https://doi.org/10.52131/joe.2022.0404.0102

*i*RASD Journal of Economics

Volume 4, Number 4, 2022, Pages 607 – 620

Journal Home Page:
https://journals.internationalrasd.org/index.php/joe

Nexus among Democracy, Human Resource Development, and Income Inequality: Three Stage Least Square Estimation for 47 Developing Economies

Tusawar Iftikhar Ahmad[1], Abdul Rehman[2], Abid Mehmood[3], Nosheena Sattar[4]

[1] Associate Professor, Department of Economics, The Islamia University of Bahawalpur, Pakistan.
Email: tusawar.iftikhar@iub.edu.pk
[2] Visiting Lecturer, The Islamia University of Bahawalpur, Rahim Yar Khan Campus, Pakistan.
Email: abdulrehmansaeed99@gmail.com
[3] Assistant Professor, Department of Business Administration, Iqra University, Karachi, Pakistan.
Email: abid.mehmood@iqra.edu.pk
[4] M.Phil. Economics, Department of Management Sciences, COMSATS University Islamabad, Vehari Campus, Pakistan.
Email: nosheenasattar923@gmail.com

ARTICLE INFO

Article History:
Received: October 30, 2022
Revised: December 25, 2022
Accepted: December 26, 2022
Available Online: December 27, 2022

Keywords:
Democracy
Human development
Inequality
Inflation
Remittances
Corruption
Population
Unemployment

JEL Classification Codes:
D72, D73, E24, F24, O15, P24, Q56

Funding:
This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

The purpose behind conducting this study was to examine the relationship among democracy, human resource development and income inequality in developing countries. For this, the study specified three econometric models. The study used panel data for the period 1995 to 2016. First, we have checked the stationarity of variables through Levin, Lin chu (LLC) and IPS test. We used three stage least square (3SLS) for our analysis. Results of model 1 found that income inequality, corruption, and the population had a negative effect on democracy, while human resource development and GDP per capita have a positive effect. In Model-II, income inequality, unemployment and inflation had a negative effect on human resource development, while foreign direct investment, remittances, and democracy had a positive effect. In Model-III results found that human resource development, democracy, GDP per capita and corruption were related negatively to income inequality, while inflation was positively related to income inequality.

Corresponding Author's Email: abid.mehmood@iqra.edu.pk
Citation: Ahmad, T. I., Rehman, A., Mehmood, A., & Sattar, N. (2022). Nexus among Democracy, Human Resource Development, and Income Inequality: Three Stage Least Square Estimation for 47 Developing Economies. *IRASD Journal of Economics*, *4*(4), 607–620. https://doi.org/10.52131/joe.2022.0404.0102

1. Introduction

Democracy brings about a great indirect positive effect on growth through the accretion of human capital. Democracy is related to a decline in inflation, a fall in political stability and a rise in economic freedom (Mohtadi & Roe, 2003). HDI (Human Development Index) of UNDP caught human progress by simply combines' information on people's health, education, and

income into one number. Considering inequality, the global HDI value of 0.728 in 2017 will fall to 0.582. This denotes a decline from the advanced category of human development to a moderate level. Both conceptually and experimentally, the notion that the degree of democracy and HD are positively correlated has been studied (Anand & Sen, 1994; Gerring, Thacker, & Alfaro, 2012; Tsai, 2006). According to Sen's idea, democracy can be viewed as the culmination of a political procedure that permits the input of various socioeconomic classes in societal governance while also encouraging an improvement in the wellbeing of the populace (Anand & Sen, 1994).

The death rate of infants is one of the most used metrics for assessing how democracy affects human development as a whole. The death rate of infants is one of the most used metrics for assessing how democracy affects human development as a whole. Gerring et al. (2012) demonstrated that the drop in the death rate of infants is influenced by both the level of electoral competition and the stock of democracy that nations have built up over time. This finding encourages policymakers to provide the population with more public goods. Does greater democracy contribute to human development? Or will a greater degree of democracy result from human development, or opposite situation? Is the increase in Human development to cause an advanced democracy level? About these, Spaiser (2015) claim that numerous countries over the past ten years have seen fast fluctuations in their economies, self-governing establishments, and citizenry standards.

Democracy and income inequality have a complicated relationship. Bollen (1993); Bollen and Jackman (1985) discover no robust relationship, on the other hand, Muller (1995a) adopting various assumptions, finds that high inequality lowers the probability of democracy, in contrast to Boix (2003) and Boix and Stokes (2003) also account that small inequality persuades democracy, by means of Gini coefficients on income inequality and the Family Farms measure. Vanhanen (2000) also demonstrate that low inequality encourages democracy. A positive association exists between school enrollments, life expectancy rate with democracy. Saha and Zhang (2017) showed that democracy coefficients are significantly positive at the 1% level implied that a better democracy enhances human development. Jacobsen (2015) showed economically and significantly positive effect of life expectancy on democracy. The study established a statistically and economically significant positive effect on the improvement of life expectancy on democracy. There is a negative impact of income inequality on health outcome. Reducing income inequality Hu, Van Lenthe, and Mackenbach (2015) stated that it could be important to create opportunity equality and reduce health inequality and its role in reducing European average mortality is limited. Siddiqi, Jones, Bruce, and Erwin (2016) showed that racial infant mortality rate (IMR) inequities vary significantly across the U.S.

