Is indirect Taxes Bad for the Poor? Examining the Determinants of Poverty in Pakistan

Alvi, Aramish Altaf and Audi, Marc and Ashiq, Rakhshanda

Department of Economics, The University of Lahore, Lahore, Pakistan, Abu Dhabi School of Management (ADSM), UAE, University Paris 1 Pantheon Sorbonne, France, Department of Economics, The University of Punjab, Lahore, Pakistan

2024

Is indirect Taxes Bad for the Poor? Examining the Determinants of Poverty in Pakistan

Aramish Altaf Alvi[1], Marc Audi[2], Rakhshanda Ashiq[3]

Abstract

This study investigates the determinants of poverty in Pakistan from 1985 to 2023, focusing on unemployment, inflation, indirect taxes, secondary school enrollment, and total population as key variables. Employing the Augmented Dickey-Fuller unit root test, the analysis finds that while many variables exhibit non-stationary behavior at levels, they become stationary at first difference, ensuring the reliability of time series analysis. The ARDL Bounds Analysis confirms the significant relationship between poverty and its predictors, indicating that changes in these variables markedly impact poverty levels. The estimated long-run and short-run results highlight the significant roles of inflation, secondary school enrollment, total population, and unemployment in influencing poverty, with diagnostic tests affirming the model's robustness. The study underscores the positive relationship between secondary school enrollment and poverty reduction, advocating for increased investment in education. The analysis reveals that indirect taxes do not significantly impact poverty levels, yet suggests a review of the tax structure to ensure it does not disproportionately burden low-income households. A progressive tax system could aid in wealth redistribution and support poverty reduction efforts. The positive correlation between total population and poverty levels indicates that rapid population growth strains resources and infrastructure, highlighting the need for effective population management strategies, including family planning programs and investments in healthcare and education. Unemployment's significant impact on poverty calls for targeted interventions to create job opportunities. Policymakers should promote economic diversification, support SMEs, and implement active labor market policies such as job training and placement programs. While higher inflation rates are associated with lower poverty levels in this analysis, maintaining inflation within a manageable range is crucial to avoid eroding purchasing power and harming economic stability. The study advocates for continuous and comprehensive data collection to enable timely and evidence-based interventions, enhancing the effectiveness of poverty reduction strategies. Prioritizing inclusive economic growth, fostering an environment conducive to investment, innovation, and entrepreneurship can create jobs and reduce poverty, ultimately supporting sustainable socio-economic development.

Keywords: indirect tax, poverty, unemployment, total population, secondary school enrollment, inflation

1. Introduction

One of the fundamental challenges in the field of economics is to comprehend the underlying causes and multifaceted nature of poverty. Poverty is a pervasive issue that impacts not just individual societies but the entire global community (Cobbinah et al., 2013; Andreou, 2021). This complex problem stems from a myriad of factors, including theft, corruption, and various forms of injustice. Tackling poverty necessitates a concerted effort to address and mitigate these contributing factors. Poverty manifests when individuals or groups are deprived of the basic resources required to maintain a minimum standard of well-being, encompassing both material and social necessities. Poverty can be categorized into absolute poverty and relative poverty (Hulme & Shepherd, 2003; Zabair & Hayat, 2020). Absolute poverty refers to a condition where individuals lack the financial resources to meet the most basic needs for survival, such as food, shelter, and clothing. Relative poverty, on the other hand, occurs when individuals or groups have less income compared to others within a society, leading to an inability to maintain the average standard of living (Wolff, 2020; Ali & Sajid, 2020). Both types of poverty have profound implications on individuals' health, education, and overall quality of life.

The world economy is facing to main challenges that are poverty and unemployment. Unemployment leads to reduce the purchasing power of the people and also face financial crisis of a nation. Unemployment can cause the poverty. When poverty increase the unemployment also increase. 51 percent of our children across the country now live in poverty, and the numbers appear to be growing. Cutler and Kataz (1991) refer that unemployment has positive and significant impact on poverty. The poverty and education relationship is complex, education supports people to make better and cleverer results about their children. The major source of government revenue is taxation and government use their taxes from different sectors and perform different functions. The primary function of taxation is to reduce the poverty.

[1] Department of Economics, The University of Lahore, Lahore, Pakistan
[2] Abu Dhabi School of Management (ADSM), UAE, University Paris 1 Pantheon Sorbonne, France,
[3] Department of Economics, The University of Punjab, Lahore, Pakistan

In developing countries like Pakistan, poverty remains a significant concern, with the country ranking high among the 43 nations assessed for poverty risk (Khan et al., 2016; Sun & Chang, 2020). The high poverty rate in Pakistan is indicative of the broader socioeconomic challenges that the country faces. A substantial portion of the population lives below the poverty line, struggling to afford basic necessities. Factors such as unemployment, low educational attainment, and inadequate healthcare services contribute to the persistence of poverty in Pakistan. Economic policies and social programs play a crucial role in poverty alleviation. Effective poverty reduction strategies often involve improving access to education and healthcare, promoting economic growth, and ensuring social protection for the most vulnerable populations. In Pakistan, government initiatives such as the Benazir Income Support Programme (BISP) aim to provide financial assistance to low-income families, helping to alleviate some of the immediate pressures of poverty. However, these programs need to be part of a broader, more comprehensive strategy to address the root causes of poverty. Additionally, international organizations and non-governmental organizations are instrumental in supporting poverty alleviation efforts. Through various development projects and aid programs, these organizations work to improve living conditions, provide educational opportunities, and enhance healthcare services in impoverished areas. Collaborations between the government, private sector, and international community are essential to create sustainable solutions to poverty (Ali & Rehman, 2015; Zhengzheng, 2019). Furthermore, addressing poverty requires an understanding of the intersectionality of various social issues. Gender inequality, for instance, often exacerbates poverty, as women and girls may have less access to education and economic opportunities. Environmental factors, such as climate change, also play a role, as natural disasters and environmental degradation can disproportionately affect impoverished communities (Florini & Pauli, 2018; Ali & Senturk, 2018; Khalid & Sultan, 2019).

Pakistan’s economic landscape grapples with a significant challenge posed by its aggressive indirect tax system, which disproportionately burdens the poor while sparing the affluent. Indirect taxes within Pakistan operate such that a single entity in the supply chain pays these taxes to the government, with the cost ultimately borne by consumers in the form of higher prices for goods and services. This regressive system places a heavier financial strain on low-income households, exacerbating their socioeconomic challenges. The impact of indirect taxes on poverty, unemployment, and education forms a crucial area of study in economics. Indirect taxes, which include both specific taxes and ad valorem taxes, exhibit distinct characteristics: specific taxes impose a fixed amount per unit of the taxed item, while ad valorem taxes are calculated as a percentage of the item’s value (Arshad & Ali, 2016; Mattioli et al., 2018; Ashraf & Ali, 2018; Roussel & Audi, 2024). These taxes contribute significantly to the government's revenue stream, with excise duties alone accounting for more than half of the collected taxes. Research by Ibadin and Oladipupo (2015) underscores the complex relationship between economic growth, indirect taxes, and poverty levels in Pakistan. Their findings highlight a negative and significant correlation between indirect taxes and poverty, emphasizing the detrimental impact of high tax burdens on impoverished communities. In the realm of economic theory, poverty is regarded as a dependent variable influenced by several independent variables, including indirect taxes, education levels, total population size, inflation rates, and unemployment figures. Studies indicate a negative relationship between indirect taxes and unemployment, suggesting that higher taxation rates may exacerbate unemployment levels, thereby worsening poverty rates. Addressing the adverse effects of indirect taxes on poverty requires comprehensive policy interventions aimed at enhancing economic inclusivity and social equity (Audi & Ali, 2016; Audi et al., 2021; Ullah & Ali, 2024). Measures to mitigate these effects include targeted social welfare programs, improvements in educational infrastructure and access, and initiatives aimed at promoting equitable economic growth. These strategies are crucial for fostering sustainable development and reducing disparities within Pakistani society.

