



## Political Regime Types and Income Inequality in Pakistan

Wasiq Ullah Hamdard<sup>1\*</sup>, Irfan Ullah Stanikzai<sup>2</sup>

Lecturer at Al-Taqwa Institute of Higher Education

**Corresponding Author:** Wasiq Ullah Hamdard [wasiqullah21@gmail.com](mailto:wasiqullah21@gmail.com)

---

### ARTICLE INFO

*Keywords:* Political Regimes, Income in Equality, Pakistan

*Received :* 3 December

*Revised :* 17 December

*Accepted:* 20 January

©2024 Hamdard, Stanikzai:

This is an open-access article distributed under the terms of the [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/)



### ABSTRACT

Rising income inequality is one of the major issues in the Pakistani economy. It has been investigated in different dimensions. Different cross-sectional and panel studies have extensively examined the connection between political regime types and income inequality over a specific period. The findings have displayed significant variations across countries and regions. This study delves into exploring the relationship between political regime types and income inequality, specifically in Pakistan, utilizing time series data spanning from 1972 to 2019. To measure political regime types, the Polity index is employed, while the Gini-Coefficient serves as the metric for income inequality. Additionally, this research takes into account various factors, such as GDP per capita, the ratio of direct taxes to GDP, the percentage of government expenditure on education relative to GDP, and the percentage of government expenditure on community and social services relative to GDP, in order to control for their direct effects. The stationarity of the data is assessed using the augmented Dickey-Fuller test, while the autoregressive distributive lag (ARDL) model is employed to examine the cointegrating relationship among the variables in the model. The empirical findings from the estimation affirm the presence of a lasting correlation between Pakistan's political regime types and wealth disparities. The findings show that different political regimes have a notable detrimental effect on the nation's economic disparity. To be more precise, a one percent increase in the Polity score is associated with a 0.45 percent long-term and a 0.25 percent short-term fall in the Gini Coefficient. This suggests that Pakistan should work toward a stable democratic political framework and put into place sustainable economic policies in order to successfully address income disparity and achieve a desirable level of income distribution

## **INTRODUCTION**

Income inequality, which refers to the disparity in income between the wealthiest and poorest individuals within a nation, has reached unprecedented levels in numerous countries. Similar to how the overall income levels of the wealthiest and poorest nations provide insights into their respective levels of development, the degree of income inequality within a country can serve as an indicator of the average citizen's quality of life. The impact of income inequality extends beyond economic aspects and influences the political landscape as well. It gives rise to political polarization, fosters negative attitudes towards the wealthy, hampers GDP growth, restricts income mobility, increases poverty rates, and contributes to higher household debt. However, it is worth noting that extremely low income inequality can sometimes signify a lack of economic progress. (Source: Income inequality by country, 2022)

According to a study conducted by Islam, T.U., Abrar, M., Arshad, R., and Akram, N. in 2022, age, gender, and higher education emerge as the primary factors contributing to inequality levels across the four provinces of Pakistan. Interestingly, higher education is identified as a factor that exacerbates inequality in all provinces.

A very small percentage of people have an immense amount of national income. while a very huge population has the least. The recent (2019) Oxfam report on income inequality ranked Pakistan 139 out of 152 countries, which shows the severity of the problem. In Pakistan, the top 20 percent of the population spent seven times more than the bottom 20 percent of the population. Inequality in Pakistan is of different kinds, such as educational, health, social, gender, growth, and income. A considerable number of researchers have analyzed it through different dimensions, such as social, historical, political, and economic dimensions, and suggested different policies to combat income inequality. Poverty based on consumption has been reduced from 57.9 percent to 27.9 percent from 1998 to 2014. Although poverty has been reduced to half, income inequality based on the Gini coefficient has increased from 0.35 to 0.41 from 1987 to 2014, respectively (Maqbool, 2019).

Based on the literature, there is a relationship between political regime types and income inequality. A political regime, whether it is a democracy or dictatorship, influences income inequality. In most world countries, income inequality has decreased with democratic political regimes, while in some other countries, income inequality is high because of dictatorial regimes (Hsu, 2008). The economic and political conditions in Pakistan have never been stable. From its inception in 1947 until now, politics and the economy have gone through certain critical situations. Most of the time, political instability and bad economic performances of democratic regimes caused a change of political regime. sometimes a democratic regime and sometimes a non-democratic regime. Although economic growth is greater in dictatorial regimes as compared to democratic regimes, Few studies have investigated the relationship between democracy, inequality, and economic growth in Pakistan. They found an inverse relationship between democracy and inequality (Amir-ud-Din and Ali Khan, 2017). But none of the studies, or very few studies, have empirically investigated the relationship between political regime types, i.e., democracy, anocracy, autocracy, and income inequality, in Pakistan. This study has empirically

investigated the long-run relationship, nature, and significance of the relationship between political regime types and income inequality in Pakistan.

### **1. Problem Statement**

The relationship between democracy, dictatorship, and Pakistan's economic growth has been the subject of extensive research. Political regimes can be classified as either democratic or dictatorial (Lidén, 2014). In Pakistan, democracy and economic growth are inversely related (Ahmad, 2014) and to some studies the relationship is ambiguous. Whereas Pakistan's economic growth is positively related to dictatorship (Qadir, Tariq, and Waqas, 2016). Most of the empirical studies concluded greater economic growth in the dictator's regime (Subhani, Lakhiya, and Osman, 2011).

Comparably, a number of panel and cross-sectional research have looked into the connection between political regimes and income disparity. Income disparity is favorably correlated with a dictatorial political regime, whereas it is inversely correlated with a democratic one. The relationship between Pakistan's political regime types and economic inequality has not been experimentally studied in many, if any, time series studies. The types of political regimes in a nation have a significant impact on economic disparity. While wealth inequality is significant in non-democratic political systems, it is low in democratic political systems. The study has employed time-series data from 1972 to 2019 to empirically analyze the nature, relevance, and long-term link between political regime types and income inequality in Pakistan, taking into account the essential role that political regimes play in the country.

### **2. Objectives of the Study**

This study has two main objectives. First to investigate the long-run relationship between political regime types and income inequality in Pakistan. And secondly to examine the nature and significance of the relationship between political regime types and income inequality in Pakistan.

