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NEXUS BETWEEN FINANCIAL DEEPENING AND INCOME INEQUALITY IN PAKISTAN: TIME SERIES ANALYSIS

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ABSTRACT

Despite financial growth in Pakistan, income inequality remains a serious concern. It is ambiguous and debatable whether financial deepening reduces inequality or favors the wealthier. The current investigation examined the association of financial deepening with income inequality in Pakistan from 1980 to 2022. We used an autoregressive distributed lag model to investigate the statistical relationships. Financial development exhibited a positive relationship with income inequality, but its square showed a negative association with the inequality. This evinces the quadratic relationship between these two variables. Gross domestic product and trade helped reduce income inequality. This affirms that Greenwood & Jovanovich's hypothesis of the Financial Kuznets Curve (FKC) holds for the long run in Pakistan. The short-run error correction model (ECM) and long-run ordinary least squares (OLS) results revealed that initially, income inequality increased due to financial development, but in the long run, it started decreasing when financial resources were accessible to the deprived population. The findings suggest that policy designers should focus on all the regions and keep in view the whole population while formulating the financial development policies in order to minimize the income inequality.

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INTRODUCTION

The economic literature has seen noticeable work regarding the association of income inequality and financial growth in recent times. Financial credit is essential to accelerate economic development in the financial sector. It includes the accumulation of savings for capital formation, which is indispensable for economic activity and employment generation. There is a concern that economists try to understand regarding the poor outcomes of financial development - that is, the increase in income inequality, particularly in less developed countries (Destek et al., 2020; Bolarinwa et al., 2021; Biyase and Chisadza, 2023). The system of financial services and methods available to an economic landscape for pursuing economic development is termed as financial deepening. Banking, stock, capital, and financial institutions are key segments of the financial development system in a country. In the past few decades, there has been significant development in the financial sector that has provided the expected outcome of income inequality reduction. The bottom income class of the population will be able to have more knowledge about financial opportunities and will reinvest their savings for capital formation; hence, it will level up their income status and reduce income inequality.

The core present assumption of most of the discussion about financial development is that it increases income variation. The questions of how the financial deepening works and what its mechanism is do not have comprehensive theoretical support. The association between different income groups and financial indicators has been investigated, but the discussion about which seems to be general and indeterminate. Moreover, some studies tried to assess the capability of the financial sector and its role in controlling the economy. It is a bit confusing and challenging as the financial sector develops and works always within the economic system, and it cannot work alone or beyond the economy, and cannot be treated separately. Despite the connected setup of financial institutions with other actors of the economy, the researchers have tried to investigate the lasting impact and differences of financial development within the economy.

Briefly summing up, the rationale of financial development involves the overall improvement in the function and structure of financial markets, development in inclusiveness, stability, and efficiency as well. It not only includes the banking system but also the stock market, insurance sector, bond market, and other saving channels (Loayza and Ranciere, 2006). Financial deepening is more concerned with the development in size and scope of financial services. Credits are the pillar in the provision of financial services; therefore, most of the literature uses the proxy- domestic credit by private banks as the percentage of GDP for financial deepening (Biyase and Chiszada, 2023). There are heterogeneous results for the association of financial deepening and income inequality. Some studies, like Banerjee and Newman (1993), explained that fewer restrictions in the financial sector and easy borrowing will reduce income inequality. Greenwood and Jovanovic (1990) discussed that, in most developed economies, the association exhibits a non-linear association of inequality and financial development. In the earlier stage of financial development, the financial sector provides benefits to the rich and wealthier class of society and increases income inequality, because the return to economic development remains smaller. After a certain period, the financial institutions and awareness

become inclusive and available to a larger population, and the inequality gets lower than before. The studies have used some other explanatory variables like GDP growth rate, interest rate, inflation, trade openness, etc., for broader visualization.