Pakistan's taxation framework, particularly its system of indirect taxes such as sales tax, excise duty, and customs duty, imposes a uniform levy on all products and services, irrespective of the consumer's income or financial status (Audi et al., 2021). This approach is deemed regressive because it impacts both the poor and the rich equally, despite the disproportionate burden it places on low-income households. Research consistently shows that indirect taxes impose a higher relative tax burden on lower-income individuals compared to their wealthier counterparts, exacerbating income inequalities within society. From 2006 to 2015, Pakistan's average tax rate fluctuated between 15% in 2006 and a peak of 17% in 2013. However, the efficiency and effectiveness of tax collection in Pakistan remain significant challenges. The burden of indirect taxes is primarily borne by consumers as producers shift these costs onto the final prices of goods and services. Indirect taxes, often referred to as consumption taxes, contribute substantially to government revenue but also contribute to higher consumer prices. Approximately 14% of Pakistan's population lives below the poverty line, facing significant economic challenges exacerbated by

factors such as indirect taxes, population growth, social security expenditure, unemployment, and inflation. Inflationary pressures lead to increased product prices, amplifying the burden of indirect taxes on consumers, particularly those with limited financial resources (Munir & Sultan, 2018).

Pakistan's economic stability is further compromised by monetary shortages, high inflation rates, elevated levels of indirect taxation, and rising unemployment, collectively contributing to persistent poverty levels (Sajid & Ali, 2018). This study aims to explore the primary objectives and impacts of indirect taxes in Pakistan, highlighting their complex interactions with inflation and poverty dynamics. While inflation demonstrates a negative correlation with poverty rates, other factors such as population growth, SSER, unemployment, and indirect taxes exhibit positive relationships with poverty rates in both the short and long term. Addressing these interconnected challenges requires comprehensive policy interventions aimed at enhancing economic stability, promoting inclusive growth, and mitigating the adverse effects of indirect taxes on vulnerable populations. Measures such as targeted social welfare programs, improvements in tax administration, and strategic investments in education and employment opportunities are essential for fostering sustainable development and reducing poverty incidence in Pakistan. Pakistan's taxation policies, particularly regarding indirect taxes, play a critical role in shaping economic outcomes and societal well-being. By understanding the multifaceted impacts of these taxes on inflation, poverty, and other socioeconomic indicators, policymakers can formulate more effective strategies to promote equitable growth and improve living standards for all segments of society.

2. Literature Review

This part of the study is comprised of literature review, most relevant studies have been selected for this purpose. Khan (1998) examines the impact of taxes on agriculture in Pakistan, emphasizing its role in generating revenue and fostering economic growth. Direct taxes on agricultural goods yield limited revenue, highlighting two key issues: resource allocation between agriculture and other sectors, and the taxation of wealth and income among individuals residing in rural areas. In many developing countries, government revenue heavily relies on taxes levied on agricultural commodities. Authorities typically assess taxes on agricultural land using two methods: based on property land area or net income from the land.

Widmalm (2001) investigates the relationship between tax structures and economic growth, focusing on OECD countries from 1965 to 1990. The study finds that increasing personal income taxes tends to boost tax revenue, but is negatively correlated with economic growth. Economic theory suggests varying impacts of different tax structures on economic growth, with progressive taxes generally viewed as having a negative effect. The study underscores the importance of tax mix and its implications for economic growth.

Saez (2004) explores the effectiveness of indirect and direct tax instruments in reallocating resources over the short and long terms. Optimal tax theory posits that simple assumptions such as production tariffs, subsidies, or varying commodity taxes are suboptimal for indirect taxation, while redistribution goals are best achieved through direct taxes. Labor taxation, which depends solely on income and labor, reflects imperfect substitution within the production function. In the short term, the impacts of indirect tax instruments are legally binding, assuming exogenous skills that limit individual mobility between occupations. In contrast, over the long term, individuals can freely select occupations based on tax rates, making direct income taxation preferable and instrumental in revenue enhancement.

Albayrak (2010) examines the redistributive effects of indirect taxes in Turkish policies amidst growing global income inequalities over the last three decades. This study utilizes S-GINI indices to measure inequality, progressivity, and explain concentration curves. Concentration curves provide descriptive and normative measures to assess the impact of tax policies. The findings indicate that indirect taxes contribute to increased income inequality and decreased public expenditure.

Sarker (2006) investigates the role of taxes, particularly indirect taxes, as impediments to economic development in developing countries. Using time-series data from 1991 to 2001, the study calculates trends in revenue, marginal and average tax rates. Results reveal that only 73 percent of tax revenue is effectively collected from taxpayers. The paper concludes with recommendations aimed at reforming and strengthening the income tax system in Bangladesh.

Duncan and Peter (2008) analyze the impact of tax progressivity on national income inequality using a comprehensive panel of countries and personal income tax schedules spanning 1981 to 2005. Their estimation employs an OLS model to observe structural progressivity changes over time. Supporting the Kuznets hypothesis, higher levels of tax progressivity are found to reduce income inequality by redistributing a greater portion of

income from the rich to the poor. The use of GINI coefficients supports these findings, indicating that flat taxes, by contrast, tend to exacerbate income inequality.

Decoster et al. (2009) employ microsimulation models to assess ex-ante the effects of reforms on social security benefits and personal income taxes. Using the Euro mod-microsimulation model, the study integrates income and consumption taxes to evaluate the impact of indirect tax systems, revealing their regressive nature across government budgets in various countries. Results suggest that lower-income households are disproportionately burdened while wealthier households benefit, particularly through liberal total expenditures but less progressive social insurance contributions.

Aamir et al. (2011) examine the impacts of direct and indirect taxes using data from 1999-2000 to 2008-2009. Their analysis compares revenue generation strategies in Pakistan and India, finding that Pakistan relies heavily on indirect taxes for additional revenue, while India adopts a different approach. The study reveals that increasing indirect taxes widens the gap between rich and poor, disproportionately affecting the labor class. Pakistan faces fiscal challenges despite a significant agrarian economy dominated by wealthy landlords, prompting pressure from the IMF to reform tax structures. The authors recommend rigorous long-term fiscal planning in Pakistan to mitigate the widening gap between rich and poor.

Ebeke and Helene (2011) investigate tax revenue instability in Sub-Saharan African countries over the period 1980 to 2005 across thirty-seven nations. They find that tax revenue mobilization in the region is not only low but also unstable relative to expenditure needs. Using panel data and regression models, their analysis identifies two key findings: firstly, instability in government tax revenue negatively impacts both government consumption and public investment, leading to a lower public investment ratio. Secondly, domestic indirect tax systems exhibit a robust stabilizing effect.

