

EVALUATING THE ROLE OF GOVERNANCE IN BOOSTING HUMAN CAPITAL TO SHRINK INCOME INEQUALITY IN DEVELOPING COUNTRIES

Tanbir Hossain*¹ 

¹Senior Lecturer and Assistant Proctor, Department of Economics, North Western University, Bangladesh

ABSTRACT

Most of the developing countries in the world are facing a well-known challenging factor-like income inequality that affects the issue of balanced growth and welfare. The core goal of this paper is to investigate whether the Human Capital Index (HCI) joined with Good Governance (GG) variables have a significant impact on reducing income inequality in upper middle income (UMI) and lower middle income (LMI) countries or not. The first point is to investigate the relationship between HCI and income inequality and the second one is to find out the joint effect (HCI and GG) on income inequality (Gini Coefficient). The author divides all the countries based on income levels like UMI and LMI countries according to WB. For the UMI, HCI has no significant positive impact on reducing income inequality. However, if HCI works combined with good governance indicators like (HCI*RL), (HCI*RQ), and (HCI*GE), these interacted variables do not have significant power to reduce income inequality in UMI countries. Contrarily, for LMI countries, HCI helps to diminish income inequality significantly. When citizens achieve technical and educational qualifications, it helps them earn more money and shrinks income inequality significantly. Moreover, when HCI joints with good governing variables like PS, RQ, and RL that help to reduce income inequality significantly in LMI countries. There are some significant differences between UMI and LMI in foreign investment, job opportunities, foreign investment, and macroeconomic conditions that generate income-gap. This analysis finds that LMI countries grab influential effect in reducing income inequality in their economy compared to UMI countries.

Keywords: Income Inequality, Good Governance, Human Capital Index, Upper-Middle-Income Countries, Lower-Middle-Income Countries.

JEL: D63; J24; O57.

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*Correspondence:
 Tanbir Hossain
 E-mail:
 tanbir.nwustu@yahoo.com

Introduction

In recent eras, growing income inequality has become a major concern where most of the developed countries exploit the core benefit of globalization policies from developing countries, which enrich their dominating power and trade-benefit while hurting the developing countries badly. The core barriers of developing countries are unequal distribution of real income, faulty monetary and fiscal policies, weak infrastructural conditions, sluggish performance of central and local government, technological backwardness, etc (UNCTAD, 2020). These barriers badly affect the welfare condition, widening the gap between the rich and poor classes. In the recent world, the government has taken some directed policies in some special-

ized sectors that help to ensure balanced income growth, and reduce poverty levels which are something beneficial for developing economies.

Inequality is described as the scenario where unequal distribution of rights can affect lower earner people, imbalance over the distribution of economic resources, unequal distribution of health services, etc. [Birungi & Hassan \(2011\)](#) ensured that the negative role of the human and social capital gain on poverty reduction where does not bring any positive results on social welfare from the Ugandan perspective. In contrast, [Afzal et al. \(2011\)](#) concluded that qualified human capital can positively lead to national income and reduce the extremity of poverty. Economists support that human capital is a handy tool for economic growth because of innovation, technological knowledge, etc.

[Wade \(2014\)](#) mentioned that many countries had achieved economic solvency, but income inequality still exists. In contrast, many countries have proved themselves as the ideal in which nations maintain income growth and equity at the same time ([International Monetary Fund \[IMF\], 2007](#)). [Piketty \(2014\)](#) highlighted that many countries have achieved a higher level of economic growth but they have still infectious income inequality which hampers the balanced welfare effect. Besides, some emerging East Asian countries achieved a satisfactory economic growth rate (miracle growth rate) but still suffer the bad effect of income inequality ([Zhuang, Kanbur, & Rhee, 2014](#); [Jain-Chandra et al., 2016](#)).

[Simson \(2018\)](#) examined the three root causes of income inequality and its impact on developing countries. Firstly, globalization is considered to have had a misbalancing effect all over the earth since 1980, where institutional and national policies are somehow responsible to amplify the gap between the poor and rich classes ([Alvaredo et al., 2017](#)). According to [Sen \(1983\)](#), the realization of human capacity (Mental and Physical health) is the primary factor that can strengthen human capital efficiently. Human capital means the person's skill, educational achievement, and applied to learn should be a handy tool for transitional learning and sustainable progress.

On the other hand, effective government indicates the better performance of government in all sectors, especially in social justice, rules of law implementation, and implementation of economic and central policies. Good governance does matter for economic development, proper distribution of natural resources, employment opportunities, and the indicators of social improvements as well ([Prasad, 2008](#)). There are some essential aspects of good governance like transparency, accountability, established rules of law, corruption control, and sustainable vision. All these factors can jointly establish a sound environment that can boost creative thinking, new entrepreneurship plans, technological innovation, and sustainable economic development. [Shafique & Haq \(2006\)](#) developed a result on good governance and economic welfare. This study finds that the Government segment plays a very significant role in this precise ample, but the efficiency of the public sector is not satisfactory.

