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Human Capital Formation and Income Disparity in Developing Nations: A Panel Data Analyses

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ABSTRACT

This study efforts to analyze the impact of human capital formation (HCF) on income disparity in developing nations. The panel dataset of 24 countries from the time period of 2003 to 2018 and panel ARDL is used to estimate the results. The outcomes shows that the variables inflation rate, government final consumption expenditures and exports of goods and services are positively while human capital index is negatively persuading the income disparity in developing nations. To rise HCF, government is to define options to expand education and research as well as to emphasize higher education. In doing that so, low income personnel can enjoy better life.

1. Introduction

Income disparity is assessed as an essential social, economic, and political issue. It can badly disturb the financial efficiency and economic growth and bring political constancy and class and cultural frictions. Such factors are important and are needed to be distinguished for better policy of the country (Abdullah et al., 2015). The investment scenario of a country is also affected by distribution of income. Fewer hands when occupy most of the income also affect HCF (Munir & Sultan, 2017). Functional distribution and personal distribution are two features of income distribution. Former describes share of income later discloses household who are earning income. The final result of entire economic process is the distribution of income (Bigsten, 1983).

Income disparity is vital area of development economics. The current study attempts to examine the effect of HCF on income disparity in developing countries. HCF is important for to attain an economy with stable basics. Importance of educational is useful for HCF (Mincer, 1974; Schultz, 1963) because it increases productivity, ability and earning of people. The findings of the study deliver implications existence of income disparity. Moreover, the policy options for states to lessen the intensity of this problem.

The objectives of this study are;

- To inspect the relationship of HCF and income disparity.
- To intricate concepts of HCF and income disparity

2. Review of Literature

Different authors like Ram (1989) Gregorio &Lee (2002) Park (2017), inspected the effect of education on unfairness of income and poverty. The results of their exposed that educational factors were important aspects that disturb the income distribution. Rehman et al. (2008), Pose R. & Tselios (2009) Mahmooda & Noorb (2015), Kanwal & Munir (2015), Lee and Lee (2018) discovered the facets that affect the inequality of income in developed and developing economies. The outcomes showed that government consumptions, financial development, literacy rate and openness in trade were the key variables which lead towards income inequality. On the other hand, studies on individual and developing countries separately by Gungor (2010), Shahpari & Davoudi (2014), Manoleva B. (2017), Muhibbullah & Das (2019) on Turkey, Iran, Bulgaria, India, Bangladesh respectively showed approximately same results but slightly different sign. The connection between educational inequality and economic development was The studies also showed that income inequality is determined by GDP and structural change. The authors suggested that fiscal policy, tax reform, addressing unemployment, and improving social safety nets lead to reduction in income disparity.

Other authors like Ali et al. (2012), Ali (2016), Munir & Sultan (2017), Muhammad et al. (2018), Sial et al. (2018) consider Pakistan as developing economy. They state that health, education, and physical capital intricate GDP in Pakistan. Education, Gini index, and GFCF are positively and significantly linked to GDP of Pakistan.

3. Data and Methodology

In current study, we have used the pooled data of some selected 24 developing economies. Time period of sixteen years started from 2003 to 2018 incorporated for statistical analysis. Selected developing economies includes Armenia, Argentina, Honduras, Indonesia, Ireland, Greece, Bolivia, Colombia, Italy, Dominican Republic, Costa Rica, El Salvador, Ecuador, Kazakhstan, Pakistan, Estonia, Panama, Peru, Kyrgyz republic, Spain, Thailand, Paraguay, Portugal, and Ukraine.

3.1 Model Specification

Panel data consists of n entities. Each of the entity includes T no. of observation to be measured in time t. The panel data has to be analyzed with caution. The class of panel data varies among balanced and unbalanced panel as well as fixed and rotating.

This study judges the effects of HCF on the Income disparity.

Model of the study is specified below:

GINI =f (HCI, GDPDEF, LFT, MANU, EXP, GFCF, GCEX)

This study relies on pooled data.

Econometric version of model is given as:

$$GINIjk = \beta 1j + \beta 2HCIjk + \beta 3GDPDEFjk + \beta 4LFTjk + \beta 5MANUjk + \beta 6EXPjk + \beta 7GFCFjk + \beta 8GCEXjk + \mu jk$$

J = 1, 2, 3, ….. N

K= 1,2,3,…. K and u is the error term.