Ramot and Ichihashi (2012) explore the relationship between income inequality, economic growth, and tax structures using data from 1970 to 2006. Their study focuses on the impact of personal income tax rates on economic growth and income distribution, employing OLS estimation techniques. They highlight the global challenge of reducing the income gap between the rich and poor, noting that poverty reduction alone does not necessarily improve income distribution without sustainable economic growth.

Tamasauskiene and Opulskyte (2012) assess the impact of indirect taxes on macroeconomic indicators, focusing specifically on two categories of products: alcoholic beverages and tobacco products, and liquid fuels. In the EU, indirect taxes constitute the primary source of budget revenue, accounting for over 50% of total tax collection through excise duties. Their study, spanning from 2001 to 2011, employs multiple regression analysis and cluster analysis to evaluate how changes in indirect taxes affect macroeconomic indicators. Results indicate that EU member states vary significantly in their application of excise duties, with increases in indirect taxes impacting GDP in dual directions according to their model.

Esmaeel (2013) examines taxation as the primary source of government revenue, fulfilling societal obligations through two main types: direct and indirect taxes. Direct taxes, known for their equity and predictability, can sometimes be perceived as inconvenient and avoidable by taxpayers. They effectively address externalities by internalizing costs, whereas indirect taxes, while providing flexibility in fiscal policy without parliamentary approval, are criticized for their inequity as they impose uniform rates regardless of income, disproportionately affecting the poor. Both types impact consumers directly, with indirect taxes levied on purchased goods.

Tahir et al. (2014) study the impact of tax incentives, both indirect and direct, on the textile industry in Pakistan from 2005 to 2010. Using various models including Ordinary Least Squares (OLS), they analyze excise duty, indirect taxes, sales tax, and customs duty as independent variables against textile industry growth as the dependent variable. The findings reveal that customs duty shows no significant impact on textile industry growth. The textile sector, crucial to economies like Pakistan and India, faces challenges such as inadequate infrastructure, contributing to its decline amidst increasing poverty.

Amin et al. (2014) explore different tax procedures imposed by governments on individuals, distinguishing between direct taxes paid directly and indirect taxes collected through sales. They emphasize the role of tax systems in revenue generation, using regression analysis on time-series data sourced from the International Country Risk Guide. Variables like trade openness, inflation, political stability, and real per capita income are examined to understand factors influencing tax collection. Results suggest that reducing tax evasion and enhancing policy implementation can boost tax revenue despite challenges such as bribery.

Husnain et al. (2015) investigate the relationships among taxes, public expenditure, and economic development in Pakistan. They analyze these factors separately, employing two regression models: one focusing on taxes and total

public expenditures, and another examining public expenditure and taxes collected from different groups. Findings indicate that taxes have a negative impact on economic development. While total public expenditures, capital expenditures, and direct taxes show insignificant effects, current expenditures and indirect taxes are found to stimulate growth. The study recommends that developmental expenditures do not significantly contribute to economic growth.

Ibadin and Oladipupo (2015) explore the impact of economic growth and indirect taxes in Nigeria using data from 1981 to 2014. They apply the augmented Dickey-Fuller test and find that all variables—custom excise duties and value-added tax (VAT)—except Real Gross Domestic Product (GDP), are stationary at the second difference and significant in the long run. Custom excise duties show a positive relationship, while VAT shows a negative relationship with economic growth. The study suggests that the government needs to address gaps and maximize VAT contributions to foster economic growth.

Ogbonna and Ebimobowei (2016) examine the effect of tax revenue and administration on Nigeria's economic growth during 1990 to 2012. They gather data from primary (questionnaires) and secondary (journals, scholarly books) sources, analyzing it through regression analysis. Results indicate a significant relationship between Nigeria's per capita income and Personal Income Tax Revenue (PITR), highlighting the impact of tax administration and revenue on economic growth.

Adukonu et al. (2016) investigate the impact of taxes on poverty in Ghana, emphasizing the role of government revenue mobilization in addressing poverty issues. They note Ghana's challenges in generating sufficient revenue due to a weak taxation system and ineffective tax policy implementation. Using time-series data from 1984 to 2013 sourced from institutions like WDI and the Ministry of Finance, they employ Johansen co-integration techniques to analyze the relationship between taxes and poverty. Results indicate a negative relationship between indirect taxes and poverty, while direct taxes show a positive association with poverty.

This study examines the determinants of poverty in Pakistan, focusing particularly on the role of indirect taxes in shaping economic outcomes. Existing literature highlights diverse perspectives on taxation, with studies such as Khan (1998) emphasizing the revenue generation and economic growth implications of agricultural taxation. Widmalm (2001) investigates the relationship between tax structures and economic growth, while Saez (2004) explores the effectiveness of indirect and direct tax instruments in reallocating resources. Albayrak (2010) examines the redistributive effects of indirect taxes, whereas Sarker (2006) studies taxes as impediments to economic development. Duncan and Peter (2008) analyze tax progressivity, and Decoster et al. (2009) assess the regressive nature of indirect tax systems. Aamir et al. (2011) compare revenue generation strategies between Pakistan and India, while Ebeke and Helene (2011) discuss tax revenue instability in Sub-Saharan Africa. Ramot and Ichihashi (2012) examine income inequality and tax structures, and Tamasauskiene and Opulskyte (2012) assess the impact of indirect taxes on macroeconomic indicators in the EU. Esmaeel (2013) compares direct and indirect taxes, and Tahir et al. (2014) study tax incentives in Pakistan's textile industry. Amin et al. (2014) analyze tax procedures, and Husnain et al. (2015) investigate taxes and economic development in Pakistan. Ibadin and Oladipupo (2015) explore economic growth and indirect taxes in Nigeria, while Ogbonna and Ebimobowei (2016) study tax revenue and economic growth in Nigeria. Adukonu et al. (2016) examine taxes and poverty in Ghana, emphasizing revenue mobilization.

3. The Model

Poverty in Pakistan is influenced by various socio-economic factors, including education, inflation, population dynamics, unemployment, and the structure of indirect taxes. Building upon existing literature, this theoretical model aims to elucidate the direct and indirect impacts of taxation policies on poverty levels in Pakistan. Level of education is a crucial determinant of human capital development and economic productivity (Khan, 1998; Ali, 2015; Dalton, 2018). Higher levels of education are expected to reduce poverty by enhancing employment prospects and income levels. Inflation affects purchasing power and the cost of living (Ebeke & Helene, 2011; Ali, 2018; Shuai et al., 2019; Ali et al., 2023). Higher inflation rates can exacerbate poverty by eroding real wages and increasing the cost of essential goods and services. Population growth influences resource allocation and economic development (Ramot & Ichihashi, 2012; Ali, 2013; Ali & Bibi, 2017). Rapid population growth can strain infrastructure and social services, potentially increasing poverty levels. Unemployment rates reflect labor market conditions and income insecurity (Saez, 2004; Ali & Ahmad, 2014; Ali & Audi, 2016; Khan et al., 2022; Abigail, 2023). High unemployment rates contribute to poverty by limiting income opportunities and household welfare. The structure and incidence of indirect taxes play a critical role in redistributing income and funding public

services (Albayrak, 2010; Ali & Audi, 2018; Duncan & Peter, 2008; Aydemir, 2024). Regressive tax systems may disproportionately burden low-income households, exacerbating poverty (Decoster et al., 2009; Audi et al., 2022). Following the existing literature review, the functional form of the model become as:

$PV_t = f\ (SSERt, INFt, TPt, UNEt, IDt)$ (1)

PV= poverty
SSER=secondary school enrollment
TP=total population
UNE=unemployment
ID=indirect taxes
INFC=inflation
t= time period (1985 to 2023)

To check the responsness of dependent variables with respect to explanatory variables, the econometric model of our study become as:

$$PVt = \alpha_0 + \alpha_1 LSSERt + \alpha_2 INFt + \alpha_3 LTPt + \alpha_4 UNEt + \alpha_5 LIDt + \mu_t \quad (2)$$

α_i= constant and slope parameters
μ = white noise error term

The time series has non-stationary problems and estimated regression results has spurious policy suggestion.co integration technique is used to check the stationary. The unit root test, ADF test is apply in this paper, and to examine the cointegration, we have applied autoregressive distributed lag model.

4. Empirical Results and Discussion

The table 1 presents descriptive statistics for the selected variables. These statistics offer insights into the distribution and characteristics of each variable over the specified time period. The mean value of 38.10 indicates the average level of poverty across the observed period, with a standard deviation of 10.95 suggesting moderate variability around this average. The skewness of 0.78 indicates a slight rightward skew, suggesting that while most values cluster around the mean, there are some higher values pulling the distribution to the right. The kurtosis value of 2.60 indicates that the distribution is moderately leptokurtic, meaning it has heavier tails than a normal distribution, which might imply periods of higher variability in poverty rates. Inflation with a mean of 80.25, shows a higher average rate of inflation, supported by a relatively high standard deviation of 4.02, indicating considerable variation in inflation rates over time. The skewness of 0.69 suggests a somewhat positively skewed distribution, meaning there might be occasional spikes in inflation beyond the mean. The kurtosis value of 3.66 indicates a distribution that is significantly leptokurtic, indicating more frequent and extreme deviations from the mean inflation rate. Indirect taxes with a mean of 12.76, shows relatively stable taxation levels, supported by a low standard deviation of 0.97, suggesting minimal fluctuation over the observed period. The near-zero skewness (-0.09) and modest kurtosis (2.04) indicate a distribution close to normal, with a slight tendency towards lower tax rates. Secondary school enrollment with a mean of 3.27, reflects consistent enrollment levels, as indicated by a low standard deviation (0.22) and skewness (0.28), suggesting minimal variation from the mean enrollment rate. The kurtosis value of 2.11 indicates a distribution that is moderately leptokurtic, with some periods of slightly higher enrollment rates. Total population with a mean of 2.07, shows a steady population growth trend over time, supported by a low standard deviation (0.08) and near-zero skewness (0.09), indicating a stable distribution around the mean population size. The kurtosis value of 1.60 suggests a distribution that is slightly leptokurtic, indicating periods of more rapid population growth. Unemployment with a mean of 5.35, indicates moderate unemployment levels, supported by a standard deviation of 1.65, suggesting variability around the average unemployment rate. The negative skewness (-0.19) suggests a leftward skew, indicating that lower unemployment rates are more frequent than higher rates. The kurtosis value of 2.50 indicates a distribution that is moderately leptokurtic, suggesting periods of higher variability in unemployment rates.

In summary, these statistics provide a comprehensive overview of the dynamics and characteristics of each variable over the observed period. They highlight trends such as variability, skewness, kurtosis, and overall distribution shape, offering valuable insights for further analysis and policymaking in areas such as economic stability, education, and social welfare.

Table 1: Descriptive Statistics

	PV	INFC	LID	LSSER	TP	UNE
Mean	38.10383	80.249367	12.76114	3.265309	2.073040	5.347333
Median	34.00000	7.882675	12.71269	3.232414	2.083081	5.505000
Maximum	64.30000	20.28612	14.29940	3.684554	2.210309	8.270000
Minimum	24.00000	2.539516	10.97173	2.887582	1.962434	1.970000
Std. Dev.	10.94900	4.019696	0.971630	0.224579	0.084249	1.648351
Skewness	0.780506	0.691947	-0.088390	0.276851	0.092308	-0.189348
Kurtosis	2.602364	3.660028	2.037871	2.108599	1.602199	2.498176
Jarque-Bera	3.351715	3.134401	1.156306	1.422359	2.567743	0.494048
Probability	0.187148	0.208628	0.560934	0.491065	0.276963	0.781122
Sum	1181.219	263.9798	370.0730	101.2246	64.26424	160.4200
Sum Sq.Dev.	3596.415	500.8965	26.43383	1.513076	0.212936	78.79479

The correlation matrix provides valuable insights into the relationships between poverty and several key socio-economic variables. Each correlation coefficient measures the strength and direction of these relationships. The negative correlation coefficient of approximately -0.45 suggests that higher inflation rates are associated with lower levels of poverty. This relationship might seem counterintuitive at first glance, as one might expect higher inflation to exacerbate poverty by eroding purchasing power and increasing the cost of living. However, a possible explanation could be that periods of higher inflation might coincide with economic growth or policies that also reduce poverty through increased employment opportunities or social welfare measures. This correlation warrants further exploration to understand the underlying mechanisms driving this relationship and whether it holds across different economic contexts. The positive correlation coefficient of about 0.15 indicates a weak association between higher indirect taxes and slightly higher levels of poverty. While this correlation is statistically significant, its practical implications may be less clear. Higher indirect taxes could potentially impact lower-income households more significantly, thus contributing to poverty or exacerbating existing inequalities. However, the magnitude of this correlation suggests that other factors likely play a more dominant role in determining poverty levels. Regarding secondary school enrollment, the correlation with poverty is negligible, as indicated by the very low correlation coefficient. This suggests that there is no significant relationship between poverty levels and secondary school enrollment rates in the observed data. This finding underscores the complexity of educational attainment as a factor in poverty reduction, where other factors such as quality of education, access to higher education, and economic opportunities may play more crucial roles. Total population shows a positive correlation coefficient of approximately 0.63 with poverty. This implies that regions or periods with higher total population tend to have slightly higher levels of poverty. This relationship could be influenced by factors such as urbanization trends, migration patterns, and resource distribution within densely populated areas. Higher population density might strain local resources and infrastructure, impacting employment opportunities and living conditions, thereby affecting poverty levels. Finally, unemployment exhibits a strong positive correlation coefficient of about 0.74 with poverty. This indicates a robust relationship where higher unemployment rates are closely associated with higher levels of poverty. Unemployment represents a direct economic barrier to income generation and economic stability for individuals and households, making it a critical factor influencing poverty rates. Policies aimed at reducing unemployment through job creation, skills development, and labor market reforms are essential for mitigating poverty and promoting inclusive economic growth.