In developing countries, the literacy rate is very minimum in contrast to the other countries in the globe. People living in rural areas live in their ancestral style, they follow those customs and laws that followed by their elders, and they follow the new state laws and regulations that were changed over time. They are usually not used by major parties to participate in the political process or to maximize voting (Waqas & Khattak, 2017). Economic inequality is widespread and inevitable to some extent. However, our belief is that there is the possibility of leading to numerous kinds of political, economic and social disasters unless the intensifying inequality is appropriately scrutinized and coped with (World inequality report 2018). Therefore, it is necessary to find a precise relationship between democracy, human resource development and income inequality. The present research finds out the relationship among these variables. Moreover, finds in which channel democracy and human resource development and income inequality are interrelated with each other. The study specifically finds the answers to the following queries:

1) What is the role of FDI in Human Resource Development in developing nations?
2) How does economic growth affect democracy in developing countries?
3) How is income inequality determined by corruption?

2. Literature Review

Rød, Knutsen, and Hegre (2020)conducted a study to check the influencing factors of democracy. The outcomes of that study displayed that for the survival of democracy, income and law enduring bureaucracy. Moreover, the results revealed that political instability and neighborhood democracy influences democratization. Apergis (2018) investigated the influence of education on democracy in developed and developing economies. The study used panel data of 161 countries, and it had been taken from period 1970 to 2013, obtained from Freedom House and World Bank Indicator. The study used a panel unit root test and ARDL estimation technique for predicting results. GDP per capita (annual), life expectancy rate, urbanization, income inequality and property rights as independent variables. The study findings show statistically significant impact on democracy.

Nikoloski (2015) studied the connection amongst democracy and income inequality in the short and long run. The study used panel data from 1962 to 2006. In this study, we used OLS and GMM techniques to predict the results. It took income disparity and democratic index as dependent variables. This study revealed several positive and significant associations between the evidence of the presence of the Kuznets curve and the development and inequality of the financial division. Knutsen (2015) examined the interrelation amongst democracy and income inequality. The study used time series data of 163 countries, and it had been taken from 1963 to 2008, the study used GMM estimation technique for predicting results. It generated two models; the first model took democracy as dependent and income inequality and GDP, wage share, the population as an independent variable. The analysis suggested income inequality does not affect democracy.

Heid, Langer, and Larch (2012) studied the impact of income (per capita GDP) on democracy. This survey, using panel data from 150 countries, is from 1960 to 2000, obtained from Freedom House and World Bank Indicator. Study used GMM technique for predicting results. It took democracy as regressor and GDP as an independent variable. They conclude a significant positive bond between income and democracy. Acemoglu, Johnson, Robinson, and Yared (2008) investigated that per capita income has a causal effect on democracy. Study used panel data of over 500 years, sample period is 1960–2000.Study used a 2SLS estimation technique for predicting results. It took democracy as dependent and population, education, GDP per capita, saving rates and trade weighted log GDP as independent variables. The study showed no causal effect of income on democracy, and GDP per capita showed positive but little effect on democracy in the study.

Barro (1999) conducted a panel research study for 100 countries. The findings of this study were that betterment in the living standard demonstrate rise in democracy. Due to this, there will be a rise in GDP, education, and low gender gap in primary school attainment. There will be a fall in democracy with the rise in urbanization. Muller (1995b) organized a cross sectional research to check the association between the economic development and democracy. His work revealed that intermediate economic development causes increase in income inequality, which further leads a decline in democracy particularly in developing countries. Saha and Zhang (2017) analyzed the impact of democratic growth connection and its interaction on human development. This survey uses cross-sectional panel data and was conducted between 1980 and 2010. Study firstly used panel least square, fixed and random effect estimation technique for predicting results. It took HDI as dependent and democracy, real GDP per capita and government consumption (shares of GDP) and trade openness as independent variables. GDP was positive which suggested that per capita income significantly enhance the development human.

Carmignani (2013) studied from the viewpoint of two complementary aspects, the influence of abundance of resources on human development. The study used panel data for the sample of 84 countries from 1970 to 2010.The study used Ordinary least square, 2SLS & 3SLS

estimation techniques for predicting results it took income inequality, HDI and institutional quality as dependent and GDP per capita, natural resources, disease environment, violence, and ethnic fragment as independent variable. Study found that resource abundance increases inequality. Hu et al. (2015) examined the impact of income inequality on life expectancy. Study used cross-sectional data and it had been taken from period 1987 to 2008. The study used pooled-cross sectional regression estimation technique for predicting results. It took health outcome as dependent and income inequality, GDP per head as independent variable. The fixed effects model to eliminate foreign differences has no statistically significant relationship between income disparity measured by the average lifespan of European countries and cause mortality rate between 1987 and 2008 and population health.

Gavurová and Vagašová (2016) analyzed Development of standardized mortality rate of ischemic heart disease in the Slovak region. Study used cross sectional data and it had been taken from 1996 to 2013. Study used linear regression for predicting results. It took standardized mortality rate as dependent and unemployment rate, income inequality, mean equalized net income, and poverty as independent variables. Results showed that the rate of unemployment, poverty rate, and corresponding disposable income were statistically important income factors. Bittencourt (2013) investigated the influence of democracy on education in the sub-Sahara African countries. Study used panel time series data and it had been taken from period 1980 to 2000. Study used pooled OLS and fixed effect techniques for predicting results. It took education as dependent and democracy, share of final government consumption to GDP, gross fixed capital formation to GDP. The results suggested that democracy has had a significantly positive effect on education.

Tridico (2018) conducted a study for OECD countries to check the factors that increase income inequality that was continuously increasing in those countries for more than two decades. The outcomes of this study revealed that financialization, expanding of labor elasticity, waning of labor unions and economizing the of welfare public. Islam and McGillivray (2020) observed the effect of political freedom on income inequality. Study used panel data of 83 countries and it had been taken from 1968 to 2011. International Monetary Fund (IMF) government financial statistics. Study used GMM estimation technique for predicting results. Primary education contributes to the reduction of inequality, but secondary education has little effect.

