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The Impact of Democracy on Human Development in Pakistan

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ABSTRACT

This research aims to find out how the democracy impacted human development in Pakistan. the relationship has been analyzed by adopting the data of the year 1990-2022. The ranking given by Freedom House was taken as a proxy variable for democracy, while the HDI was the variable that was the dependent variables for human development. In addition, this study also considers some of the most important control variables that include trade openness, the GDP per capita and government spending in an attempt to account for the whole political and economic factors which may cause changes in human development. This research ensures use of reliable econometric approaches in the analysis of the data to ensure high reliability in the results obtained. To determine both the long term and short-term relationship, The Augmented Dickey-Fuller (ADF) unit root test, Auto-regressive Distributed Lag (ARDL), and Error Correction Model (ECM) tests are used in the investigation. In order to add another dimension to the consistency of the results we conduct stability and diagnostic tests including testing for serial correlation, heteroscedasticity, stability and normality. The study contributes to the ongoing debate of how democracy and human development is linked, particularly in developing countries like Pakistan. Although earlier research on the relationship between democracy and human growth has produced conflicting findings, with some indicating a favorable relationship and others pointing to the opposite. The Freedom House rating demonstrates a statistically significant and positive influence on HDI, indicating that greater democratic governance is associated with improved human development outcomes in the country. The analysis of government expenditure and GDP per capita further implies that economic forces and democratic governance boost human growth. Finally, there are Positive effects of trade openness in Pakistan's case according to the findings. The findings demonstrate how important democratic governance is to promoting human growth.

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1. Introduction

1.1. Democracy

"Democracy is government of the people, by the people, for the people" (Lincoln). Popular sovereignty and the notion that the people should hold the power are highlighted in this concise description. Prominent economist Joseph Schumpeter described democracy as "the institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people's vote." This definition emphasizes how political competition shapes policy outcomes and how democratic elections are competitive.

1.2. Modern Interpretations

A minimalist definition of democracy was put out by political scientist (Robert Dahl), who focused on the procedural elements of democratic governance. He determined seven essential requirements:

1. Effective Participation: Citizens should have equitable and effective opportunities to engage in decision-making processes.
2. Voting Equality: Each voter's vote ought to be equally significant.
3. Enlightened Understanding: People have to be able to obtain information and develop well-informed judgments.
4. Agenda Control: The people should be able to determine what matters and what the government should do about it.
5. Inclusion of Adults: Every adult citizen ought to be able to take part in politics.
6. Freedom of Association: People have to be able to organize and join groups in order to voice their opinions and interests.
7. Freedom of Expression: People have to be able to voice their thoughts without worrying about censorship or retaliation.

In their book "The Global Resurgence of Democracy," (Larry Diamond and Marc Plattner) make the case for a more fundamental definition of democracy that encompasses both procedural and substantive components, such as political rights, civil liberties, and the rule of law.

1.3. Human Development

The idea of human development centers on increasing people's liberties and chances to enhance their quality of life. It emphasizes the value of people's lives and capacities, going beyond economic progress. UNDP definition of human development, is "The process of enlarging people's choices."
Among these are:

- Having a long and healthy life: Health indicators and life expectancy are the main topics of this dimension.
- Knowledge Acquisition: This component focuses on literacy and education levels.
- Having a decent standard of living: This factor takes into account both income and the availability of necessities.

Building on Sen's Capability Approach, human progress increases freedoms and options. (Alkire, 2010; Sen, 1990). Human development, according to prominent Pakistani economist Mahbub ul Haq, is:

"The process of enlarging people's choices."

This definition highlights that development is about increasing people's capacities and opportunities to live satisfying lives, not just about economic growth.

