



Does Fiscal Decentralization Matter for Poverty Reduction? Empirical Evidence from Pakistan

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ABSTRACT

The proposed study examines how fiscal decentralization alleviates poverty in Pakistan over the period 1990–2023. Focusing on two key dimensions, expenditure decentralization and revenue decentralization, the analysis draws on secondary data from the World Development Indicators and the Statistical Yearbook of Pakistan. An Autoregressive Distributed Lag (ARDL) framework is used to apprehend both short-run and long-run dynamics between fiscal decentralization and poverty reduction. The findings disclose that government expenditure contributes to poverty reduction, though at a diminishing rate, reflecting inefficiencies from corruption and weak governance structures. In contrast, revenue decentralization exhibits a robust and increasingly positive impact on poverty alleviation over time, underscoring the importance of effective tax collection, enhanced fiscal autonomy, and sustained economic development. Overall, the results suggest that strengthening revenue-based decentralization mechanisms can play a pivotal role in designing more inclusive and effective poverty-reduction policies in Pakistan.



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1. Introduction

The primary objective of developing countries is to reduce poverty. This study investigates the role of fiscal decentralization in alleviating poverty by strengthening local fiscal autonomy and improving the effectiveness of public spending in addressing regional socioeconomic needs. Decentralization refers to the handover of authority, responsibilities, and administrative functions from the central government to subordinate levels of governance (Wang et al., 2024). The transference of fiscal resources and tasks from federal to subnational and local governments, directed by the principle of subsidiarity, improves governance efficiency and strengthens institutional capacity at lower levels (Bossuyt & Gould, 2000; Huther & Shah, 1998; Oates, 1972). Over the past two decades, decentralization has gained global

prominence, with both developed and developing countries increasingly adopting decentralized governance frameworks (Iqbal et al., 2012). The reason for supporting fiscal decentralization growth is that it reinforces policies, socio commercial institution, and municipal contributions, improves administration, and assists in mitigating poverty.

Fiscal decentralization has increasingly been viewed as a governance mechanism capable of improving welfare outcomes by aligning public spending with local needs, particularly in developing economies such as Pakistan (Ahmad & Bhatti, 2024). By transferring expenditure and revenue authority to sub-national governments, decentralization enhances targeting efficiency in social protection, health, and education programs, thereby reducing poverty through improved service delivery and accountability. Evidence from Pakistan suggests that fiscal choices made by political leadership significantly shape distributive outcomes, as highlighted by Nazir et al. (2025), indicating that local fiscal autonomy influences resource allocation priorities.

Complementary findings from Gillani et al. (2022) show that localized public investment in health and development sectors directly affects poverty-related human capital indicators. Moreover, the broader development literature demonstrates that governance quality and institutional capacity mediate welfare gains (Wang et al., 2025), while technological progress and economic restructuring improve living standards. Structural transformation driven by innovation and efficiency (X. Yang et al., 2025; Yang et al., 2024) and regulatory sustainability frameworks (Xie et al., 2025) further emphasize the importance of coherent institutional arrangements. In addition, policy stability (Sun et al., 2025) reinforces that decentralized fiscal governance, when supported by strong institutions and development-oriented policies, can play a crucial role in poverty reduction in Pakistan by enhancing the responsiveness, efficiency, and inclusiveness of public expenditure.

Poverty reduction is an important debate in the world. Poverty is a multidimensional concept. It is varying society to society or from individual to individual. Haq (1992) asserts that poverty limits people's freedom of choice in terms of choice of income, choice of education, choice of denial of freedom in politics, and choice of poverty in general, including intellectual and environmental poverty.