In earlier years, researchers tried to connect income inequality with human capital and income inequality with good governance, human capital, income Inequality with economic variables from an Indonesian perspective, Human Capital and Income Inequality Linkage in Sub-Saharan African countries, etc. In a macroeconomic sense, human capital and income equality play a vital role in developing a welfare economy where income equality enhances the sign of a welfare economy.

In this paper, the author tries to examine the interacted or joint impact of HCI and good governance variables (GG) on income inequality between UMI and LMI from 1990 to

2017 nearly 22 years based on the World Bank (WB) database. The author tries to highlight how interacted variables (HCI and GG) affect income levels in UMI and LMI countries.

Research Objective

To measure the combined impact of good governance and human capital on reducing income inequality in developing countries

Research Questions

A. How does Human capital help to reduce income inequality in developing countries?

Human capital is an important indicator that affects a person's income level. HCI deals with the indicators of education, health, and income which can affect a people's income condition and economic standard. So, from the first research question, the author wants to investigate the relationship between HCI and income inequality from a developing country's perspective.

B. How do Human Capital and Good Governance jointly work to alleviate income inequality in developing countries?

Good Governance means the combined and effective strategy of government that sound and beneficial economic policies help ensure citizens' welfare by guaranteeing property rights, national services, etc. to maximize welfare. Governance can affect HCI which can affect the income level of citizens. So, in the second research question, the author wants to identify the joint effect of (HCI and GG) on income inequality in developing economies.

Literature Review

[Becker & Chiswick \(1966\)](#) mentioned that parents invest some portion of money from their income-share to ensure standard education for their children that can well balance the distribution of income-level. In contrast, [Mincer \(1970\)](#) suggested that real income is highly dependent on education, where real income is influenced by the investment rate of investment. Education is a vital tool to improve impersonal skills and quality that might be helpful to lessen the dispersal of income levels. Since the 1950s, personal skills and education have become major factors in investing in the human capital and economic productivity sector. Furthermore, education can explore more scope for gaining social facilities, strengthening mental health, better living standards, maximum life expectancy, etc. where society gets positive feedback from well-educated people. [Smith \(1776\)](#) believed that education can grow the capabilities and develop skills of human beings that can be invested intensively to improve the development of society.

Famous economist [Mill \(1848\)](#) believed that education can generate the forecasting ability of human beings that can ensure their capacities to invest themselves in the productive sector. [Fields \(1980\)](#) considered education as a mobile factor that can help to diversify and raise the level of income, spread the benefits of education, the transmission of regional inequality, help to grow diversified thinking, etc. A bulk of the research was conducted to investigate whether there is a significant connection between income-inequality on educational achievement or not? For example, [Becker & Chiswick \(1966\)](#), [Tinbergen \(1972\)](#), [Sakharopolos & Woodhall \(1991\)](#), [Lam & Deborah \(1991\)](#), [De Gregorio & Lee \(2002\)](#), and [Checchi \(2001\)](#) conducted intensive research on two factors. They found that improving education gaining can lessen the income gap pointedly.

Conversely, [Ram \(1984\)](#), [Park \(1996\)](#), and [Digdowiseiso \(2009\)](#) did not find any positive linkage between education and income inequality. Education is not an efficacious tool to reduce the income gap. [Pose & Tselios \(2009\)](#) used the Theil index as income inequality measurement within European countries where the higher unequal rate of education can lead to income inequality. [Roy & Husain \(2019\)](#) mentioned how education is proved as a sustainable tool to reduce income inequality in the economy from the Indian perspective. Additionally, [Schultz \(1961\)](#) introduced a theory of how investment in human capital is proved as an effective tool in an economy. [Herzer & Nunnenkamp \(2014\)](#) investigated the relationship between income inequality and health facilities, where inequality works positively in rich economies and negatively in emerging countries. [Deaton \(2003\)](#) highlighted that income inequality carries a secondary role in low-earning countries causing poverty where income inequality is somehow liable for mortality rate. [Hill & Jorgenson \(2017\)](#) researched 50 states in the USA to measure the connectivity between income inequality and life expectancy from 2000-to 2010 where income inequality lessens the life expectancy rate, but redistribution policies can improve the health condition in the USA. [Blázquez-Fernández et al. \(2018\)](#) researched to find out the relationship between income inequality and life expectancy in 26 European countries from 1995-to 2014. The result was that income inequality does not have any significant impact on life expectancy. Besides, [Truesdale & Jencks \(2016\)](#) surveyed how income inequality affects health and the authors found the two ways from this research.