### **3. The hypothesis of the Study**

To achieve the purpose of the study the following hypotheses are tested.

The first hypothesis is about the long-run relationship between political regimes and income inequality.

Ho: There is no long-run relationship between political regime types and income inequality in Pakistan.

HI: There is a long-run relationship between political regime types and income inequality in Pakistan.

The second hypothesis is about the nature and significance of the relationship between political regime types and income inequality.

Ho: Political regime type is negatively and significantly related to income inequality in Pakistan.

HI: Political regime type is not negatively and significantly related to income inequality in Pakistan.

## **LITERATURE REVIEW**

Dodlova and Giolbas (2017) used annual data for 143 developing countries from 1960 to 2015 to examine the relationship between regime type, inequality, and redistributive transfer. According to the study, there is a higher likelihood of redistribution through various social transfer programs in democracies than in

autocracies because pro-poor policies are decided by median voters in democracies, while the elite maximizes their utility in autocracies. Furthermore, high inequality raises the likelihood of redistribution in democracies, but in autocracies, the outcome is unclear because the elite can alter the amount of redistribution to prevent civil unrest.

According to a 2020 study by Riaz et al., there is a substantial and favorable association between economic growth and education. Furthermore, there is a strong and unfavorable long- and short-term association between income disparity and economic growth. Based on these results, the paper proposes that concentrating on advancements in the education sector can be a successful policy strategy to boost economic growth and improve Pakistan's income distribution.

Beomgeun Cho and R. Karl Rethemeyer (2022) addressed the impact of international networks on the evolution of e-government and the function of political regime types in e-government dissemination across international networks. Their research provides empirical evidence that e-government development is higher in nations that are highly integrated into global e-government networks because these countries obtain creative ideas for public sector breakthroughs from international conferences. Nonetheless, it was noted that different political regimes function as filters – both overtly and covertly – for the adoption and application of concepts pertaining to cross-border e-government initiatives.

In 2022, Ayse Demir, Vanesa Pesqué-Cela, Yener Altunbas, and Victor Murinde conducted a study that offers fresh data underscoring the importance of financial inclusion as a cornerstone tactic employed by FinTech to mitigate income disparity. Furthermore, the findings demonstrate that financial inclusion dramatically reduces inequality across the board for all income distribution levels. That being said, the effects are more apparent in wealthier countries. Overall, these results provide support to the aims of the United Nations' 2030 Agenda for Sustainable Development (UN-2030-ASD) and the G20 High-Level Principles for Digital Financial Inclusion (G20-HLP-DFI).

Dodlora and Giolbas (2017) concluded that low-income inequality in democracy is compared to autocracy because democracy increases the probability of redistribution as the elite are elected by the common people, that's why their policies are pro-poor. While in autocracy the situation is unclear because they can increase or decrease the redistribution based on their interest and for the avoidance of social conflicts.

In 2020, Shrabani undertook a study with the aim of examining how political regimes affect the relationship between economic growth and corruption. Panel data from more than 100 countries covering the years 1984–2016 were included in the analysis. The study's conclusions offer convincing proof that the relationship between corruption and economic expansion differs according on the kind of political system in power. In particular, it is found that, in autocratic regimes as opposed to democratic ones, corruption has a more noticeable positive effect on economic growth.

In a 2017 study, Amir-ud-Din and Ali Khan looked at the connection between Pakistan's democracy, wealth disparity, and economic expansion. The study used the GLS methodology to estimate the coefficients of the variables and the 3SLS method to estimate a simultaneous equation system.

The estimation results show that in Pakistan, there is a negative correlation between economic inequality and democracy. In particular, the Gini-Coefficient indicates that there is a 0.128 percent decrease in economic inequality for every unit rise in the value of democracy as determined by the Polity index. On the other hand, a one percent rise in the Gini-Coefficient corresponds to a roughly 0.52 unit decline in democracy.

Furthermore, the analysis shows that while the economic growth rate in Pakistan has no discernible effect on income disparity, it does have a negative impact on the rate of economic growth. This implies that the lower socioeconomic echelons of society do not receive enough benefits from economic expansion.

Furthermore, the findings show that Pakistan's democracy and economic expansion are positively correlated. In Pakistan, democracy and income disparity are inversely correlated, claim Amir-ud-din and Ali Khan (2017), which forecasts a decline in democratic income inequality.

Cheema and Sial (2012) estimated the link between poverty, income inequality, and economic growth in Pakistan using pooled data from various household income and spending surveys. Fixed-effects and random-effects models were employed in the study. The study came to the conclusion that Pakistani poverty is greatly impacted by economic growth and income inequality. In Pakistan, poverty is significantly impacted negatively by economic progress, although income disparity is much positively impacted by it. According to the regional research, Pakistan's rural areas have higher rates of poverty than its urban areas, while its urban areas have higher rates of income disparity. When compared to changes in poverty brought on by income disparity, the effects of economic growth on poverty are less pronounced.

Shahbaz (2010) investigated the relationship between income inequality and the economic growth of Pakistan. The study used time series data from 1971 to 2005 and the Autoregressive Distributed Lag model as an estimation technique. The research concluded a positive and significant relationship between income inequality and GDP per capita both in the short-run and in long run in Pakistan. A one percent increase in GDP per capita leads to a 0.026 percent increase in income inequality in long run, while a 0.018 percent increase in the short. The study also confirms the inverted U-Shaped curve of the Kuznets hypothesis.

Bangura (2010) came to the conclusion that there is a two-way causal relationship between poverty and income inequality and that the poorest countries typically have the highest levels of income disparity. It indicates that there is a large degree of income inequality in developing nations due to poverty. There is a positive correlation between poverty and inequality, meaning that as poverty rises, inequality falls. Conversely, poverty results from a large degree of income inequality. There exists a positive correlation between income inequality and poverty; an increase in inequality is accompanied by an increase in poverty, and vice versa. The relationship between economic growth and income inequality is inverse. Economic growth declines when income disparity rises. A highly unequal society has a poor rate of economic growth.