1.4. Objectives of Human Development

A rise in real income per capita was considered development in the context of classical development economics. A more expansive Development with distributive goals was adopted. In other words, economic progress was re-framed to reduce poverty and inequality. This progress view is "goods-oriented" Critical development is "people centered". Development that prioritizes human well-being implies people come first. Human development will be this "people-oriented" approach. Therefore, it is clear that a country's level of advancement cannot be accurately determined by its per capita income. in order to resolve this problem and understand development dynamics. Take the following example; Can humans read and write? Does everyone receive food supplies in the same manner? Do disadvantaged children receive lunchtime meals from their schools? Are the disadvantaged children fed enough nutritious meals at home? Without a doubt, someone who is poor and uneducated cannot have the same skills as someone who is affluent and literate. Thus, failure of capability leads to poverty and deprivation. A. Sen claims that this perspective on development explains why development

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economists place a higher priority on education and health. Despite having high levels of real prosperity and per capita GDP growth, many countries around the world struggle with high rates of mortality, undernourishment, low literacy, and other problems. We call this state "growth without development." According to M. P. Todaro and S. C. Smith, "health and education are unquestionably necessary in addition to real income in order to transform the characteristics of commodities into functions." Stated alternatively, the concept of "well-being" is not adequately characterized by what people make.

1.5. Relationship between Democracy and Human development

Democracy is thought to promote human development. Boix (2001); Brown and Hunter (2004); Brown and Mobarak (2009); Dreze and Sen (1990); Ghobarah, Huth and Russett (2004); Lake and Baum (2001); Lenski (1984); Lipset (1959); Meltzer and Richard (1981); Muller (1988), even though democracy and economic growth are still debated (Kurzman, Werum, & Burkhart, 2002; Przeworski, 2000). According to Aristotle, Madison, and many political economists, democratic governance empowers people and holds governments responsible for meeting their needs, especially those of underprivileged populations. Recent research, however, has questioned this widely held features, claiming that there may not be as strong a correlation between democracy and human growth as previously believed (Gauri & Khaleghian, 2002; McGuire, 2010; Shandra et al., 2004). A meta-analysis conducted in 2008 found no correlation between democracy and economic growth. But it has tremendous indirect effects that boost growth. Democratic societies have more human capital, lower inflation, less political instability, and more economic freedom. Democracy and economics are linked sources of success, including lifespan and educational achievement through improvements in healthcare and educational institutions(Ragmoun, 2022). "As democracy expands in developing countries, newly empowered workers are likely to demand better living conditions, health care, access to clean water, and so on to all conditions that contribute to increased life expectancy and, in turn, to increased productivity"

Poorer democracies have seen economic growth 50% quicker than non-democracies during the past 45 years, with the exception of East Asia. Countries like Ghana, Senegal, Botswana, the Baltic states, and Costa Rica have surpassed non-democracies like Angola, Syria, Uzbekistan, and Zimbabwe in terms of growth. Democratizing African countries may choose the more economically stable centralized China over democratic Taiwan in their hunt for economic advantages (such as aid, commerce, and foreign direct investment). All seven African states that either made the transition to democracy after 2000 or were approaching an election following previous election results during economic downturns reflect this pattern(Wided, 2019). Established democracies benefit from institutional governance and generally enjoy higher-quality governance, but emerging democracies frequently have difficulties during their transition period (Kapstein & Converse, 2008; Keefer, 2007). The interaction between democracy and human development has been a subject of extensive scholarly research. While a positive correlation between the two is often posited, there are challenges to it. This literature review aims to dig into this relationship, critically examine the diverse empirical findings, and explore the potential mechanisms through which democracy may influence human development outcomes(Ragmoun, 2023).

Qasim (2022) his results demonstrated that democratic accountability has a direct and statistically significant positive effect on economic growth in Pakistan. It highlighted the sustainability of economic development depending upon institutional quality, especially democratic accountability. Both being empowered democratic institutions and civil responsiveness to the needs of the society were considered important for the country's sustainable economic development in Pakistan. Itzaz, A. et. al (2019) Democracy has also enhanced human development in Pakistan. The study has found that it is democracy that works better in developing people than autocracy does. However, the notion of democracy has had a very pale and soaked up implementation in Pakistan because democratic governments are less stable and frequently overpowered by military rule. Mohammadi, Boccia and Tohidi (2023) examined democracy and economic growth. This study examined the causal relationship between democracy and economic growth in the OECD and selected developing countries from

1990 to 2020. The conflicting hypothesis was supported in OECD countries and the skeptical hypothesis in developing countries. OECD countries' economic growth paths differ from those of developing nations. Democracy hurt per capita GDP in OECD countries, but past economic growth drove future growth. Democracy alone did not boost economic growth in developing nations; other factors like social and physical infrastructure were crucial determinants of economic performance. Liotti, Musella and D'isanto (2018) performed a study and found a positive relationship between democracy and human development in former Socialist countries. This suggests that the transition to democratic regimes had a beneficial impact on the well-being of citizens. Furthermore, the researchers used data on Polity IV and the Human Development Index (HDI) for 18 former Socialist countries to empirically test this relationship. The findings provide strong evidence in support of a positive association between democracy and Human Development(Ahmed, Azhar, & Mohammad; Ahmed, Azhar, & Mohammad, 2024; Mohammad, 2015).