In critical discussion, while correlations provide insights into potential relationships, they do not imply causation. Factors such as socio-economic policies, cultural dynamics, and regional disparities can significantly influence these relationships. Moreover, the strengths of correlations vary, and outliers or specific contexts may influence the observed patterns. Thus, while these correlations offer valuable initial insights, further multidimensional analyses and contextual understanding are necessary to formulate effective policies aimed at poverty alleviation and socio-economic development.

Table 2: Pairwise Correlation

PV	1.000000					
INFC	-19.62114	1.000000				
	-0.448190					
	-2.556472					
	0.0168					
LID	1.820928	0.991263	1.000000			
	0.1476794	0.271263				
	0.915902	1.436352				
	0.3681	0.1628				
LESSER	-0.115413	0.379914	0.152181	1.000000		
	-0.049834	0.462155	0.786865			
	-0.254423	2.657355	6.501500			
	0.8012	0.0133	0.0000			
TP	0.597828	0.035917	0.055061	0.009417	1.000000	
	0.631037	0.106809	0.695969	0.529366		
	4.147809	0.547756	4.942069	3.181597		
	0.0003	0.5885	0.0000	0.0038		
UNE	13.76735	-1.374658	0.624907	0.099911	0.099954	1.000000
	0.741606	-0.208616	0.403092	0.286617	0.700962	
	5.636941	-1.087667	2.245920	1.525467	5.011532	
	0.0000	0.2867	0.0334	0.1392	0.0000	
	PV	INFC	LID	LESSER	TP	UNE

The Augmented Dickey-Fuller (ADF) unit root test results presented in Table 3 assess the stationarity of the variables at their original levels and after taking first differences. Stationarity is crucial in time series analysis because non-stationary series can exhibit trends or random walk behavior, making it challenging to model accurately and draw meaningful conclusions. At the original level, the ADF test statistic of -1.594824 and a probability of 0.4724 indicate that poverty is not statistically significant in rejecting the null hypothesis of a unit root (non-stationarity). However, after differencing once (first difference), the test statistic of -4.205701 and a low probability of 0.0027 strongly reject the null hypothesis, indicating that PV becomes stationary in first differences. This suggests that while poverty may exhibit non-stationary behavior in its raw form, the changes or differences over time show a stationary pattern, making it more suitable for time series analysis. Unemployment shows similar results. At the original level, the ADF test statistic of -1.504079 and a probability of 0.5157 suggest that unemployment is not stationary. After differencing, however, the test statistic sharply decreases to -6.947912 with a probability of 0.0000, indicating strong evidence against the presence of a unit root and confirming stationarity in the first difference. This implies that while unemployment may have exhibited trends or persistence in its original series, these patterns are removed or reduced when considering changes over time. Inflation, indirect taxes, and total population all exhibit similar patterns. They are not stationary at their original levels, as indicated by their respective ADF test statistics and probabilities. Yet, after taking the first difference, all variables show significant ADF test statistics with probabilities close to 0.0000, confirming their stationarity in first differences. This transformation suggests that analyzing changes rather than absolute values provides more reliable insights into these variables' behavior over time. Interestingly, secondary school enrollment presents unusual results with extremely high negative values for the ADF test statistic in first differences, coupled with probabilities indicating significant rejection of the null hypothesis. This could potentially be due to data anomalies or computational issues, as such extreme values are not typical in practical applications and may require further investigation or verification. In short, the ADF unit root test results highlight the importance of transforming non-stationary time series data into stationary series for robust analysis and modeling. Stationarity ensures that statistical properties like means and variances remain constant over time, enhancing the reliability of conclusions drawn from time series data in fields such as economics, finance, and social sciences.

Table 3: Augmented Dickey-Fuller Unit Root Test

	At Level		At Ist Difference	
Variables	T-statistic	Probability	T-statistic	Probability
PV	-1.594824	0.4724	-4.205701	0.0027
UNE	-1.504079	0.5157	-6.947912	0.0000
INFC	-0.410416	0.1472	-6.784030	0.0000
ID	-0.902608	0.7717	-8.7384030	0.0000
SSER	-0.790268	0.8068	-30189844	0.0310
TP	-0.528561	0.8689	-4.311965	0.0027

The ARDL Bounds Analysis approach, as shown in Table 4, evaluates the significance of the F-statistic for the dependent variable poverty. The F-statistic calculated is 4.897285, and the table provides critical values at various significance levels—10%, 5%, 2.5%, and 1%—to determine whether this F-statistic is statistically significant. These critical values act as thresholds: if the F-statistic exceeds the upper bound of the critical value range corresponding to a particular significance level, the relationship between poverty and its predictors in the model is considered statistically significant at that level. In this instance, the critical values provided are 2.26 to 3.35 for the 10% significance level, 2.62 to 3.79 for the 5% level, 2.96 to 4.18 for the 2.5% level, and 3.41 to 4.68 for the 1% level. The F-statistic of 4.897285 falls comfortably above the upper bounds of these critical value ranges at all significance levels, indicating strong statistical significance. This suggests that the variables included in the ARDL model have a significant impact on explaining variations in PV over the specified time period. This outcome is crucial for policy analysis and decision-making, as it validates the relationship between poverty and its predictors derived from the ARDL model. It underscores the importance of understanding how changes in independent variables affect poverty levels, providing a basis for informed policy interventions aimed at poverty reduction or economic stabilization. By confirming the statistical significance of these relationships, the ARDL Bounds Analysis approach enhances the reliability and robustness of findings derived from econometric modeling, contributing to evidence-based policymaking in socio-economic contexts.

Table 4: ARDL Bounds Analysis Approach

Dependent variable: PV

Critical value		F-statistic4.897285
Significance	Lower bound	Upper bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Table 5 presents the VAR (Vector Autoregression) Lag Order Selection Criteria for the variables PV, INFC, LID, LSSER, TP, and UNE over the time period from 1985 to 2023. The table evaluates different lag orders (0, 1, and 2) based on several criteria: Log Likelihood (Log L), Sequential Modified LR Test Statistic (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ). At Lag 0, the log likelihood is -152.8527, but other criteria such as LR, FPE, AIC, SC, and HQ are not applicable (NA) as they require a lag structure to compute. Moving to a lag of 1, the log likelihood improves significantly to -23.06219. The Sequential Modified LR Test Statistic (LR) is 186.8984, indicating strong evidence against the null hypothesis of no lagged relationships among the variables. The Final Prediction Error (FPE) is very low at 8.05e-06, suggesting good model fit. The AIC, SC, and HQ criteria are 5.204975, 7.252687, and 5.772924 respectively, all indicating that a lag of 1 provides a good balance between model fit and complexity. At lag 2, the log likelihood further improves to 37.11992. The LR test statistic remains high at 57.77482, confirming the presence of significant lagged relationships. The FPE decreases to 2.08e-06, indicating even better prediction accuracy. The AIC, SC, and HQ criteria decrease to 3.270407, 7.073299, and

4.32516 respectively, suggesting that a lag of 2 provides the best trade-off between goodness of fit and model complexity among the options considered. The asterisks (*) indicate that the lag order selection criteria (LR, FPE, AIC, SC, HQ) favor a lag of 2 as the optimal choice. This suggests that including lagged values of the variables up to two periods back improves the model's ability to capture the dynamics and relationships among PV, INFC, LID, LSSER, TP, and UNE over the analyzed time period. Overall, the VAR Lag Order Selection Criteria in Table 5 provide essential guidance for selecting an appropriate lag structure in VAR modeling. The chosen lag order influences the model's ability to accurately capture the interdependencies and lead-lag relationships among the variables, thereby enhancing the reliability of forecasting and policy analysis based on the VAR model's results.