Economic expansion does not significantly affect income disparity in Pakistan, according to Amir-ud-Din and Ali Khan (2017), demonstrating that

economic progress does not trickle down to the lower socioeconomic segments of society.

Ali (2018) looked on the connection between Pakistan's income inequality and macroeconomic instability. The study discovered a long-term connection between income inequality and macroeconomic instability. They have created a thorough macroeconomic instability index that includes the trade deficit, budget deficit, inflation rate, and unemployment rate. The co-integration of the variables was examined in the study using the ARDL model. The study came to the conclusion that Pakistan's income inequality is directly correlated with macroeconomic instability. According to the report, Pakistan must raise direct taxes, improve secondary school enrolment, and decrease macroeconomic volatility in order to lessen income inequality.

According to Ali (2018), there is a direct correlation between macroeconomic instability and income inequality, with the latter increasing as the former does. Ross (2006) came to the conclusion that while democracy offers its citizens greater resources than any other form of political government, the poor are not the main winners. The wealthy and middle class are the ones who gain the most from their programs. Similarly, Lipset (1959) found that, in comparison to other types of regimes, democracy is associated with greater wealth, industry, urbanization, and improved educational systems in European, Latin American, and English-speaking countries.

From 2004 to 2011, Ulu (2018) examined the impact of government social spending on income inequality across 21 member countries of the Organization for Economic Cooperation and Development (OECD). Two analytical methods are the Fixed Effect model and the Granger causality test. According to the study's findings, income inequality in OECD nations is negatively and significantly correlated with the government's social spending as a share of GDP. Income disparity decreases by 0.0015 percent for every one percent rise in government social spending as a proportion of GDP. The study also discovered a strong and negative correlation between income disparity and government spending on education as a percentage of GDP.

Democratic or non-democratic political regimes have an impact on wealth inequality, claim Kammass and Sarantides (2018). However, because authoritarian governments concentrate on elements like taxation and direct cash transfers that have a direct impact on economic disparity, their consequences outweigh those of democratic regimes. Democratic regimes, on the other hand, place more emphasis on issues like health and education that have an indirect impact on economic inequality. Ulu (2018), however, found a strong and negative correlation between government spending on education and economic inequality. Additionally, the analysis verified a negative and noteworthy correlation between government spending on social programs and income disparity. There is less income disparity when social services account for a larger portion of GDP.

## METHODOLOGY

### Theoretical Structure

The theoretical, and empirical literature has concluded two types of relationships between polity and income inequality, some studies concluded negative and some studies concluded a positive relationship, but this relationship varies across regions and countries. The empirical studies show that democracy based on Polity and income inequality are inversely related, as the degree of democracy increases the level of income inequality decreases (Knutsen, 2011). According to Dodlova and Giolbas (2017) in a democracy because of greater redistribution the income inequality level is low. And a democratic regime that is rich can better reduce income inequality than a democratic regime that is poor (Miguel and Aguilar, 2016).

Hence all of these studies show that income inequality in an economy has political factors. To some studies, equal distribution of political power can lead to equal distribution of income. Whereas the unequal distribution of political power causes a high level of inequality in income distribution. Democracy is believed to equally distribute political power and can reduce income inequality through the redistribution of income. Similarly non-democratic or autocracy is characterized as unequal distribution of political power, which leads to a high level of income inequality.

The literature further shows that political regime, whether democratic or non-democratic has effects on income inequality both directly and indirectly, through their various policy instruments. The direct effects can be through different types of taxes collected and different types of cash transfers. While the indirect effects can be through different types of spending on different types of community, social, and public services. The policies of a regime depend on the type of political regime it is. In non-democratic regimes because of power concentration in a small segment of individuals the income redistribution is less as compared to a democratic regime, where political power is equally distributed.

From the literature, the study concluded that income inequality does not only depends on Political Regimes but few additional significant factors as well. Equation 1 discusses these variables below.

$$\text{Gini} = f(\text{Polity}, \text{GDP}, \text{EE}, \text{DT}, \text{CSS}) \dots \dots \dots (1)$$

Where;

Gini Coefficient is our dependent variable, which is used to measure income inequality. Similarly, Polity is our independent variable, which measures political regime types. While GDP is Gross Domestic Product per capita, EE is Government Expenditures on Education percentage of GDP, DT is Direct Taxes to GDP ratio and CSS is Government Expenditures on Community and Social Services.

### Diagrammatical Representation

The relationship between the dependent variable, income inequality, and the independent variable, political regime types, is depicted in Figure 3.1 below. The GDP per capita, direct tax to GDP ratio, government spending on education as a percentage of GDP, and government spending on community and social services as a percentage of GDP are the study's control variables.

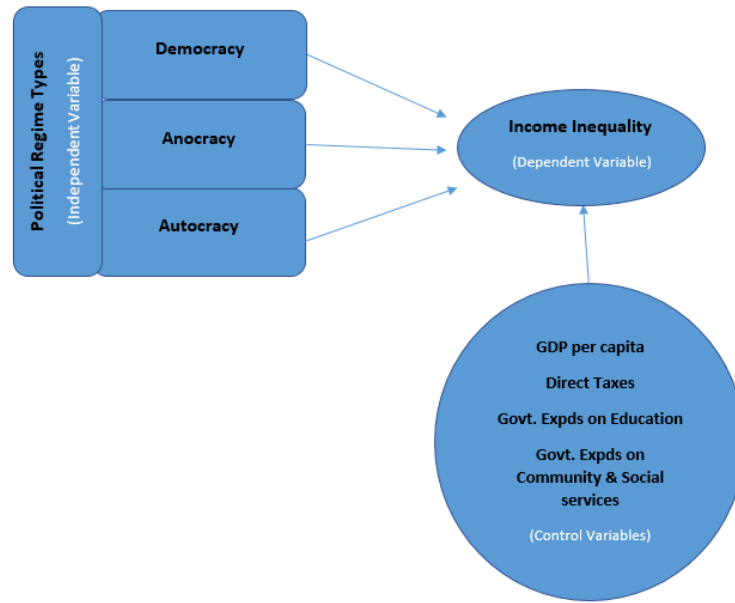


Figure 1. Diagrammatic Representation

**Expected Signs of Variables**

The expected signals of the independent variables and the dependent variable, or income inequality in Pakistan, are displayed in table 3.1 below. The predicted link between the dependent and independent variables is indicated by these indicators.

