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Effect of Institutional and Financial Development on Poverty and Income Inequality in Pakistan

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Abstract

The present research investigates the impact of financial and institutional development on Pakistan's poverty and income inequality levels. The time series data from 1984 to 2019 was utilized for empirical analysis. The empirical estimations used the Autoregressive Distributed Lag Model (ARDL) to analyze the short-term outcomes. The ARDL-Bound test approach was also employed to examine the long-term association between the variables. The findings of this study indicate that financial development plays a crucial role in reducing poverty and income inequality in Pakistan, both in the short and long run. The empirical findings indicate a negative relationship between financial development and poverty and income inequality in the short and long run. The empirical findings suggest that the influence of intuitional quality on poverty exhibits a positive relationship in the short run, albeit statistically insignificant long-run impact on poverty levels. The impact of institutional development on income inequality in Pakistan, both in the short and long run, appears to be statistically insignificant. The study's findings indicate potential policy measures that may be employed to tackle poverty and enhance income distribution effectively.

Keywords: Financial Development, Institutional Development, Poverty, Income Inequality

1 Introduction

Poverty is a complicated phenomenon because it is a composite of multiple forms of deprivation.

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The definition of poverty in economics postulates that "an individual is deemed to be poor if he/she is unable to attain a minimal standard of living". Poverty reduction is not a concern of economics but also encompasses a couple of desires a human being confronts in everyday life. The development can be perceived as a mechanism for augmenting the fundamental freedoms people enjoy. For poverty alleviation, the role of political, social, and cultural freedom is suitable to uplift the income of the individuals. Moreover, the complementarity between the social safety net, primary healthcare access, education, and infrastructure can enhance the productivity and employment of people experiencing poverty, raising their income and well-being (Yunus, 2009; Mir et al., 2023; Shair et al., 2023a).

Poverty is one of the world's major problems. The Millennium Development Goals were designed to reduce poverty in 2015 around the globe. Moreover, sustainable development goals (SDGs) are designed to protect the planet, and the first SDG is related to ending poverty by the end of 2030. According to the development report of ASEAN 2017, the people living below the poverty line are almost 36 million in Southeast Asia, which is 90% of the region's population. Poverty is at the top of the challenges developing economies face. The consequences of poverty may be low literacy levels, higher unemployment, malnutrition, crime, and other social and economic issues. However, to eradicate poverty, many strategies are introduced by national governments and international agencies like the International Monetary Bank (IMF) and the United Nations (UN).

Many economic factors may help reduce the level of poverty in developing countries. However, financial inclusion is among the essential factors that may help reduce poverty. The financial development may lower poverty by generating self-employment through microfinancing in low-income economies (Bauchet et al., 2015). However, it is not child's play to expand business in low-income economies due to multiple difficulties associated with credit sanctions to assist micro, small, and medium-sized enterprises (MSMEs). However, in fixing these issues, the role of microfinance institutions is emerging, and governments of developing countries recognize the importance of microfinance in eradicating poverty.

It is argued that generating steady employment opportunities at substantial wages is a reasonable step towards poverty alleviation. According to the International Labor Organization (ILO), "Nothing is more fundamental to poverty reduction than employment" because it is directly associated with the individual's economic prosperity. It also suggests that employment creation is a process to accelerate economic growth and mitigate poverty. Production and remunerative employment can benefit low-income people through economic growth (Yunus, 2009). While it is very complicated because sectoral boom patterns and employment/productiveness profiles vary throughout the nations, a higher level of employment may also decrease poverty, which is best if it is centered on the promising jobs sectors. Moreover, Gutierrez et al. (2007) determined that upper-middle income economies may also have a one-of-a-kind set of dating a number of the sectoral styles of growth and poverty reduction from the decrease-income economies. In this context, households' financial development must serve to accelerate self-employment and alleviate poverty.

The studies on institutions and governance have generally centered on the relation with growth. In recent times, though, there has been a rising curiosity about the relationship between governance, distribution, and income disparity. This curiosity has been subjugated with two points of view. The first one is how democracy and administrative organizations are related to income distribution and disparity, and the second one is how corruption creates inequality. The results from the literature show that there is a two-way relation in both cases. In one way, democracy and administrative institutions affect the income distribution in society, while income inequality also helps shape governmental intuitions and democracy in society. Likewise, income disparity increases because of corruption, although the higher inequality also helps to promote corruption.

In the economic development process, the roles of institutions are widely recognized. The formation of institutions may affect economic development; however, government policies shape institutional quality in addition to political behavior. In this regard, Schulze and Ursprung (1999) affirm that the results of global capital market integration depend closely on intergovernmental political institutions. Moreover, Craft (2000) also discovered that many elements of modern-day political institutions are shown to be extraordinary, now not simply pushed via a coverage choice but also in combination with the promotion of macroeconomic policy. However, institutional quality is crucial to mitigating poverty and achieving sustainable growth.

The study's objective is two-fold: 1) this study aims to empirically analyse the effect of financial development on poverty and income inequality in Pakistan. 2) This study empirically analyses institutional development's effect on poverty and income inequality in Pakistan. Given the significance of poverty and income inequality reduction, little interest has been paid to its empirical analysis. There is very little research, according to the best information available in the literature (Donou-Adonsou & Sylwester, 2016). Their study studied the association between financial development and poverty using data from 71 developing economies. On the other hand, the study of Hasan et al. (2009) was limited only to China. In the current study, we will study the role of financial and institutional development in determining Pakistan's poverty and income inequality. Likewise, this study is first in its nature to incorporate the effect of financial development on poverty, income inequality, and institutional development.

The study is organized as follows: The next section reviews the literature on the factors affecting poverty and income inequality. Section 3 of the study concerns research methodology, and section 4 deals with empirical results and discussion. The final section concludes the study findings and proposes policy measures.

2 Review of the Literature

2.1 Literature Review on Poverty

Many economic factors may help in reducing poverty in developing economies. However, financial inclusion is among the essential factors that may help reduce poverty. In this context, Chong and Calderon (2000) examined the link between institutional development and poverty-specific developing economies from 1960 to 1990. The findings of the study reveal that the higher the efficiency of the institution, the lower the incidence of poverty. Jalilian and Kirkpatrick (2007) examined financial development as a catalyst for poverty reduction in the selected developing economies. The study confirms the causal relationship between financial sector growth and poverty reduction. However, financial development complements economic growth in affecting poverty to a given threshold point. Moreover, financial development also serves as a complement to income inequality as a poverty-mitigating effect.