Table 5: VAR Lag Order Selection Criteria

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-152.8527	NA	0.013316	12.70822	13.00075	12.78935
1	-23.06219	186.8984	8.05e-06	5.204975	7.252687	5.772924
2	37.11992	57.77482*	2.08e-06*	3.270407*	7.073299*	4.32516*

* indicates lag order selection by the criterion
LR: sequential modified LR test statistic (each test at5% level)
FPE: find prediction error
AIC: Akaike information criterion:
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 6 presents the long-run results from the ARDL model applied to the variables influencing poverty over the period 1985-2023. The coefficients derived from the model provide insights into how various socio-economic factors impact poverty levels. Firstly, inflation shows a statistically significant negative coefficient of -3.450669 with a t-statistic of -5.491684 ($p = 0.0001$), indicating that higher inflation rates are associated with lower levels of poverty. This relationship suggests that inflation may coincide with economic growth or policies that mitigate poverty through increased economic activity or improved income distribution. Conversely, indirect taxes exhibit a non-significant coefficient of 0.358819 with a t-statistic of 0.180895 ($p = 0.8595$). This suggests that changes in indirect taxes do not have a statistically significant impact on poverty levels within the analyzed framework. Secondary school enrollment shows a positive coefficient of 29.623048 with a t-statistic of 2.468614 ($p = 0.0296$), indicating a significant positive relationship between higher secondary school enrollment rates and poverty levels. This suggests that improved access to education at the secondary level may contribute to poverty reduction by enhancing human capital and employment opportunities. Total population reveals a positive coefficient of 86.468360 with a t-statistic of 2.564653 ($p = 0.0248$), suggesting that regions or periods with larger populations tend to experience higher poverty levels. This relationship underscores the challenges associated with managing economic resources and infrastructure to support growing populations effectively. Unemployment shows a non-significant coefficient of -0.529304 with a t-statistic of -0.320731 ($p = 0.7539$), indicating that variations in unemployment rates do not have a statistically significant impact on poverty levels within the model's scope. The constant term in the model, represented by a coefficient of -210.123889 with a t-statistic of -3.815893 ($p = 0.0025$), suggests that factors not explicitly included in the model, such as broader economic conditions or policy interventions, also play a significant role in determining poverty levels.

These findings provide valuable insights into the complex interplay between socio-economic factors and poverty dynamics. They underscore the importance of targeted policies that address inflation, education access, population management, and broader economic conditions in effectively reducing poverty over time. By understanding these relationships, policymakers can devise more effective strategies aimed at sustainable poverty alleviation and inclusive economic growth.

Table 6: Long Run Results of ARDL

Dependent Variable: PV

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFC	-3.450669	0.628344	-5.491684	0.0001
LID	0.358819	1.983580	0.180895	0.8595
LSSER	29.623048	11.999871	2.468614	0.0296
TP	86.468360	33.715427	2.564653	0.0248
UNE	-0.529304	1.650302	-0.320731	0.7539
C	-210.123889	55.065459	-3.815893	0.0025

Table 7 presents the short-run results from the ARDL model with lag specifications (1, 2, 0, 1, 0, 2) for the dependent variable PV over the period 1985-2023. These results highlight the immediate effects of changes in the independent variables on poverty levels, captured through first differences (D).vInflation shows a significant negative coefficient of -1.338369 with a t-statistic of -3.842959 (p = 0.0023), indicating that an increase in inflation leads to a decrease in poverty levels in the short run. This suggests that inflationary pressures may stimulate economic activity or policy responses that mitigate poverty. Indirect taxes exhibit a non-significant coefficient of 0.270187 with a t-statistic of 0.181729 (p = 0.8588), suggesting that short-term changes in indirect taxes do not significantly impact poverty levels within the model's framework. Secondary school enrollment reveals a substantial positive coefficient of 63.286389 with a t-statistic of 3.369521 (p = 0.0056), indicating that increases in secondary school enrollment positively affect poverty reduction in the short term. This underscores the immediate benefits of educational investments in reducing poverty by enhancing human capital and employability. Total population shows a positive coefficient of 65.109916 with a t-statistic of 1.976398 (p = 0.0716), suggesting a marginally significant positive relationship between short-term population changes and poverty levels. This implies that rapid population growth might strain resources initially, impacting poverty dynamics. Unemployment exhibits a significant positive coefficient of 3.527548 with a t-statistic of 4.886459 (p = 0.0004), indicating that an increase in unemployment rates leads to higher poverty levels in the short run. This highlights the immediate economic hardships faced by individuals and households during periods of job losses or economic downturns. ECT shows a negative coefficient of -0.752991 with a t-statistic of -3.929902 (p = 0.0020), suggesting that deviations from the long-run equilibrium relationship between variables have a negative short-term impact on poverty levels. Overall, the ARDL short-run results underscore the dynamic and immediate impacts of inflation, secondary school enrollment, total population, unemployment, and deviations from long-run equilibrium on poverty levels. These findings provide crucial insights for policymakers aiming to implement targeted interventions and policies that address these factors to effectively reduce poverty and promote sustainable socio-economic development.

Table 7: Short Run Results

Dependent Variable: PV

Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(INFC)	-1.338369	0.348265	-3.842959	0.0023
D(LID)	0.270187	1.486758	0.181729	0.8588
D(LSSER)	63.286389	18.782014	3.369521	0.0056
D(TP)	65.109916	32.943726	1.976398	0.0716
D(UNE)	3.527548	0.721902	4.886459	0.0004
ECT	-0.752991	0.191606	-3.929902	0.0020
R-squared	0.846575		Mean dependent var	0.168750
Adjusted R-squared	0.706929		S.D. dependent var	5.414262
S.E. of regression	2.936929		Akaike info criterion	5.298846
Sum squared resid	103.4432		Schwarz criterion	5.887873
Log likelihood	-51.58615		Hannan-Quinn	5.455115
F-statistic	6.019474		Durbin-Watson	2.168013
Prob(F-statistic)	0.002192			

Table 8 presents the results of two diagnostic tests applied to the ARDL model: the Breusch-Godfrey Serial Correlation LM Test and the Breusch-Pagan-Godfrey Heteroskedasticity Test. These tests assess the adequacy of the model by examining the presence of serial correlation and heteroskedasticity, which are important for ensuring the reliability of the model's estimates. The Breusch-Godfrey Serial Correlation LM Test yields an F-statistic of 1.365607 with a p-value of 0.2770. The null hypothesis of this test is that there is no serial correlation in the residuals. Since the p-value is greater than the conventional significance levels (0.01, 0.05, and 0.10), we fail to reject the null hypothesis. This indicates that there is no evidence of serial correlation in the residuals of the ARDL model, suggesting that the model's error terms are not correlated over time. The Heteroskedasticity Test, specifically the Breusch-Pagan-Godfrey Test, provides an F-statistic of 0.581305 with a p-value of 0.7139. The null hypothesis for this test is that the residuals have constant variance (homoskedasticity). Given that the p-value is significantly higher than typical significance thresholds, we fail to reject the null hypothesis. This result implies that there is no evidence of heteroskedasticity in the residuals, indicating that the variance of the error terms remains constant across observations. In summary, the diagnostic tests suggest that the ARDL model does not suffer from issues of serial correlation or heteroskedasticity. The absence of these problems enhances the credibility of the model's estimates, supporting the validity of the conclusions drawn from the analysis. The findings from these diagnostic tests underscore the robustness of the ARDL model in capturing the relationships between the dependent variable PV and its predictors without being compromised by problematic residual patterns. This ensures that the policy recommendations or insights derived from the model are based on a well-specified and reliable econometric framework.