Knutsen (2015) examined the interrelationship between democracy and income inequality. The study used time series data of 163 countries, and it had been taken from 1963 to 2008. The study used GMM estimation technique for predicting results. Study concluded that democracy reduces inequality amongst income earners and capital owners for the reason that democratic system permit independence of connotation, comprising the freedom to form independent unions, thereby strengthening labor's bargaining power. Ucal, Haug, and Bilgin (2016) explored the impact of FDI and other components on income inequality in Turkey in the long run and short-run. Study used data from period 1970 to 2008. Study used ARDL estimation technique analysis for predicting results. It took Gini as dependent and inward annual FDI flow, annual inflation rate, and GDP deflator, the annual growth rate of GDP and % change in adult literacy rate as independent variables. This research suggests that policies that position GDP growth rate as the center of reduction of income disparity will be inappropriate in the long run.

Paweenawat and McNown (2014) organized a study in Thailand to explore the factors that causes income inequality through synthetic cohort method. The study revealed that education, children number, number of household earners are the vital factors of inequality. Asteriou, Dimelis, and Moudatsou (2014) investigated the influence of globalization on income inequality. Study used panel data of EU- 27 countries it had been taken from period 1995 to 2009. Study used GMM estimation technique for predicting results. It took Gini as dependent and Globalization countermeasures (openness of trade, direct investment, and capital account) and management variables are technological change and employment. Lee, Kim, and Cin (2013) conducted a research study in Korea to explore the trends and associated factors that affect income inequality

in the case of Korea. According to them, GNI was insignificantly affecting the income inequality. Rise of aging population was increasing the gap in income inequality. A study conducted in the context of 35 African countries showed that high-income inequality reduces the economic growth. This leads to the decline in political stability and the reduction in the investment in education sectors (Odedokun & Round, 2001).

3. Theoretical Framework

The theoretical framework incorporates a number of from various angles interconnected concepts and ideas from the literature survey. Democracy, according to Abraham Lincoln's 1863 Gettysburg Address, is "government of the people, by the people, for the people." Traditional Theory of Democracy encourages majority rule without impacting on the rights of minorities, fostering a spirit of accommodation, and valuing the worth and dignity of every individual. According to the pluralist theory of democracy, people with like interests join formal organizations to further their causes and shape political agendas. According to this theory, no one organization, sector, or governmental body controls politics. According to the Elite Theory of Democracy, a select few people, organizations, and sectors control the majority of political power and influence. This theory's proponents claim that the elite are unfairly favored by government policies compared to everyone else. Hyper pluralism, which is similar to the pluralist theory, proposes that people with similar interests create groups to further their objectives. Akin to the Elite Theory, it argues that some groups have an excessive amount of sway over politics. For instance, a group may file a lawsuit if it disagrees with a law passed by Congress.

According to the human capital hypothesis, education and training increase a worker's productivity by supplying them with practical knowledge and abilities. This expands the worker's future income by raising their lifetime earnings. Becker (1964) further suggests that education will increase workers' productivity by giving useful knowledge and skills, but others suggest that education will affect worker productivity. Schultz (1975) suggests that education boost the ability to cope well with individual imbalances in changing economic circumstances. Such capabilities include identifying a given imbalance, evaluating information, and altering resources to act.

4. Data and Methodology

To examine the three-way connections between democracy, human resource development and income inequality in developing countries, we have used the three-stage least square technique. As a democracy, the Human Development Index (HDI) and income inequality have interdependence. When variables have interdependence than, here we use a system equation or simultaneous equation model.

4.1 Empirical Model

Table 1 shows the measurement and sources of variables. Equation (1) shows the impact of income inequality and human resource development on democracy along with other control variables such as GDP per capita, population, and corruption.

$$DEMO = f(HRD, GINI, GDPP, POP, CORR) \quad (1)$$

Equation (2) shows the impact of income inequality and democracy on human resource development along with other control variables such as foreign direct investment, remittances, inflation, and unemployment.

$$HRD = f(DEMO, GINI, FDI, REMI, INFL, UNEMP) \quad (2)$$

Equation (3) shows the impact of democracy and human resource development on income inequality along with other control variables such as GDP per capita, corruption, and inflation.

$$GINI = f(HRD, DEMO, GDPP, CORR, INFL) \quad (3)$$

Table 1
Description of Variables

Variable Code	Variable name	Measurement of variables	Data Source
DEMO	Democracy	Index of political rights and civil liberty	FH
HRD	Human Resource Development	Index of edu, standard of living, fertility rate	HDR
GINI	Income inequality	Annual % of GDP	WDI
GDPP	GDP per capita	% Of GDP	WDI
POP	Population	Annual %	WDI
CORR	Corruption	Corruption perception index	WDI
REMI	Remittances	Personal remittances, received (% of GDP)	WDI
INFL	Inflation	Consumer prices (annual %)	WDI
UMEM	Unemployment	Annual % of GDP	WDI
FDI	Foreign Direct Investment	Net inflow % of GDP	WDI

4.2 Data

The current study explores the role of democracy, human resource development and income inequality in panel data framework. The dataset covers the time period from 1995 to 2016. Annual data for 47 developing countries covers three regions Asia (Pakistan, India, Nepal, Sri Lanka, Indonesia, Tajikistan, Vietnam, Azerbaijan and Yemen), Latin America (Belize, Columbia, Cuba, Haiti,) and Africa (Algeria, Angola, Botswana, Burundi, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Mauritius, Uganda, Zimbabwe, Central African Republic Chad, Congo, Liberia, Benin, Burkina Faso, Gambia, Ghana, Guinea, Guinea-Bissau, Mali, Niger, Nigeria, Senegal, Sudan, Sierra Leone and Togo, Tunisia) for whom the data on democracy, human resource development, and income inequality are consistently available for the chosen time period have been considers for the analysis.