As discussed in earlier literature reviews, democracy plays a crucial role in promoting sustainable development. Democratic institutions can foster political stability, transparency, and accountability, creating a conducive environment for investment, innovation, and economic growth. Additionally, democratic processes can ensure that development policies adjust with societal needs and priorities. Human rights are essential for achieving sustainable development. Ensuring access to basic human rights, such as education, healthcare, and freedom of expression, is fundamental for creating fair and inclusive societies. Human rights violations can hold back development progress and weaken social connection. Berggren (2012); Gerring, Thacker and Alfaro (2012) investigated the effects of democratic institutions on human development performance. They found that human development is increased by democracy and proportional electoral systems. The results appeared stronger when democracy was considered a historical phenomenon. However, countries with similar economic development sometimes experienced different levels of human development. Gerring's research suggests that the relationship between democracy and human development is more complex than previously thought. While democracy may not have a strong immediate impact on human development, it can have a significant long-term effect. Burkhart and Lewis-Beck (1994) challenged the traditional view that democracy is a prerequisite for economic development. The study employed a large data-set covering 131 countries over (1972-1989). the study employed the GLS-ARMA technique for estimation. The impact of economic development on democracy was found to vary depending on a nation's position in the world system the most. The effect was strongest in core countries and diminished in semi-periphery and periphery regions.

2. Methodology

2.1. Theoretical Framework

The literature shows the relevant theories that explain the mechanisms through which democracy affect human development. Additionally, this research has outlined the key relationships among variables and developed a methodological framework to analyze the impact of democracy on human development. The relationship between democracy and human development has been widely debated in political and development economics literature. In the case of Pakistan, understanding how democratic governance impacts human development requires a comprehensive theoretical approach that considers the key dimensions of both democracy and human development.

2.2. Empirical Model

Therefore, we have developed a model to empirically address questions concerning the effect of democracy and other major economic and social factors on human development in Pakistan. The model will utilize HDI as the dependent variable that measures the economic status, years of schooling and life expectancy at birth. The study considers four as the key independent variables with their impact on HDI and these include Freedom House Score, Trade Openness, Government Expenditure and GDP per Capita Income. Consequently, the empirical model can be specified in the following manner:

$$HDIt = \beta o + \beta_1 FHSt + \beta_2 GEt + \beta_3 TOt + \beta_4 GDP.PCt + \mu t$$

Where:

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- HDI is an abbreviation for the Human Development Index for the time period, t which is the dependent variable.
- The Freedom House Score for year t measures political and civil liberty.
- TO is year t's trade openness, measured by trade (exports + imports) to GDP.
- GE is the government expenditures on social services (such as education, health, and infrastructure) for year t.
- GDP.PC is the GDP per capita for year t.
- μ is the error term, capturing unobserved factors that might influence HDI in year t.

2.3. Hypothesis

Considering the direction and aims of our study, we formulate the following pair of hypothesis:

- H_0: There is no significant relationship between the level of democratic governance and human development.
- H_1: There is a significant positive relationship between the level of democratic governance and human development.

2.4. Estimation Methodology

For the estimation of our time series data, we have used multiple tests that suits the data the most.