Imai et al. (2010a) examined the possibility of achieving the targets of the Millennium Development Goal related to half of the extreme poverty. The positive effect of institutions on growth, trade openness, and financial development was observed, and institutions' negative effect on poverty was observed. The study's findings finally concluded that improvements in institutional quality seem to be an essential factor in halving the poverty level in the sub-Sahara Africa region. Chong et al. (2000) studied the potential benefits that can be tapped after reaching the specific threshold for financial development. However, before the threshold level, income inequality may act as a counteract with financial developments. The policy measures concerning achieving the minimum necessary financial development level may reduce economic income inequality.

Khan et al. (2012) confirmed the lack of uni-directional or bi-directional causality among poverty and financial development. The financial market's imperfection is a potential source of the inability to impact the poverty reduction process. Imai et al. (2010b) examined that a country with

a more significant number of microfinance institution loans per capita is associated with a lesser poverty in that country. The finding recommends the development of microfinancing to mitigate poverty rather than microfinancing in developing economies. Assadzadeh and Pourqoly (2013) suggested that both FDI and institutional quality (IQ) have significantly favorable effects in reducing poverty while raising the welfare level. Perera and Lee (2013) suggested that economic growth does not affect income inequality while contributing to poverty reduction. The improvement in the outcomes of institutional development, like corruption, bureaucratic quality, law and order, and government stability, decreases poverty and state of income inequality.

Rewilak (2017) found that financial deepening or more fantastic financial access helps decrease the proportion of individuals below the poverty line. Hicham (2018) found that financial development cannot impact poverty in Algeria. However, the pro-poor role of economic growth was observed. Sibt-e-Ali et al. (2018) found that government consumption, gross capital formation, industrial production, and exports positively affect developing countries' economic growth. Félix and Belo (2019) examined that microcredit decreases the poverty rate, poverty gap, and squared poverty gap.

Moreover, employment and education also serve as poverty-reducing factors. Kousar et al. (2019) found that per capita income followed the U-shaped pattern with income inequality. Moreover, education lowers income inequality in short- and long-term periods. Conversely, it has led to increased poverty in the long run. Poverty and income inequality are positively connected with unemployment. This relationship remains positive in the short- and long run. Sugiyanto and Yolanda (2020) revealed that financial deepening improves economic growth and worsens income inequality and poverty. From the backdrop of the existing literature, this study develops the following hypothesis:

H1: *Financial development decreases poverty in Pakistan in the short and long run.*

H2: *Institutional development decreases poverty in Pakistan in the short and long run.*

2.2 Literature Review on Income Inequality

Shahbaz and Islam (2011) analyzed the effect of financial development and income inequality in Pakistan from 1971 to 2005 to test the Greenwood and Jovianvich (GJ) hypothesis. The results of the ARDL suggest that financial developments lower income inequality while financial instability may worsen this effect. The economic growth worsened income inequality, further deteriorating due to trade openness. Tiwari et al. (2013) investigated the role of financial deepening on the inequality of income in the rural and urban areas of India from 1960 to 2008. The estimates of the ARDL model suggest that economic growth, inflation, and especially financial development worsen the earning gap of individuals in urban and rural areas. Uddin et al. (2014) observed that structural breaks suggested the long-term relationship between poverty, financial development, and economic growth. It implies that the influence of financial development seems to be poverty-mitigating and not linear.

Law et al. (2014) analyzed that the effect of financial development on income inequality is negative if a certain threshold of intuitional quality is achieved. The effect of below that threshold level remains insignificant. The better the finance quality, the more equal income distribution will be. Shahbaz et al. (2015) examined how financial development in Iran softens income inequality. Moreover, economic growth increases income inequality; however, globalization and inflation improve income distribution. A U-shaped pattern exists at the level of globalization and income inequality in Iran. Josifidis et al. (2017) examined the globalized financial system, insufficient redistribution, and excessive inequality, which are probably interpreted because of the consequence of institutional inertia to disruptive technological and commercial enterprise adjustments. Meniago and Asongu (2018) used the Generalised Method of Moments. They

suggested that access to credit (or financial activity) and intermediation efficiency have proven to be an encouraging factor for income redistribution. Moreover, the inverted bell-shaped relationship between the per capita GDP and income inequality was observed. From the backdrop of the existing literature, this study develops the following hypothesis:

H3: *Financial development lowers income inequality in Pakistan in the short and long run.*

H4: *Institutional development lowers income inequality in Pakistan in the short and long run.*

Poverty is one of the world's significant problems, and the Millennium Development Goals were designed to reduce poverty in 2015 around the globe. Moreover, amongst 17 sustainable development goals (SDG), poverty in all forms should be ended by the end of 2030. Macroeconomic policies and other financial and institutional development are crucial to reducing poverty and income inequality. Despite its importance, little attention has been paid to alleviating poverty and income inequality with better financial institutions. This study attempts to fill the gap by incorporating the importance of financial and institutional development to alleviate and reduce poverty. According to our knowledge, the existing set of studies is (Khan et al., 2012; Kousaret al., 2019; Madni & Anwar, 2021). However, the study of Shahbaz and Islam (2011) is available in Pakistan. Still, their study examines the role of financial development and inequality while ignoring the role of intuitional development and poverty.

3 Research Methodology

3.1 Data

For empirical analysis, we take data from 1984 to 2019 for Pakistan—data for real GDP growth sourced from the World Bank. Economic growth is expected to be associated with lower poverty and income inequality. The private sector credit-to-GDP ratio is used as a proxy for financial development, as suggested by Donou-Adonsou and Sylwester (2016), and is sourced from the World Bank. Remittances as a percentage of GDP are also sourced from the World Bank. Following Demir (2016), institutional development is proxied as a composite index of bureaucracy quality, law and order, and corruption. The institutional development is sourced from the International Country Risk Guide (ICRG). The data on poverty and income inequality are sourced. The unemployment rate was sourced from the IMF (see Table 1).