Different techniques have been used to investigate the relationship among these variables. These techniques are not suitable to clarify the problem of endogeneity between the variables. When variables have interdependence, there creates a problem of endogeneity. We employed the three stages least square technique to look at the three-way relationships between democracy, human resource development, and wealth disparity in developing nations. The phrase "endogenous variable" refers to a variable that follows a Data Generating Process (DGP) in a system or whose value is established within the model. The model's endogeneity is caused by this variable.

In the case of a single equation model, endogeneity is unclear. There will be obvious endogeneity in the model if there are multiple equations or equational systems. Therefore, in this case, we employ a simultaneous or system equation model. Three Stage Least Square (3SLS) is more appropriate for systems of equations since it takes into account the link between independent variables as well as the current correlation between mistakes. The three-stage least squares (3SLS) estimation technique combines the two-stage least squares estimation with the system equation, also referred to as seemingly unrelated regression (SUR). It is assumed that each system equation has at least been simply identified. In the 3SLS estimation, under-identified equations are ignored.

4.3 Panel specification of Econometric Model

This study objects to explore the rapport between democracy, Human Resource Development and income inequality in the context of developing economies, we have used three specifications.

4.3.1 First Specification

In the first specification, we use democracy as a dependent variable and use human resource development, income inequality, GDP per capita, population and corruption as explanatory variables. So, panel specification of the econometric model is as:

$$DEMO = \beta_0 + \beta_1 HRD_{it} + \beta_2 GINI_{it} + \beta_3 POP_{it} + \beta_4 GDPP_{it} + \beta_5 CORR_{it} + \mu_{it} \quad (4)$$

Where DEMO shows democracy, HRD shows human resource development, GINI shows income inequality, POP shows population, GDPP shows GDP per capita, and CORR shows corruption. Term 'i' denotes the countries and t denotes the time period. Equation (4) is used to see the impact of human resource development or income inequality on democracy in developing countries.

4.3.2 Second Specification

In our second specification, we use human resource development as the dependent variable and use income inequality, democracy, foreign direct investment, remittances, inflation and unemployment as explanatory variables. So, the panel econometric model is as:

$$HRD = \beta_0 + \beta_1 DEMO_{it} + \beta_2 GINI_{it} + \beta_3 REMI_{it} + \beta_4 INFL_{it} + \beta_5 UMEMP_{it} + \beta_6 FDI_{it} + \mu_{it} \quad (5)$$

Where HRD shows use human resource development, DEMO shows democracy, GINI shows income inequality, REMI shows remittances, INFL shows inflation, UMEM shows unemployment, FDI shows foreign direct investment. Term 'i' denotes the countries and t denotes the time period. As this study also intends to examine role of democracy and income inequality on human resource development in the context of developing countries so the equation (5) is constructed for this purpose.

4.3.3 Third Specification

In our third specification, we use income inequality as the dependent variable and use democracy and human resource development, unemployment, corruption, inflation and GDP per capita as explanatory variables. So panel specification of the econometric model is as:

$$GINI = \beta_0 + \beta_1 DEMO_{it} + \beta_2 HRD_{it} + \beta_3 GDPP_{it} + \beta_4 CORR_{it} + \beta_5 INFL_{it} + \mu_{it} \quad (6)$$

Where GINI shows income inequality, DEMO shows democracy, HRD shows human resource development, GDPP shows GDP per capita, CORR shows corruption, INFL shows inflation. Term 'I' denotes the countries and t denotes the time period. As this study also aims to inspect role of democracy and human resource development on income inequality in context of developing countries so the equation (6) is constructed for this purpose.

4.4 Graphical Analysis

Figure 1 shows democracy trend in developing countries. In the above graph, democracy is taken on Y-axis and X-axis represent developing countries. The graph shows the fluctuations in the democracy of developing countries.

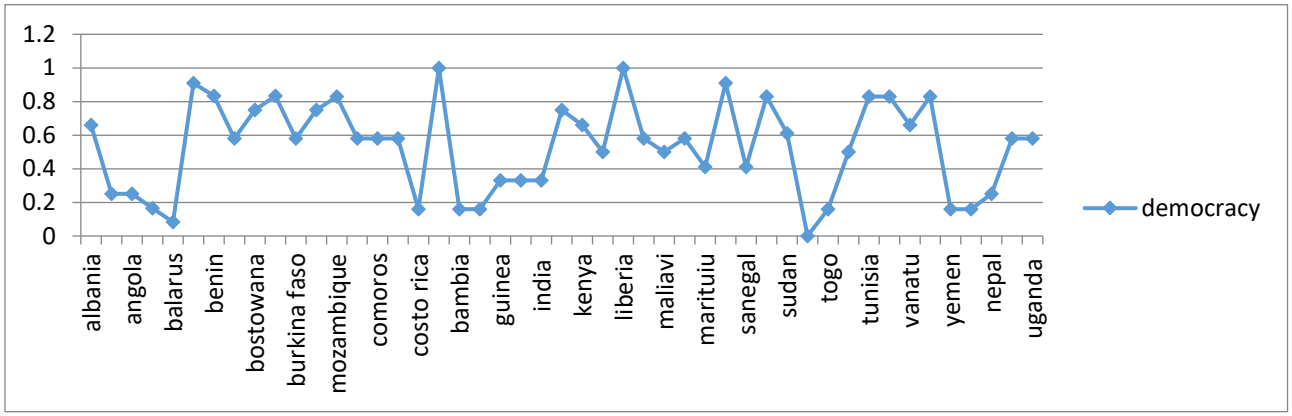

Figure 1: Democracy Index for 47 Developing Countries

Figure 2 shows human resource development in developing economies. Values of HRD are taken on Y-axis while, the x-axis represents countries. The graph trend displays that dissimilar economies have a different level of human resource development, which is shown by rise, and fall in the above graph. Some countries have very dynamic variations in human resource development. Some developing countries show have negative trend according to their economic situation.