Table 1

Explanatory Variables and Explained Variables

Variable	Abbreviation	Description	Measuring Units	Expected Relations
Income disparity	GINI	The GINI index taken as the proxy of income disparity	Index	–
Human Capital Index	HCI	Human capital is proxied with Education (Rehman et al. 2008).	Index	Negative
Labour force	LFT	Labour force total is the country's workforce.	Number	Negative
Inflation	GDPDEF	Inflation rate is measured with CPI (Rehman et al. 2008).	Number	Positive
Exports	EXP	Entire exportable.	US Dollars	Positive
Manufacturing	MANU	It is the net total output of domestic manufacturing activities.	US Dollars	Negative
Govt. consumption expenditures	GCEX	Government consumption expenditures comprise expenditures by government to produce and provide services to the public, like national defence and education	US Dollars	Positive
Gross Capital Formation	GFCF	The spending on buying assets within the country.	US Dollars	Negative

1. Econometric Analysis

1.1 Stationarity Results Analysis

This results of stationarity are given in Table 1.

Table 2

Stationarity Test

	Constant			Constant with Trend			None		
Var.	**LLC**	**IPS**	**ADF**	**LLC**	**IPS**	**ADF**	**LLC**	**ADF**	**Results**
GINI	-6.10	-0.81	57.78	-7.35	-3.86	101.38	-4.41	115.04	**I(0)**
GFCF	-4.02	-1.53	56.92	-3.93	-1.93	64.90	0.27	29.76	**I(I)**
LFT	-1.27	3.31	48.05	-4.33	-2.45	79.79	7.99	27.01	**I(I)**
MANU	-4.10	-1.44	73.29	-5.87	-2.53	75.48	-4.64	90.58	**I(0)**
HCI	0.77	7.45	48.90	350.08	-0.52	48.20	5.22	11.64	**I(I)**
EXP	-2.80	-0.15	56.93	-5.00	-1.70	64.96	-0.68	61.03	**I(I)**
GDPDEF	-3.61	3.25	67.91	3.56	4.35	47.41	9.86	4.91	**I(I)**

Source: Author's calculations

In Table 2 test results of ADF, LPS, and LLC are given. The findings are mixed in conclusion i.e. of I(0) and I(1).

4.2

Descriptive Statistic

Table 3

Descriptive Statistics

	HCI	**GINI**	**LFT**	**GDPDEF**	**EXP**	**MANU**	**GCEX**	**GFCF**
Mean	2.70	40.41	16411244	175.57	38.35	15.04	14.75	22.22
Median	2.73	38.55	163430	106.17	31.89	14.12	14.66	21.44
Maximum	3.64	59.50	1.32E+08	2060.07	122.33	34.57	23.31	40.63
Minimum	1.71	24.00	673822.00	29.91	8.24	5.78	7.20	11.07
Std. Dev.	0.42	8.88	25071131	214.72	20.78	5.17	3.69	5.79
Skewness	-0.24	0.17	2.85	4.40	1.50	1.28	-0.04	0.73
Kurtosis	2.58	1.81	11.44	27.38	5.58	5.13	1.92	3.43

Table 3 elaborates descriptive statistics. The mean of human capital is 2.70 while the standard deviation is 0.42. The values 3.64 and 1.71 are maximum and minimum values respectively. The mean

value of manufacturing value-added is 15.04 and std. dev. are 5.17 while minimum at 5.78 and the maximum value is 34.58. The mean of gross fixed capital formation is 22.22, std. dev. is 0.579 with the minimum on 11.07 and the maximum on 40.63.

The mean value of GDP deflator is 175.57 with Stnd. Dev. is 214.72. The minimum value is 29.91 and the maximum is 2060.07. The mean and std. dev. of GINI index is 40.41 and 8.88. and max on 59.50 while min on 24.00. Export of goods and services has an average value of 38.35. The variation of export of goods and services is 20.78. Average of gross govt. final consumption expenditures are 14.75 and the standard dev. is 3.69, while it minimum at 7.20 and max at 23.31.

The maximum of goods and services exports in developing economies is 122.33 and minimum is 8.24. Labour force total's average is 16411244, standard deviation is 25071131. Skewness is the separation from symmetry. The distribution is leptokurtic if the kurtosis is greater than three otherwise the distribution is platykurtic. In this inquiry only inflation rate is leptokurtic. Government final consumption expenditures is negatively skewed, and other variables are positively skewed.