2.5. Stationarity of Variables

Stationarity is a characteristic of a time series that has fixed mean, variance, and auto-covariance in each point in time. In other words, it means that a time series should not have trends, seasonality or variation in the variability of the series, that it due to the fact that the majority of statistical models employed in time series forecasting (including ARIMA) assumes the stationary of data. In case the data is non-stationary, the above mentioned models are likely to provide incorrect forecasts or possibly give results attributing to the unstable pattern of the series. The problem associated with non-stationary data is often a creation of "spurious relationships" hence the true correlation of variables is difficult to establish. For a typical time series, in order to remove trends and seasonality, transformations such as differencing, log transformations or seasonal components are taken. The Augmented Dickey-Fuller (ADF) test is a statistical test that was developed as a means in which we can determine if a given time series is stationary, or if it contains a unit root which suggests non-stationarity. It is an extension of the Dickey-Fuller test, which is used to test for a unit root in uni-variate time series model while the current test can allow for more flexible by including the difference of order delayed values of the time series in order to check for a higher order serial correlation.

2.6. Hypothesis of ADF Test

- H_0: The variables used in the time series are non-stationary, and exhibit a unit root.
- H_1: The variables used in the time series are stationary, and does not exhibit a unit root.

2.7. Auto-regressive Distributed Lag Model

ARDL models offer a reliable and flexible framework for analyzing the complex relationships between time series variables. By understanding the long-run and short- run dynamics, researchers and policymakers can make informed decisions and develop effective strategies. Given that variables of this study exhibits a mix of I(0) and I(1) integration orders, the Auto-regressive Distributed Lag (ARDL) model for estimation is employed. ARDL is well-suited for estimation as it can accommodate both stationary and non-stationary variables. This approach enables to investigate both the short-run dynamics and long- run equilibrium relationships among the variables, providing a comprehensive understanding of their interconnections.

2.8. Data Description

This research focuses on determining the impact of democracy on human development in Pakistan. To further delve into this phenomenon empirically, we have used the time series data of Pakistan from 1990-2022 respectively. The variables used in the study are Human development index (HDI) is the dependent variable, Freedom House Ratings are the proxy for Democracy, Government Spending, Trade Openness, and GDP per Capita are the independent factors. The data for the Freedom house ratings was taken from official website of freedom house, the Government as a percentage of GDP was taken from IMF, while all the data for the remaining variables had been taken from World Development Indicators (WDI).

2.9. Data Source

The time series data for the study that was taken from the year 1990 to the year 2022 was sourced as follows:

Table 1

Name of the Variables	Variables Used	Source
Human Development	HDI	United Nations Development Programme
Democracy	Freedom House Rating	Freedom House
Government Spending	Government spending percentage as of GDP	IMF
Trade openness	Trade to GDP ratio	WDI
GDP per capita	Percentage GDP per capita	WDI

2.10. The Dependant Variable

2.10.1 Human Development Index (HDI)

HDI measures economic, educational, and health development. The HDI is a statistical composite indicator that measures average accomplishment in three basic human development areas: life expectancy, education and income and it includes the general human development of a country, and the developmental progress of a country not only in terms of financial aspect, but in terms of health and education services also. In this context, dynamics of democracy explaining its influence on HDI are defined through establishing the correlations between the principles of democracy and governance, on the one hand, and the major factors of human development, on the other hand. Human development is a broader concept as compared to just the economic development; it includes Human Index that is composed of Education, Health, Standard of Living and Political freedoms. The idea is conceived in terms of agency freedom and is drawn from Amartya Sen's capability approach which aims at identifying and enhancing what can be done and be become by individuals. Development refers to the state of being of people in relation to resources such as health, education and civil liberties. The human development index HDI adopted by the United Nations Development Programme UNDP is a standard measurement that put together values of economic, health, and knowledge status to estimate human development in any given country. From the capability approach, we can understand how democracy affords citizens powers to bring about political solution that enhance the opportunities for resource and public goods such that people's human development improves.

2.10.2. Independent Variables Affecting HDI

All the independent variables are associated with HDI through different theoretical pathways.

2.10.3. Democracy

In essence, democracy refers to a government whereby the people hold the central power, and have the right vote to officials of their choosing. It involves political activity, civil freedoms, and the supremacy of the law, where the population has the authority to publicly state their views, rally and vote in any election without any forceful suppression. People of the democratic system enjoy the freedom to change their leaders through a ballot and the government will change through the ballot in a non-violent manner. Democracy guarantees people rights with the focus in social justice, empathy, inclusion, and equality. It can be argued that policies formulated and actions taken by government in true democracy reflect needs and demands of the voters and that results into better distribution of resources, enhanced delivery of services and development in common terms. In addition, the system of democracy will be favorable in facilitating freedom of speech and press, judicial independence and liberalization of

politics since these are fundamentals in enhancing a society's health, dynamism and development as well as protection of everyone's rights.