[Monnin \(2014\)](#) pointed out the relationship between income inequality and inflation from developed countries' perspectives but he focuses on the motivational trend of monetary policies on distribution effect in ten OECD countries from 1971 to 2010. The author stated that higher income inequality leads to lower inflationary pressure where the inflation rate grows maximum at 13% then income inequality might fall there. Besides, inflation can amend labor income significantly but it opens two effects: the exposure channel and the Cantillon effect. [Cysne et al. \(2005\)](#); [Areosa & Areosa \(2006\)](#) found positive construction between inflation and income inequality. Conversely, higher inflation lessens the value of real wages and lessens the money value in society ([Sun, 2011](#); [Maestri & Roventini, 2012](#)). In contrast, [Heer & Maußner \(2005\)](#) found that inflationary pressure reduces inequality at a marginal level.

FDI plays a vital role in the host economy for welfare ensuring while it sometimes works as a basic indicator to develop infrastructure and diplomatic relations ([Figini & Görg, 2011](#)). [Liebrand \(2018\)](#) researched FDI and income inequality from a sectoral perspective in Europe. The author found that FDI has significant inflow in sectoral and service sectors, where FDI benefits everyone by generating income-earning activities. FDI works as a backbite factor that divides the working forces into two different perspectives: low-skilled labor and high-skilled labor, indicating income inequality ([Gottschalk & Smeeding, 1997](#); [Acemoglu, 2003](#)). [Feenstra & Hanson \(1997\)](#) found a result that FDI is positively connected with real income generation where FDI requires high-skilled labor to demand in industrial data from a Mexican perspective.

In contrast, [Jensen & Rosas \(2007\)](#) stated that FDI can reduce the income gap between the rich and poor class that FDI helps to explore to accelerate economic development by balancing income adjustment in Mexico. [Blonigen & Slaughter \(2001\)](#) failed to justify any weighty connection between FDI and income inequality among laborers in the USA. From the Asian perspective, [Tsai \(1995\)](#) surveyed 33 developing countries but FDI leads to income inequality related to destroying the real welfare in society. Furthermore, [Gopinath & Chen \(2003\)](#) investigated the analysis of 15 developed countries on 11 developing where FDI is highly liable to widen the gap between skilled and unskilled labor forces. [Herzer & Nunnenkamp \(2015\)](#)

researched 10 European countries where FDI has a positive correlation with income inequality in the short term and a negative correlation with income inequality in the long run. So, FDI creates a significant impact on sectoral aspects in developing countries. In other words, FDI creates development inflow in host countries where technical knowledge can spread from the domestic portion to the root level, creating a new market and reducing the gap of income inequality at a significant level.

Barro (2000) described that tackling income inequality is a major challenge in the recent world because it is highly liable to widen the income gap and poverty. According to Kuznets's (1955), revolutionary theory, where resources shift to the high-productivity sector from lower productivity sectors like agricultural to the industrial sector, that rises income-inequality rate. Bouincha & Karim (2018) used the Kuznets theory but they use human capital as a proxy variable of growth rate. The authors use panel data from 189 different countries between 1990 and 2015 where growth works negatively to lessen income inequality. Voitchovsky (2005) investigated the bad effect of income inequality on economic growth for a long period based on a country-based survey. Li & Zou (1998) discovered that income inequality is not a harmful tool for economic growth. Adelman & Morris (1973) researched some variables like factors allocation -sector-wise, production difference in different sectors, distribution of wealth like land capturing rate, savings factor sector-wise, sharing a portion of social expenditure, consuming natural resources, population growth which are continuous factors creating the relationship between income inequality and growth. On the other hand, Birdsall, Ross, & Sabot (1995) researched some East Asian countries to measure the relationship between income inequality and growth where the author found positive higher growth can reduce the income gap, the author discovered that educational growth can reduce income inequality and quicken productivity as well. Recently, Halter et al. (2014) analyzed that the nexus between income inequality-high growth can stable the economic condition in the short term but dampen the possibility of sustainable growth.

From the broader view of macroeconomics, economic growth is somehow correlated with distribution policies, where redistribution policies include tax-rate reform and social-spending policies. Perotti (1996) mentioned that social spending can positively affect economic growth because it can motivate the citizen to work from their maximum efforts. From this review findings, Muinelo-Gallo & Roca-Sagal'es (2013) mentioned that imposing direct tax policies and redistribution channels can reduce the severity of income inequality in 21 high OECD countries. Lastly, Vo et al. (2019) used the Granger causality test to measure the connexion income gap and economic growth in middle-income countries from 1960-to 2014, where income inequality works negatively with economic growth. Meschi & Vivarelli (2009) tried to justify a connection between trade and income inequality in developing countries' perspectives where trade-specialized countries have failed to diminish the probability of income inequality, innovative new technologies, and labor-skill are the liable factor to reduce income inequality. As discussed earlier, Acemoglu (2003) mentioned that trade-liberalization supports modern technology to flow international capital goods, extending the income gap between low and high-skill laborers. Trade integration can create a wage gap between laborers who are involved in exporting sectors and non-exporting sectors as well. Developing countries do not have an in-depth capacity for labor-intensive goods due to internal collision between a trade union, labor expertise, etc (Sampson, 2014). Dawood (2017) researched to justify the effect of international trade on income inequality in developing countries and the author used the Hecksher-Ohlin model. The author suggested that there are huge inequalities in gaining educational support from developing countries when these countries involve in in-