This investigation can be an important source for researchers in Pakistan to understand the complexity, significance, and nature of financial deepening and its role in reducing income inequality. The poor must be provided with less strict loans so that they can avail themselves of more opportunities to improve their living standard. The availability of funds will help them start a small business that will create employment opportunities, and it will develop a development cycle. There will be more funds for education, health, and nutrition, which will also help to increase overall societal wellbeing. The financial deepening plays a vital and inevitable part in the financial and economic growth of a country. It provides the analogy of the financial Kuznets curve (Kuznets, 1955), which describes that initially, with the formulation of the financial sector, the income inequality increases, and then over the period, it starts declining. In addition to major contributions on the U-shaped behavior of financial deepening and inequality, many studies have attempted to estimate the linearity between both factors, showing that financial deepening has proved a crucial factor in reducing income inequality. A country like Pakistan, which has been struggling with financial crisis related to its central bank reserves, deficit in trade, and political instability, needs to be more careful in making effective and implementable financial policies. In Pakistan, financial institutions are on their way to maturity, along with digitalization and public awareness. However, more concrete steps need to be taken to tackle the persistent financial crisis.

In the course of economic development, the inclusion of financial resources and opportunities faces major challenges in an informal economy. A major part of the population has not been documented yet. Having an efficient impact of financial deepening, the gap between the formal and informal economy can be greatly bridged. Similarly, the provision of uniform financial awareness and access to services in all regions of Pakistan can reduce regional disparities and the rural-urban divide. It is very important that there should be fair and equal distribution of financial development in all segments of society to have better results.

The financial pattern of a country has an important and multifaceted impact on income inequality and poverty. Expecting a significant impact of a country's financial system on the distribution of income, many researchers have investigated the relationship between income inequality and financial deepening around the world. Dabla-Norris et al. (2015) studied that a strong and deepened financial system has a positive impact on lowering income inequality as it helps withstand the financial shocks, thereby providing financial resources. Some other investigations revealed that financial development has increased income inequality in an economic system due to imperfections in the labor market (Te Velde, 2003; Inoue and Hamori, 2012). Similarly, Kim and Lin (2011) found a nonlinear association of income inequality with financial development indicators. They proposed that there must be a minimum level of standard established in the economy of financial institutions; otherwise, financial development will create an uneven economy, resulting in more income inequality.

With the provision of this backdrop, this study has an emphasis on exploring the financial system of Pakistan's economy and its association with inequality. The inspiration comes from the fact that Pakistan is overpopulated and has a large geographical area. The country is struggling with poverty and income inequality, and trying to maintain its financial resources, engulfed in the trap of foreign debts, which is inversely impacting economic growth. So, this study has been designed to investigate the long-run empirical impact of financial deepening on wealth inequality in Pakistan. The study involves two main research questions: 1) What is the effect of financial deepening on income inequality in Pakistan, and 2) to what extent does the macroeconomic development, along with financial development, help reduce income inequality?

METHODOLOGY

This study has investigated the relationship between income inequality and financial development measures in Pakistan. There has been considerable development in the financial sector over the years in the country. Financial access, risk aversion, knowledge, and provision of credits and financial facilities have a large impact on income distribution. Thus, it has a strong linkage with income inequality and inequality of opportunity in Pakistan. This study is novel in the way that it includes some important traditional factors like gross domestic product, per-capita income, and trade growth, along with financial development, for which domestic credit to the private sector by the banks has been used as a proxy variable.