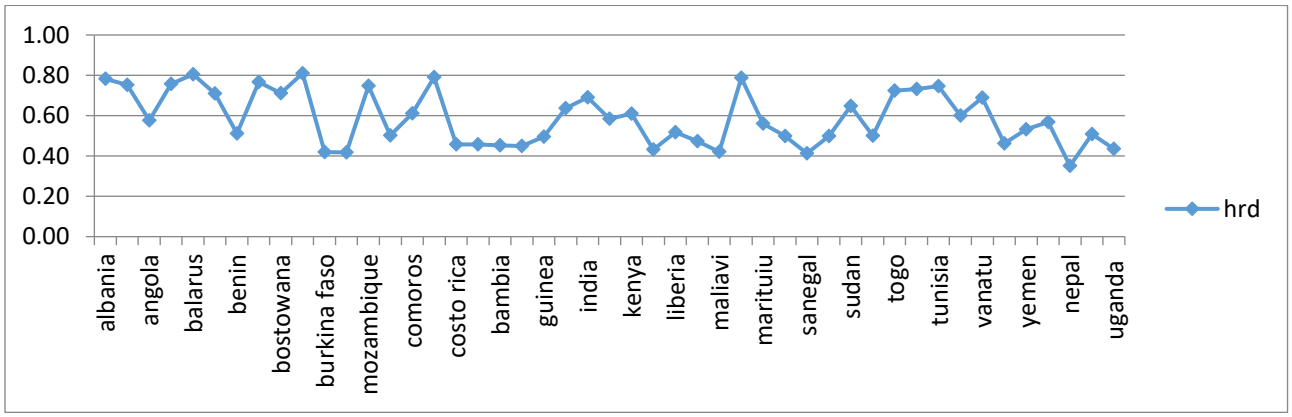

Figure 2: Human Resource Development for 47 Developing Countries

Figure 3 shows income inequality in all developing economies. Y-axis shows values of income inequality, while X-axis represents developing countries. All developing countries have a different level of income inequality. Above graph, clarify variation in income inequality among developing countries.

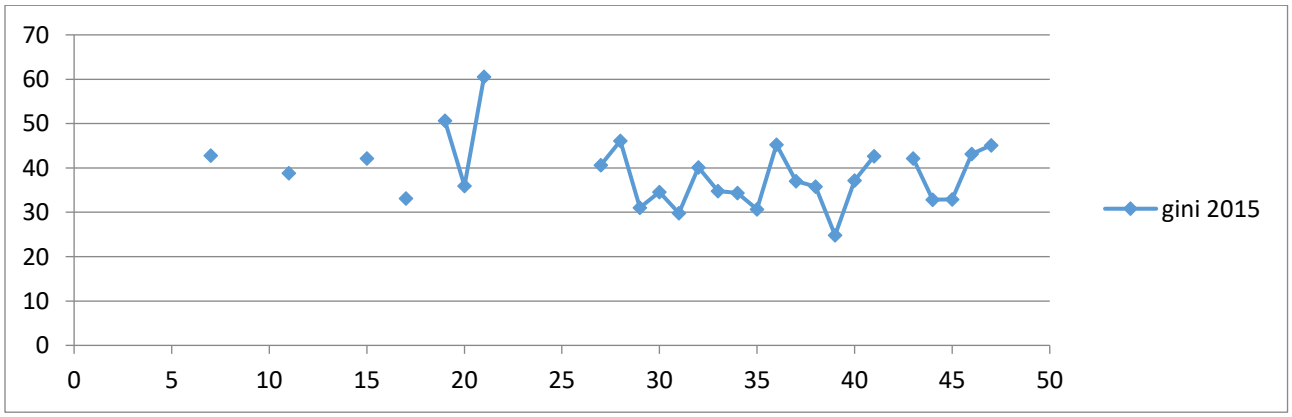

Figure 3: Income Inequality for 47 Developing Countries

4.5 Diagnostics

4.5.1 Regressors Endogeneity test (Durbin-Wu-Hausman)

This test is applied to check that whether the independent variable in the model has endogeneity problem or not.

H_0: Endogeneity does not exist
H_1: Endogeneity exists

If we accept H_o which means in the model, there is no endogeneity problem and there will the vice versa situation if we reject H_o and, in this case, it is essential to use some methods to solve the problem of endogeneity.

4.5.2 Wald Test

Whenever a connection within or between variables can be articulated as a statistical model the Wald test can be used for it. That is why to see this, we use Wald test for diagnostics. Through 3SLS, the relationship among more than one variable, or they cause each other or not is estimated (Agresti, 1999).

5. Results and Discussion

Table 2 describes the mean, median, standard deviation, minimum and maximum values of variables.