ternational trade to exchange capital-based goods. Xu (2003) developed a model based on the continuous flow of goods between trade and non-traded items to measure the significance of trade policy. However, trade liberalization can raise wage inequality, which is not a good sign for income equality.

Methodology

Data and Research Methodology

In the end, Sen (1976) developed a theory based on the income and consumption levels of those living below the poverty line. The people who live below the poverty line how their income may be redistributed if there is huge skewness under the poverty line and there is a big income gap. So, the formula belongs this $P = [1 + (1-H)G]H$

Here, P indicates the poverty index in society for a group of people, with 1 mean level of distribution. G indicates the level of income inequality that is measured by the Gini coefficient. H means the head-count ratio of people who live below the poverty line.

From this model, it is well said that income inequality and welfare status of citizen is connected where the author suggested ensuring functional efficiency and distributional effect how the social welfare varies from government initiatives.

So, the social welfare function can be

$$W = \delta(1 - G) \quad (1)$$

Sen (1976), the author finally set up a relationship like that

$$W = f(hc, gg), W = f(y) = f(hc) = \delta(1 - G) \quad (2)$$

From this equation, social welfare is affected positively or negatively by two factors human capital (HC) and good governance (GG). Considering the above function, Khosroabadi et al. (2016) pointed out that social welfare (One of the influencing factors of income inequality) is effectively correlated with human capital and good governance.

Data Sources and Econometrics Model

The author collects secondary data from the World Bank and Penn world table websites. No primary data will be used there because all data will be collected from a country-wise perspective. The author will use the data from 1996 to 2017, nearly 22 years where 13 independent variables should be used. The author will take time series data to understand the long-time effect of human capital and good governance indicators on income inequality on a country basis. The author selects all developing countries in the world based on WB open data. These are lists of developing countries.

Multiple Regression for Upper Middle-Income Countries (Model-1)

$$UMI: Gini Index = \beta_0 + \beta_1 LE + \beta_2 LR + \beta_3 GDP + \beta_4 TP + \beta_5 TOT + \beta_6 FDI + \beta_7 HCI + \beta_8 IF + \beta_9 PS + \beta_{10} GE + \beta_{11} RQ + \beta_{12} RL + \beta_{13} CC + u_i \quad (3)$$

Interacted Multiple Regression for Upper Middle-Income Countries (Model -2)

$$UMI_IV: Gini Index = \alpha_0 + \alpha_1 LE + \alpha_2 LR + \alpha_3 GDP + \alpha_4 TP + \alpha_5 TOT + \alpha_6 FDI + \alpha_7 IF + \alpha_8 CC * HCI + \alpha_9 PS * HCI + \alpha_{10} RQ * HCI + \alpha_{11} RL * HCI + \alpha_{12} GE * HCI + u_i \quad (4)$$

Multiple Regression Lower Middle-Income Countries (Model -3)

$$LMI:Gini\ Index = \mu_0 + \mu_1LE + \mu_2LR + \mu_3GDP + \mu_4TP + \mu_5TOT + \mu_6FDI + \mu_7HCI \quad (5)$$

$$+ \mu_8IF + \mu_9PS + \mu_{10}GE + \mu_{11}RQ + \mu_{12}RL + \mu_{13}CC + \mu_{14}HCI + u_i$$

Interacted Multiple Regression for Lower Middle-Income Countries (Model -4)

$$LMI_IV:Gini\ Index = \gamma_0 + \gamma_1LE + \gamma_2LR + \gamma_3GDP + \gamma_4TP + \gamma_5TOT + \gamma_6FDI + \gamma_7IF \quad (6)$$

$$+ \gamma_8CC * HCI + \gamma_9PS * HCI + \gamma_{10}RQ * HCI + \gamma_{11}RL * HCI + \gamma_{12}GE * HCI + u_i$$