In this study, we have used cointegration analysis to measure the relationship in the long run between financial deepening and income inequality. Major macroeconomic variables like gross domestic product growth and trade are also added to the model. After confirming the long-run association among the variables, a bounds test was performed to verify the existence of cointegration among the variables. Thereafter, we executed the Error Correction Model (ECM) to look at the short-run dynamics (response to unexpected shocks) and speed of adjustment towards the long-run equilibrium. Finally, for the long run coefficients of explanatory variables, the ordinary least squares method has been used. We have explained the relationship of inequality with financial development and some other economic indicators using time series data (1980-2022) of Pakistan. Our baseline model is given in Equation 1. The main variable of interest is financial deepening, for which domestic credit to the private sector by banks (% of GDP) has been used as a proxy variable. This proxy has also been used elsewhere (Jauch and Watzka, 2016; Biyase and Chisadza, 2023). The inequality data have been taken from the Standardized World Income Inequality Database (SWIID), and the other variables are taken from World Development Indicators (WDI). In the basic model, income inequality is the dependent variable, whereas trade, financial development, gross domestic product growth, and per capita income are explanatory variables. Table 1 describes the variables used in the model.

$$IE = f(FD, FD\ square, GDP\ growth, Trade) \quad (1)$$

Table 1. Variable description.

Variables	*Description*
IE (Income Inequality)	Income inequality, Gini index
GDP growth	Growth rate of Gross domestic product in current US $
Trade	% of Gross Domestic Product
FD	Domestic credit to private sector by banks
FD Square	The square of FD

Autoregressive Distributive Lags (ARDL) model (Pesaran et al., 2001) is an established tool that we use to investigate the long run association of financial deepening with income inequality, and its non-linear impact on inequality. The usefulness of ARDL estimates has been well documented in academic and professional contexts, with better integration of different orders and lags. We have tested whether our model is suitable for this methodology, followed by the procedures according to the empirical guideline.

RESULTS AND DISCUSSION

A summary of descriptive statistics of variables included in the model is given in Table 2, where the minimum Gini index is 34% and the maximum Gini index value is 35% which shows the existence of inequality in Pakistan. From 1980 to 1990, there had been a consistent increasing trend in income inequality in Pakistan, and after that, the restart of the democratic rule showed some decline in the Gini index due to favorable public policies. The historic data shows that due to industrialization in the country during the 1960s, and due to the influx of foreign aid and removal of economic sanctions in the 1980s, the income inequality improved in Pakistan. Whereas, due to nationalization and possibly the corruption issues in the 1970s, and increased regional disparity and poverty during the 1990s, it worsened.

During military rule from 1999 to onward for a few years, the open trade policies and economic policies increased the wealth of some people, but it also resulted in increased inequality. Afterwards, there has been a decreasing trend in income inequality. So, from 2000 to 2017, there has been some major macroeconomic development in IT, manufacturing, and the private sector; all have been encouraged to participate in economic development, which revealed some positive impact on reducing poverty. Again, from 2017, the income inequality started increasing in Pakistan, and that situation is getting worse along with inflation as well. It was mainly due to a foreign reserves deficit and a lack of foreign and local investment. Overall, during the last four decades, income inequality has seen many ups and downs and has not shown a consistent improvement over time. This needs continuous monitoring and stable efforts to tackle the issue.

Watching the trends of financial deepening is also important. Figure 1 shows discontinuous ups and downs in financial development in Pakistan from 1980 to 2022. Initially, there had been a persistent increase in financial development from 1980 to 1987, and after that, there was a sharp decline from 1987 to 1998. Therefore, there have been fluctuations in the financial deepening data, which shows instability over different decades. Overall, it looks like a declining trend in financial development that shows the financial problems of Pakistan, including the availability of hard loans for people to invest and to do business. It also means that a certain population has been getting benefits from the financial sector, and the rest of the people have remained neglected. In 2022, 28.2% men and 13.5% women had access to any account in a bank or in a financial institution. There has been a major gap in financial inclusion, especially based on gender, size of enterprise, and remoteness of rural areas. A large part of the unbanked population will be a hindrance to the documented digital economy.