Table 1: List of variables used in the analysis, definition, and source

S.No	Variables	Description	Units	Source
1.	POV	Poverty rate (Headcount index as a measure of poverty)	Percentage of the total population below the poverty line	Jamal (2018)
2.	INEQ	Income inequality	The gini-coefficient measure of income inequality value ranged from 0-1, where 0 indicates perfect equality and 1 indicates perfect equality.	Jamal (2018)
2.	FD	Financial Development	Private sector credit to GDP ratio	WDI
3.	GDP	GDP growth	Growth of the GDP per capita	WDI
4.	ID	Institutional Development Index	Proxied used for institutional quality as a sum of a composite index of bureaucracy quality, law and order, and corruption	ICRG
5.	UNEM	Unemployment rate	Unemployed persons as a percentage of the labor force	IMF
6.	REM	Remittances	Remittances as a percentage of GDP	WDI

3.2 Econometric Models

The previous studies used different variables that affect income distribution but ignored the role of essential variables like political stability, socioeconomic conditind institutional quality. These variables affect the distribution of income and poverty. The functional form of the variable used in the analysis would be: $CapPOV = (FD, UNEM, GDP, ID, REM)$
$INEQ = (FD, UNEM, GDP, ID, REM)$
Where
POV= Poverty rate
INEQ= Income inequality
FD= Financial development
UNEM=Unemployment rate
GDP=Growth of Gross Domestic Product per capita REM= Remittances the econometric form of the model then becomes a functional form, $POV_t = \beta_0 + \beta_1 FD_t + \beta_2 UNEM_t + \beta_3 GDP_t + \beta_4 ID_t + \beta_5 REM_t + \mathcal{E}_t INEQ_t = \alpha_0 + \alpha_1 FD_t + \alpha_2 UNEM_t + \alpha_3 GDP_t + \alpha_4 ID_t + \alpha_5 REM_t + \epsilon_t$

The data for empirical analysis will cover the period from 1984 to 2019 for Pakistan.

3.3 Econometric Methodology

In the empirical analysis, we first tested the stationarity of each series by using the Augmented Dickey-Fuller (ADF) test. The stationarity of the variable is necessary because the lack of stationarity of the variables can affect the consistency of the coefficients (Gujarati & Porter, 2009). At the same time, the existence of the series' stationarity in the first difference or stationarity in level and first difference for some variables recommended the ARDL method for estimating the short-run effects. However, the Bound Test can be used for the long-run relationship, which can be estimated later using the ARDL approach to cointegration.

3.3.1 Unit Root Test

The unit root is a pre-estimation test stating that the series should be stationary to avoid spurious regression, as Granger and Newbold (1974) pointed out. Spurious regression occurs when estimates of the non-stationary series are biased towards the presence of a significant relationship, although no relationship exists. This implies that unit root testing for the stationarity of the series is a prerequisite for estimating the relationship among the series. It is observed that non-stationary series typically comprises the trend and, to some extent, stochastic process. The ADF test was mainly in practice to confirm the series' stationarity. The null hypothesis of the ADF test is that the series is not stationary, and the alternative hypothesis concerns the series' stationarity. The stationarity of the series indicates the presence of a constant mean, while non-stationarity indicates the time-varying mean of the series (Gujarati & Porter, 2009). We also presented the dynamic pattern of the variables used in the study in Figure A1, which is also a source of testing the presence of unit roots in the series.

3.3.2 Autoregressive-distributed Lag (ARDL) Technique

After testing the existence of series' stationarity in level or first difference or both. The next appropriate choice of model. For estimation of short-run results, the most appropriate model is ARDL in the presence of all variable non-stationarity at the level. The model comprises different lags of the different dependent and independent variables. The choice of the lags is based on the Akaike information criterion (AIC). The model with the lowest AIC is more appropriate than the others.

3.3.3 Bound Test Approach

The existence of the long-run relationship among the variables can be tested using the bound test. In this approach, all the explanatory variables are regressed at the first lag level of the series. Then,

the coefficient's joint significance is tested using the F-statistic technique to test the null hypothesis that no long-run relationship exists. At the same time, its alternative is the presence of a long-term relationship. After calculating the Wald F-statistics value, compare it with the upper and lower bound critical values. The higher value of the F-stat than the upper bound's value indicates the cointegration's presence. However, a lower F-stat value than the lower bound's value indicates no cointegration. If F-statistics is between the lower and upper bound, then the presence of cointegration is inconclusive.

4 Empirical Results and Discussion

4.1 Descriptive Analysis

Table 2 depicts the descriptive analysis over the 36 years. The mean value of private sector credits to GDP ratio (financial development) is 22%, but there is less disparity over time, as confirmed by the range and standard deviation. The average real GDP growth is 4.5% over the given period, with higher disparities as shown by range and standard deviation. Moreover, skewness is negative but close to zero, indicating the normal distribution. Still, Kurtosis suggests that most values are away from the mean and that the lesser frequency of the values is close to the mean. The income inequality over time depicts lesser disparities among the data. The higher negative value of skewness and higher value (above 3) of Kurtosis suggest that the distributions are leptokurtic. Most of the data's frequency is near the income inequality's mean value, indicating lesser disparities.

The minimum value of institutional development is 4.35 scale points, and the maximum is 8.83, with a mean value of 6.7 scale points. The highest score for institutional development is on an 18-point scale for a developed country like Norway (ICRG, 2017). However, the current level of institutional development is not satisfactory and is below the average level. The institutional development is usually distributed with the above 3 Kurtosis, which depicts lesser disparities and a higher frequency of data around the mean. The remittances to GDP ratio is, on average, 4.7%, with a maximum 8.2% surge after the 9/11 incident. The remittances to GDP are also normally distributed, and a higher level of disparities is observed as Kurtosis is less than 3 in the unemployment rate the higher level of disparities observed as Kurtosis is less than 3. A higher level of disparities is observed in the poverty level of Pakistan, as suggested by the difference between maximum and minimum levels and standard deviation. Moreover, the poverty rate is typically distributed, as confirmed by the Jarque-Bera, and higher disparities are also confirmed from the Kurtosis as it is less than 3.