2.10.4. Freedom House Scores

The proxy variable to measure the extent to which democracy exists, or does not exists in a given nation is the Freedom House score. This score gives the level of political rights, civil liberties that achieved by a country which gives the idea about the democratic status of that country. Freedom House focuses on the following indicators for rating: Speaking and learning freedom, judicial system, Elections, Association, Religion and belief. Freedom scores can range from 1 to 7 where 1 is most free and 7 is least free and each country type is either: Free, Partly Free or Not Free. Higher Freedom House score denotes that the political setting in a particular country is sound and progressive democracy where citizens enjoy political freedom and civil liberties. A lower score, on the other hand, is indicative of political repression, downsizing of civil liberties, and decreased democracy. When it comes to human development, countries that enjoy higher Freedom House ratings achieve better governance because more often than not, they are capable of formulating and implementing policies that will foster the health, education and economic welfare of a nation's people. Countries that are politically stable and which protect individual freedoms are those that get high FH scores and which are democracies. These systems often deliver more, and often superior, public goods comprising education, health and other infrastructure that have a direct relation to human development outcomes – Przeworski (2000). There might also be a positive effect on political freedoms increasing the formation of social capital as well as citizens' capabilities to call for change on relevant government policies that can affect human development.

2.10.5.Trade Openness

Modernization Theory asserts that economic liberalization is major contributor to growth and development hence the motive to open the economy. The knowledge spillover effect arises from opening up the trade enabling countries to access new technologies and markets and investment. This openness can lead to economic growth where backed by sound government policies it impacts on health and education leading to a positive influence on HDI (Rodrik, 2001).

2.10.6. Government Expenditures

Both the level and quality of government expenditures for human development appear to be influential in determining high human development. From the theory of Public Goods, only those governments that spend more on basic needs such as; education, health, and facilities have a direct impact of enhancing the standard of the people's lives. According to the findings of this analysis, a well funded and efficient public sector can improve health status, education and standard of living and therefore improve the HDI. Government consumption on social services has been an issue in Pakistan; their ability to influence HDI might therefore be the efficiency of the expenditure as well as the commitment of the authorities to human development.

2.10.7.GDP per Capita

GDP per Capita Income is calculated as the real income, and as a rule, the gross domestic product per capita is regarded as the basic human development component since it directly affects people's standard of living and availability of resources for social needs. Higher income as captured by GDP per capita indicate service provision such as health, education etc. that defines human development standards. Growth Theory shows that increasing GDP per capita starts a positive cycle where improvements in the human development foster economic growth and the later fosters human development.

3. Results and Discussions

3.1. Augmented Dickey Fuller Test results

Below are the categorized ADF results of each of the variable that is being used in this study just below:

3.2. Augmented Dickey Fuller Test results

Table 2

Variables	T- Statistics	P-value	Results
HDI	-3.216636	0.0296	I(1)
Freedom House Ratings	-6.576995	0.0000	I(1)
Government Spending	-5.692560	0.0000	I(1)
Trade Openness	-3.627890	0.0467	I(0)
GDP per Capita	-4.219906	0.0001	I(1)

The T- Statistics are less than T Calculated. Below are the interpretations of the ADF results table according to P-value:

HDI: The dependent variable's p-value is below 0.05, rejecting the null hypothesis and indicating that the time series is stationary at first difference.

Freedom House Rating: After the first difference, this variable's p-value is less than 0.05, rejecting the null hypothesis and indicating that the time series is integrated of order 1.

Government Spending: The first difference makes the time series stationary, as the p-value is less than 0.05. The series appears to be integrated of order 1.

Trade Openness: The Augmented Dickey-Fuller (ADF) test shows that Trade openness is stationary at levels, indicating no unit root. Trade openness is zero- order integrated, implying a stable process.

GDP per Capita: At the first difference, the p-value is below 0.05, showing the time series is stationary, rejecting the null hypothesis.

