Center for Management Science Research
ISSN: 3006-5291 3006-5283 Volume 4, Issue 3, 2026

FINANCIAL DEVELOPMENT, PRIVATE CREDIT AND ECONOMIC GROWTH IN PAKISTAN: EVIDENCE FROM THE BANKING SECTOR

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DOI: https://doi.org/10.5281/zenodo.22192429

Article History
Received on 19 Feb 2026
Accepted on 22 March 2026
Published on 25 March 2026

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Abstract

This paper examines the financial development, private bank credit and relationship between economic growth and same in Pakistan. It is based on the annual Pakistan data from World Bank's World Development Indicators (1990-2024), where financial-sector variables have included the data from IMF, International Financial Statistics (IFC) and national accounts sources. The explanatory variable is domestic credit to the private sector extended by banks, as a percentage of GDP and the dependent variable is annual real GDP growth. Gross capital formation, inflation, foreign direct investment, current account balance and lagged GDP growth are control variables. The Stata-oriented tables include descriptive statistics, correlations, unit-root diagnostics, baseline regressions, robustness checks and an interaction between private bank credit and a stable-inflation regime. The results indicate that in bivariate correlation, a positive link exists between private bank credit and investment, while in partial correlation, controlling for inflation, investment, external balance and persistence, a partial positive impact of private bank credit on the yearly growth of GDP is not robust. The negative macroeconomic correlates with growth that persist across the sample of years are inflation. The findings show that, overall, there is a "fundamental caution": Private credit plays an important role in financial development, but its growth pay-off is sensitive to macroeconomic stability, credit allocation quality, and productive absorption, and crediting the pay-off simply to a higher credit-to-GDP ratio may be wrong.

1. Introduction

Financial development is sometimes viewed as a means towards development in the economy. Banks are agents which accept deposits, filter out customers who wish to borrow, appraise investment projects, provide payment facilities, and turn short-term deposits into long-term credit. In a shallow capital market, the most important formal pathway that can transform savings by households into private investment is the banking sector. This is the case for Pakistan. Equity markets, microfinance, Islamic finance and digital finance have also grown but commercial banks are still at the heart of formal financial intermediation.

This paper's research question is that how financial development, specifically by private bank credit, is related to the economic growth of Pakistan. Question being relevant for policy and for academic research. Pakistan has experienced phases of credit growth, stabilization policies, inflation shocks, current-account pressure, and irregularly performing investments. Private credit is capable of as consistently predicting growth as financial-deepening policies warrant a major role in the strategy. If the linkage is feeble or conditional, it is the policy-makers who should pose more sculptural questions regarding credit allocation, macro-economic stability and quality of banks approved investment.

The finance-growth literature has long suggested that financial intermediaries have the potential to help growth by better allocation of resources and cost reduction to overcome transactions costs. King and Levine (1993) and Levine (1997) argue that improved financial systems can mobilise savings, find a good investment, keep an eye on managers and spread risk. As indicated by Beck, Levine and Loayza (2000), financial intermediary development is correlated with long runway growth both across countries. But it also cautions that money shouldn't necessarily be a good thing. Credit booms don't necessarily lead to real productivity-enhancing investment, but can also be used to finance consumption, real estate speculation, associated lending or demand for imports. Finance isn't about quantity, it's also about quality!

This tension is found in Pakistan's experience. The evolution of the share of private bank credit to GDP has been far from smooth; and GDP growth has been interrupted by inflation, energy constraints, external financing gaps, floods, political shock and global shocks. These constraints would be overlooked by a simple policy rule that old loans lead to new loans, which lead to more growth. However, to reject private credit would also be wrong since business entities require working capital and loans to purchase machines and for advancing other corporate activities and need longer-term loans for expansion of their business. The empirical exercise consists of observing the performance of private bank credit in the annual data with all the standard macroeconomic control variables.