Table 2
Summarize the Descriptive Statistics of Variables

Variable	Obs.	Mean	Median	Std. Dev.	Max.	Min.
DEMO	893	-0.003	-0.07	0.1823	0.645	-0.16
HRD	893	0.526	0.520	0.032	0.5813	0.4829
GINI	893	39.04	39.36	2.45	41.97	32.35
UNEMP	893	16.91	16.93	0.39	15.77	13.79
URB	893	3.14	3.14	0.051	3.22	3.02
CORR	893	-0.64	-0.63	0.025	-0.59	-0.68
POPU	893	46903	46822	43288	54127	3991
REMI	893	5.48	5.68	1.32	7.24	2.77
GDPP	893	6728	6711	10112	84461	52260
FDI	893	4.61	4.58	1.821	8.19	0.17
GDPG	893	7.20	7.71	1.322	8.97	4.98
INFL	893	17.88	8.7	27.87	127.92	5.15
Trade	893	75.79	76.46	5.01	81.85	68.28

5.1 Durbin-Wu-Hausman Test

This is used to check the existence of endogeneity and to know that whether it's necessary to used instruments or not. Table 3 shows that P-value is less than 0.05 which depicts that endogeneity is in the model, so we used tools to get rid from this problem.

Table 3
Hausman Test

Durbin Wu Hausman	P-Value
	0.00

5.2 Regression Results

5.2.1 Regression Results of Democracy for Overall Developing Countries

Table 4
Regression Results of Equation 4 for Overall Economies

Variable	Coefficient	T-Statistics	Prob.
HRD	4.079***	4.73	0.0000
GINI	-0.62***	-19.32	0.0000
GDPP	.000069***	4.90	0.0000
CORR	-0.328*	-0.25	0.802
POP	-2.49***	-8.70	0.0000

* Significant at the 10%, and *** significant at the 1% level

The increase of 1% in Human Resource Development in developing economies increases democracy by 4.07% in developing nations and findings shows positive statistically significant. The empirical analysis also emphasized that democracy plays a vital part in determining the education. Results of income inequality show that a 1-unit increase in income inequality decreases democracy by 0.62% in developing countries. In developing economies, income inequality has a deep-rooted effect on democracy promotion. Income inequality is measured by the Gini coefficient. The empirical findings suggest that GDP per capita has a positive and significant impact on democracy in developing countries. According to our results, 1 unit rise in GDP per capita will rise democracy by 0.0069 units. Che, Lu, Tao, and Wang (2013) discovered that per capita income has a positive and very statistically significant influence on democracy. Acemoglu et al. (2008) conclude that the per capita income factor, even after including additional controls, is a positive statistic even after the usage of substitute methods of democracy, different subsamples, longer sample periods, and longer time intervals but it remained meaningfully significant. According to our results of population, a 1-unit increase in population will decrease democracy by 2.49 units. Rapid population growth places a burden on the political system and raises the pressure on the service.

5.2.2 Regression Results for Human Resource Development

Table 5
Estimates of Equation 5 for Overall Economies

Variable	Coefficient	T-Statistics	Prob.
DEMO	0.028**	2.50	0.012
GINI	-0.00734	-34.83	0.0000
REMI	0.010*	12.84	0.0000
INFL	-0.00028***	-5.48	0.000
FDI	0.0025-***	10.94	0.0000
UMEM	-0.0112*	-10.09	0.000

* Significant at the 10%, and *** significant at the 1% level

First independent variable of concern in the given model is a democracy. Democracy has a statistically significant and a positive relationship with human resource development. Value of slope coefficient for democracy is 0.025, which is statistically significant at 5% level, which means that a 1% increase in democracy increases human resource development of the given countries by 2.5%. The second independent variable of concern in the given model is inflation. The variable is statistically significant in its relationship with human resource development. However, the value of the slope coefficient is negative, showing that increased inflation is associated with a lower level of human resource development. The value of positive slope coefficient of inflation in the given model estimation is 0.0002.

The results of income inequality are statistically significant in its relationship with human resource development. Nevertheless, the value of the slope coefficient is negative, showing that increased income inequality is related with a low level of human resource development. Value of

negative slope coefficient of income inequality in given model estimation is 0.007. The fourth independent variable of concern in the given model is remittances. Remittances have a statistically significant as well as a positive relationship with human resource development. Value of slope coefficient for remittances is 0.010 that is statistically significant at 1% level, which means that a 1% increase in remittances increases human resource development of the given countries by 1%. (Khan, Batool, & Shah, 2016). Iqbal and Sattar (2005) conclude that remittances are vital factors that significantly affect the economic development in Pakistan.

Foreign direct investment has a statistically significant positive association with human resource development. Arcelus, Sharma, and Srinivasan (2005) find that FDI has a positive and significant impact on human development. Unemployment variable is statistically significant in its relationship with human resource development. However, the value of the slope coefficient is negative, showing that increased unemployment is associated with a lower level of human resource development. The value of the negative slope coefficient of unemployment in the given model estimation is 0.011.

5.2.3 Regression Results for Income Inequality

Table 6
Regression Results of Equation 6 for Overall Economies

Variable	Coefficient	T-Statistics	Prob.
DEMO	-16.61	-18.01	0.0000
HRD	-31.69	-2.12	0.034
GDP	-0.0002	-5.11	0.0000
CORR	-4.42	-1.96	0.050
INFL	0.034	6.60	0.0000

* Significant at the 10%, and *** significant at the 1% level

Findings describe that a statistically significant negative link between HDI and income inequality with a coefficient of 31.70. It implies that a one-unit increase in Income inequality would reduce the value of HDI by 31.7 units. The results are in accordance with (Ucal et al., 2016). The literacy rate has a statistically significant effect at 5% inequitably in long run and reduces inequality as expected. The empirical findings of income inequality suggest that democracy has a negative and significant effect on income inequality in developing countries. Effect of democracy is negative. However, democracy may influence inequality not only directly but also through the type of political system. The empirical findings suggest that inflation has positive significant effect on income inequality in developing countries. Mbazia (2017) findings show that the expansion of monetary policy through the increase in the money supply brings about a rise in asset prices and inflation, which can lead to an expansion of income disparity.