3.3. Bound test (F-Test) Results

Given that variables of the study exhibit a mix of I (0) and I (1) integration orders, the Auto-regressive Distributed Lag (ARDL) model for estimation is employed.

Table 3: Bound test (F-Test) Results

F-Statistics value	Significance level	Bound's Critical values	
		I(0)	I(1)
	1%	3.29	4.37
	2.5%	2.88	3.87
	5%	2.56	3.49
	10%	2.2	3.09
6.243087			

The table above shows the results of Bound's test. The calculated F-statistic from the bounds test is 6.243087 that exceeds the Upper bound crucial value at all significance levels (1%, 2.5%, 5%, and 10%) strongly suggesting a long-term co-integrating relationship between variables. Thus, the null hypothesis that variables have no level association is rejected.

3.4. Estimation of ARDL: Case 2: Long Run Outcomes

The ARDL model for the long run allows us to explore the equilibrium relationship between HDI and the key drivers of human development in Pakistan, focusing on both economic and political factors. By estimating this model, we aim to assess how democracy, trade openness, government expenditures, and GDP per capita influence human development outcomes over time. The results from the long-run ARDL model provide a valuable understanding of the factors that shape HDI in Pakistan and how they interact in the long-term development process. The values in the tables below are after taking estimation of the time series data using e-views:

Table 4: Estimation of ARDL: Long Run Outcomes

Variables	Coefficients	Standard Error	T- Statistics	P-Value
Freedom House Ratings	0.060771	0.001825	3.326810	0.0077
Government	0.026334	0.000809	2.883754	0.0163

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Spending				
Trade Openness	0.028680	0.000147	2.507317	0.0403
GDP per Capita	0.010121	4.05E-06	7.952510	0.0000

Table 5

R-Squared	0.894405
Adjusted R-Squared	0.802889
F-Statistics	6.243087
Sum Squared Residuals	3.05E-05

3.5. Interpretation of the Results

The results that have been provided are derived from an Auto-regressive Distributed Lag (ARDL) model which mainly analyses the impact of a dependent variable- HDI, and several independent variables. Here's the interpretation of the given results for each variable:

The coefficient of Freedom House Ratings has a positive relation and is statistically significant on the basis of p-value that is less than 0.05. From this, it is indicated that as the Freedom House Ratings (an index of political rights and civil liberties) rises, the dependent variable rises slightly as well. Particularly, for every unit increase in the Freedom House Rating, the Human development increases by 6.07 percent. These results show that coefficients of the Government Spending is positive and significant at 5% level (since $p < 0.05$). This indicates that an increase in government spending leads to a positive change in the dependent variable. Specifically, a 1-unit increase in government spending is associated with an increase of 2.6 percent in the Human development. The coefficient for Trade Openness is positive and statistically significant as its p-value is 0.0004. This suggests that an increase in trade openness (measured by trade- to-GDP ratio) positively impacts the dependent variable. Specifically, for every unit increase in trade openness, the Human development increases by 2.8 percent. The coefficient for GDP per Capita is positive and highly statistically significant. This indicates a strong positive relationship between GDP per capita and the dependent variable HDI. Specifically, a 1-unit increase in GDP per capita leads to an increase of 1.0 percent in the dependent variable, which suggests that higher income levels are associated with higher values of the HDI.

3.6. Model Fit Statistics

3.6.1. R-Squared

The R-squared value of 0.8944 indicates that 89.44% of the variance in the dependent variable is explained by the independent variables included in the model. This suggests that the model fits the data well.

3.6.2. Adjusted R-Squared

The Adjusted R-squared provides a more accurate measure of model fit. With an adjusted R-squared of 80.29%, it suggests that after adjusting for the number of variables, the model still explains a significant portion of the variance in the dependent variable.

4. Conclusion

By testing Freedom House Ratings, Government Spending, Trade Openness, and GDP per Capita to the dependent variable, the study posits that all the independent variables have correlation with the dependent variable. Under the control variables, GDP per Capita has recorded the highest positive coefficient that affect the dependent variable positively while Freedom House Rating, Trade Openness and Government Spending also have positive coefficient to affect the dependent variable. This indicates that the model accounts for a significant and large amount of variance in the dependent variable (89.44%) and that all the variables are statistically significant at least the 0.05 level.