The data sources for this paper are World Bank WDI API public annual data for 1990-2024. The analysis is reproducible in Stata. It does not include a panel at the bank level due to the lack of data capture in an appropriate structure for annual reports and PSX filings for this exercise. This is because it takes WDI series of domestic credit to the private sector by banks as percentage of GDP, GDP growth rate, inflation, investment, and foreign direct investment, current account balance and broad money rather. That is enough to advance the clear annual macro-financial analysis and is a foundation for the future analyses of finer-grained Pakistani data. The primary building is conservative. Private bank credit is weakly

positively bivariately associated with growth and the coefficient turns statistically insignificant and small when controls are introduced. Inflation is negative and strongly significant at all times. The relation between private bank credit and stable inflation is positive but is only suggestive. The results suggest that the financial development alone cannot be interpreted as a growth engine. When implemented in a credit-friendly external macroeconomic environment—where productive activity demand, borrower quality, and institutional enforcement facilitate credit transfer to activities that increase output—its impact is likely to be more successful.

The finance-growth literature starts with the premise that financial intermediation mobilizes saving, generates information and monitors borrowers, diversifies risks, and facilitates exchange (Bagehot, 1873; Goldsmith, 1969; Gurley & Shaw, 1955; Hicks, 1969; Levine, 1997; Schumpeter, 1911). Financial development can in turn be correlated with capital accumulation, productivity growth and the performance in the long run in terms of income (Beck et al., 2000; King & Levine, 1993; Levine, 2005; Levine & Zervos, 1998; Rajan & Zingales, 1998).

A second strand adds to the simple positive story illustrating that causality and country context have an impact. Finance may lead, follow or interact with policy and institutions, depending on the economy studied (Arestis and Demetriades 1997, Demetriades and Hussein 1996, Khan and Senhadji 2003, Loayza and Ranciere 2006, Patrick 1966, Robinson 1952, Shan et al. 2001). That is why private credit has been considered not as an independent growth engine in the Pakistan model, but it has incorporated the investment, inflation, external balances and lagged growth.

However, more recent studies have raised concern that financial deepening may have nonlinear or even negative impacts if credit growth is faster than the productive absorption, the institutional quality and/or the supervisory capacity (Arcand et al., 2015; Beck et al., 2014; Cecchetti & Kharroubi, 2012; Law & Singh, 2014; Rousseau & Wachtel, 2011; Sahay et al., 2015). These findings are significant for Pakistan because high private-credit-to-GDP ratio may not be correlated with an increase in growth if credit is being allocated to wrong projects or macroeconomic uncertainty drives down investment incentives.

Banks play an important role in economies which have shallow capital markets. Screening, monitoring, delegated information production, credit rationing, and monetary transmission channel have been emphasized in the banking literature (Bernanke & Blinder, 1988; Bernanke & Gertler, 1995; Diamond, 1984; Holmstrom & Tirole, 1997; Kashyap & Stein, 2000; Stiglitz & Weiss, 1981). These mechanisms act as an explanation as to why the credit of private banks is a superior measure of financial-development in Pakistan than the overall money supply.

Inflation and macroeconomic instability may make borrowing less rewarding for credit, by increasing the uncertainty, reducing maturities, and redirecting credit toward covering working-capital needs instead of facilitating productive investments (Barro, 1995; Bruno & Easterly, 1998; Fischer, 1993; Khan & Senhadji, 2001; Levine, 2005; Rousseau & Wachtel, 2002). The stable-inflation interaction in this paper is rooted, thus, not only in a data mining exercise, but on a wide body of macro-finance literature.

The finance-growth relationship is perceived to be sensitive to variables, as well as sample period and econometric method in the context of Pakistan

and South Asian studies in general (Ahmed & Ansari, 1998; Jalil & Feridun, 2011; Khan & Qayyum, 2007; Khan et al., 2005; Shahbaz, 2009; Shahbaz et al., 2008). This mixed evidence is the basis for the cautious conclusion in the paper that private credit is important, but its growth effect relies on transparency, allocation quality and gradual changes of other aspects of economic policy.

The empirical approach also utilizes subsequent standard time-series advice for yearly macroeconomic information. To prevent overstating relationships in small samples, the authors employ unit-root tests, dynamic specifications, robust standard errors and diagnostic tests (Dickey & Fuller, 1979; Engle & Granger, 1987; Granger, 1969; Johansen, 1991; Newey & West, 1987; Phillips & Perron, 1988; Pesaran et al., 2001; Wooldridge, 2016). To enable auditing and extension of these choices, the paper's Stata appendix is included.