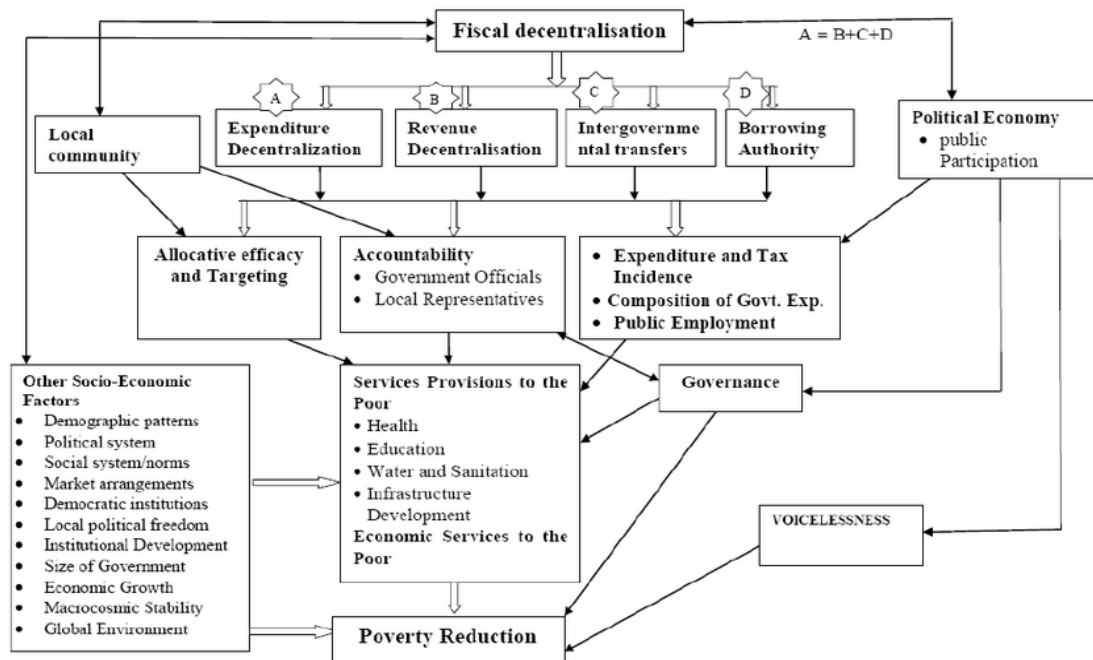


Figure 1: Fiscal Decentralization

Townsend's definition of poverty states that a family or group of people can be considered poor if they do not have the means to maintain a lifestyle that is either widely accepted or customary in the community to which they belong, or if they do not have the resources to acquire the kind of food necessary to engage in daily activities (Townsend, 1979). According to Amartya Sen, poverty is defined as an absolute lack of capabilities and the inability to meet certain minimum capabilities. Capabilities, however, do not remain constant throughout society. Sen's definition of absolute refers to a point at which a person's ability to function in society is no longer possible (Sen, 1990). Two types of poverty are commonly used

- Absolute poverty
- Relative poverty

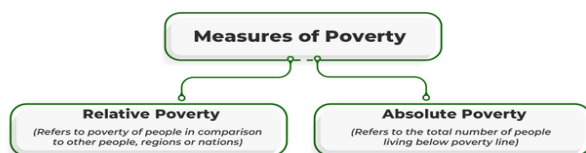


Figure 2: Measurement of Poverty

There are many poverties measure, but this study used only two poverty measures. One is the headcount index (HCI), which signifies the proportion of people that is under the national deficiency line, and the other one is the human development index (HDI), which is a broader measure of socioeconomic well-being. There are basically two sides of the fiscal budget; expenditure side and other one is revenue side. The graph shows that there is a declining trend in total expenditure, which declines because current expenditure and development expenditure also decline.

