Measuring the Impact of Per Capita Income and Average Years of Schooling on Income Inequality: A Panel Data Analysis

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Introduction

At the crest of the age of globalization are tainted by several economic crises, which undoubtedly have implications for income inequality. Therefore, it might be possible to find a link between income inequality, human capital and per capita income.

In this regard, the relationship between income inequality and per capita income are highly discussed area in economics since 1950s. In this regard, Kuznets (1955) curve provides theoretical basement to contrast the dynamic relationship between income inequality and per capital income paradox. Some of the existing literature detected negative relationship between income inequality and growth which depends on exogenous factors such as human capital (Fuente, 1997). In contrast Frorbes (2010) identified positive relationship and Corak (2013) found no relationship between those variables. Therefore, there is no consensus among the researcher regarding the relationship between income inequalities, human capital and economic growth.

However, most of the above research uses panel data only for the less time period (10 to 20 years). With this research gap, in this study we uses 40 years observation for 140 countries to analyze the relationship between income inequalities, human capital and economic growth.

Objectives

The primary objective of this study is to investigate the relationship between income inequality and per capita income over the period of 1971 to 2010 for 140 countries from all over the world. The secondary objective is to measure the impact of average years of schooling on income inequality. In this case we use average year of schooling as a proxy for human capital.

Data and Methodology

The methodology used by Forbes (2010) is modified to formulate econometric model for this study. The model estimate the inequality as a function of per capita income, openness of the economy, average year of schooling of primary, secondary and tertiary as well as geographical regions.

$$Gini_{i,t} = \beta_{0,i,t} + \beta_{1i,t}PCI_{i,t} + \beta_{2i,t}OPE_{i,t} + \beta_{3i,t}PRIM_{i,t} + \beta_{4i,t}SEC_{i,t}$$
$$+ \beta_{5i,t}THR_{i,t} + \sum_{j=0,}^{j=6} \beta_{j,i,t}D_{j,i,t} + \epsilon_{i,t}$$

Where Gini is the dependent variable denotes the income inequality which is measured thorough the Gini coefficient values, PCI is the per capita income, OPE is the openness, PRIM, SEC and THR are the primary, secondary and tertiary schooling respectively. D is the dummy variables represents the different economic region. Gini coefficient is collected from UNU- WIDER database. PCI, OPE were collected from World Bank data base. PRIM, SEC, and THR were gathered from the Barro and Jong W.Lee (2010). In order to smooth out business cycle fluctuation data is averaged over five-year periods. Then the sample size has been reduced from 5600 to 1120. The model is estimated using generalized random effect model

Results and Discussions

Table 1: Results of Random Effect Model Using GLS Method

Variable	Coefficient	Std. Err.	Z value	P value
PCI	-.00008	.000048	-1.74	0.081
OPN	.0277	.0086	3.23	0.001
PRIM	-.7020	.3250	-2.16	0.031
SEC	-.2415	.3924	-0.62	0.538
THR	1.7818	.9497	1.88	0.061
D1 (South Asia)	.7621	2.8612	0.27	0.790
D2 (Europe & Central Asia)	-1.1292	2.0121	0.56	0.575
D3 (Middle East & North Africa)	-.11407	2.1558	0.05	0.958
D4 (Latin America & Caribbean)	13.66931	1.7902	7.64	0.000
D5 (Sub- Saharan Africa)	12.2206	1.9424	6.29	0.000
D6 (East Asian and Pacific)	3.7217	2.0807	1.79	0.074
Cons	36.8554	2.0543	17.94	0.000

Source: Author's Calculations

The above results explain that per capita income has negative and significant (only at 10%) impact on income inequality. However this impact is very tiny. That is increase in per capita income by 1% reduce the income inequality by 0.00008% only. In contrast openness of the economy has significant and positive relationship with inequality at 1% level of significance.

Further primary and tertiary years of schooling have significant impact on inequality where former one has negative impact and latter one has positive impact on it. That is one year rise in primary years of schooling decreases the income inequality by 0.702 which is consistent with the finding of Psacharopoulos (2011). He also identified that primary education is most productive in the developing countries. Because, people those who can read and write easily then they can work effectively in the basic economic activities, especially in agricultural and industrial sector. Psacharopoulos (2014) suggest that secondary education is less important since value addition is low due to higher social cost or less effectiveness of the productivity. This result is

support to our finding where we also detected that secondary years of schooling do not have significant impact income inequality. However, tertiary education does not favorable effect. That is rise in tertiary education increase the inequality which is somewhat strange. However, people in many developing countries may not able to afford for tertiary education due to high economic cost for it.

If we look at the regional level inequalities, coefficient of South Asian dummy has positive sign which implies high inequality but which is not statistically significant. Then there is no significant income difference among South Asian nations. But India, Pakistan and Bangladesh together have 14% higher inequality compare to world average. The reason for this is that Government failures are often happened and politically instability is common problem in major economies in these regions. Further results show that the inequality is less among the Europe and Central Asia and Middle East and North Africa nations since the coefficients of these dummies are negative, however, which are also not statistically significant. However Europe and Central Asia had some impact due to separation from the Soviet Union (Forbes 2000) from 1989 which is the transitional period for this reason. This could be the reason that we could not find the significant impact.

However, other three regions: Latin America, Sub Saharan Africa and East Asia do not provide the expected sign with average years of schooling and per capita income. That is increase in average years of schooling and per capita income increases the inequalities between the nations of these regions.

Conclusion

This paper investigates the impact of average years of schooling and per capita income on income inequalities using 140 countries over the period of 1971-2010. Generalized Random effect model was used to estimate the model. We identified negative and significant relationship between per capita income and Gini coefficient. Also per capita income

provides partial evidence to Kuznets curve. However, open economic activities may not support to reduce the inequalities of the economy. Primary education is the key factor for reducing inequality while secondary and tertiary are not. South Asia, Europe, Central and Middle Asia do not have significant income differences whereas other regions high income differences.

Reference

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Appendix

Table 1: Summary Statistics (1971-2010)

Regions	Gini	Per Capita Income($)	Openness (%)	Primary Education (years)	Secondary Education (years)	Tertiary Education (years)
South Asia	38.55	3851.325	64.85	2.585	1.421	0.127
Europe and Central Asia	30.43	9051.61	75.49	5.54	3.42	0.419
Middle East & North Africa	37.19	13202.12	97.34	3.42	3.42	0.2955
Latin America & Caribbean	48.79	7030.56	60.95	4.59	1.93	0.245
Sub- Saharan Africa	48.33	2657.28	66.328	2.86	0.970	0.052
East Asian & Pacific	39.30	9051.474	89.62	4.217	2.223	0.226
Developed Countries	32.85	24757	59.43	5.78	3.741	0.915
World	39.48	10175.82	71.41	4.251	2.267	0.335