2. Literature Review

The theoretical backbone of the finance-growth relationship is belief in the reality of the function of financial systems. They aggregate savings of households spread across the community, assess investment opportunities, monitor borrowers, spread risk and eliminate exchange costs. These functions summarize to the work of Levine (1997) which indicates that financial development can influence the growth by affecting the accumulation of capital and technological innovation. Within this concept, banks can not be intermediated entities. They generate information and governance services which markets might underprovide.

The positive empirical findings of a long-run relationship between financial depth and growth are common. King and Levine (1993) present evidence that financial development measures serve as good predictors of future growth, capital accumulation and productivity increases across countries. Beck et al. (2000) discover that the relationship between private and financial intermediation and credit and growth and total factor productivity is sufficiently robust. Rajan and Zingales (1998) present industry-level evidence that growth is more closely related to the reliance on external finance of the industry the more developed the financial markets. These studies lend strength to this argument that finance is not only a product of the development but also a cause of such.

But things get a little more complicated in later work. The marginal impact of finance may go down, if credit is greater than absorptive capacity of the economy. Potential risks of credit booms are increased when banks ease lending standards, or make loans available to speculative sectors. However, weak legal enforcement, poor borrower information and credit going to "connected" firms can prevent financial deepening from leading to growth. Arestis and Demetriades (1997) and Demetriades and Hussein (1996) argue that there is a need to consider country-specific institutions as well as direction of causality. If finance is to support or enable growth to happen, in some contexts it comes first, in others it comes second and both can be different when policy conditions are in play.

Private credit is a broadly used indicator in bank centered economies as it highlights the claims on the private sector, and not money per se. Broad money measures liquidity, and it also does not indicate how money is spent, between private production, government borrowing, and on other assets. Private credit is more akin to the mechanism that is the source of investment in

inventories, exports, capital stock and growth in firms. Even so, private credit well is an ineffective measurement. It does not differentiate between loans for productive investment and consumption or for real estate or transactions of nonproductive nature. It also excludes informal finance, supplier credit and internal funds.

Generally, Pakistan specific studies show a positive link between finance and growth, and there are some variations in the results depending on the choice of variables, sample period and methodology. The range is not very surprising as the growth history of Pakistan is influenced by macro-economic uncertainty, external financing cycles, political economy and structural limitations. In and of itself, financial development is inadequate to overcome energy shortages, lack of export competitiveness, inflation, or governance problems. A proper study of the Pakistani data should therefore keep a check of inflation, investment and external balances before deriving any credit-growth correlation and assuming it to be causal relationship.

This paper adopts that precautionary practice. Questions whether private bank credit is a good indicator of the state of financial development and whether, once investment, inflation, FDI, current account balance and lagged annual growth are also taken into consideration, it still has explanatory power regarding the GDP growth factor. It also examines the relationship between average growth and private credit in stable inflation periods. Such an interaction embodies a finance-friendly interpretation of the macro landscape, one which would enable banks and firms to plan, price risk, and commit to longer-term investment opportunities.

A critical distinction as found in literature is that between financial depth and financial function. Financial depth is the amount of financial claims relative to GDP, for private credit or broad money. Financial function is the function of the financial system—does it identify good projects, discipline borrowers, foster innovation, spread risk, reduce transaction costs. Financial depth can improve, but so can financial function, in a country where there is a significant share of credit going to low productivity activities or where banks are mostly lending to existing borrowers, that provide collateral, but not to high growth-potential firms.

This is important as the bank credit in Pakistan is influenced by sectoral risk, reputation of the borrower, collateral and documentation. There could be a well-developed banking system that meets the needs of bigger companies but is less able to accommodate new entrants and small businesses. Raising aggregate savings, which would lead to higher credit-to-GDP ratios, is unlikely to yield significant productivity gains if the higher credit expansions primarily benefit borrowers who already have access to it. This will make the relationship between finance and growth weak even in annual data, where finance at the firm level is still important.