Table 1. Indicators of Expected Independent Variables

Independent Variables	Expected Signs of Coefficients
Polity	Positive/Negative
GDP Per Capita	Positive/Negative
Govt. Expenditures on Education, total Percentage of GDP	Negative
Direct Taxes to Gross Domestic Product ratio	Negative
Govt. Exp on Community and Social Services ratio of GDP	Negative

The theoretical framework suggests that the Polity variable, which measures the political regime types can affect income inequality both positive and negative, that’s why we expect both positive and negative signs of the coefficient of the Polity in the study.

**Empirical Model**

Equation 2 below provides the model that will be used to empirically quantify the impact of different political regime types on income inequality. Amir-ud-Din and Ali Khan (2017) conducted a time series study using the same methodology to determine how democracy affects income disparity. In a similar vein, Hsu (2008) employed it in a cross-sectional research to determine the impact of political regime types on income inequality.

$$Gini_t = \alpha_0 + \alpha_1 Polity_t + \alpha_2 GDP_t + \alpha_3 EE_t + \alpha_4 DT_t + \alpha_5 CSS_t + \epsilon_t \dots \dots \dots (2)$$

To estimate the connection between income inequality and political regime types, which are our study variables. The model contains some control variables as well. These variables will help to reduce the effects of important

omitted variables in the empirical specification. Epsilon t ( $\epsilon_t$ ) is the error term. In particular, the study controls the following variables.

1. Gross Domestic Product (GDP) per Person

GDP per capita may account for the direct impact of economic progress on income inequality and is not dependent on the presence of democracy. It will be easier to understand how different political regime types affect income inequality if GDP per capita is taken into account. The long-term correlation between a lower degree of income inequality and GDP per capita was demonstrated by Nikoloski (2015).

2. Government Expenditures on Education Percentage of Gross Domestic Product

Any nation's prosperity, economic growth, and general well-being all depend on its educational system. Democracy can be ensured in a nation through redistribution and education (Amir-ud-Din and Ali Khan, 2017). There is a large and inverse relationship between income disparity and education level. The population's per capita income rises with education. When secondary school participation rises by 1 percent in Pakistan, income disparity falls by 1.6 percent (Ali, 2018).

3. Government Expenditures on Community and Social Services as a Ratio of GDP

The government expenditures on community and social services help in the redistribution of income, reducing income inequality, as well as it strengthens the democratic values in a country. Democracy based on Polity2 is significantly and positively related to government expenditures on the community, and social and public services in Pakistan (Amir-ud-Din and Ali Khan, 2017).

To represent all these variables in percentage form, a log of variables is taken which are not in percentage form. The econometric model becomes as follows in equation 3

$$\log Gini_t = \alpha_0 + \alpha_1 Polity_t + \alpha_2 \log GDP_t + \alpha_3 EE_t + \alpha_4 DT_t + \alpha_5 CSS_t + \epsilon_t \dots \dots (3)$$

The study has used the following symbols for the variables in the econometric model.

Table 2. List of Variables with their Respective Symbol

Variables	Symbols
Gini Coefficients	Gini
Political Regime Types	Polity
Gross Domestic Product Per Capita	GDP
Govt. Expenditures on Education, total Percentage of GDP	EE
Direct Taxes to Gross Domestic Product ratio	DT
Govt. Expenditures on Community and Social Services as a ratio of GDP	CSS

## RESULT AND DISCUSSION

The empirical estimation of the econometric model and a discussion of the findings are the subjects of this study. A description of the data, the variables' correlation, the data's stationarity, the estimation findings, the Cointegration Bound test, long- and short-term relationships, diagnostic tests, and stability tests are all included in the estimation.

### 1. Descriptive Statistics

Table 3. Descriptive Statistics

	<b>Gini</b>	<b>Polity</b>	<b>GDP</b>	<b>EE</b>	<b>DT</b>	<b>CSS</b>
<b>Mean</b>	33.57	1.875	613.16	2.383	2.679	0.4981
<b>Maxi</b>	41.40	8.000	1499.8	3.022	4.670	1.0444
<b>Mini</b>	28.67	-7.000	100.23	1.578	0.1900	0.010
<b>Std. Dev.</b>	3.527	6.449	409.66	0.3871	1.0518	0.3008
<b>Skewness</b>	1.031	-0.385	7.154	2.238	1.807	2.580
<b>Kurtosis</b>	3.219	1.274	0.027	0.326	0.405	0.275
<b>Jarque-Bera</b>	8.605	7.144	7.154	2.238	1.807	2.580
<b>Probability</b>	0.0135	0.0280	0.0279	0.3266	0.405	0.2752

The descriptive statistics for each variable in the model are displayed in Table 3 above. The mean value of the Gini Coefficient is 33.57. It has a minimum value of 28.67 and a maximum value of 41.40. 3.52 is its standard deviation. In addition, it exhibits leptokurtic behavior (Peaked Curve) and is positively skewed (long right tail). Furthermore, Jarque-Bera 8.60 indicates that it is non-normally distributed. Polity has a standard deviation of 6.44, a mean value of 1.87, a maximum value of 8.00, and a minimum value of -7.00. Additionally, as demonstrated by Jarque-Bera 7.14, it is non-normally distributed, platykurtic (Flatted Curve), and negatively skewed (long left tail). GDP per capita ranges from a minimum of 100.23 to a maximum of 1499.8, with a mean value of 613.16. Its 409.66 standard deviation is another feature. According to Jarque-Bera 7.15, it is positively skewed, platykurtic, and non-normally distributed. The percentage of GDP that the government spends on education (EE) has a mean of 2.38, a maximum of 3.02, a minimum of 1.57, and a standard deviation of 0.38. Additionally, as indicated by Jarque-Bera 0.32, it is positively skewed, platykurtic, and regularly distributed. The direct taxes to GDP ratio (DT) has a standard deviation of 1.05. Its mean value is 2.67, maximum value is 4.67, and minimum value is 0.19. Additionally, Jarque-Bera 1.80 indicates that it is favorably skewed, platykurtic, and normally distributed. Comparably, government spending on social and community services as a percentage of GDP (CSS) has a mean of 0.49, a maximum of 1.04, and a minimum of 0.01. It has a 0.30 standard deviation. It is platykurtic and favorably skewed. In addition to the usually distributed data that Jarque-Bera 2.58 displays.