Table 1: Upper Middle Income and Lower Middle-Income Countries

Upper Middle Income Countries		Lower Middle Income Countries	
Country	Country	Country	Country
Albania (ALB)	Fiji (FJI)	Angola (AGO)	Ghana (GHA)
Algeria (DZA)	Gabon (GAB)	Bangladesh (BGD)	Honduras (HND)
American Samoa (ASM)	Georgia (GEO)	Bhutan (BTN)	India (IND)
Argentina (ARG)	Grenada (GRD)	Bolivia (BOL)	Indonesia (IDN)
Azerbaijan (AZE)	Guatemala (GTM)	Cabo Verde (CPV)	Kenya (KEN)
Belarus (BLR)	Guyana (GUY)	Cambodia (KHM)	Kiribati (KIR)
Belize (BLZ)	Iran (IRN)	Cameroon (CMR)	Lao PDR (LAO)
Bosnia and Herzegovina (BIH)	Iraq (IRQ)	Comoros (COM)	Mauritania (MRT)
Botswana (BWA)	Jamaica (JAM)	Congo, Rep (COG)	Micronesia, Feb. Sts (FSM)
Bulgaria (BGR)	Jordan (JOR)	Cote D, Ivoire (CIV)	Moldova (MDA)
China (CHN)	Kazakhstan (KAZ)	Djibouti (DJI)	Mongolia (MNG)
Colombia (COL)	Kosovo (XKX)	Egypt. Arab Republic (EGY)	Morocco (MAR)
Cuba (CUB)	Lebanon (LBN)	El Salvador (SLV)	Myanmar (MMR)
Dominica (DMA)	Libya (LYB)	Eswatini (SWZ)	Nicaragua (NIC)
Dominican Republic (DOM)	Malaysia (MYS)	Sudan (SDN)	Nigeria (NGA)
Ecuador (ECU)	Maldives (MDY)	Timor-Leste (TLS)	Pakistan (PAK)
Equatorial Guinea (GNQ)	Marshall Islands (MHL)	Tunisia (TUN)	Papua New Guinea (PNG)
Mauritius (MUS)	Mexico (MEX)	Ukraine (UKR)	Philippines (PHL)
Montenegro (MNE)	Thailand (THA)	Uzbekistan (UZB)	Sao Lome and Principe (STP)
Namibia (NAM)	Tonga (TON)	Vanuatu (VUT)	Senegal (SEN)
North Macedonia (MKD)	Turkey (TUR)	Vietnam (VNM)	Solomon Islands (SLB)
Paraguay (PRY)	Turkmenistan (TKM)	West Bank and Gaza (PSE)	Zimbabwe (ZWE)
Peru (PER)	Tuvalu (TUV)	Zambia (ZMB)	
Romania (ROU)	Venezuela, RB (VEN)		
Russian Federation (RUS)	Samoa (WSM)		
Serbia (SRB)	South Africa (ZAF)		
Sri Lanka (LKA)	St. Vincent and The Grenadines (VCT)		
ST. Lucia (LCA)			

Source: World Bank Open Data Source, 2022

Table 2: Dependent and Independent Variables that affecting in Model

Variables	Definition	Source	Data Collection	Summary Statistics	World Bank Indicator Name	Authors Reference
Dependent Variable						
Gini Index	GINI index (World Bank estimate)	World Bank	In Percentage	Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution.	SI.POV.GINI	Khosroabadi (2016)
Independent Variables						
1. Life Expectancy (LE)	Life expectancy at birth, total (years)	World Bank Open Data	In years	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.	SP.DYN.LE00.IN	Digdowniseiso (2009)
2. Literacy Rate (LR)	Literacy rate, adult total (% of people ages 15 and above)	World Bank Open Data	Literacy rate, adult total (% of people ages 15 and above)	Average years of primary schooling, 15+, the total is the average years of primary education completed among people over age 15.	SE.ADT.LITR.ZS	Digdowniseiso (2009); Checchi 2001; Roy & Husain (2019)
3. GDP (GDP)	GDP per capita (current US\$)	World Bank Open Data	In US Dollar	GDP per capita is gross domestic product divided by mid-year population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	NY.GDP.PCAP.CD	Digdowniseiso (2009); Mahmood & Zaleha (2013)
4. Total Population (TP)	Population, Total	World Bank Open Data	In Number	The total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates.	SP.POP.TOTL	Mahmood & Zaleha (2013)
5. Trade (TOT)	Net barter terms of trade index (2000 = 100)	World Bank Open Data	In percentage	Net barter terms of trade index are calculated as the percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year 2000.	TT.PRI.MRCH.XD.WD	Huang & Ho (2018)