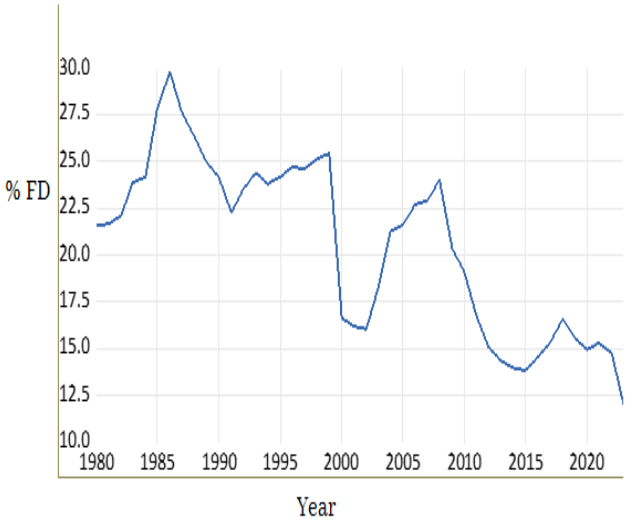

Figure 1. Financial development in Pakistan 1980-2022; Source: World Development Indicators (WDI, 2020).

The behavior of data reveals that financial deepening has a strong relationship with income inequality. There has been an unstable trend in the growth of financial development, just like the economic growth of Pakistan. As per recent statistics of the State Bank of Pakistan, domestic credit (the key proxy for financial deepening) was reported to be 11.9% of GDP in 2023 and 14.2% in January 2025, which was less than the previous year when it stood at 16.4%. In recent times, it is more likely that demand for credit will increase in Pakistan in the private sector for two reasons. Firstly, a new tax on deposits, that is the Advances to Deposits Ratio (ADR), has encouraged banks to supply more credit, and secondly, the reduced rate of interest in Pakistan can increase the demand for credit. This scenario would help increase business activities, and the inflation rate would start declining, leading to a better economic situation.

Table 2. Descriptive statistics.

Statistic	*GINI (%)*	*FD*	*Sq. FD*	*GDP Growth*	*Trade*
Mean	34.45	20.68	448.85	4.80	31.47
Median	34.50	21.66	469.29	4.78	32.41
Maximum	34.90	29.79	887.21	10.22	38.50
Minimum	34.00	11.90	141.61	-0.04	21.46
Std. Dev.	0.23	4.66	190.26	2.15	4.37
Skewness	-0.09	-0.16	0.13	0.07	-0.55
Kurtosis	2.20	1.82	2.04	2.81	2.44
Jarque-Bera	1.21	2.65	1.77	0.10	2.76
Probability	0.55	0.27	0.41	0.95	0.25
Sum	1481.50	889.23	19300.37	206.33	1353.08
Sum Sq. Dev.	2.19	911.11	1520274.00	193.90	801.36
Observations	43.00	43.00	43.00	43.00	43.00

Multicollinearity Test

Before starting the empirical investigation, a multicollinearity test was performed to check the collinearity in explanatory variables by the variance inflation factor (VIF). Collinearity within the regressors can lead to misleading results. If the value of centered VIF is greater than 5, it exhibits the presence of multicollinearity in explanatory variables (Kock and Lynn, 2012). The value of centered VIF shows there is no severe problem of multicollinearity among independent variables (Table 3).

Following the collinearity diagnosis, our empirical investigation advances by taking the unit root test of all variables using ADF and Phillips and Pesaron (PP) tests. The results show that the Gini index and trade are stationary at the first level, and gross domestic product, financial deepening, and the square of financial deepening are stationary at level. Thereafter, confirming the long integration in the variables, we checked the long run bounds test to examine if there is a long run relationship or not. ARDL and long run bounds test confirm the long run relationship in the model. The value of the F-statistic in the long run bounds test is greater than the upper bound limit at the level of 2.5%, so we can reject the null hypothesis of no co-integration at this level. ARDL and long-run bounds test affirm the long-run association between dependent and independent variables included in this model. We go for the ARDL test afterwards. For the selection of the order of lags in the model, we used Akaike Information Criteria (AIC). It suggested the lag order as (1,4,4,0,3) after 2500 iterations. This order was a precise identification of the required lags (Table 4).