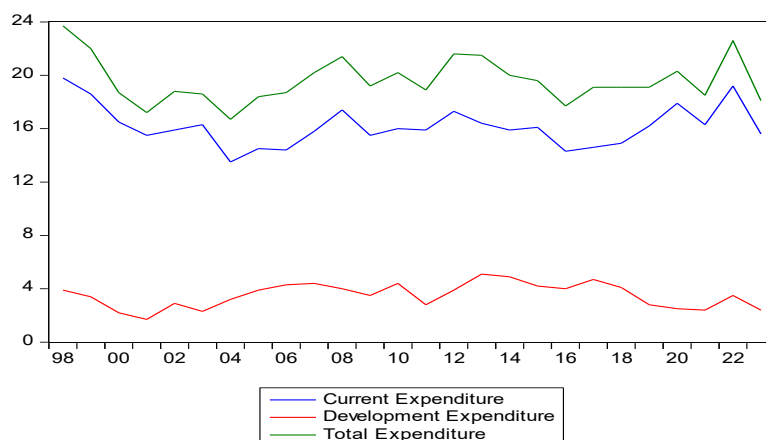


Figure 3: Trends in Expenditure

Poverty is the biggest problem in underdeveloped countries. So, it is necessary to study how fiscal decentralization is helping to reduce poverty. In the context of many developing and emerging economies, where reducing poverty is a top policy priority, this study addresses a highly pertinent and urgent issue. It adds to the current discussion about how well fiscal decentralization works as a tool to accomplish this goal. In this research, it will be identified how financial resources are distributed at a local level. The result of the study may be useful to other nations dealing with comparable issues, in addition to Pakistan. It offers a comparative study of the possible benefits and drawbacks of fiscal decentralization in the international effort to combat poverty.

The structure of the paper is as follows. Section 1 introduces the study and defines its research objectives. Section 2 reviews the relevant literature, while Section 3 details the data and empirical methodology. Section 4 reports and interprets the empirical results, and Section 5 concludes with key findings and policy implications.

2. Literature Review

In empirical studies it is a debate about whether decentralization affects poverty in literature. We conclude that it has a mixed result in some cases, or in some regions, it has a positive impact. In this part, our basic purpose is to identify the association between fiscal decentralization and its impact on poverty. So, to measure this impact, there are two basic methods, one is revenue decentralization, and the other one is expenditure decentralization. This chapter started with the literature examining the relationship, the second one is how poverty indicators are measured, the third one is the formation of an empirical and analytical model, and the last one is to identify the time period and region.

Hussain et al. (2025) determined the above theme relationship using the ARDL model (1975-2023) and applied the ADF (Augmented Dickey Fuller) test. The outcome shows that there is a direct and indirect relationship of poverty with fiscal decentralization when enhance living standard of people in Pakistan, investing in health and education. The recommendation shows at government should apply direct taxes on wealthy individuals and use these amounts particularly to the poor and backward areas to give clean water, health, and better education.

Susilo et al. (2026) explored the influence of fiscal decentralization on HDI convergence in Indonesia across 34 provinces in the time of 2011-2020 using the Arellano-Bond GMM model on panel data. The finding shows that government spending on health has an adverse effect, though public spending on education has a constructive impact on fiscal decentralization (revenue).

Dang et al. (2025) examined the influence of physical decentralization on economic growth in Vietnam using the period 2010- 2018. The result shows that fiscal decentralization has positive effects in the short-run and negative impacts in the long-run. The suggestions are fiscal decentralization policy should concentrate on province level to achieve optimal growth.

Eloundou et al. (2025) examined the role of fiscal decentralization on industrialization in Africa using 13 countries in the era of 2002-2017 on panel data. The findings show that fiscal decentralization has a helpful influence on industrialization when corruption and access to energy are controlled in Africa.

Z. Yang et al. (2025) studied the influence of the same relationship using panel data from 2504 firms in China from 2000 to 2022. The result shows that fiscal decentralization (revenue) has a positive influence on the local environment in both centralized and decentralized environmental administrator systems.

Tselios and Rodríguez-Pose (2024) examined the concerns variable in addressing poverty and social exclusion in Europe. Their results indicate that the devolution of party-political, organizational, and fiscal powers to subnational public authorities contributes to poverty reduction. The relationship is more consistent at the regional level, where governments possess policy autonomy, enabling them to reduce poverty and social exclusion and enhance overall well-being.