4.1. Short Run Estimation: Error Correction Model

Specifically, with reference to this study, the ECM is used to further explore the short-run relationship among the variables of interest after establishing that the variables are co-integrated. As a result, the coefficients which are estimated for the first few lags of the

dependent variable provide information about the path and the extent of its correction within the short run as regards the adjustments of the independent variables, and the error correction term expresses the level of overall degree of disequilibrium in the system. The next table contains the short run results of the estimations with the coefficients of the lagged variables and the EC term. The results present information on the short-run reactions to short-term disturbances and their consequences for long run relationship between the variables.

Table 6: Short Run Estimation: Error Correction Model

Variable	Coefficient	Std. Error	T-Statistic	Prob.
D(D_HDI(-1))	-0.862787	0.253904	-3.398078	0.0068
D(FHS(-1))	0.033337	0.000995	3.353577	0.0073
D(GDP.PC(-2))	5.04E-05	9.45E-06	5.334883	0.0003
D(GE)	-0.029570	0.000372	-7.945794	0.0000
CointEq(-1)	-0.922811	0.123110	7.495851	0.0000

These short-run dynamics are considered with the help of ECM results derived from the Error Correction Model technique. According to the theoretical ECM model, the coefficient linked to the ECM should be negative and statistically significant. From the table above it can be seen and agreed the ECM coefficient is negative and is significant, In addition to providing evidence of the existence of a long-run equilibrium relationship between the variables as pointed out in the co-integration test it also ensures that the model is stable. The results also shows that the error correction mechanism is highly efficient in the view to correcting any deviations from the long-run equilibrium. The negative sign of the coefficient suggests that the variables tend to adjust towards the equilibrium after short-run shocks, with a correction speed of 92% per period. This negative and significant coefficient also shows that the variables in the model go back to their long-run equilibrium after being disrupted by any short-run shocks. In other words, any displacement from the position of long run equilibrium due to any short run shocks are adjusted over time to bring the situation to a state of equilibrium.

4.2. Stability and Diagnostic Tests

Stability and diagnostic tests are vital for validation of a model in order to investigate the reliability and accuracy of estimations; as well as to consider whether the model has been correctly specified. In the framework of time series analysis, some of these tests are used when using methods such as ARDL (Auto-regressive Distributed Lag) or ECM (Error Correction Model) to verify, among others, problems that may arise with stability, residual auto-correlation, heteroscedasticity and normal distribution of errors. The following is the description and key outcomes of the stability and diagnostic tests applied in our study:

Table 7: Stability and Diagnostic Tests Interpretations

Test	Uses	Interpretations
CUSUM Test	Verification of the model's stability over time	The model is stable if the cumulative sum of the residuals remains within the boundaries.
Breusch-Godfrey LM Test	Checks the higher-order serial correlation	Auto-correlation at larger lags is suggested by the significant finding.
Breusch-Pagan Test	Detects the heteroscedasticity	Heteroscedasticity is suggested by a significant finding.
Jarque-Bera Test	Tests the normality of error terms	Non-normal residuals are suggested by a significant outcome.
Ramsey RESET Test	Testing of misspecification of the model	Potential model misspecification (such as missing variables) is indicated by a significant outcome.

4.3. Stability and Diagnostic Tests Results

Table

Tests Applied	Purpose	F-Statistics	P-Values
Breusch-Pagan Test	Detects the heteroscedasticity	0.436461	0.939566
Breusch-Godfrey LM Test	Checks for the higher order Serial correlation	0.098162	0.999986
Jarque-Bera Test	To check for the	J-Berra 0.860203	0.650443