Variables	Definition	Source	Data Collection	Summary Statistics	World Bank Indicator Name	Authors Reference
Dependent Variable						
6. Foreign Direct Investment (FDI)	Foreign direct investment, net inflows (% of GDP)	World Bank Open Data	In percentage	Foreign direct investment is the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors and is divided by GDP.	BX.KLT.DINV.WD.GD.ZS	Huang & Ho (2018)
7. Human Capital Index (HCI)	Human capital index, based on years of schooling and returns to education; see Human capital in PWT9.	Penn World Table, 2019	In number	Human capital index, based on years of schooling and returns to education; see Human capital in PWT9.	hc	Shahabadi et al. (2018)
8. Inflation (IF)	Inflation, consumer prices Annual %	World Bank Open Data	In percent	Inflation, as measured by the consumer price index, reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.	FP.CPI.TOTL.ZG	Shahabadi et al. (2018)
9. Political Stability and Absence of Violence/ (PS)	The estimate of governance (ranges from approximately -2.5 (weak) to 2.5 (strong) governance)	World Bank Open Data	The estimate of governance (ranges from approximately -2.5 (weak) to 2.5 (strong) governance)	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. Estimate gives the country's points on the aggregate indicator, in units of standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	PV.EST	Shafique & Haque (2006); Yusuf & Malarvizhi (2012)

Variables	Definition	Source	Data Collection	Summary Statistics	World Bank Indicator Name	Authors Reference
Dependent Variable						
10. Government Effectiveness (GE)	The estimate of governance (ranging from approximately -2.5 (weak) to 2.5 (strong) governance)	World Bank Open Data	The estimate of government effectiveness and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Estimate gives the country's points on the aggregate indicator, in units of standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	GE.EST	Shafique & Haque (2006); Yusuf & Malarvizhi (2012)	
11. Regulatory Quality (RQ)	The estimate of governance (ranging from approximately -2.5 (weak) to 2.5 (strong) governance)	World Bank Open Data	Regulatory Quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Estimate gives the country's points on the aggregate indicator, in units of standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	RQ.EST	Shafique & Haque (2006); Yusuf & Malarvizhi (2012)	
12. Rule of Law (RL)	The estimate of governance (ranging from approximately -2.5 (weak) to 2.5 (strong) governance)	World Bank Open Data	Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country's points on the aggregate indicator, in units of standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	RL.EST	Shafique & Haque (2006); Yusuf & Malarvizhi (2012)	
13. Control of Corruption (CC)	The estimate of governance (ranging from approximately -2.5 (weak) to 2.5 (strong) governance)	World Bank Open Data	Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimate gives the country's points on the aggregate indicator, in units of standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	CC.EST	Shafique & Haque (2006); Yusuf & Malarvizhi (2012)	

Source: World Bank Open Data Source, 2022

Table 3: Multiple General Regression and Multiple Interacted Regression Model in UMI and LMI Countries

Variable Sign	Variables Name	1. Multiple General Regression for UMI	2. Multiple Interacted Regression for UMI	3. Multiple General Regression for LMI	4. Multiple Interacted Regression for LMI
<i>LE</i>	Life Expectancy	-0.509*** (0.062)	0.494*** (0.065)	-0.232*** (0.038)	-0.212*** (0.037)
<i>LR</i>	Literacy rate	0.034 (0.046)	0.026 (0.048)	0.084*** (0.018)	0.061*** (0.018)
<i>GDP</i>	Gross Domestic Product	0.001*** (0.0001)	-0.001*** (0.0001)	-0.001*** (0.0003)	-0.002*** (0.0003)
<i>TP</i>	Total Population	0.00000*** (0.000)	0.00000*** (0.000)	0.000 (0.000)	0.000 (0.000)
<i>TOT</i>	Term of Trade	-0.0005 (0.009)	0.003 (0.009)	0.026*** (0.007)	0.021*** (0.007)
<i>FDI</i>	Foreign Direct Investment	-0.186*** (0.044)	-0.177*** (0.046)	0.149*** (0.055)	0.157*** (0.052)
<i>IF</i>	Inflation	-0.020*** (0.007)	-0.021*** (0.007)	0.002 (0.001)	0.004*** (0.001)
<i>CC</i>	Control of Corruption	4.504*** (1.293)	-25.411*** (8.106)	0.002 (0.001)	-16.345*** (4.935)
<i>HCI</i>	Human Capital Index	0.300 (0.852)	2.091* (1.263)	-2.883*** (0.715)	2.606** (1.154)
<i>PS</i>	Political Stability	3.008*** (0.586)	2.427 (3.256)	2.850*** (0.451)	9.236*** (1.834)
<i>RQ</i>	Regulatory Quality	6.445*** (0.900)	10.568** (4.766)	4.280*** (0.785)	18.321*** (3.972)
<i>RL</i>	Rules of Law	-8.863*** (1.365)	3.470 (8.740)	-5.738*** (1.238)	9.286* (5.524)
<i>GE</i>	Government Effectiveness	1.063 (1.322)	8.455 (9.025)	-2.122* (1.171)	-28.715*** (5.836)
<i>HCI: CC</i>	Human Capital Index* Control of Corruption		12.170*** (3.262)		10.563*** (2.344)
<i>HCI: PS</i>	Human Capital Index* Political Stability		0.067 (1.318)		-2.898*** (0.869)
<i>HCI: RQ</i>	Human Capital Index* Regulatory Quality		-1.695 (1.934)		-6.080*** (1.882)
<i>HCI: RL</i>	Human Capital Index* Rules of law		-4.995 (3.533)		-7.629*** (2.725)
<i>HCI: GE</i>	Human Capital Index* Government Effectiveness		-2.580 (3.518)		12.544*** (2.727)
	Constant *Intercept	77.806*** (4.869)	72.919*** (5.905)	57.299*** (2.566)	47.632*** (3.035)
Observations		792	792	638	638
R²		0.34	0.357	0.348	0.430
Adjusted R²		0.33	0.342	0.335	0.413
Residual Std. Error		8.892 (df = 778)	8.834 (df = 773)	6.009 (df = 624)	5.643 (df = 619)
F Statistic		31.396*** (df = 13; 778)	23.830*** (df = 18; 773)	25.633*** (df = 13; 624)	25.913*** (df = 18; 619)