Mukherjee (2023) explored the proposed relationship employing the data of two countries, China and India. The study shows that in both countries' poor do not fully benefit from rapid economic growth using the method of GMM kernel estimations in the time period of

2016 to 2019. The findings show that fiscal decentralization lessens poverty while income inequality is declining below the government threshold.

Pham et al. (2022) investigated the proposed relationship over the period of 2010-2019 for OECD and African countries. The findings show that economic growth had a large impact on poverty reduction compared to education and local welfare spending in both cases. The policy suggests that improving infrastructure and increasing the participation of people in gross root level for the reduction of poverty in both eras.

Ebenezer et al. (2021) evaluated the relationship between fiscal federalism for poverty reduction in Nigeria. The study applies the auto regressive distributed lag (ARDL) using time series data from 1981 to 2018. The results show that government expenditure has a positive effect on poverty reduction in Nigeria, and the findings of the study show that greater decentralization, an increase in fiscal expenditure, and strengthened revenue are necessary for the reduction of poverty in Nigeria.

Hussain et al. (2021) investigated the link between concerned variables in Pakistan over the period of 1975 to 2018 and unit root testing techniques. Drawing on World Bank evidence, they note that the COVID-19 pandemic increased poverty by 0.3–0.7 percent. Their findings suggest that fiscal decentralization, both directly and indirectly, contributes to poverty reduction. The study concludes that greater provincial autonomy and the adoption of a progressive taxation system can enhance government revenue and support poverty alleviation.

Arif and Ahmad (2020) use panel data in the region of Pakistan to find out whether only deviation or other major forms of fiscal decentralization are sufficient to achieve the objective, using the period of 1996–2014. The result shows that physical devolution is not the major source of economic growth. For four days, we give incentives and opportunities.

From the above literature review, this novel research identifies how revenue decentralization and expenditure decentralization affect poverty in Pakistan. The study used the latest data on revenue decentralization, expenditure decentralization, Gross Domestic Product (GDP), Head Count Index (HCI), and Population (P) to evaluate the influence of fiscal decentralization on poverty in Pakistan.

2.1 Research Questions

Based on the literature review and problem statement, we in this research try to respond to the subsequent questions.

- How does fiscal decentralization influence poverty reduction in Pakistan?
- Are revenue decentralization and expenditure decentralization important for the reduction of poverty in Pakistan?

3. Data and Methodology

In a conducted study, we used secondary data from 1990 to 2023, and variable data were collected from the World Bank database and the Pakistan Statistical Yearbook.

3.1. Model Construction

Based on the literature review, the core purpose of this research is to determine the Impact of fiscal decentralization on poverty reduction in Pakistan. Our econometric model can be expressed as follows.

$$HCI_{it} = \alpha + \beta_1 Pop_{it} + \beta_2 GDP_{it} + \beta_3 ED_{it} + \beta_4 RD_{it} + \beta_5 HDI_{it} + \varepsilon_{it}$$

HCI = Head Count Index

Pop = Population

GDP = Gross Domestic Product

ED = Expenditure Decentralization

RD = Revenue Decentralization

HDI = Human Development Index

e = Error term

Table 1
Variables Descriptions

Symbols	Variable Name	Measurement	Source
DE	Decentralization Expenditure	Ratio (%)	Statistical Yearbook
DR	Decentralization Revenue	Ratio (%)	Statistical Yearbook
HDI	Human Development Index	Index	WDI
HCI	Head count index	Index	WDI
Pop	Population	Millions	WDI
GDP	Gross Domestic Product	US\$	WDI

4. Results and Discussions

The outcomes of this research are explained with the help of descriptive analysis, graphical analysis, and regression analysis.