The empirical outcomes advise that per capita GDP have negative and significant influence on income inequality in developing countries (Galor & Zeira, 1993). Brueckner and Lederman (2015) examined that GDP per capita increase, inequality decreases. Empirical findings suggest that corruption has negative and significant impact on income inequality in developing countries. Corruption may be an important element of the economic system if the unfair property rights system is missing. Dreher and Schneider (2010) concluded that connection amongst corruption and the informal economy could be dependent on income level.

6. Conclusion

The overall aim of this research was to know the association amongst democracy, human resource development and income inequality in developing nations. Present study is vital because it contributes to the debate on the rationalization of monetary policy by establishing the precise quantitative nature of influence of democracy and income inequality and human resource development on each other. Our study covers the data of 47 developing countries by using the

3SLS methodology for estimating empirical suggestions. The data is collected for the period of 1995 to 2016 from various sources that included World Development Indicator, World Governance Indicator and other sources including International Financial Statistics.

The 1st equation of the developing countries model represents that human resource development has positive and significant impact on democracy and income inequality has negative effect. Empirical results demonstrates that there is a robust positive connotation among democratic governance and better individual health, also found that democracy and GDP per capita are positively associated with health. The 2nd equation of the developing countries model represents that income inequality has negative and democracy has positively and significantly impact on human resource development. Results show that democracy coefficients are significantly positive at 1% level implied that a better democracy enhances human development. The study shows economically and statistically significant and positive effect of life expectancy on democracy. The 3rd equation of the developing economies model in overall analysis represents democracy and human resource development both are negatively related to income inequality. Study shows that the political regime do not have direct influence on the distribution of income and its effect on inequality is expected to be stronger through liberalization policies. Furthermore, the study suggested that democratization affects inequality indirectly.

6.1 Policy Recommendations

The findings from this study have important policy recommendations for the ability to develop countries to increase progress towards development goals: Firstly, developing countries should stratify with manual workers at the bottom and the others above, graded according to their level of skill and intelligence. Secondly, our study suggests that developing countries should develop such democratic culture or promote democratic process on every level, which encourages human resource development and decreases inequality. Thirdly, development countries should spend more and more on human developing an increased level of human development would discourage inequality. Fourth, human development and democracy should increase in developing countries, which will help in reducing income inequality. Lastly, our study suggested that developing countries should work on decreasing inflation because it affects health, education and purchasing power of people.

Authors Contribution

Tusawar Iftikhar Ahmad: study design and concept, data interpretation
Abdul Rehman: critical revision, incorporation of intellectual content
Abid Mehmood: methodology, data analysis, drafting
Nosheena Sattar: literature search, data collection, drafting

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

References

Acemoglu, D., Johnson, S., Robinson, J. A., & Yared, P. (2008). Income and democracy. *American economic review, 98*(3), 808-842. doi:https://doi.org/10.1257/aer.98.3.808

Agresti, A. (1999). Modelling ordered categorical data: recent advances and future challenges. *Statistics in medicine, 18*(17-18), 2191-2207.

Anand, S., & Sen, A. (1994). Sustainable Human Development: Concepts and Participation. In: Occasional Paper, UNDP.

Apergis, N. (2018). Education and democracy: New evidence from 161 countries. *Economic modelling, 71*, 59-67. doi:https://doi.org/10.1016/j.econmod.2017.12.001

Arcelus, F. J., Sharma, B., & Srinivasan, G. (2005). Foreign capital flows and the efficiency of the HDI dimensions. *Global Economy Journal, 5*(2), 1850036. doi:https://doi.org/10.2202/1524-5861.1058

Asteriou, D., Dimelis, S., & Moudatsou, A. (2014). Globalization and income inequality: A panel data econometric approach for the EU27 countries. *Economic modelling, 36*, 592-599. doi:https://doi.org/10.1016/j.econmod.2013.09.051

Barro, R. J. (1999). Determinants of democracy. *Journal of Political economy, 107*(S6), S158-S183. doi:https://doi.org/10.1086/250107

Becker, W. C. (1964). Consequences of different kinds of parental discipline. *Review of child development research, 1*(4), 169-208.

Bittencourt, M. (2013). *Democracy and Education: Evidence from the Southern African Development Community*. Retrieved from

Boix, C. (2003). *Democracy and redistribution*: Cambridge University Press.

Boix, C., & Stokes, S. C. (2003). Endogenous democratization. *World politics, 55*(4), 517-549.

Bollen, K. (1993). Liberal democracy: Validity and method factors in cross-national measures. *American Journal of Political Science, 37*(4), 1207-1230. doi:https://doi.org/10.2307/2111550

Bollen, K., & Jackman, R. W. (1985). Political democracy and the size distribution of income. *American Sociological Review, 50*(4), 438-457. doi:https://doi.org/10.2307/2095432

Brueckner, M., & Lederman, D. (2015). *Effects of income inequality on aggregate output*: The World Bank.