The long run and short run estimations and coefficient values are given in the tables below (Tables 5 and 6). The model used the Gini index (a measure of income inequality), financial development and its square term (to check non-linearity), trade, and GDP growth rate. All coefficient diagnostics and residual diagnostics established that the model can be further pursued and taken into consideration for econometric evaluation of our hypothesis (Table 5).

Table 3. Variance inflation test.

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
Constant	0.050	58.990	NA
FD	0.000	41.230	1.946
GDP Growth	0.000	6.826	1.118
Trade	0.000	97.746	1.806

Table 4. Unit root results using ADF test.

Parameter	*GINI*	*FD*	*SDFD*	*GDP growth*	*TRADE*
	At first difference	At level	At level	At level	At first difference
t-statistic	-5.324	-4.33	-4.458	-5.047	-5.911
P-value (Prob.)	0.000	0.007	0.005	0.001	0.000

Table 5. Long run bounds testing.

Long Run Bounds Testing	*Value*	*Signif.*	*1(0)*	*1(1)*
F-Stat	4.30	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88%	3.87%
		1%	3.29	4.37

Asymptotic: N-1000; Finite Sample: 40; Null Hypothesis: No level relationship.

Table 6. ARDL Error Correction Model (ECM) results.

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
D(GINI(-1))	-0.014	0.175	-0.078	0.939
D(GINI(-2))	0.302	0.176	1.717	0.110
D(GINI(-3))	-0.361	0.148	-2.433	0.030
D(FD)	0.081	0.045	1.779	0.099
D(FD(-1))	0.096	0.043	2.226	0.044
D(Sq. FD)	-0.002	0.001	-1.844	0.088
D(Sq. FD(-1))	-0.002	0.001	-2.316	0.038
D(Sq. FD(-2))	-0.001	0.000	-4.664	0.000
D(Sq. FD(-3))	-0.001	0.000	-3.380	0.005
D(GDP Growth)	-0.006	0.008	-0.839	0.417
D(GDP Growth(-1))	0.001	0.008	0.160	0.876
D(GDP Growth(-2))	0.023	0.007	3.387	0.005
D(GDP Growth(-3))	0.017	0.007	2.352	0.035
D(Trade)	0.006	0.006	1.050	0.313
D(Trade (-1))	-0.008	0.006	-1.408	0.183
D(Trade (-2))	0.012	0.005	2.159	0.050
D(Trade (-3))	0.013	0.006	2.296	0.039
*Coint. Eq(-1)**	-0.584	0.098	-5.982	0.000

Dependent: Diff (Gini); Selected model: (4,2,4,4,4); Observations: 36; Adjusted R-sq: 0.67

Interpretation of Long-run Estimates and ECM

The short run estimates showed that the Error Correction Model ECM (-1) engaged the model with a negative value, and it is statistically significant at 1% level (Table 6). It allows for the estimation of the long-run association of the variables included in the model. Its value of -0.58 showed that the model following the shock has a speed of settling itself up to 58% over a year. The sign and significance of short-run estimates are widely aligned with the long-run estimates. Particularly, it supports the confirmation of a long-run relationship between income inequality and financial development.

The coefficient values affirm that predictions in the long run from OLS results are consistent with our hypothesis. All explanatory variables, except trade, show considerable influence on income inequality in Pakistan. In earlier years, the financial deepening has shown a positive and significant impact on income inequality in Pakistan, whereas the later stage of the financial development showed a negative and significant impact on income inequality (as the square term shows). It means, in the initial stage, the financial development increases the income inequality, and after a certain period, the development in the financial sector reduces income inequality. The long run coefficient of financial deepening and its square term means that financial development will increase income inequality by 0.18 points at the start, but later it will reduce inequality. There has been poor infrastructure, a lack of digitalization, and illiteracy in developing countries like Pakistan; therefore, initially, only a limited portion of the population has access to and knowledge of the financial resources and opportunities.