Table 2
Descriptive Statistics

Variables	Mean	Median	Std. D	Maximum	Minimum
HCI	38.949	30.967	28.065	78.300	4.900
POP	2.6593	2.858	0.781	4.423	1.204
GDP	966.840	937.479	268.719	1535.718	554.880
RD	0.479	0.418	0.187	0.980	0.240
ED	0.494	0.397	0.482	3.759	0.036
HDI	0.442	0.430	0.071	0.5460	0.332

Source: Author's own calculation

Table 2 represents the summary statistics of the variables. The mean values are shown in the 2nd column; the 3rd and 4th columns are devoted to showing the median value and the standard deviation, maximum, and minimum values of the variables.

Stationarity is usually checked using a unit root test based on an autoregressive model (Brooks, 2014; Dickey & Fuller, 1979). Akaike's criteria can be used for lag selection (Akaike 1978). It is very important that the data is stationary in I (0) or I (1).

Table 3
Unit Root Test

Variables	Level	1 st difference	Critical value			P-value	Order of Int
			1%	5%	10%		
Pop	-4.376	-0.388	-3.571	-2.922	-2.599	0.001	I(I)
GDP	-4.876	3.479	-3.571	-2.922	-2.599	0.000	I(I)
ED	-6.964	5.048	-3.568	-2.921	-2.598	0.000	I(0)
RD	-8.606	2.278	-3.571	-2.922	-2.599	0.000	I (I)
HDI	-3.252	2.654	-3.571	-2.922	-2.599	0.023	I (I)
HCI	-3.177	-1.556	-3.571	-2.922	-2.599	0.027	I (I)

Source: Author's own calculation

In Table 3, the results of Population, GDP, revenue decentralization, HDI, and HCI variables are stationary on 1st difference, and expenditure decentralization is stationary on level, so we apply the ARDL model because of the mixed order of integration. It is mostly used to see the relationship in shorten as well as long run. If the order of integration is mixed, we use the ARDL model.

Table 4
ARDL BOUND Test

Test statistics	Value	K
F-Statistics	5.515	5
Critical Value Bounds		
Significance	I (0) Bound	I (1) Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Source: Author's own calculation

The ARDL approach, also known as the bounds testing procedure, refers to the autoregressive distributed lag model developed by Pesaran (1998) and later extended by (Pesaran, 1998). This method is appropriate when variables are integrated of mixed orders. As shown in Table 4, the calculated F-statistic (5.515) exceeds the upper critical bound at the 5% significance level (3.38), confirming the existence of a long-run relationship among the variables.

Table 5
Long Run ARDL Results

Regressor	Coefficient	St. Error	T-Ratio	P-value
Pop	11.264	3.324	3.388	0.003
GDP	-0.020	0.028	-0.749	0.463
ED	-6.246	4.812	-1.298	0.209
RD	28.943	16.070	1.801	0.087
HDI	-3.001	94.722	-3.168	0.005
F-Statistics	5.515	R-Squared		0.876
Akaike info Crit	3.576	Adjusted R-Sq		0.781
Log Likelihood				-63.055

Source: Author's own calculation

In Table 5, population has a constructive and substantial impact on poverty. If the population increases by 1%, poverty increases by 11.2%. The GDP, expenditure decentralization, and revenue decentralization are insignificant. HDI has a significant and negative impact on poverty. If HDI increases by 1%, poverty decreases by 3.00%.

The above Table 6 shows the outcomes of the short-run relationship. In the second lag, the value of the coefficient population will be significant, and its p-value will be 0.0031. The value of the coefficient of population has a significant but negative impact on poverty reduction. If the population increases by 1%, then poverty reduces by -4.320962% in the short run, but all other economic variables will be constant. Decentralization expenditure will increase by one percent, then poverty is reduced by -1.509%, and all other economic variables will be constant in the short-run time.

