.

Yuko et al., (2015) worked on female labor participation in Morocco. He used time-series data to explain the model. This study explained that in Morocco the inequality in gender and education decreased manifold. At university level, about more than 50% females were enrolled. But, in spite of this fact, the role of female participation in the labor force decreased from 30% to 26% b/w the time period 1999 and 2010. He explained the reason that more role of public sector and Govt. control was the main reasons of decline in the female participation. He suggested that Govt. should start different programs to encourage females to participate in the development of the economy.

Olowa and Adeoti (2014) worked to investigate the effects of female in the labor market in rural area participation for Nigeria. About half of the female population is in the rural areas. The study narrated that education had increased the participation of females in the labor market. NLSS data was used which was collected from Nigeria Bureau of Statistics. A control function was used to estimate the objectives of the study. The results concluded that the increased in the years of education had affected female participation. An important factor age showed non-linear effects on the female labor participation which increased first but after it decreased. Moreover, some different factors like marital status of female, mother's education were positively affected female participation. But of the same time, numbers of children linked with female labor participation. The study suggested that female education should be ensured to increase their participation.

Latif et al., (2009) worked on the girl's education in Pakistan and narrated the female literacy rate. According to him, there were three factors which were responsible for the vast gap among the educational attainments for females (1) low literacy and school enrollment rates. (2) Gender biases in curriculum and books. (3) Cultural norms. He suggested that there should be increase in school enrollment and literacy rates for girls and women to decrease the gap in educational attainments.

Sahn and Younger (2005) predicted that a few countries like Finland, Singapore would have lower in equality in education. While in South Africa, the inequality was more. They used test scores for showing achievement method. The study used times data for the study. The study consisted on 38 Countries. The times dataset was used for comparison among countries, but other criticized usage of these techniques. As the population used in this study consisted on school children could not properly indicate the stock of human capital.

Sackey (2005) worked on the female participation in the labor force for Ghana. It explained that in Ghana, the fertility decreased due to the female participation in the labor force. The main reason is years of schooling. The data used in this study from living Standard Surveys for Ghana. It viewed that female labor participation increased due to more education at primary and post-primary level which showed that due to female participation, education equality has increased (or in the other words, education inequality decreased).

Pose and Tselion (2010) worked on an empirical study to find out the determinants of educational inequality among the different regions of European Union. He used panel data for 102 different regions during 1995-2000 in European countries. For this purpose, different static and dynamic panel data were used. He concluded that there was a positive relationship between income inequality and educational inequality in these countries. While in the Asian and African countries, where income inequality was more due to low opportunities, education inequality was also more.

3. Theoretical Framework and Methodology

The previous studies have used different techniques for the measurement of educational inequality, income inequality etc. like equality line to describe the relationship between the variables. To evaluate the inequalities in this study, educational Gini index has been used for measuring the inequality for education among and between the countries.

Now, inequality in the education attainment has been reduced about a half. Gini co-efficient for education shows that in 2010, it was 0.28 while in 1960, it was 0.55. Gini co-efficient for human capital was 0.22, while in 2005, it was 0.15, while in spite of the improvements in the human capital, gender inequality is high.

Methodological Framework

STATA is used for results. Firstly, strongly balanced data of countries is gained. Only 203 observations is take for 7 countries from 1990 to 2018. Only available data is used in this research. This dataset consists of 7 countries including Canada, France, Germany, Italy, Japan, the United Kingdom and the United States. It has been tried to collect data for develops countries to avoid the issue of heterogeneity. The following model has the econometric form for methodological framework where function form is used to explain the model. One model has been used to

discuss. In this section, variable description of the study, nature of variables and their sources has been used. Also, data collection, analysis and statistical techniques have been expressed.

Econometric Form of Model

$EI = f(gi, fcectl, lfprf)$

$$EI_{it} = \beta_0 + \beta_1 \log gi_{it} + \beta_2 \log fcectl_{it} + \beta_3 \log lfprf_{it} + \mu_{it}$$

Where EI is the education inequality, gi is the gender inequality, loglfprf is the female labor participation and logfcectl is the final consumption expenditures.

Hypothesis

Null hypotheses of this study are:

Ho:

1. Gender inequality has no role in educational inequality.
2. Female labor force does not affect educational inequality.
3. Consumption expenditures do not affect educational inequality.