Stability Tests

The CUSUM (cumulative sum of recursive residuals) and CUSUMSQ (cumulative sum of square of recursive residuals) are very important tests to check the changes in mean and variance, respectively, in the model given in Figure 2 and Figure 3. The trend lines of CUSUM and CUSUMSQ have shown that they are under the control limits. Both CUSUM and CUSUMSQ showed that the model is suitable as the test statistics are present under the critical bound at the 5% significance level. These results provide an indication to go for a short-run and long-run model investigation.

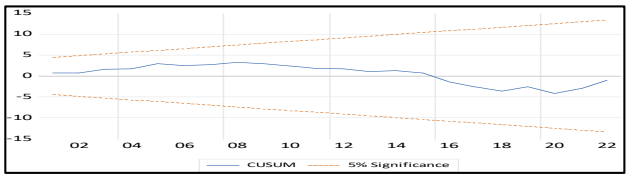

Figure 2: CUSUM graph

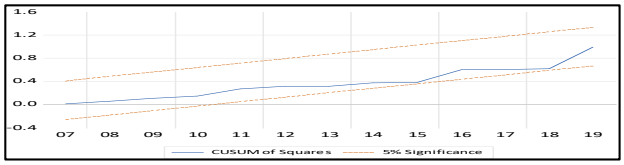

Figure 3: CUSUM square graph

Residuals Tests

LM Test

Durban Watson value up to one lag, 1.8 is close to zero, suggesting no serial correlation in the residuals of the model. Similarly, the probability of F-stat 0.000 also indicates there is no significant correlation, and we can reject the null hypothesis that there is a correlation in the residuals.

Test for Heteroscedasticity

For this model, we have used the Breusch-Pagan test, which indicates an F-statistic of 0.59 with an insignificant P-value of 0.41. Based on the above results, the null hypothesis cannot be rejected. There has been no significant evidence of heteroscedasticity. Residuals of the models are normally distributed with constant variance. Detailed results of the LM test and Heteroscedasticity are included in the appendix in Tables A and B. OLS provides more reliable estimates, after having all time series stability tests, for the long run relationship of data, especially when there are cointegrated variables in the data.

Results of the OLS Model

The long-run covariance estimates using OLS confirm that in the early years, financial deepening has a positive effect on income inequality. It means that as financial deepening increases, the income inequality also increases (Table 7). This finding is aligned with the literature (Greenwood and Jovanovich, 1990). The negative sign of the square of financial deepening shows that after a certain time, the income inequality starts decreasing with the financial development.

Initially, a small portion of population has access to financial resources; they are mostly businessmen and merchants living in urban areas, and thus benefiting from the financial sector more efficiently than the rest of the population. This results in the accumulation of wealth and resources that leads to an increase in the gap between the have-nots and haves, and thus, income inequality increases in the short run. After some time, more people acquire knowledge and skills about financial management. Similarly, the financial system also grows and becomes widespread to more areas and a larger population. In this way, a large portion of the population will start utilizing the ripening of financial development. Better regulatory systems in the financial sector, improved public policies, and progressive taxation generally help in the long run to reduce the gap between the affluent population and the deprived ones. The more equitable distribution of resources and access to the financial sector helps decrease the inequality in the long run. Lin et al. (2013) observed that initially, the inequality increases with increasing rate due to financial development, but after some time, when large people gain access to the financial sector, it slowly starts declining. According to Levine (1997), financial development helps improve income distribution and the poverty situation in the long run when it has more inclusive impacts.

Table 7. Results of OLS model (N=42).

Variable	*Coefficient*	*St. error*	*T-stat*	*Prob.*
Constant	32.60	0.66	49.25	0.000
FD	0.188	0.06	2.71	0.009
SQ. FD	-0.004	0.001	-2.33	0.025
GDP Growth	-0.044	0.014	-3.10	0.003
Trade	-0.003	0.008	-0.42	0.671

Dependent Variable: Gini Index; R.sq=0.44; Adj R-sq=0.38; F-Stat= 7.40; Prob (F-Stat)=0.000.