HDI has a significant and negative influence on poverty reduction. If HDI increases by one percent, the poverty rate is reduced by 283.871%, but all of the economic variables will be constant. The coefficient variable of HDI will be significant and have negative impact on poverty reduction at the first difference. If the variable HDI increases by one percent, then poverty reduces by -279.525%, and all other economic variables will be constant. In this

model, estimation shows that the value of the coefficient ECM is (-0.401) and statistically significant; its p-value is 0.000, which is highly significant. The value of the coefficient will show that 40% of the models will be efficient in reducing poverty in the short run.

Table 6
Short-Run ARDL Results

Regressor	Coefficient	St. Error	T-Statistics	P-value
D(HCI_M_(-1))	0.879	0.124	7.106	0.000
D(HCI_M_(-2))	0.185	0.163	1.135	0.269
D(HCI_M_(-3))	0.395	0.145	2.726	0.013
D(POP_M_)	-1.268	1.204	- 1.054	0.304
D(POP_M_(-1))	-1.431	1.491	-0.959	0.349
D(POP_M_(-2))	-4.321	1.286	-3.359	0.003
D(GDP_M_(-1))	0.009	0.012	0.812	0.426
D(GDP_M_(-2))	0.002	0.014	0.120	0.905
D(GDP_M_(-3))	0.041	0.012	3.455	0.002
D(RD_M_)	12.894	7.078	1.822	0.083
D(RD_M_(-1))	24.628	6.398	3.848	0.001
D(RD_M_(-2))	15.356	6.327	2.427	0.025
D(RD_M_(-3))	18.428	8.539	2.158	0.043
D(ED_M_)	0.099	0.661	0.150	0.882
D(ED_M_(-1))	-0.704	0.710	-0.991	0.333
D(ED_M_(-2))	-0.794	0.802	-0.991	0.334
D(ED_M_(-3))	-1.509	0.413	-3.653	0.002
D(HDI_M_)	-283.871	126.997	-2.235	0.037
D(HDI_M_(-1))	-279.525	135.249	-2.067	0.052
D(HDI_M_(-2))	330.295	150.574	2.193	0.040
CointE q(-1`)*	-0.401	0.057	-7.084	0.000
Log-likelihood	-63.055	R-Square	0.876	
Adj R-Square	0.781			

Source: Author's own calculation

Table 7
Normality Test

Test applied	J-B value	Probability value
Jarque Bera	18.653	0.000

Source: Author's own calculation

The Jarque-Bera test outcomes conclude that the model is normally distributed. After that, we apply a hack on normality, but the problem of normality still exists in the model.

Table 8
Heteroscedasticity Test

Test applied	F-statistics	Obs*R-square	(Chi) T-value	F(P value)
Breusch pagan	0.614	20.857	0.749	0.879

Source: Author's own calculation

The Breusch Pagan test is used to check the Heteroscedasticity in the model. The outcomes conclude that there is no Heteroscedasticity problem occurring in the model.

Table 9
Serial Autocorrelation Test

Test applied	F-statistics	Obs*R-square	(Chi) T-value	F (P value)
Breusch pagan	2.072	8.797	0.012	0.155

Source: Author's own calculation

The LM Breusch-Godfrey test is used to estimate serial autocorrelation. It applies to check whether the auto correlation existed in the model or not. The result of autocorrelation indicates that the model has no serial autocorrelation.

Table 10
Ramsey RESET Test

Test applied	F-statistics	T-statistics	T(P-value)	F(P-value)
Ramsey Test	0.609	0.781	0.444	0.444

Source: Author's own calculation

The RESET test is used to check whether the equation is correctly specified or not. In this, we are the power of the dependent variable to check whether the variable is significant or not. The above table results show that the model equations are correctly specified.

4.1. CUSUM and CUSUM Square Test

This is the graphical representation of the data. It is basically used to check the stability of the model.