Level of Significance: *p<0.1; * p<0.05; ***p<0.01

Source: Author’s Own Compilation, 2022

Finding and Discussion

Result Analysis for Model-1

As shown in Model 1 from table 3, if average life expectancy increase by 1 year in Upper Middle-Income countries, it will decrease the income inequality (Gini coefficient) value at 0.509 points by holding other variables constant. It is statistically significant at the 1 percent level.

From a GDP perspective, if the average GDP increases by \$1 in Upper Middle-Income countries, it will decrease the income inequality (Gini coefficient) value at 0.001 points by holding other variables constant, it is statistically significant at 1 percent level. When there are more scopes for income, GDP will augment automatically then the income gap must be lowered.

From the Population point of view, if the population increases in Upper Middle-Income countries, income inequality will be increased by other variables constant. It is statistically significant at the 1 percent level.

From Foreign direct investment (FDI), If FDI increase by 1 percent in GDP, income inequality (Gini coefficient) will be reduced by 0.186 points by holding other variables constant. It is statistically significant at the 1 percent level. When FDI inflow happens and it accelerates income opportunity, it widens the scope of general people to involve themselves in the job. Sometimes, the government launches many initiatives with foreign partners, which widens the scope of income and lessens the Gini value.

From the inflationary issue, if inflation increases by 1 percent, it will decrease the Gini coefficient to 0.020 points by holding other variables constant. It is statistically significant at the 1 percent level. When business people invest money from the government and non-government sources, it forces the inflation digit to the upper where it tries to lessen income inequality (Gini coefficient) at a significant rate.

In this paper, the value of CC divides between -2.5 to 2.5 where corruption hinders economic productivity by increasing productivity, demotivated investment amount, diminishing the confidence level of public institutions, weakening the connection between the public and private management, and lowering the investment level of health and educational system. Moreover, Political instability is the condition where political parties involve themselves in conflict to gain personal interest where PS gains points between -2.5 to 2.5 and RQ is measured by the WB index where the RQ value exists between -2.5 to 2.5 index. Here, CC, PS, and RQ do not have a significant impact to reduce income inequality in UMI. Conversely, RL has a significant impact to reduce the income inequality problem from UMI.

Result Analysis for Model-2

Besides, [Johansen \(2014\)](#), the author used educational achievement as a proxy variable for HCI (An individual citizen to involve himself in primary and return to higher education) and how it creates an effect on income inequality in developing countries as well. [Johansen \(2014\)](#) investigated a relationship between human capital and income inequality in 123 countries from 1960-to 2010. No interacted variables do not have any significant impact to reduce income inequality in UMI countries.

Result Analysis for Model-3

As shown Table 3 explains that, if average life expectancy increase by 1 year in Lower Middle-Income countries, it will decrease the income inequality (Gini coefficient) value at

0.232 points holding other variables constant. It is statistically significant at the 1 percent level.

If the literacy rate increases by 1 percent in Lower Middle-Income countries, income inequality (Gini coefficient) will be increased by 0.084 points holding other variables constant. It is statistically significant at the 1 percent level.

From a GDP perspective, if the average GDP increases by \$1 in Lower Middle-Income countries, it will decrease the income inequality (Gini coefficient) value at 0.001 points holding other variables constant, it is statistically significant at 1 percent level.

From the viewpoint of TOT, it means how many export units or volumes will be compulsory to purchase 1 unit of import goods. Suppose, If Germany exports more goods (In monetary amount) while it purchases fewer imported goods, then the TOT will be positive in Germany. Besides, if the TOT percent ratio increases by 1 percent, the income inequality (Gini coefficient) value will increase by 0.026 points holding other variables constant. It is statistically significant at the 1 percent level.