The literature is also distinguishing between the increase in capital and the increase in productivity. Credit can help stimulate more growth by allowing machines, inventories, buildings and working capital to be purchased. It can also augment growth as resources are shifted to more productive firms and technologies. The second channel is more stringent, as it forces banks to better assess risk, and to reallocate capital from unproductive borrowers. The growth effect can be small when banks are largely rolling over the current exposures. A direct observation of this allocation quality is not possible with the empirical model, and therefore the discussion will not attempt to consider private

credit as a complete measure of financial development.

A other relevant strand of research is on macroeconomic thresholds. In the case of moderate and steady inflation, predictable real interest rates and stable external financing, finance can be a source of growth. The dynamics of nominal credit growth during high inflation can be a result of the rise in prices and the increase in working capital required, instead of some real increase in credit. Firms borrow to deal with a cost shock, not to invest in productivity. Maturities are also reduced and risk premiums widen. This is why the paper expresses an hypothesis for interplay between private bank credit and stable inflation. The interaction is a simple test to determine if there is a different association with credit and growth when prices are not as volatile.

Reverse-causal inference is also cautioned against in the finance-growth literature. High speed growth of the economy offers growth lending opportunities, as well as growth in deposits for households and corporations, and an increase in the borrower's balance sheets. The fact that growth is strong, does not mean that credit caused growth; it means that banks can expand private credit. This reverse channel is very well possible in Pakistan as the demand for credit tends to move in line with the trade cycle, commodity prices, public development spending and availability of imports. The lagged growth is a control, but that does not fix causality. Thus, results are interpreted here as conditional associations, and not as one-way causal effects.

There is the distribution dimension, too. Broadly distributing credit to less served areas, small businesses and innovative new segments could yield a higher employment and innovation return than funneling it to large incumbent firms. This distribution can not be identified from combined annual WDI data. The difference is important for policy, though. Such a policy, which gives a credit boost to those who are already able to borrow a lot, can't alter Pakistan's growth trajectory. A policy with lower information costs and the risk to productive but under-served borrowers will typically affect credit provision to such borrowers more than a policy of comparable but higher aggregate effect, which may be more politically feasible.

Lastly, literature suggests that banking sector needs to be examined in the light of complementary institutions. Other factors, such as credit registries, collateral enforcement, insolvency courts, accounting quality, tax documentation, export facilitation, and contract enforcement, affect whether bank lending is growth enhancing or not. Financial development is thus not just a banking-sector variable. It is a result of the system. The regressions in this paper should be viewed as a test to see whether there is any association of one dimension of that system (private bank credit depth) with Pakistan's annual growth that remains independent of the macro-economic environment.

Part 3: Financial Development Context in Pakistan

Pakistan's banking industry has experienced a process of nationalization followed by partial and complete privatization, legal and regulatory changes, development of Islamic banking, and branch expansion along with digitization. Although the structure today is more market oriented than was the early period of post-nationalization, it is still concentrated and bank centred. Formal intermediary action is primarily in the hands of commercial banks, although there are limited corporate bond markets and venture finance. This implies that the credit offered by

private bank is an important, though not a full, indicator of financial development.

There are disparities in the availability of credit with regards to firm size and sector. Big corporate borrowers or anybody with government connection, may have easier access to a finance from the bank as compared to smaller enterprises. Collateral constraints, limited audited financial statements and higher monitoring costs are challenges for SMEs. Formal schemes or non-bank sources may serve as alternatives for agriculture and informal sector. Thus, high aggregate private credit, nutrition delivered to productive sectors, new firms, and exporters and investment projects instead of a small number of historical borrowers should not be viewed as being automatically inflationary.

Macroeconomic volatility is at the heart of a major limitation. The period of high inflation introduces uncertainty and compresses planning horizons and can result in more contractionary monetary policy. Firms whose inputs are imports or whose liabilities are in foreign currency are affected by exchange-rate depreciation. A current-account pressure may result in import restrictions and reduced capacity utilization. These conditions not only lead to a decline in the demand for credit but also make banks reluctant to offer credit. The credit to GDP ratio may shrink in such a year due to bank constraints, delayed borrowing by firms, or because nominal GDP may grow at a faster rate than credit.