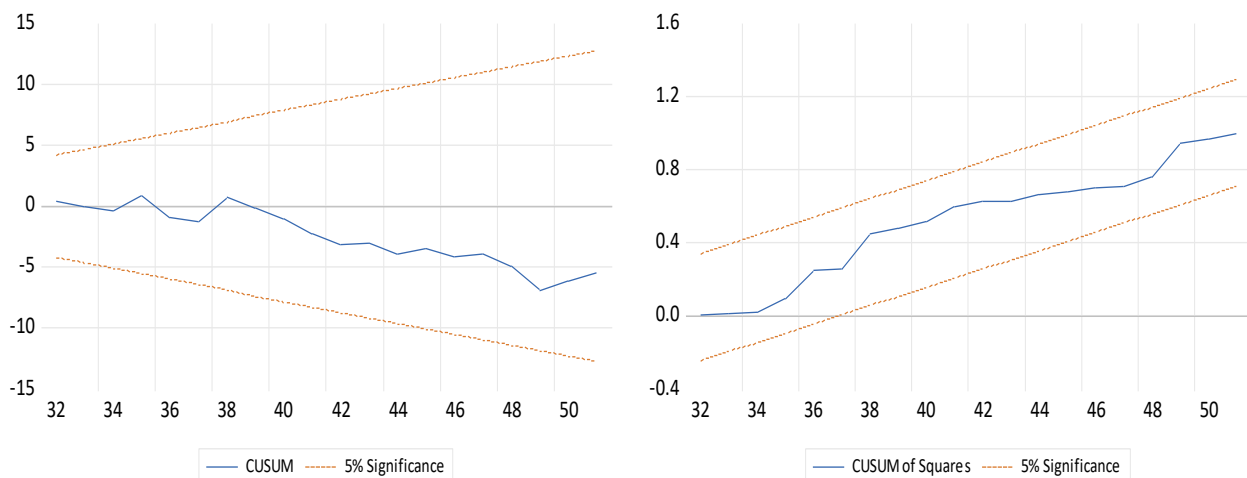


Figure 4: CUSUM and CUSUMSQR Graphs

5. Conclusion

The findings show that fiscal decentralization influences poverty in Pakistan through multiple channels. Population growth contributes positively to poverty reduction only when effectively utilized for development purposes. The Human Development Index (HDI) is negatively associated with poverty and plays a substantial role in reducing scarcity. Empirical results further reveal that expenditure decentralization, revenue decentralization, and GDP exert a negative long-run effect on poverty. However, rapid population growth, combined with declining mortality rates, places increasing pressure on resources. Negative expenditure decentralization refers to the circumstance that government spending at the local level is not properly utilized and is characterized by insufficient behavior, which results in negative outcomes. Negative revenue decentralization indicates that the government can collect taxes but can't distribute them properly. Texas is one of the major parts of income generation at the state level. GDP is negative because of some economic challenges in the current era, which might be the COVID-19 period. At this time, Pakistan faces a lack of funding and a lack of depth in receiving.

Another analysis of the research work shows that population revenue subsidiarity has a positive influence on poverty reduction, but the other economic variables hinder the reduction

of poverty over several decades it might be due to socioeconomic and political instability. This study suggests the following policy implications:

- Taxes are a major part of government revenue, and if the government starts those types of projects that are very beneficial for the utilization of people's capabilities.
- The government should apply more direct taxes and improve administrative efficiency in revenue collection.
- Governments shift their financial authority or power to a lower level to enhance their capabilities.
- The government should invest in the health or education sector to enhance human capabilities.

For future research, there are also some limitations. First, many factors can affect poverty reduction in Pakistan, but our research is not inclusive in terms of all factors. Second, we only use data from the years 1990-2023, so our findings might not apply to other time periods. These limitations mean that our study may not capture the full picture of how these variables interact and cannot be generalized to all situations.

Authors' Contribution

Ayesha Siddiqui: Conceptualization, methodology, data collection, write the initial draft.

Naveed Munir: Conceptualization, methodology design, reviewed and edited the paper.

Taskeen Rubab: Data collection, revised the paper, drafting.

Hassan Raza: Methodology design, formal analysis, visualization.

Conflict of Interests/Disclosures

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

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