Foreign direct investment (FDI), if FDI inflow increases by 1 percent in GDP, income inequality (Gini coefficient) will be increased by 0.149 points holding other variables constant. It is statistically significant at the 1 percent level.

From the perspective of good governance, CC, PS, and RQ do not have significant power to reduce income inequality significantly in lower-middle-income countries (LMI). Moreover, Rules of Law (RL), human capital and Government effectiveness (GE) do have significant power to reduce income inequality significantly from LMI. Good governance can show its skill to implement productive monetary policy and fiscal policies where it can play a vital role in sound economic growth. [Shafique & Haq \(2014\)](#) examined that the rich class got more economic benefits than the poor rising income inequality at the time of super economic growth. Government effectiveness help to ensure transparency, accountability to a citizen, connection from top to bottom level for bureaucratic factor, and financial stability where it exposes the joint advantage of government effectiveness.

When a person gets an education and training, he can use it for productive purposes, that essential for reducing income inequality. He can generate more scope for income opportunities. In contrast, [Yang & Greaney \(2017\)](#) pointed out that the income gap will force the lower-earning group to engage in any jobs to fulfill their basic demands, which can positively accelerate economic growth.

Result Analysis for Model-4

A. From the table no 3, When control of corruption (CC) merges with human capital (HCI), this joint or interacted variable cannot reduce income inequality significantly from LMI. Local-level citizens have not got a good flavor of controlling corruption, which leads to widening the income gap between the two classes.

B. When the administrative body maintains a good relationship with other political parties within the country, it will create a good relationship with HCI to lessen income inequality significantly. When PS help to improve the human capital index, it will reduce income inequality significantly.

C. If the government launches sound policies and sustainable policies to stabilize the economic condition like price control, discrimination of tariffs and taxes, market policies, and

perfect wage distribution then it should create negative effects to lessen income inequality in LMI countries. If the RQ works to enhance HCI, it will reduce income inequality significantly.

D. RL indicates the statement of society when people and agents have confidence in government indicators like property rights, the government sets laws against violent crimes, property rights protection, people have full trust in police and army forces, then it helps to reduce income gap significantly. If the RL help gains a good education and improves their professional and technical quality, it will reduce income inequality significantly from LMI.

E. If the Government Effectiveness (GE) merges with human capital (HCI), it does not have any impact to shrink income inequality from LMI.

Lee & Lee (2018) investigated that human capital helped reduce educational inequality and thus income inequality from 1980 to 2015 in ADBI Working Paper. Molla (2021) conducted a study on panel data from 1984-to 2016 in 25 Sub-Saharan African countries. This paper investigates that human capital in terms of secondary school enrolment rate hurts income inequality. Suhendra et al; (2020) analyzed a paper showing the relation between Human Capital, Income Inequality, and economic Variables in the Indonesian perspective, it shows that human capital has a negative and significant effect on income inequality. Shafique & Haq (2006) investigated that good governance instruments affect economic welfare in SARRC countries for the period 1996 to 2005. According to World Bank (WB), lower-middle-income economies (LMI) are those with a GNI per capita between \$1,046 and \$4,095; upper-middle-income economies (UMI) are those with a GNI per capita between \$4,096 and \$12,695; high-income economies are those with a GNI per capita of \$12,696 or more.

In this paper, for UMI countries, when the Human capital index (HCI) merges with GG variables, it does not have any statistically significant impact on income inequality in this model. Conversely, when HCI merges with Political stability (PS), Regulatory quality (RQ), and rules of law (RL), it reduces the income inequality significantly in LMI countries. Human capital brings a significant impact on reducing income inequality only in lower-income countries.

Conclusion

In the world, developed countries, as well as developing countries, try to accelerate the wheel of economic development ensuring maximum welfare of citizens. Due to the front image of economic development, most of the developed countries grab the real benefits of cheap labor, support from natural resources, and raw materials availability that hamper economic sustainability. These reasons severely lead to income inequality problems where a group of portions does not feel the flavor of standard life. In developing countries, distribution efficiency does matter because an extra dollar spent by the central government on the poor will be used to fulfill their basic needs whereas this additional dollar will be spent to purchase foppish and luxury goods if it is spent on the rich class. So, the value of the marginal utility of wealth reduces at the time being rich. The long term effect of income inequality breaks the welfare of the state where it can hasten debt loans, unfair competition, the downtrend of savings, monopolization ion power of nominating bodies, etc. when a group of people is deprived of their basic needs for a long time, they will go for civil wars and terrorism activities. Income inequality divides society into two classes where a fixed portion wants to seize all reimbursements pushing back their neighbors, which creates social conflict. So, economists and policy-makers should consider modern policies and initiatives to reduce the income gap in society.

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