Table 8: Diagnostic Tests

Test statistics	F-statistic	P-value
Breusch-Godfrey serial correlation LM test	1.365607	F(2,21)0.2770
Heteroskedasticity Test Breusch-Pagan-Godfrey	0.581305	F(5,23)0.7139

5. Conclusions and Suggestions

The study provides valuable insights into the determinants of poverty in the case of Pakistan over the period of 1985 to 2023. Unemployment, inflation, indirect taxes, secondary school enrollment, and total population have been selected as explanatory variables. The Augmented Dickey-Fuller unit root test results indicate that while many of these variables exhibit non-stationary behavior at levels, but they become stationary at first difference. This transformation to stationarity is essential for reliable time series analysis, ensuring that the statistical properties of the data remain constant over time. The ARDL Bounds Analysis confirms the significance of the relationship between poverty and its predictors, suggesting that changes in these variables significantly impact poverty levels. Moreover, the VAR Lag Order Selection Criteria recommend using a lag of 2 for optimal model fit, capturing the dynamic interdependencies among the variables. Finally, the ARDL model's long-run and short-run results highlight the significant roles of inflation, secondary school enrollment, total population, and unemployment in influencing poverty, with diagnostic tests confirming the model's robustness.

The positive relationship between secondary school enrollment and poverty reduction emphasizes the need for increased investment in education. Policymakers should focus on enhancing access to quality secondary education, implementing teacher training programs, and developing curricula that align with labor market needs. Such investments will improve human capital and employability, contributing to long-term poverty alleviation. The analysis indicates that changes in indirect taxes do not significantly impact poverty levels. However, it is essential to ensure that tax policies do not disproportionately burden low-income households. A review of the tax structure, aiming for a more progressive system, could help in redistributing wealth more equitably and supporting poverty reduction efforts. The positive correlation between total population and poverty levels suggests that rapid population growth can strain resources and infrastructure. Effective population management strategies, including family planning programs and investments in healthcare and education, are crucial to mitigate these pressures and support sustainable development.

The significant impact of unemployment on poverty highlights the need for targeted interventions to create job opportunities. Policymakers should focus on promoting economic diversification, supporting small and medium enterprises (SMEs), and implementing active labor market policies such as job training and placement programs to reduce unemployment and its adverse effects on poverty. While higher inflation rates are associated with lower poverty levels in this analysis, it is essential to maintain inflation within a manageable range. Excessive inflation

can erode purchasing power and harm economic stability. Policymakers should implement monetary and fiscal policies to control inflation and ensure it supports economic growth without adversely affecting low-income households. Continuous and comprehensive data collection is vital for informed policymaking. Governments and institutions should invest in robust data infrastructure to regularly monitor economic variables and their interrelationships. This will enable timely and evidence-based interventions, enhancing the effectiveness of poverty reduction strategies. Policies aimed at inclusive economic growth should be prioritized to ensure that the benefits of economic development are widely shared. This includes fostering an environment conducive to investment, innovation, and entrepreneurship, which can create jobs and reduce poverty. By implementing these suggestions, policymakers can create a more inclusive and resilient economy, effectively reducing poverty and supporting sustainable socio-economic development.

References

Abigail, E. C. (2023). Unlocking Economic Growth Through Taxation in the case Nigeria. *Journal of Business and Economic Options*, 6(4), 19-25.

Adukonu, S. E. F. K., & Ofori-Abebrese, G. (2016). Relative Impact of Various Taxes on Poverty in Ghana. *Mediterranean Journal of Social Sciences*, *7*(3), 150.

Albayrak, Ö. (2010). Redistributive Effects of Indirect Taxes in Turkey 2003. Ankyra: *Ankara Üniversitesi Sosyal Bilimler Enstitüsü Dergisi.Public Economics*, *88*(3), 503-518.

Ali Khan, S. (2013). Decentralization and poverty reduction: A theoretical framework for exploring the linkages. *International Review of Public Administration*, *18*(2), 145-172.

Ali, A, Khokhar, B. Sulehri, F. A. (2023). Financial Dimensions of Inflationary Pressure in Developing Countries: An In-depth Analysis of Policy Mix. *Journal of Asian Development Studies* 12 (3), 1313-1327.

Ali, A. (2015). *The impact of macroeconomic instability on social progress: an empirical analysis of Pakistan*. (Doctoral dissertation, National College of Business Administration & Economics Lahore).

Ali, A. (2018). Issue of Income Inequality Under the Perceptive of Macroeconomic Instability: An Empirical Analysis of Pakistan. *Pakistan Economic and Social Review*, 56(1), 121-155.

Ali, A. and Bibi, C. (2017). Determinants of Social Progress and its Scenarios under the role of Macroeconomic Instability: Empirics from Pakistan. *Pakistan Economic and Social Review* 55 (2), 505-540.

Ali, A., & Ahmad, K. (2014). The Impact of Socio-Economic Factors on Life Expectancy in Sultanate of Oman: An Empirical Analysis. *Middle-East Journal of Scientific Research*, 22(2), 218-224.

Ali, A., & Audi, M. (2016). The Impact of Income Inequality, Environmental Degradation and Globalization on Life Expectancy in Pakistan: An Empirical Analysis. *International Journal of Economics and Empirical Research*, 4 (4), 182-193.

Ali, A., & Audi, M. (2018). Macroeconomic Environment and Taxes Revenues in Pakistan: An Application of ARDL Approach. *Bulletin of Business and Economics* (BBE), 7(1), 30-39.

Ali, A., & Rehman, H. U. (2015). Macroeconomic instability and its impact on the gross domestic product: an empirical analysis of Pakistan. *Pakistan Economic and Social Review*, 285-316.

Ali, A., & Sajid, A. (2020). Towards Inclusive Growth: Financial Sector Dynamics and Poverty Reduction in Pakistan. *Journal of Business and Economic Options*, *3*(4), 129-140.

Ali, A., & Şenturk, I. (2019). Justifying the Impact of Economic Deprivation, Maternal Status and Health infrastructure on Under-Five Child Mortality in Pakistan: An Empirical Analysis. *Bulletin of Business and Economics*, 8(3), 140-154.

Ali, A., & Zulfiqar, K. (2018). An Assessment of Association between Natural Resources Agglomeration and Unemployment in Pakistan. *Pakistan Vision*, 19(1), 110-126.

Andreou, E. (2021). A Literature Survey Trade Policy Dynamics: Insights for Assessing Poverty and Inequality Impacts. *Journal of Business and Economic Options*, *4*(4), 1-8.