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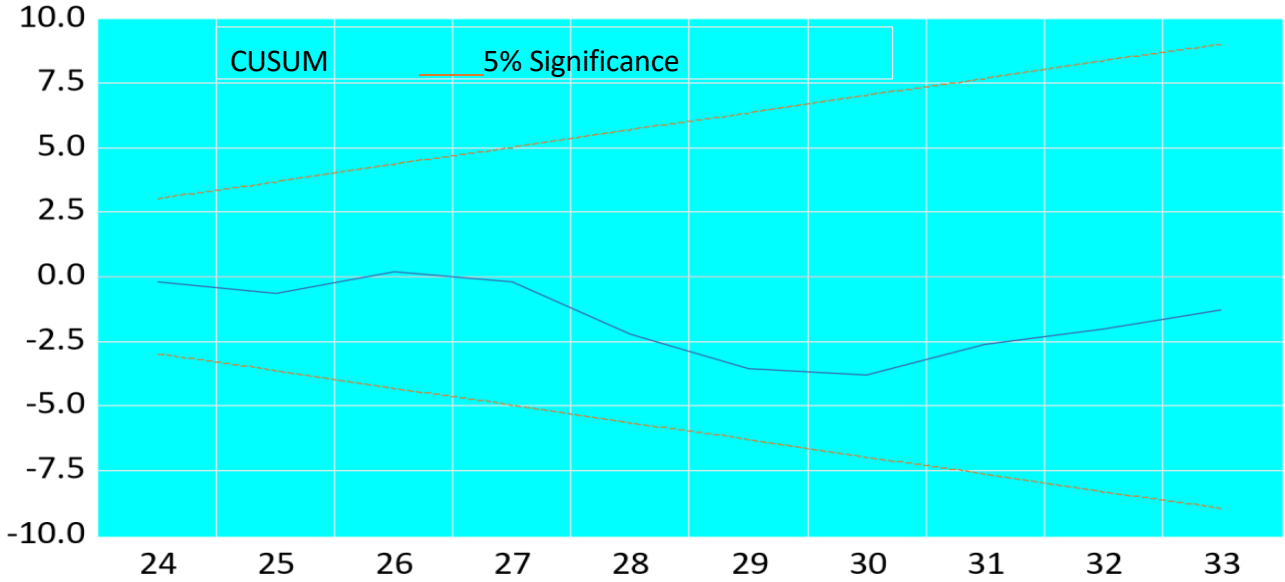
	normality of the residuals		
Ramsey RESET Test	Checks for the model specification	0.233669	0.6404
CUSUM Test	Checks for the model's Stability	Stable	Stable

The Breusch-Pagan test are used to test the existence of heteroscedasticity (non-constant variance of residuals). Now if the value of p = 0.939566 which is more than 0.05, we do not reject the null hypothesis that there is no heteroscedasticity. This implies that the observed residuals do not seem to depict heteroscedasticity in the model. The Breusch-Godfrey LM test depicts the higher-order serial correlation (auto- correlation) in the residuals. The estimation suggests a very high p-value 0.999986, therefore conclude that there is not sufficient evidence to reject the null hypothesis of no serial correlation in the data set. Hence it is correct to conclude that there is no auto- correlation in the residuals, therefore the error terms in the model are not related to previous years. As for the normality of the residuals have p-value 0.650443 in the Jarque-Bera test which means that this study does not reject the null hypothesis of normality. This means the residuals do not significantly deviate from a normal distribution, which is important for ensuring the validity of statistical inference (e.g., hypothesis tests and confidence intervals). The value of the Ramsey RESET test is 0.6404 and exceeds the conventional 0.05 level, which suggests that this study should fail to reject the null hypothesis of a proper model specification. This imply that the results do not show any indication of model misspecification and this means that in terms of functional form and variables, the of the model is appropriately specified. These findings make sense since, according to the CUSUM test, the model is stable, which implies that the relationship between the variables analyzed is stable and the coefficients estimated are not affected by large structural changes within the analyzed period. Overall, the diagnostic tests suggest that the model is well-specified, with reliable residuals that meet the assumptions of homoscedasticity, no auto-correlation, normality, and stability.

Figure 1: CUSUM Test Results



5. Conclusion

The relationship between democracy and human development in Pakistan is examined in this study. This research also investigates additional explanatory variables expected to affect Pakistani human development. Freedom House ratings as a proxy for democracy boost Pakistan's human development in the short and long term. Explanatory variables; GDP per Capita, Trade Openness and Government Spending are also having long-term and short-term benefits. The estimation uses Auto-regressive Distributive Lag model to capture for long-term relationships between variables of interest, and for short-term dynamics, in addition this study

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has incorporated the ECM model for the speed of equilibrium adjustment due to short-term deviations.

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