Table 2: Descriptive statistics of variables used in the analysis

	FIN	GDP	IRAQ	IQ	REM	UNEM	POV
Mean	22.70	4.50	40.15	6.71	4.77	5.56	31.24
Median	23.99	4.78	40.68	6.98	4.66	5.90	30.23
Maximum	29.79	7.71	41.80	8.83	8.28	8.30	38.68
Minimum	15.39	0.99	35.36	4.25	1.31	3.10	23.49
Std. Dev.	4.11	1.87	1.65	0.90	2.04	1.48	4.65
Skewness	-0.31	-0.14	-1.19	-0.55	0.08	-0.027	0.17
Kurtosis	1.96	2.33	3.66	3.69	1.89	2.50	1.72
Jarque-Bera	2.18	0.79	9.11	2.53	1.87	0.38	2.64
Probability	0.34	0.67	0.01	0.28	0.39	0.83	0.27
Sum	817.31	161.95	1445.32	241.52	171.81	200.00	1124.53
Sum Sq. Dev.	589.31	121.75	94.88	28.62	145.17	76.67	755.20
Observations	36	36	36	36	36	36	36

4.2 Correlation Analysis

Table 3 represents the correlation matrix of the variable used in the analysis. The negative

associations between financial development and income inequality are observed. The absolute value of the correlation coefficient in the range of 0.40-0.59 indicates moderate associations. The negative association of GDP growth with income inequality is also observed. The relatively weak associations were observed because the estimated range of the correlation coefficient is 0.200-0.390. Strong positive associations were observed between income inequality and institutional development. It implies that the potential benefits of institutional development are not transmitted to the bottom 20% of the population. The association between poverty and income inequality is as expected because it depicts a strong positive association because the estimated correlation coefficient is above 0.8. The association of the remittances with income inequality is negative but weak because the estimated value of the correlation coefficient is less than 0.2. Moreover, the association between unemployment and income inequality is strongly positive because the correlation value is 0.69.

We present the correlation coefficients of poverty with other covariates in Table 3. A strong negative association is observed between poverty and financial development because the value of the correlation is in the range of 0.60-0.79. Similarly, the association between poverty and GDP growth is negative but weak as per the level of magnitude. The association between poverty and income inequality is as expected because it depicts a strong positive association because the estimated correlation coefficient is above 0.8. Strong positive associations were observed between poverty and institutional development. It implies that the potential benefits of institutional development are not transmitted to mitigating poverty. A weak and negative nature association was observed between GDP and poverty. The association between poverty and unemployment is moderately positive because the correlation coefficient value is 0.53. Moreover, the correlation in the covariates used in the analysis is not very strong in the nature observed. It implies the lack of possibility of multicollinearity. We also presented the scatter plot of the outcome variable against the covariates in Figure A2 and Figure A3 to observe the relationship between the variables.

Table 3: Correlation coefficients of the variables used in the analysis

	FIN	GDP	INEQ	IQ	POV	REM	UNEM
FIN	1.00						
GDP	0.13	1.00					
INEQ	-0.61	-0.34	1.00				
IQ	-0.32	-0.45	0.64	1.00			
POV	-0.77	-0.28	0.83	0.60	1.00		
REM	-0.29	0.13	-0.11	-0.24	0.27	1.00	
UNEM	-0.39	-0.09	0.70	0.44	0.54	-0.43	1.00

4.3 Pre- and post-estimation test

4.3.1 Unit root test

In Table 4, we presented the unit root testing using the ADF—the testing comprising the series in the level by incorporating the constant. Further, testing is also done by incorporating constant and time trends. Moreover, the same exercise was also carried out for the first difference series. It was also tested by incorporating the constant. Further, testing is also done by incorporating constant and time trends. The null hypothesis of the ADF test is subject to the series' non-stationarity (unit root), while the alternative hypothesis is subject to the stationarity of the series. The results of the ADF tests indicate that GDP growth (GDP) is stationary at a level for both constant and trend with constant. Poverty (POV) and income inequality are unit root at a constant level and stationary at constant for the constant and trend. However, financial development (FIN), remittances (REM), institutional quality (IQ), and unemployment (UNEM) are not stationary at a level in the specification of constant or constant trends. Panel B of Table 4 depicts the stationarity of all the series at the first difference in the constant specification or even constant with trend—the

stationarity of the variable observed after getting the first difference not at level.

Table 4: ADF test of unit root

Variables	Intercept		Tend and Intercept	
	t-statistic	**p-values**	**t-statistic**	**p- values**
POV	-1.0351	0.7297	-3.9590**	0.0198
INEQ	-1.6414	0.4514	-1.7065	0.7270
FIN	-1.1457	0.6864	-3.0179	0.1427
IQ	-2.2855	0.1827	-2.0643	0.5438
GDP	-3.7399***	0.0076	-3.9391**	0.0207
UNEM	-1.6713	0.4366	-1.1438	0.9065
REM	-1.4204	0.5612	-1.8417	0.6627
1st difference				
	Intercept		**Tend and Intercept**	
	t-statistic	**p-values**	**t-statistic**	**p-values**
POV	-8.2821***	0.0000	-8.1867***	0.0000
INEQ	-5.4603***	0.0001	-19.106***	0.0000
FIN	-4.5909***	0.0008	-4.5032***	0.0054
IQ	-3.3578**	0.0216	-4.1557**	0.0146
GDP	-7.0754***	0.0000	-6.9496***	0.0000
UNEM	-4.8153***	0.0004	-4.9849***	0.0016
REM	-4.9387***	0.0003	-5.2978***	0.0007

4.3.3 Cointegration Test

The ARDL bound test is carried out to determine the presence of the cointegration. The variables financial development (FIN), institutional quality (IQ), unemployment (UNEM), and real GDP growth (GDP) are tested by utilizing the ARDL Bound Test to cointegration. The calculated F-statistics of the poverty model is 4.3057, which suggests that it is higher than the upper bound level at a significance level of 10% (see Table 5 left). It implies the rejection of the null hypothesis that no long-run relationship exists. On the other hand, the calculated F-statistics for the income inequality model is 5.1327, which suggests that it is higher than the upper bound level at a significance level of 10% (see table 5 right). It implies the rejection of the null hypothesis that no long-run relationship exists.

Table 5: ARDL Bound test for poverty model and income inequality model

Poverty model			**Income inequality model**	
F-statistics= 4.31, k= 5			F-statistics= 5. 13, k= 5	
Significance level	**Lower bound I (0)**	**Upper bound I (1)**	**Lower bound I (0)**	**Upper bound I (1)**
10%	2.45	3.52	2.26	3.35
5%	2.86	4.01	2.62	3.79
2.5%	3.25	4.49	2.96	4.18
1%	3.74	5.06	3.41	4.68

4.4 Regression analysis for poverty model

The short-run and long-run results on the effect of financials and institutional developments in poverty are presented in Table 6. The estimated adjusted $R2$ values explain 84 percent of the variance for the determinants of poverty. The coefficient of financial development is statistically significant and negative. This implies that increasing financial development by 10 percent will decrease poverty by 1.5 percent in the short run. The financial development coefficient is also harmful in the long run and statistically significant. In the long run, if financial development increases by 10 percent, poverty will decrease by 4%. The coefficient of financial development on the poverty supports hypothesis 1, which states that financial development lowers poverty in

Pakistan. Pakistan is an emerging economy with untapped potential. However, increasing private sector credit may result in higher returns, increase investment opportunities, and trickle down this effect by reducing poverty. It is contrary to the Khan et al. (2012). While consistent with the findings of the Appiah et al. (2020).