4. Empirical Findings

Variable Description:

Education Inequality is the dependent variable. Education inequality describes the unequal distribution of academic resources. It cannot be limited to only furniture's or just school buildings. Skills, abilities and trainings is also counted as education necessary to flourish human capital. For Education Inequality, Gini Coefficient for Education has been used as studies of (Barro and Lee,2001); Cohen and Soto (2007) used Gini coefficient for education on the basis of years of schooling. For gender inequality, gender index has been used. Female labor participation force is used in this study to find out the influence on education whether it causes to raise or decrease the level of education inequality? Female labor force means the proportion of females practically having share in economic activities. In this study, for female labor, Labor force participation rate, female (% of female population ages 15-64) is used as a proxy.

Final consumption expenditures are simply the expenditures made by government on goods and services for the individual's satisfaction. Studies have shown that as governments spend more, it decreases income inequality and due to better income equality, education inequality decreased. Final consumption expenditure (constant LCU) is used for Final consumption expenditures.

Data Analysis: In this study, we use panel data from 1990 to 2018 for different 7 countries. In this study, RE and FE is used to determine the results. After using the Hausman test, FE has been used depending on the probability value. In panel data to allow decreasing the omitted variable generates biasness. In different countries analysis compensated the time invariant differences these characteristics unobserved in a cross country. Use of explanatory variable is an attempt to measure the unobserved characteristics of country. The panel data estimation technique RE and FE do not check the time variant variables and omitted variables unobserved factors involved as tariff government regulation, corruption and culture, people abilities regarding human capital.

The result of econometric model is given below.

Descriptive Analysis

Summary of variables

Variables	Obs.	Mean	St. dev.	Min	Max
Logei	203	-.217845	.0972755	-.5124937	-.0555127
Loggi	203	-.1125088	.0253866	-.1731636	-.0449974

Logfceptl	202	10.59115	.1494695	10.23317	10.918
Logleprf	203	4.153235	.1322035	3.744527	4.319247

Descriptive statistics depicts the quantitatively description of data's main feature, which is used in our study. This included the mean, maximum and minimum values of observation, standard deviation and total counting of observation use in study.

Hausman test: Prob>chi2 = 0.0000

Here, we have used Hausman test to see whether the effects are fixed or random. The probability is (0.0000) significant. It shows that for random, it should be insignificant. But here it is significant. It shows that the technique of Fix Effect is to be used. If value would appear positive, then we should see the random effects.

TABLE: FIXED EFFECTS

Variables	Coef.	Std. Err.	t	P> t
Loggi	2.867	.0615287	46.61	0.0000
Logfceptl	-.0060344	0.00004879	-12.37	0.0000
Loglfprf	.0524093	0.0117328	4.47	0.0000
_cons	.1396174	.06016	2.32	0.021

In the tables, the value of gender inequality is significant at 1% with a positive sign which means that education inequality increases due to increase in gender inequality in the world level. It has also proved the literature of previous studies.

the value of final consumption expenditures is significant with a negative sign shows that there is a negative relationship between final consumption expenditures and education inequality. More spending on final goods and services make the economic conditions better and they have more opportunities. Sylwsester (2002)

In the table, the value of female labor participation in primary education (a proxy used in this study for female labor participation) is significant but here it is inversely related with educational inequality. This is due to gender wage gap for which females' earnings are lower than males. that's why, it is positively related. (Seguino (2010), Klasen (2009))

Diagnosis test:

In this model, there is no issue of heteroscedasticity. Breusch-Pagan is used to check it. Its value is chi 2(1) = 2.30, Prob > chi2 = 0.1296.

Vif value is 1.59 which indicates that there is issue of multicollinearity among the regressors. Wooldridge test is used for autocorrelation and its value is Prob > F = 0.2386 which shows that there is no serial correlation amongst the residuals.

5. Conclusion

On the basis of results, it may be concluded that education inequality has been increased in the world. The main determinants of education inequality are gender inequality, (gender index has been used), LFPRF (a proxy used for female labor participation), Final consumption expenditure by government (a proxy used for government expenditures for education). FLPRF is negatively related in (FE) showing that as more females participate in labor force, more equality will prevail in the society. As a result, education inequality will decrease. This may happen especially in Asian and African countries where no proper planning is made to reduce gender and education inequalities. Also, government spending on final consumption is a source of increasing education inequality. The reason may be that as government spends more, there is lack of funding for education instruments (instruments mean institutions, furniture, staff etc.), education inequality will increase. The governments should focus to reduce income inequality, for this purpose, different policies in budget simply the tax reforms should be adopted to provide relief to poor's in the shape of incentives. So that the burden is should shift on rich. Moreover, agricultural reforms should be made. The formers should be provided pesticides and seeds etc. so that the gaps in income become narrow. The governments should enhance the human capital resources like skills, trainings and abilities of the public, steps should take. The governments should try to reduce gender gaps in all aspects.

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