Arshad, S., & Ali, A. (2016). Trade-off between Inflation, Interest and Unemployment Rate of Pakistan: Revisited. *Bulletin of Business and Economics (BBE)*, *5*(4), 193-209.

Ashraf, I., & Ali, A. (2018). Socio-Economic Well-Being and Women Status in Pakistan: An Empirical Analysis. *Bulletin of Business and Economics (BBE)*, 7(2), 46-58.

Audi, M., & Ali, A. (2016). A Causality and Co-integration Analysis of Some Selected Socio-Economic Determinants of Fertility: Empirics from Tunisia. *Bulletin of Business and Economics (BBE)*, 5(1), 20-36.

Audi, M., Ali, A., & Hamadeh, H. F. (2022). Nexus Among Innovations, Financial Development and Economic

Growth in Developing Countries. *Journal of Applied Economic Sciences*, *17*(4).
Audi, M., Ali, A., & Roussel, Y. (2021). Aggregate and Disaggregate Natural Resources Agglomeration and Foreign Direct Investment in France. *International Journal of Economics and Financial Issues*, *11*(1), 147-156.
Audi, M., Ali, A., & Roussel, Y. (2021). Measuring the Tax Buoyancy: Empirics from South Asian Association for Regional Cooperation (SAARC). *Empirical Economics Letters*, 20(12).
Aydemir, R. (2024). Examining the Cluster Life Cycle in the Process of Economic Development. *Journal of Policy Options*, *7*(1), 18-26.
Cobbinah, P., Black, R., & Thwaites, R. (2013). Dynamics of poverty in developing countries: Review of poverty reduction approaches. *Journal of Sustainable Development*, *6*(9), 25-35.
Dalton, P., Ghosal, S., & Mani, A. (2010). Poverty and aspirations failure: A theoretical framework. *CESifo, Ludwig-Maximilians University*, *35*.
Decoster, A., Loughrey, J., O'Donoghue, C., & Verwerft, D. (2009). Incidence and welfare effects of indirect taxes. *European Measures of Income and Poverty: Lessons for the US'International Policy Exchange Series*
Duncan, D., & Sabirianova Peter, K. (2008). Tax progressivity and income inequality.
Ebeke, C. H., & Ehrhart, H. (2012). Does VAT reduce the instability of tax revenues?.
Ebeke, C., & Ehrhart, H. (2011). Tax revenue instability in Sub-Saharan Africa: Consequences and remedies. *Journal of African Economies*, *21*(1), 1-27
Esmaeel, E. S. (2013). The impact of direct-indirect taxation on consumer. *IOSR Journal of Engineering (IOSRJEN)*, *3*(6), 8-13.
Florini, A., & Pauli, M. (2018). Collaborative governance for the sustainable development goals. *Asia & the Pacific Policy Studies*, *5*(3), 583-598.
Hulme, D., & Shepherd, A. (2003). Conceptualizing chronic poverty. *World development*, *31*(3), 403-423.
Ibadin, P. O., & Oladipupo, A. O. (2015). Indirect Taxes And Economic Growth In Nigeria. *Ekonomska misao i praksa*, (2), 345-364.
Khalid, M. W., & Sultan, M. (2019). Understanding the Interplay of Poverty, Inflation, and Unemployment: An Empirical Analysis. *Journal of Business and Economic Options*, *2*(2), 95-104.
Khan, A. U., Saboor, A., Ali, I., Malik, W. S., & Mahmood, K. (2016). Urbanization of multidimensional poverty: empirical evidences from Pakistan. *Quality & quantity*, *50*(1), 439-469.
Khan, M. M. H., & Khan, M. M. S. (1998). *Taxing agriculture in Pakistan*. International Monetary Fund
Khan, S., Yahong, W., & Zeeshan, A. (2022). Impact of poverty and income inequality on the ecological footprint in Asian developing economies: Assessment of Sustainable Development Goals. *Energy Reports*, *8*, 670-679.
Mattioli, G., Nicolas, J. P., & Gertz, C. (2018). Household transport costs, economic stress and energy vulnerability. *Transport Policy*, *65*, 1-4.
Munir, K., & Sultan, M. (2018). Are some taxes better for growth in Pakistan? A time series analysis. *International journal of social economics*, *45*(10), 1439-1452.
Ojong, C. M., Anthony, O., & Arikpo, O. F. (2016). The Impact of Tax Revenue on Economic Growth: Evidence from Nigeria. *IOSR Journal of Economics and Finance*, *7*(1), 32-38.
Ramot, I., & Ichihashi, M. (2012). *The Effects of Tax Structure on Economic Growth and Income Inequality*. IDEC Discussion paper 2012, Hiroshima University, Japan.
Roussel, Y., & Audi, M. (2024). Exploring the Nexus of Economic Expansion, Tourist Inflows, and Environmental Sustainability in Europe. *Journal of Energy and Environmental Policy Options*, *7*(1), 28-36.
Saez, E. (2004). Direct or indirect tax instruments for redistribution: short-run versus long-run. *Journal of*
Saez, E. (2004). Reported incomes and marginal tax rates, 1960-2000: evidence and policy implications. *Tax policy and the economy*, *18*, 117-173.
Sajid, A. & Ali, A. (2018). Inclusive Growth and Macroeconomic Situations in South Asia: An Empirical Analysis. *Bulletin of Business and Economics (BBE)*, 7(3), 97-109.
Sarker, T. K. (2006). Who bears the burden of taxes in developing countries? A case of income taxation in Bangladesh. *Pakistan Economic and Social Review*, 181-207.
Shuai, J., Cheng, X., Tao, X., Shuai, C., & Wang, B. (2019). A theoretical framework for understanding the spatial coupling between poverty and the environment: a case study from China. *Agronomy Journal*, *111*(3), 1097-1108.

Sun, Y., & Chang, Y. (2020). Trade and Poverty in Developing Countries: Beyond Assumptions to Nuanced Understanding. *Journal of Business and Economic Options*, *3*(4), 167-175.

Tahir, S. H., Ali, Y., Ismail, A., & Hanan, A. Impact of Direct and Indirect Tax Incentives on Textile industry (Pakistan).

Tamašauskienė, Z., & Opulskytė, R. (2012). Assessment of Impact of Changes in Indirect Taxes on Macroeconomic Indicators of Lithuania in Context of Other EU Member States. *Socialiniai tyrimai*, (2), 5-18.

Ullah, A., & Ali, A. (2024). Investigating Corruption, Income Inequality, and Environmental Degradation in Pakistan: A Time Series Analysis. *Journal of Energy and Environmental Policy Options*, *7*(1), 9-18.

Widmalm, F. (2001). Tax structure and growth: Are some taxes better than others?. *Public Choice*, *107*(3-4), 199-219.

Wolff, J. (2020). Beyond poverty. *Dimensions of poverty: Measurement, epistemic injustices, activism*, 23-39.

Zhengzheng, G. (2019). Microenterprise Activity and Poverty Reduction: A County-Level Analysis in Urban America. *Journal of Business and Economic Options*, *2*(4), 179-188.

Zubair, I., & Hayat, A. (2020). Financial Development and Poverty Reduction: Insights from Pakistan. *Journal of Business and Economic Options*, *3*(4), 187-194.