The estimated coefficient of institutional quality is positive and statistically significant. This implies that an increase in institutional quality by 10 percent will increase poverty by 4 percent in the short run. The effect of institutional quality is positive and statistically insignificant in the long run. This result is consistent with the existing empirical findings of Perera and Lee (2013). The coefficient of institutional development on poverty does not support hypothesis 2, which states that institutional development lowers poverty in Pakistan. The short-run positive effect suggests that Pakistan is a developing economy, and improvement in institutions is a signal of an increase in the formal sector, so people will be reluctant to invest and document their business. It implies that people want to commence business informally or undocumented to get the privilege of tax evasion (Shair et al., 2023d). However, improvement in institutional quality may threaten investors or business people to quit the business, resulting in higher poverty. It does not imply that there should not be improvement in institutional quality, but a complement is required to transmit the effect of institutional quality as poverty-mitigating.

The estimated coefficient of real GDP growth is significant and positive. The economic growth of Pakistan remains unstable over time (see Figure A1). The effect of economic growth is statistically significant in the long run. In the long run, if economic growth increases by 10 percent, poverty will decrease by 2.8%. This result is consistent with the existing empirical findings of Tahir et al. (2014) and Bonito et al. (2017). This implies that long-run economic growth is more important in mitigating poverty in Pakistan than short-run economic growth. Long-run economic growth is more stable and predictable and significantly affects investors' decisions to undertake projects with certainty. Pakistan's estimated unemployment rate coefficient is statistically insignificant in the short run. Similarly, it is also insignificant in the long run but negative. This result is consistent with the empirical findings of Dahliah and Nur (2021). The lack of significance in the short run and long run is because most of the families in Pakistan live in the joint family system. Therefore, other family members can support monetary loss due to unemployment. Moreover, monetary loss due to the unemployment of a family member can be compensated with the social safety net program or other alms in the low-income family. Therefore, the unemployment rate does not affect poverty in Pakistan. The error correction coefficient suggests that in the case of disequilibrium from the long-run path, almost 54% adjustment was made one year towards long-run equilibrium in the short run.

Table 6: Short-run results for poverty

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POV(-1))	-0.4695**	0.1998	-2.3502	0.0406
D(FIN)	-0.1519**	0.0658	-2.3092	0.0432
D(IQ)	0.4845**	0.1579	3.0681	0.0119
D(GDP)	-0.0340**	0.0197	-2.0318	0.0696
D(UNEM)	-0.0825	0.0683	-1.2068	0.2553
D(REM)	0.2957	0.2400	1.2319	0.2113
Coint Eq (-1)	-0.5431**	0.1995	-2.7215	0.0215
Long run estimates				
FIN	-0.4016**	0.1345	-2.9846	0.0137
IQ	0.2324	0.2724	0.8533	0.4135
GDP	-0.2764**	0.0941	-2.9385	0.0148
UNEM	-0.0326	0.1219	-0.2671	0.7948
REM	0.13213**	0.0531	2.48730	0.0231
C	4.7507***	0.7171	6.6249	0.0001

R-square	0.8431
Adj. R-square	0.8375
Durbin-Watson stat	2.2652

*, **, and *** show 10%, 5%, and 1% levels of significance, respectively

4.5 Regression analysis for income inequality model

The ARDL procedures for cointegration are used to estimate the effects of financial and institutional development on income inequality in Pakistan. Table 7 presents the estimated short— and long-run relationship among the variables. The model has relatively satisfactory explanatory power in terms of adjusted *R*2. The estimated adjusted *R*2 values explain 79 percent of the variance for the determinants of income inequality in Pakistan.

The estimated coefficient of financial development is negative and statistically significant. This provides evidence that an increase in financial development by 10 percent will decrease income inequality by 0.18 scale points in the short run. The effect of financial development is statistically significant in the long run. The coefficient of the financial development on the income inequality supports hypothesis 3, which states that financial development lowers the income inequality in Pakistan. This result is consistent with the findings of Bittencourt (2010). In the long run, if financial development increases by 10 percent, poverty will decrease by 6.8%. It implies that the effect of financial development is higher in the long run than in the short run. The short-run and long-run adverse effects suggest that it takes time for an individual from the bottom-income group to uplift to the lower middle-income group due to the return of loans. Completing interest plus principal payment can add to the household income previously not utilized at the household level.

The estimated coefficient of institutional quality is positive but statistically insignificant. The institutional quality coefficient is positive. However, it is insignificant in the long run. The coefficient of institutional development on the poverty does not support hypothesis 4, which states that institutional development lowers income inequality in Pakistan. It is consistent with law et al. (2014). The authors justify the unaffected nature of institutional development on income inequality in a non-linear relationship. Financial development can lower income inequality before a certain threshold is reached. However, before this threshold, inequality of income did not lower. Improving institutions can result in better governance and a step towards the diffusion of the formal sector but does not directly benefit in reducing inequality. However, a better institution complements the cash flow of transfers to uplift the bottom population. This implies that better institutions may transparently help channel cash transfers and other alms to the bottom segment of the population.

The estimated coefficient of real GDP growth is negative and statistically significant. This provides evidence that an increase in real GDP growth by 10 percent will decrease income inequality by 0.03 scale points in the short run. This result is consistent with the existing empirical findings of Tahir et al. (2014). The effect of real GDP growth is negative but statistically insignificant in the long run. The lack of significance in the long run is due to an unstable economic growth path. In the long run, the lower income inequality due to higher economic growth is offset by the higher income inequality due to lower economic growth. It also implies that lower volatile economic growth may result in better outcomes on income inequality.

The estimated unemployment coefficient is positive and statistically significant in the short run. Likewise, the effect of unemployment is positive and statistically significant in the long run. This result is consistent with the existing empirical findings of Castells-Quintana and Royuela (2012). This provides evidence that an increase in unemployment by 10 percent will increase income inequality by 28 scale points in the long run. It implies that the persistence of unemployment over

time may significantly decrease labor income and other sources of income, and lower income implies higher income inequality.