### 2. Correlation

The correlation coefficient quantifies the degree of association between two variables. Its values lie in the -1.0 to +1.0 range. A perfect positive correlation is shown by a value of +1.0, a perfect negative correlation by a value of -1.0, and no linear relationship by a value of 0.0. Ordinary Correlation Table 4

Table 4. Correlation

Correlation	Gini	Polity	GDP	EE	DT	CSS
Gini	1.0000					
Polity	-0.4755	1.0000				
GDP	-0.2470	0.3271	1.0000			
EE	-0.2888	0.4451	0.4237	1.0000		
DT	-0.2749	0.1631	0.7821	0.4350	1.0000	
CSS	0.1851	-0.2288	-0.6345	0.0380	-0.3104	1.0000

Table 4 above shows the ordinary correlation among the variables used in the model. The correlation between Polity and Gini is negative and considerably high. This supports the existing literature and theory, which shows that with the increase in the Polity score (Political Regime moving from Autocracy to Full Democracy) the Income Inequality (Gini Coefficient) decreases. Similarly, the correlation between GDP Per capita, Government Expenditure on Education percentage of GDP, Direct Taxes to GDP ratio, and Income Inequality (Gini) are also negative and according to the prevailing literature and theory. The increase in GDP Per capita, Government Expenditures on Education, and Direct Taxes to GDP ratio decrease Income Inequality. The correlation between Government Expenditure on Community and Social Services as a percentage of GDP and Income Inequality is positive and very low, which is almost negligible, this result is against the existing literature and expected result.

Stationarity Testing

Table 5. Unit Root Test for Stationarity

ADF Test							
Variables	At Scale			First Distinctions			The Integration Order
	Intercept	Trend & Intercept	No Trend, No Intercept	Intercept	Trend & Intercept	Not a Trend, Not an Intercept	
LogGini	-2.100	-2.082	0.030	-7.111***	-7.074***	-7.183***	<b>I (1)</b>
Polity	-1.914	-2.103	-1.825*	-6.496***	-6.507***	-6.571***	<b>I (0)</b>
LogGDP	2.111	-0.541	4.951	-5.931***	-6.346***	-4.378***	<b>I (1)</b>
EE	-1.316**	-3.346*	0.293	-5.159***	-5.104***	-5.205***	<b>I (0)</b>
DT	-0.387	-2.433	0.977	-5.003***	-4.946***	-4.861***	<b>I(1)</b>
CSS	-0.675	-1.302	-1.057	-5.759***	-5.902***	-5.794***	<b>I (1)</b>

Note: \*, \*\* & \*\*\* Shows Significance at 10.%, 5.% and 1.% Respectively.

The findings of the Augmented Dickey-Fuller (ADF) test are displayed in Table 5 above. The dependent variable LogGini has an order of integration of one,

or I (1), because it is non-stationary at the level and becomes stationary at the first difference. Similarly, the order of integration for two of the explanatory variables – polity and the government's share of GDP spent on education – is zero, or I (0). These variables are stationary at level. The order of integration for the next three variables is one, or I (1). They are non-stationary at the level and become stationary at the first difference: LogGDP, the ratio of direct taxes to GDP, and government expenditures on community and social services as a percentage of GDP.

### 1. Model Selection Criteria

Table 6. VAR Lag Order Criteria Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-607.418	NA	51815.62	27.8826	28.1259	27.9728
1	-378.245	385.428*	8.0941*	19.1020	20.805*	19.733*
2	-349.702	40.219	12.462	19.441	22.603	20.613
3	-314.335	40.190	16.547	19.469	24.092	21.184
4	-262.121	45.093	13.809	18.732*	24.815	20.988

The results of the optimal lag length selection based on the Schwarz Information Criterion (SC), Hannan-Quinn information Criterion (HQ), Akaike Information Criterion (AIC), Final Prediction Error (FPE), and sequentially modified LR test statistic (LR) are shown in Table 4.4 above. The criterion with the lowest value is the best one. Because AIC has a minimum value and suggests a maximum of 4 delays, EViews automatically chooses it as a model selection criterion. The (1, 0, 1, 2, 3, 4) ARDL model is the most optimal choice. It displays the ideal lag duration for every variable in the model. Where 1 denotes a single LogGini lag, 0 denotes no Polity lag, 1 denotes another LogGDP lag, 2 denotes two EE delays, 3 denotes three DT lags, and 4 denotes four CSS lags.

### 2. Cointegration Bound Test for ARDL

Table 7. The ARDL Bound Test

Test Statistic	Value	k
F-Statistic	4.35924	5
<b>Critical Value Limit</b>		
Level of Significance	I0 (Lower Critical Bound)	I1 (Upper Critical Bound)
10. %	2.26	3.35
5. %	2.62	3.79
2.5. %	2.96	4.18
1. %	3.41	4.68

The ARDL Bound test results are displayed in Table 4.5 above. The fact that the F-Statistic value of 4.35924 is higher than the upper critical bound values at the significance levels of 10.%, 5.%, and 2.5.% indicates that the variables in the model have a long-term association. If there is cointegration between the model's variables.

### 3. Long-Run Relationship Estimation Results

Table 8. Long Run Coefficients

<b>Dependent Variable: Log Gini</b>				
<b>Variables</b>	<b>Coefficients</b>	<b>Standard Errors</b>	<b>t-Statistics</b>	<b>Probabilities</b>
<b>Polity</b>	-0.4521	0.1627	-2.7780	0.0098
<b>LogGDP</b>	0.0064	0.0045	1.4056	0.1713
<b>EE</b>	4.1598	2.7106	1.5346	0.1365
<b>DT</b>	-4.064	1.2632	-3.2172	0.0034
<b>CSS</b>	-3.874	4.6327	-0.8363	0.4103
<b>C</b>	33.668	5.7033	5.9033	0.0000

The long-run coefficients of the variables, together with the corresponding probabilities, standard errors, and t-statistics, are displayed in Table 4.6 above. As was previously noted, the factors' long-term association has been established at the five percent significant level.