Carmignani, F. (2013). Development outcomes, resource abundance, and the transmission through inequality. *Resource and Energy Economics, 35*(3), 412-428. doi:https://doi.org/10.1016/j.reseneeco.2013.04.007

Che, Y., Lu, Y., Tao, Z., & Wang, P. (2013). The impact of income on democracy revisited. *Journal of Comparative Economics, 41*(1), 159-169. doi:https://doi.org/10.1016/j.jce.2012.05.006

Dreher, A., & Schneider, F. (2010). Corruption and the shadow economy: an empirical analysis. *Public Choice, 144*(1), 215-238. doi:https://doi.org/10.1007/s11127-009-9513-0

Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. *The review of economic studies, 60*(1), 35-52. doi:https://doi.org/10.2307/2297811

Gavurová, B., & Vagašová, T. (2016). Regional differences of standardised mortality rates for ischemic heart diseases in the Slovak Republic for the period 1996–2013 in the context of income inequality. *Health Economics Review, 6*(1), 1-12. doi:https://doi.org/10.1186/s13561-016-0099-1

Gerring, J., Thacker, S. C., & Alfaro, R. (2012). Democracy and human development. *The journal of politics, 74*(1), 1-17.

Heid, B., Langer, J., & Larch, M. (2012). Income and democracy: Evidence from system GMM estimates. *Economics Letters, 116*(2), 166-169. doi:https://doi.org/10.1016/j.econlet.2012.02.009

Hu, Y., Van Lenthe, F. J., & Mackenbach, J. P. (2015). Income inequality, life expectancy and cause-specific mortality in 43 European countries, 1987–2008: a fixed effects study. *European journal of epidemiology, 30*(8), 615-625. doi:https://doi.org/10.1007/s10654-015-0066-x

Iqbal, Z., & Sattar, A. (2005). The contribution of worker's remittances to economic growth in Pakistan: PIDE research report 187. In. Islamabad, Pakistan: Pakistan Institute of Development Economics.

Islam, M. R., & McGillivray, M. (2020). Wealth inequality, governance and economic growth. *Economic modelling, 88*, 1-13. doi:https://doi.org/10.1016/j.econmod.2019.06.017

Khan, K., Batool, S., & Shah, A. (2016). Authoritarian regimes and economic development: an empirical reflection. *The Pakistan Development Review, 55*(4), 657-673.

Knutsen, C. H. (2015). Reinvestigating the reciprocal relationship between democracy and income inequality. *Review of Economics and Institutions, 6*(2), 37. doi:http://dx.doi.org/10.5202/rei.v6i2.173

Lee, H.-Y., Kim, J., & Cin, B. C. (2013). Empirical analysis on the determinants of income inequality in Korea. *International Journal of Advanced Science and Technology, 53*(1), 95-109.

Mbazia, N. (2017). Inequality and Growth in Tunisia: Empirical evidence on the role of macroeconomic factors. *Theoretical and Practical Research in Economic Fields (TPREF), 8*(16), 153-160.

Mohtadi, H., & Roe, T. L. (2003). Democracy, rent seeking, public spending and growth. *Journal of Public Economics, 87*(3-4), 445-466. doi:https://doi.org/10.1016/S0047-2727(01)00135-9

Muller, E. N. (1995a). Economic determinants of democracy. *American Sociological Review, 60*(6), 966-982. doi:https://doi.org/10.2307/2096435

Muller, E. N. (1995b). Economic determinants of democracy. *American Sociological Review*, 966-982.

Nikoloski, Z. (2015). Democracy and income inequality: revisiting the long and short-term relationship. *Review of Economics and Institutions, 6*(2), 1-24.

Odedokun, M. O., & Round, J. I. (2001). *Determinants of income inequality and its effects on economic growth: evidence from African countries*: WIDER Discussion Paper.

Paweenawat, S. W., & McNown, R. (2014). The determinants of income inequality in Thailand: A synthetic cohort analysis. *Journal of Asian Economics, 31*, 10-21. doi:https://doi.org/10.1016/j.asieco.2014.02.001

Rød, E. G., Knutsen, C. H., & Hegre, H. (2020). The determinants of democracy: a sensitivity analysis. *Public Choice, 185*(1), 87-111. doi:https://doi.org/10.1007/s11127-019-00742-z

Saha, S., & Zhang, Z. (2017). Democracy-growth nexus and its interaction effect on human development: A cross-national analysis. *Economic modelling, 63*, 304-310. doi:https://doi.org/10.1016/j.econmod.2017.02.021

Schultz, T. W. (1975). The value of the ability to deal with disequilibria. *Journal of economic literature, 13*(3), 827-846.

Siddiqi, A., Jones, M. K., Bruce, D. J., & Erwin, P. C. (2016). Do racial inequities in infant mortality correspond to variations in societal conditions? A study of state-level income inequality in the US, 1992–2007. *Social Science & Medicine, 164*, 49-58.

Spaiser, O. A. (2015). The EU as a security actor in Central Asia: Minor but not marginal. *L'Europe en Formation, 375*(1), 83-105.

Tridico, P. (2018). The determinants of income inequality in OECD countries. *Cambridge Journal of Economics, 42*(4), 1009-1042. doi:https://doi.org/10.1093/cje/bex069

Tsai, M. C. (2006). Does political democracy enhance human development in developing countries? A cross-national analysis. *American Journal of Economics and Sociology, 65*(2), 233-268.

Ucal, M., Haug, A. A., & Bilgin, M. H. (2016). Income inequality and FDI: evidence with Turkish data. *Applied Economics, 48*(11), 1030-1045. doi:https://doi.org/10.1080/00036846.2015.1093081

Vanhanen, T. (2000). A new dataset for measuring democracy, 1810-1998. *Journal of peace research, 37*(2), 251-265. doi:https://doi.org/10.1177/0022343300037002008

Waqas, M., & Khattak, M. (2017). Democracy in Pakistan: Problems and Prospects in Making Informed Choices. *International Journal of Social Sciences and Management, 4*(1), 9-11. doi:https://doi.org/10.3126/ijssm.v4i1.16225