The estimated coefficient of remittance is negative but statistically insignificant in the short run. The lack of significance in the short run can be explained by the fact that the migration of a family member is associated with a higher level of expense. Initially, migrants sent money to pay the expenses associated with migration, which was borrowed from individuals or institutions (Shair et al., 2023b; Shair et al., 2023c). It implies the unaffected nature of remittances in the short run. However, the effect of unemployment is positive and statistically significant in the long run. This result is consistent with the empirical findings of Koechlin and Leon (2007). This provides evidence that an increase in remittances by 10 percent will increase income inequality by 8.9 scale points in the long run. This implies that the migration of members is associated with higher returns, a positive function of the period of staying abroad. This increases the income of the remittance-receiving family compared with the non-remittance-receiving family.

The error correction coefficient suggests that in the case of disequilibrium from the long-run path, almost 64% adjustment was made one year towards long-run equilibrium in the short run.

Table 7: Short-run result for the income inequality

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D (INEQ (-1))	-0.6246	0.2866	-2.1793	0.1174
D(FIN)	-0.0183*	0.0072	-2.5477	0.0841
D(IQ)	0.0032	0.0049	0.6549	0.5592
D(GDP)	-0.0037*	0.0012	-3.0439	0.0557
D(UNEM)	0.0236*	0.0081	2.9165	0.0617
D(REM)	-0.0005	0.0019	-0.2400	0.8258
CointEq (-1)	-0.6492**	0.1492	-4.3520	0.0224
Long run results				
FIN	-0.6800*	0.2570	-2.6464	0.0772
IQ	0.1521	0.5966	0.2549	0.8153
GDP	-0.5064	0.4725	-1.0718	0.3624
UNEM	2.8840***	0.3413	8.4495	0.0035
REM	0.8966**	0.1632	5.4923	0.0119
C	37.3381***	2.1818	17.1138	0.0004
R-square	0.7999			
Adj. R-square	0.7992			
Durbin-Watson stat	2.6021			

, **, and * show 10%, 5%, and 1% levels of significance, respectively*

5 Conclusion

This study examined the effect of financial and institutional development on poverty and inequality in Pakistan. The estimated coefficient of the ARDL model suggests that financial development is negative and statistically significant in the short run and long run to affect poverty. The effect of financial development is also statistically significant in the long run. It implies that the effect of financial development is higher in the long run than in the short run. Pakistan is an emerging economy with untapped potential. However, increasing private sector credit may result in higher returns, increase investment opportunities, and trickle down this effect by reducing poverty. The estimated coefficient of institutional quality is positive and statistically significant in the short run. However, the effect of institutional quality is positive but statistically insignificant in the long run. The short-run positive effect suggests that Pakistan is a developing economy, and improvement in institutions is a signal of an increase in the formal sector, so people will be reluctant to invest and document their business. It implies that people want to commence business informally or

undocumented to get the privilege of tax evasion. However, improvement in institutional quality may threaten investors or business people to quit the business, resulting in higher poverty. It does not imply that there should not be an improvement in institutional quality, but a complement is required to transmit the effect of institutional quality as poverty-mitigating.

The effect of financial development is negative but statistically insignificant on income inequality. However, the effect of financial development is statistically significant and harmful in the long run. The long-run negative effect suggests that it takes time for an individual from the bottom-income group to uplift to the lower middle-income group due to the return of loans. Completing interest plus principal payment can add to the household income previously not utilized at the household level. The effect of institutional quality is positive but statistically insignificant in the short run and long run. Improving institutions can result in better governance and a step towards the diffusion of the formal sector but does not directly benefit in reducing inequality. However, a better institution complements the cash flow of transfers to uplift the bottom population. This implies that better institutions may transparently help channel cash transfers and other alms to the bottom segment of the population.

Multiple macroeconomic factors can affect the level of poverty and inequality in Pakistan. This study highlights some of the factors that are essential to mitigating the level of poverty and softening the level of income inequality. Based on the study's findings, here are some recommendations and short-run and long-run policy measures. The importance of financial development emerges to mitigate the level of poverty. For this purpose, one window operation is required to disbarment credit sanctioned quickly. Short-term and long-term policies are required to enhance the population's financial literacy, and effective expansionary monetary policy is required to soften the policy rate. Policies related to financial inclusion are also required to distribute the benefits of financial development equally. Institutional development with compliments of other social safety net policies and cash transfer policies may help mitigate poverty and reduce income inequality. They are adopting policies to support informal sector workers who may be affected by institutional reform.

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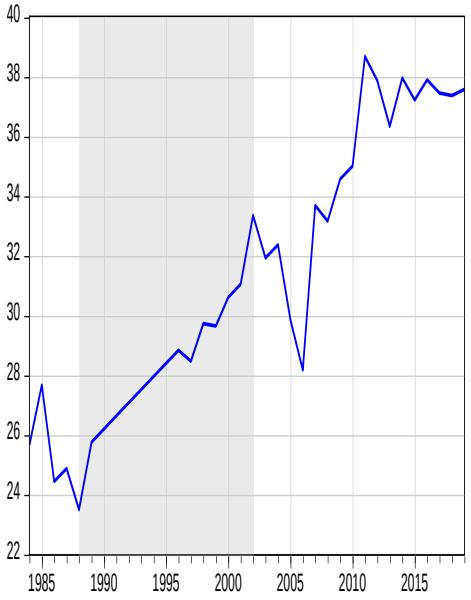
7 Appendix



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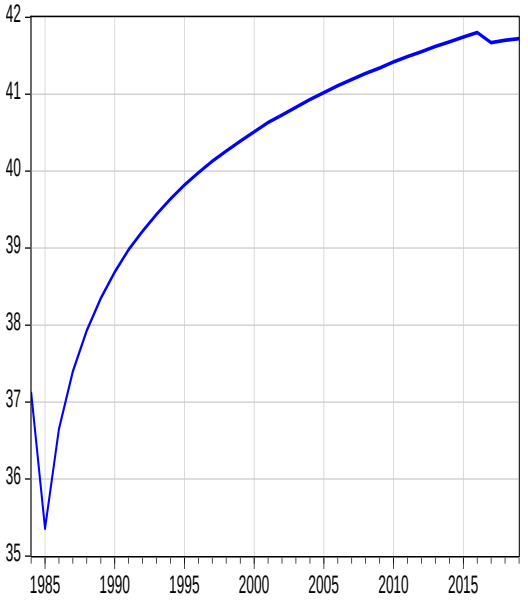