The outcome shows that, over the long term, the Polity coefficient is negative and highly significant.

### 4. Short Run Relationship

Table 9. Cointegrating form, Selected ARDL Model (1, 0, 1, 2, 3, 4)

<b>Dependent Variable: Log Gini</b>				
<b>Variables</b>	<b>Coefficients</b>	<b>Standard Errors</b>	<b>t-Statistics</b>	<b>Probabilities</b>
<b>D(Polity)</b>	-0.2509	0.0999	-2.5093	0.0184
<b>D(Log GDP)</b>	-0.0099	0.0054	-1.8568	0.0743
<b>D(EE)</b>	1.0839	1.5253	0.71065	0.4834
<b>D(EE(-1))</b>	-2.8512	1.5682	-1.8182	0.0802
<b>D(DT)</b>	-1.2168	1.1554	-1.0531	0.3016
<b>D(DT(-1))</b>	-0.1141	1.6365	-0.0697	0.9449
<b>D(DT(-2))</b>	2.0288	1.1931	1.7005	0.1005
<b>D(CSS)</b>	-3.2642	3.8530	-0.8472	0.4043
<b>D(CSS(-1))</b>	-6.8541	4.4615	-1.5363	0.1361
<b>D(CSS(-2))</b>	-5.6350	4.3916	-1.2831	0.2103
<b>D(CSS(-3))</b>	9.4096	3.2056	2.9381	0.0067
<b>CointEq(-1)</b>	-0.5549	0.1137	-4.8819	0.0000

Since a long-term correlation between the variables has been shown. The outcome of the short-term association between the variables is now displayed in Table 9 above. It is made up of the probabilities, t-statistics, standard errors, and coefficients for each variable in the model. Both in the short and long terms, politeness is detrimental and very important. This demonstrates the strong inverse relationship that exists in the short term between Political Regime Types and Income Inequality.

The coefficient of -0.251 indicates that, in the short term, a one-unit increase in Polity will result in a 0.251 percent fall in the Gini Coefficient. In the medium term, LogGDP is negative but not noteworthy. A one percent rise in GDP per capita will, in the short term, result in a 0.0099 percent decrease in income

inequality, according to the coefficient -0.0099. EE has a short-term beneficial impact and is negligible. EE's first lag is negative but negligible. Again, not very significant, the coefficient 1.084 indicates that a one percent increase in EE will result in a 1.084 percent increase in Income Inequality in the short term. Similarly, Income Inequality will fall by 2.85 percent in the short run if EE is increased by one percent, according to the coefficient -2.85 of the first lag of EE. The dominant theory explains this inverse association. In the short term, DT is detrimental but unimportant; in the long term, however, it was detrimental and significant. In a similar vein, whereas DT's first lag is negligible and negative, its second lag is also negligible but positive. A one percent rise in the ratio of direct taxes to GDP will result in a 1.217 percent fall in income inequality and a 0.114 percent decrease in income inequality, according to the coefficients of -1.217 and -0.114. Income inequality would rise by 2.029 percent (again, not statistically significant) if DT grew by one percent, according to the coefficient 2.029 of the second lag of DT. In a similar vein, CSS's first two lags are negative and negligible in the short term, but its third lag is large and positive. A one percent increase in government spending on community and social services as a proportion of GDP will result in a 3.26, 6.85, and 5.64 percent drop in income inequality, according to the coefficients -3.26, -6.85, and -5.64. Similarly, Income Inequality will rise by 9.41 percent in the short run if CSS increases by one percent, according to the coefficient 9.41 of the third lag of CSS.

The long-term relationship between the model's variables is confirmed by the negative and extremely significant coefficient of CointEq (-1). The long-term adjustment rate of any shock or disequilibrium is 55 percent, as indicated by the coefficient -0.5549 of CointEq (-1). Put another way, the rate of change is fifty-five percent.

**5. Serial Correlation LM Test**

Table 10. Breusch Godfrey Serial Correlation LM Test

<b>F-Statistic</b>	1.693078	<b>Probability F(2,25)</b>	0.2044
<b>Obs* R-Squared</b>	5.248716	<b>Probability Chi-Square(2)</b>	0.0725

The results of the Breusch Godfrey test of serial autocorrelation are displayed in Table 4.8 above. The outcome indicates that there is no serial autocorrelation issue because both the probability of the F-statistic and the probability of the Chi-square are larger than the 0.05 significance level.

**6. Normality Test**

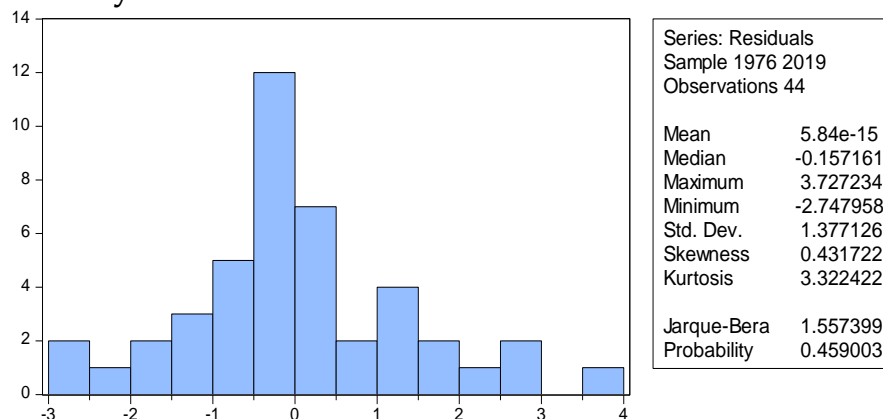


Figure 2. Histogram Normality Test

Figure 2 displays the Jarque-Bera test results. The fact that the probability of Jarque-Bera above the significance level of 0.05 verifies the normal distribution of the residuals.