4.4 Panel Data ARDL Long-Run Analysis

Table 5

(Long-Run Results) HCF &ID in Developing Nations: Panel ARDL

Variables	C	t-Stat
LFT	-4.69E-07*	-3.587281
GDPDEF	0.001376	0.708836
HCI	-13.06035*	-17.66445
MANU	-0.081442***	-1.930772
EXP	0.020191	1.167897
GFCF	-0.086275*	-4.624404
GCEX	0.141902*	3.136808

Source: Author's Calculations **ii)** *significance at 1% level, ** significance at 5% level

*** significance at 10% level

Table 5 gives the panel ARDL analyses of HCF and income. The panel ARDL result displays that labour force total (LFT), gross fixed capital formation (GFCF, human capital index (HCI), manufacturing value (MANU) have negative but significant relationship with Income disparity in the context of developing countries. The variables inflation (GDPDEF) and exports of goods and services (EXP) have positive but insignificant relation with the dependent variable. Where government consumption expenditures (GCEX) have positive but significant relationship with the income disparity.

The long-run results presented inverse but significant connection of GINI index and the HCI. The coefficient of HCI is -13.06035 which indicates that 13.06 units decline in the GINI index if there is

upsurge in one of human capital index. It indicates that disparity decreases in developing countries, similar to Lee and Lee, 2018; Rehman et al. 2008.

ARDL long run results of labour force total shows the negative but highly significant relationship esists between the labour force and Income disparity. -4.69 shows decline of 4.69 units in income disparity in result of 1 unit increases in labour force. The results of manufacturing value-added, shows that there is inverse relation between manufacturing value-added and Income disparity. Findings are similar to Shahbaz and Aslam (2011).

The results of exports of goods and services shows that there is direct relation of exports and income disparity in selected developing countries. The coefficient value of EXP is 0.020 which indicates that one unit change occurs in export in result 0.020-unit change will occurred in Income disparity (GINI index). These results are like Lee and Lee (2018); Barusman & Barusman, (2017).

The results show the positive relationship between gross government consumption expenditures and Income disparity. The coefficient value of government consumption expenditures is 0.141902. The results indicate 0.14 unit increase in GINI is due to one unit increase in gross government consumption expenditures. These results are in-line with those of Anderson et al. (2017).

Gross fixed capital formation results shoes negative relationship with GINI. The coefficient of GFCF indicates that as the GFCF increase by one unit Gini index declines by 0.086 units. The relationship between GFCF and GINI is significant as the probability value is less than 0.05 which are similar to Farid, 2016.

4.5 Short-Run Analysis

The short run results are given in Table 6.

Table 6

Short-Run HCF & ID in Developing Nations: Panel ARDL

Variables	Coefficient	Stand. Er.	t-stat.
D(HCIBENR)	-86.61548	90.77605	-0.954167
COINTEQ01	-0.709348	0.112655	-6.296652
D(LFT)	3.01E-06	3.54E-06	0.850027
D(GDPDEF)	-0.093357	0.066112	-1.412103
D(EXP)	0.06944	0.067909	1.022553
D(MANU)	-0.212522	0.315801	-0.672963
D(GCEX)	0.215456	0.19047	1.131177
D(GFCF)	0.181899	0.060295	3.016801
C	58.01286	9.071665	6.394951

Source: Author's calculation

In Table 6, gross fixed capital formation and total labour force have reverse sign, respectively. The co-integration value indicates that 70% of disequilibrium is adjusted from short run to the long run.

2. Conclusions and Recommendations

This study explored negative relationship between HCF and income disparity. Furthermore to that; exports, inflation; and gross final consumption expenditures positively influenced the income disparity. The manufacturing value added, total labor force, gross fixed capital formation are found to negatively influence income disparity. The relationship between labor force total, GFCF, gross government consumption expenditures, human capital index, and income disparity is significant.

Policy recommendations are furbished to be:

1. Government should define policies for promoting education and training, research and development so that individuals with less income can enjoin with higher education.
2. Improved health services promote HCF. Better health facility facilitates to control income disparities.
3. The need of time is to promote manufacturing sector to create employment opportunities, GDP, and thus be enabled to address income disparities.

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