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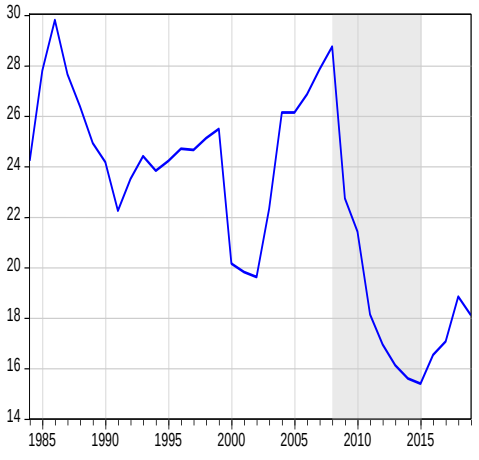
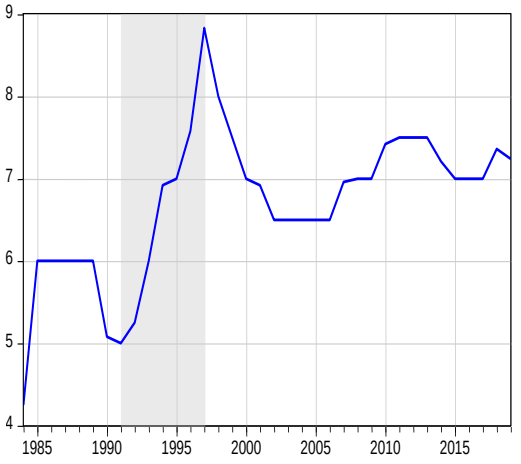
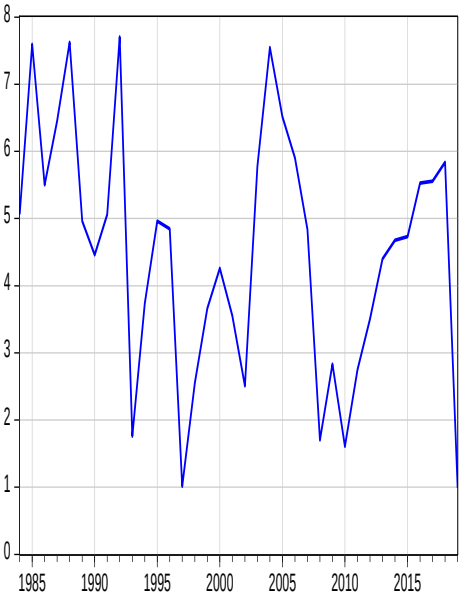