### 7. Heteroskedasticity Test

Table 11. Breusch Pagan Godfrey Test of Heteroskedasticity

<b>F-Statistic</b>	1.708569	<b>Prob. F(16,27)</b>	0.1065
<b>Obs* R-Squared</b>	22.13649	<b>Pro. Chi-Square (16)</b>	0.1388
<b>Scaled Explained SS</b>	9.679258	<b>Pro. Chi-Square</b>	0.8828

Heteroskedasticity is verified using the Breusch-Pagan-Godfrey test. Heteroskedasticity problems exist when the likelihood of the F-statistic is less than the 5.% significance level, but they do not exist when the probability of the F-statistic is larger than the 5.% significance level. The Breusch pagan Godfrey test findings are displayed in Table 4.9 above. Given that the F-statistic's probability exceeds the 0.05 level of significance. This demonstrates that the heteroskedasticity issue is resolved.

### 3. Stability Tests

Stability tests are typically run to verify the model's structural stability. For this, the two tests that follow are utilized.

#### 1. CUMSUM Test

To verify that the model has undergone systematic changes, apply the Cumulative Sum (CUMSUM) test. If the cumulative sum, or the blue line, is situated between the two red lines, or at the 5.% significance level, the model's structure is stable. Figure 3 below displays the CUMSUM test result. Because the blue line lies between the two red lines, our model is stable

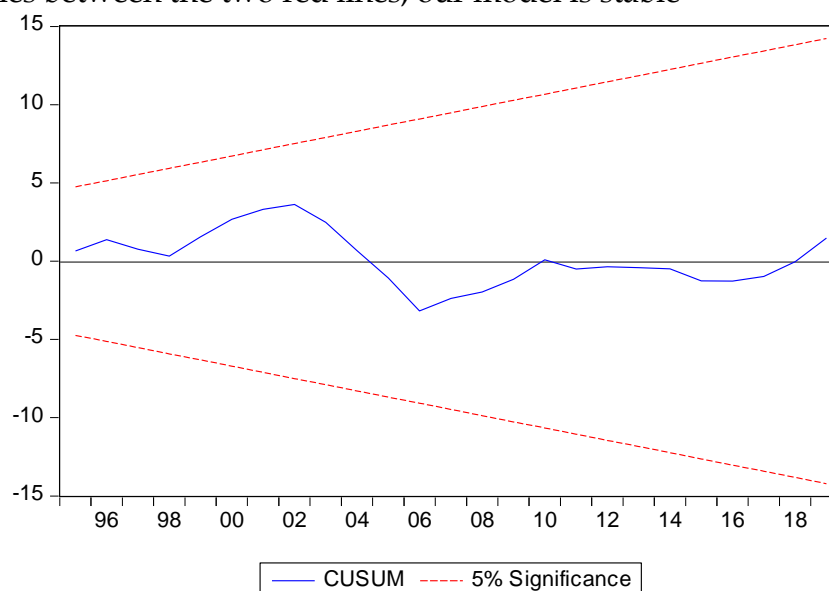


Figure 3. CUMSUM Test

#### 2. CUMSUM of Square Test

The model's abrupt or sudden changes are examined using the cumulative sum of squares test. If the cumulative sum of squares, or the blue line, is between the two red lines, or at the 5.% significance level, the model is stable and does not exhibit rapid shifts. The results of the CUMSUM of the Square test are displayed

in Figure 4 below. The fact that the blue line lies between the two red lines indicates that our model is stable and does not fluctuate.

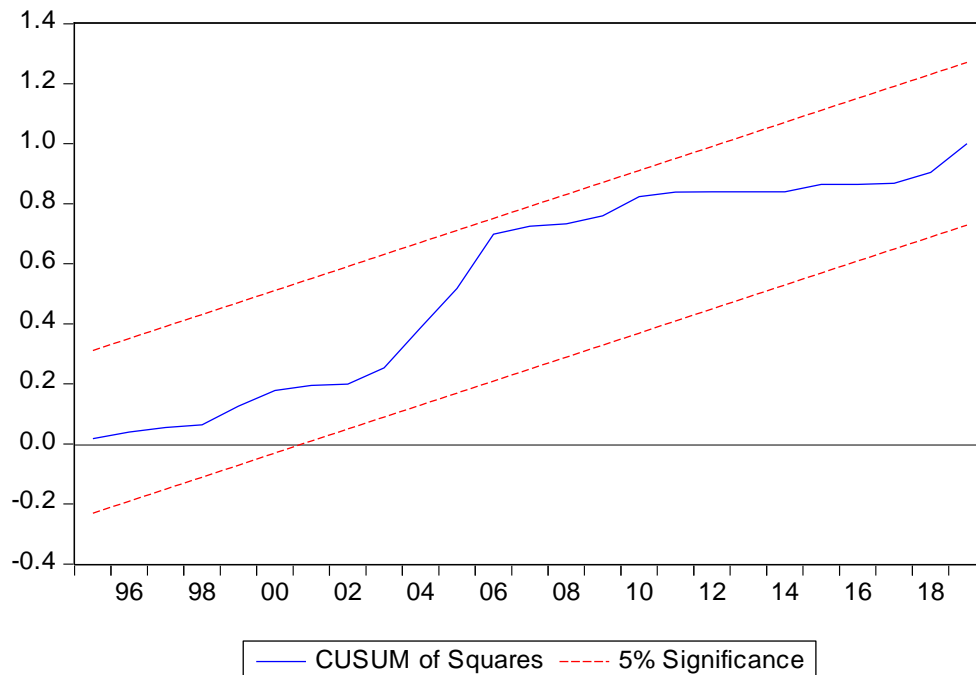


Figure 4. CUMSUM of Square Test

## CONCLUSION AND RECOMMENDATION

The present study examines the correlation between political regime types and income inequality in Pakistan by utilizing annual time series data covering the years 1972 through 2019. Measures of political regime types and income inequality are determined by the Polity and Gini Coefficient, respectively. A number of significant control variables are included in the model, including GDP per capita, the ratio of direct taxes to GDP, the government's expenditures on education as a proportion of GDP, and the government's expenditures on community and social services. Different political regimes and wealth disparity have different relationships in different nations and areas. The main goal of this study is to determine the nature, long-term link, and relevance of the relationship—specifically, the relationship between political regime types and income disparity in the context of Pakistan.