The existence of FKC, i.e., non-linear interdependence between financial development and income inequality, is more attention-grabbing in developing countries like Pakistan. The results are consistent with Biyase and Chizsada (2023) and Hassan and Meyer (2021) from South Africa, Shahbaz et al. (2015) from Iran, and Destek et al. (2020) from Turkey. The long-run association of GDP growth shows that economic growth has been reducing the income disparities. Keeping the other things same, 1% increase in GDP will reduce income inequality up to 0.044%. GDP growth has a modest impact on reducing income inequality, which implies that the process of economic growth certainly improves employment and earnings of the people, but for Pakistan, it seems that the benefits of economic growth are mostly for a portion of the population due to regional and economic disparities. It seems that economic growth has positively impacted the urban and industrial areas to a greater extent. The impact of GDP on reducing inequality is congruent with the previous studies like Law and Tan (2009). Trade also shows a negative impact on income inequality and is found to help cure the uneven income distribution in Pakistan, but the impact is statistically insignificant because trade has more concern with the income of the affluent sector of society. The persistent and efficient economic growth in a country provides a trickle-down effect. It means increased taxes would enable the government to spend on public welfare programs. The negative impacts of macroeconomic variables like GDP and trade are consistent with the previous literature at the national level (Arif et al., 2023; Kemal, 2006).

CONCLUSIONS

The availability of financial resources and knowledge to all socio-economic segments of society seems to alleviate poverty and reduce income inequality in a country. There has been a robust association of financial deepening with gross domestic product in the country. The distribution of benefits of financial deepening is bound to different levels of economic development in the country, which would explain the differential impacts of domestic credit provision at different milestones of economic progress in a country. This relates to the renowned theory of Simon Kuznets presented in 1955 (Kuznets, 1955). So, considering this in an immense research background, the wider economic growth would have a worsening effect on income distribution, but on the maturation of the economic system, the marginalized groups of the population might reap benefits. Now, the main question arises: what are we lacking in this regard to promote equitable economic growth and reduce income inequality? Firstly, low-income groups should be prioritized by supporting them in social safety nets to uplift their living standard. Our focus must be on human capital development so that the country may have a productive labor force. Equitable distribution of resources would help to eliminate regional and economic disparities. In addition, the progressive taxation would resolve the issue of financial resources.

The combination of financial development and digitalization will lead to fintech growth and will surely help reduce poverty. It will develop a more business-friendly environment and magnify its competitiveness. It is suggested to provide more financial access to the rural population, women, and low-income groups. For this purpose, digital banking and microfinance institutions can help enhance financial accessibility. Financial literacy has a pivotal role in the development of the financial sector. Financial literacy increases financial participation, and it can bridge the gap in income disparity. Pakistan desperately needs financial investment to deal with its economic problems. Small business enterprises should be focused and encouraged to expand. Easy loans and access to credit can support small industries to grow and stimulate the process of economic development in the country. By leveraging the financial development, Pakistan can develop a more efficient, inclusive, and stimulating economy, and the economic condition of all citizens can be more equitably improved.

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Appendix

Table A. LM Test for Serial Correlation.

Breusch Godfrey Serial Correlation Test (Null hypothesis: No serial correlation up to one lag).

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.597	0.438	1.365	0.181
FD	-0.050	0.045	-1.091	0.283
Sq. FD	0.001	0.001	1.147	0.259
GDP. Growth	0.004	0.009	0.426	0.673
Trade	-0.004	0.006	-0.783	0.439
RESID(-1)	0.820	0.114	7.199	0.000

R sq: 0.59; DW: 1.80; F stat: 10.36; Prob F: 0.000.

Table B. LM test for Heteroscedasticity (Null hypothesis: Homoscedasticity exists).

F-Statistic	*1.137*
Prob. F(22,13)	0.416