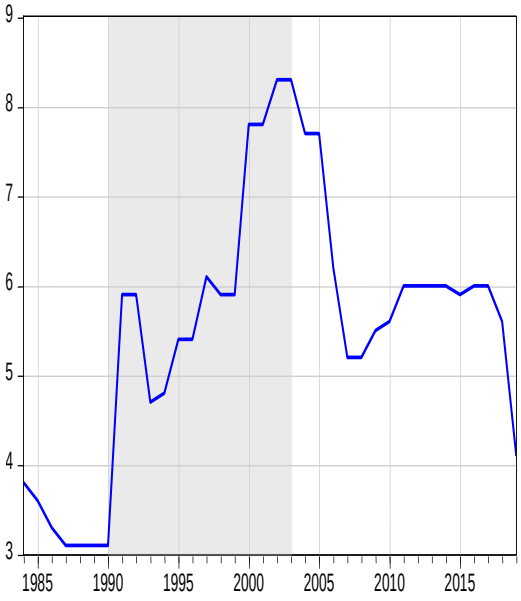
Private Sector Credits To GDP Ratio



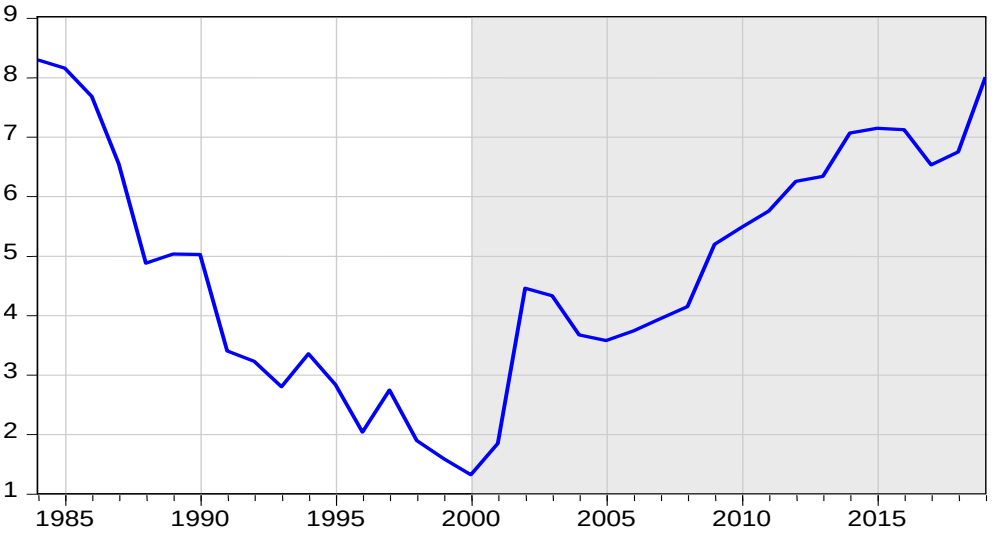
Institutional development



Real GDP Growth



Unemployment rate



Remittances as a Percentage Of GDP

Figure A1: Dynamic pattern of variables used in the study

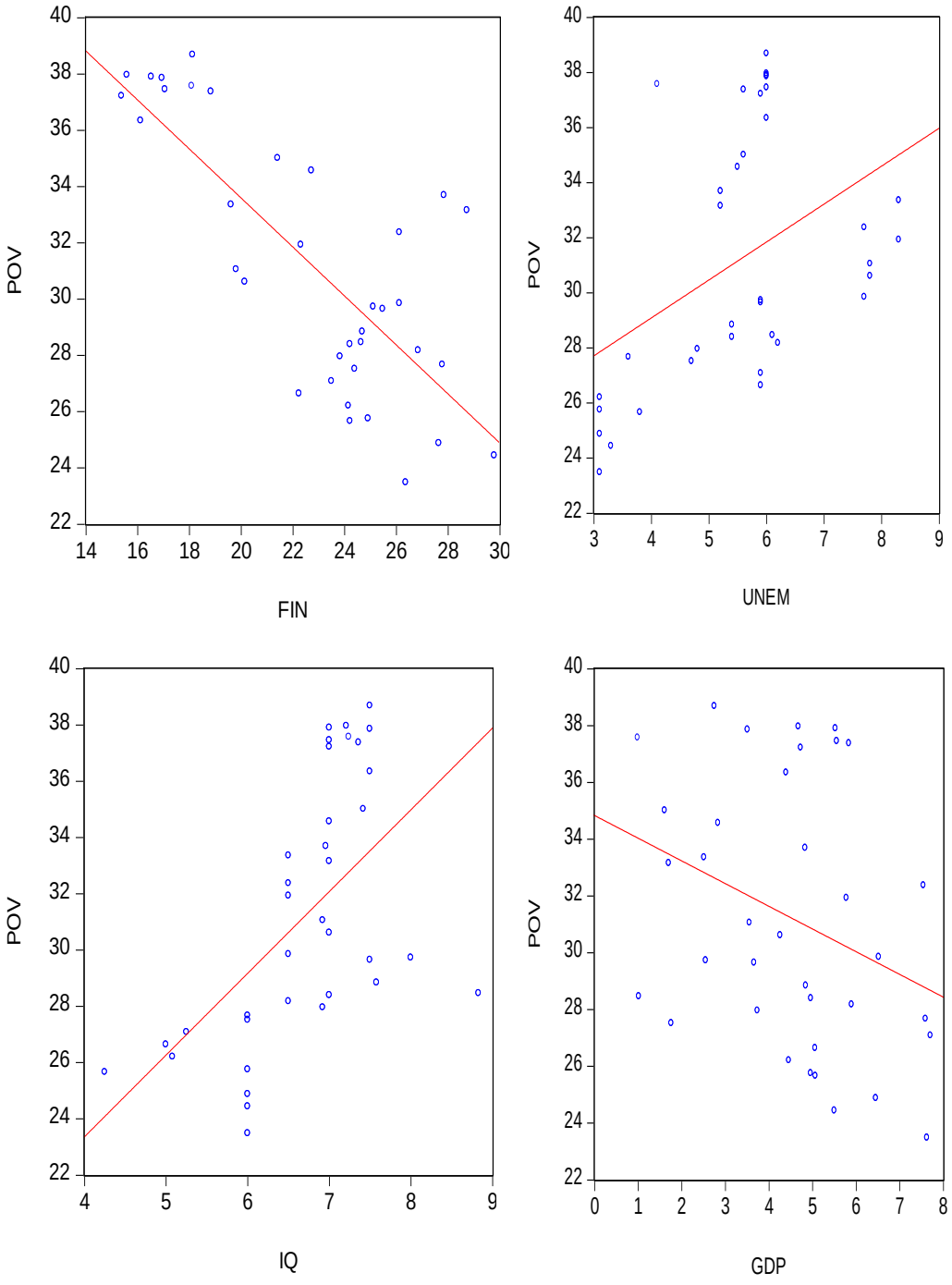


Figure A2: Scatter plot of poverty against the variates used in the study

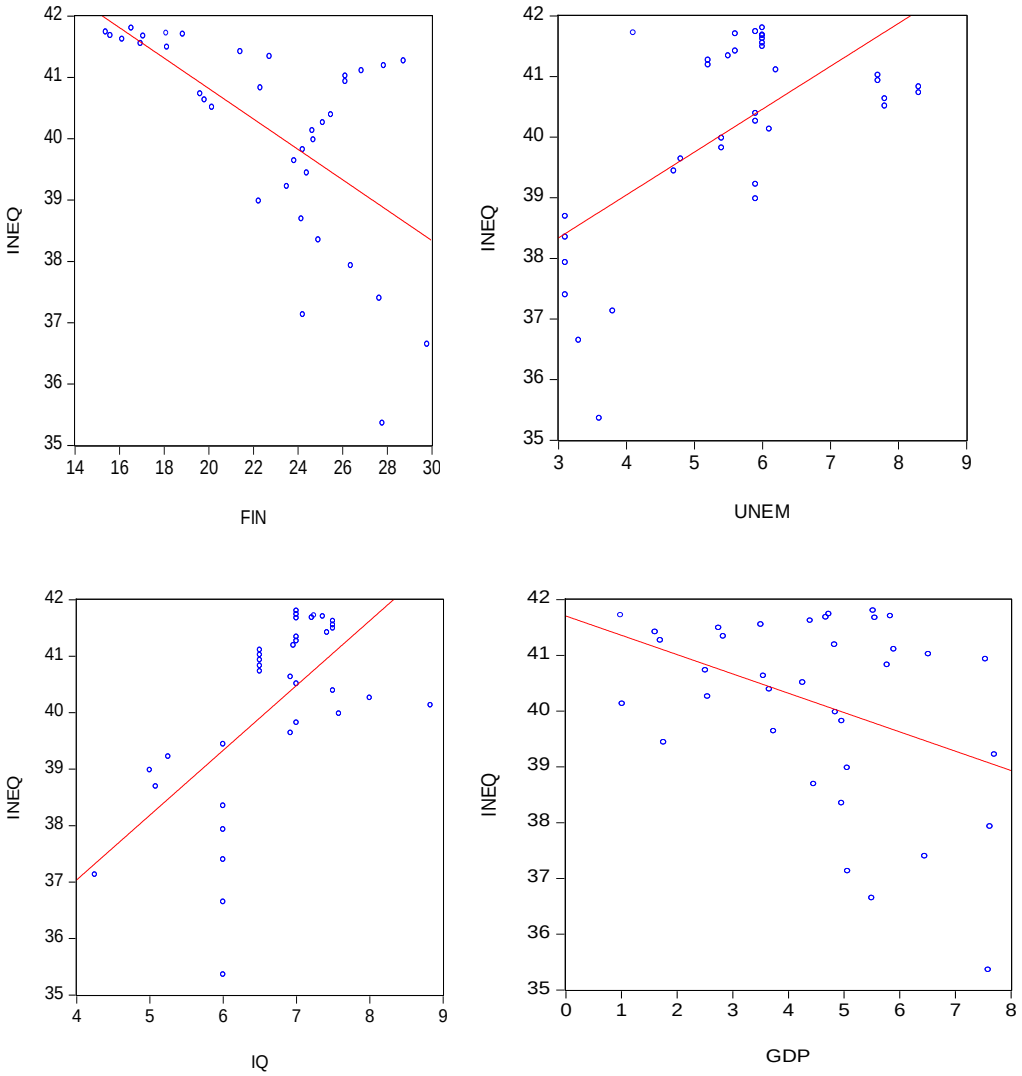


Figure A3: Scatter plot of income inequality against the variates used in the study