Our empirical findings demonstrate that political regime types and economic inequality in Pakistan have a long-term or cointegrating relationship. In the short and medium terms, the coefficient of polity is negative and extremely substantial. This suggests that the sorts of political regimes in Pakistan have a big impact on economic disparity. As the polity-based political system progresses toward democracy, economic disparity declines significantly. Additionally, when a polity-based political system tends toward autocracy, economic disparity rises.

Additionally, the empirical conclusion demonstrates a negative and substantial relationship between Pakistan's income disparity and the ratio of direct taxes to GDP. In a similar vein, there is a negative but negligible correlation between government spending on social and community services as a proportion

of GDP and income disparity. The estimate demonstrates that, over the long term, income inequality is positively and marginally correlated with both GDP per capita and the government's share of GDP spent on education. Although the association is unfavorable and unimportant in the short term.

### **FUTHER STUDY**

In this thesis, our focus was only on political regime types and income inequality in Pakistan. Based on the literature there is a causal relationship between income inequality and poverty. Hence in the future, we will investigate the relationship between political regime types, income inequality, and poverty in Pakistan.

### **REFERENCES**

- Ayşe Demir, Vanesa Pesqué-Cela, Yener Altunbas & Victor Murinde (2022) Fintech, financial inclusion, and income inequality: a quantile regression approach, *The European Journal of Finance*, 28:1, 86-107, DOI: 10.1080/1351847X.2020.1772335
- Acemoglu, D., Naidu, S., Restrepo, P., & Robinson, J. (2013, December). Democracy, redistribution, and inequality. (A. Atkinson, & F. Bourguignon, Eds.) National Bureau of Economic Research, 1-85. Retrieved from <http://www.nber.org/papers/w19746>
- Ahmad, M. (2014). Democracy, dictatorship, and economic performances of Pakistan. Mphil thesis. Institute of Management Sciences, Peshawar.
- Ali, A. (2018). Issue of income inequality under the perceptive of macroeconomic instability: An empirical analysis of Pakistan. *Pakistan Economic and Social Review*, Vol. 56, No. 1, 121- 155.
- Amir-ud-Din, A., Rashid, A., & Ahmad, S. (2008, November 15). Democracy inequality and economic development: The case of Pakistan. Munich Personal RePEc Archive, 1-20. Retrieved from <https://mpra.ub.uni-muenchen.de/26935/>
- Amir-ud-Din, R., & Ali Khan, R. E. (2017). Democracy, income inequality and economic growth nexus: The case of Pakistan. *Pakistan Journal of Commerce and Social Sciences*, 11 (1), 205-220.
- Bangura, Y. (2010). Combating poverty and inequality: Structural change, social policy, and politics. United Nations, Research Institute for Social Development. Geneva: United Nations Research Institute for Social Development. Retrieved from [www.unrisd.org](http://www.unrisd.org).
- Beomgeun Cho & R. Karl Rethemeyer (2022): Whom do we learn from? The impact of global networks and political regime types on e-government development, *International Public Management Journal*, DOI: 10.1080/10967494.2022.2077868
- Cheema, A. R., & Sial, M. H. (2012, 02 17). Poverty, income inequality, and growth in Pakistan: A pooled regression analysis. *The Lahore Journal of Economics*, 7, No. 2, 137 - 157.
- Chong, A. (2004, July). Inequality, democracy, and persistence: Is there a political Kuznets curve? *Economics & Politics*, 16, No. 2, 189-212.
- Dodlova, M., & Giolbas, A. (2017, February). Regime type, inequality, and redistributive transfers in developing countries. United Nations

- University World Institute for Development Economics Research (UNU-WIDER), 1- 29. Retrieved from <http://hdl.handle.net/10419/161594>
- Gradstein, M., Milanovic, B., & Ying, Y. (2001, March). Democracy and income inequality: An empirical analysis. The World Bank Development Research Group Poverty and Human Resources, Policy Research Dissemination Center. Washington: Policy Research Dissemination Center. Retrieved from <http://econ.worldbank.org>.
- Hamid, A., & Akram, N. (2013, June). Multi-dimensional income inequality in Pakistan. *International Journal of Economics and Business Research*, 8, No. 1, 2014, 21–35. doi:10.1504/IJEER.2014.063939
- Hsu, S. (2008, August). The effect of political regimes on inequality, 1963-2002. Trinity University-San Antonio, Texas, Department of Economics. Texas: United Nations Research Institute for Social Development. Retrieved from <http://www.unrisd.org>
- Ilaboya, O., & Ohonba, N. (2013, March). Direct versus indirect taxation and income inequality. *European Journal of Accounting Auditing and Finance Research*, 1. No. 1, 1-15.
- (Income inequality by country, 2022). <https://worldpopulationreview.com/country-rankings/income-inequality-by-country>
- Islam, T.U., Abrar, M., Arshad, R. and Akram, N. (2022), "Income inequality in Pakistan", *International Journal of Social Economics*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/IJSE-09-2021-0573>
- Kammas, P., & Sarantides, V. (2018, November 07). Do dictatorships redistribute more? *Journal of Comparative Economics*, 47, 176 - 195. doi:<https://doi.org/10.1016/j.jce.2018.10.006>
- Keefer, P. (2009, July). The poor performance of poor democracies. (C. Boix, & S. Stokes, Eds.) *The Oxford Handbook of Comparative Politics*, 887-909. doi:10.1093/oxfordhb/9780199566020.003.0036
- Knutsen, C. H. (2011, June 25). The economic effects of democracy and dictatorship. Ph.D. Thesis, University of Oslo, Department of Political Science, Oslo.
- Riaz et al ( 2020), "Impact Of Education And Income Inequality On Economic Growth In Pakistan", *Journal of Economics and Management Sciences Fall 2020*, Volume 1, No.2, pp 32-43
- Shrabani et al (2020)," The corruption-growth relationship: does the political regime matter?", *Journal of Institutional Economics* (2021), 17, 243–266 doi:10.1017/S1744137420000375