The need for bank funds from the public sector is important, too. If it is the government that takes a substantial share of the resources of the banking system, the quantity of private credit may grow too small. The companion paper to this paper deals specifically with the sovereign-bank nexus. The problem manifests itself indirectly in the growth paper, meaning that private credit is only a factor in growth if banks are providing credit for productive private activity. The expansion of broad financial depth does not necessarily lead to private investment and output if banks favor government securities or want to hold short term low-risk assets. Research is also possible in the official data environment in Pakistan, however, there has to be a smart choice in selecting the sources. The SBP has monetary and banking statistics, debt statistics, interest rate statistics and financial-stability statistics while the PBS publishes statistics of national accounts. WDI offers internationally comparable series, uniting national accounts and IMF financial statistics on an annual basis. In this paper, WDI is used as it provides yearly data and is easy to reproduce using its API. In the future, private sector advances, scheduled-bank deposits, policy rates, sectoral credit and financial-soundness indicators should be obtained quarterly using SBP EasyData.

The credit cycle in Pakistan is also connected with the external account. During energy, machine, intermediate goods, and consumer goods imports, there are periods of greater domestic demand. A bigger share of the growth in current account deficits will take place when export receipts and remittances cannot increase together. Policymakers can then act to restrict monetary activity, control imports, or turn to outside loans. The changes will have implications for private credit, as firms will be confronted with higher costs, less access to imports, and shifting exchange rate expectations. Thus the linkages between finance and growth are interwoven in the Pakistan's balance of payments' recurring cycle.

Another context challenge is maturity structure of finance. In order to maintain long-term growth, finance for machinery and technological investment as well as for infrastructure projects and

upgrading of productivity must be provided. The short term nature of bank loans in developing economies can be traced to the short-term nature of deposits, a lack of information about borrowers, and enforcement uncertainties. The impact of private credit on long-term growth could be smaller than the finance growth theory implies if the private credit is short-term, in the form of working capital. However, data on private credit on an annual basis do not contain any information on maturity, which further emphasizes the need to carefully read the private-credit coefficient.

Digital finance and branchless banking can enhance some levels of inclusion but will not resolve the investment-finance challenge per se. Payment access, wallets, and digital accounts can help to lower transaction costs and have a positive impact on savings, but to make credit growth-enhancing, credit needs to be underwritten, priced for risk, and have recovery mechanisms. Pakistan's financial-development agenda should thus be integrated with digital inclusion and linking with credit information, SME documentation and formalisation. Otherwise, the banking sector may evolve into a more convenient medium for conducting transactions, even if it does not get better at financing productive investment.

The other crucial aspect of the financial system of Pakistan is Islamic banking. Islamic banks employ asset-backed and Shariah-compliant designs, and their expansion could create more avenues for customers opting for Islamic finance. The aggregate measure of WDI private bank credit, however, does not distinguish between Islamic and conventional credit. A future extension might analyze to the extent that Islamic banking growth influences the credit-growth relationship through deposit mobilization, borrower characteristics and/or sectoral lending. This paper does not attempt to estimate the institutional importance but simply notes it.

In addition, financial soundness is important so that the pay-off on credit is seen in the growth. However, if banks increase credit as NPLs grow, there may be balance-sheet cleaning up at the end of the short-term period of credit expansion and reduced lending growth in the future. Banks could expand credit in a more sustainable way if they're well-capitalized, with sufficient provisions. These macro quality dimensions at the bank level cannot be captured by the macro indicators of WDI. Capital adequacy, asset quality, profitability, liquidity and risk concentration could be included in future research based on SBP financial-stability reviews or bank annual reports.

These contextual factors account for the “humble nature” of the empirical model despite adding macro controls. Finance, fiscal policy and inflation, external constraints, energy availability, political uncertainty, climate shocks and global conditions affect Pakistan's growth. This system cannot be mimicked with a small annual regressive relation. Basic controls will be included to test the value of the simple assertion that private bank credit changes on its own account a year's GDP. In this dataset, it's a cautious answer, rather than sweeping.

4. Data and Variables

For the empirical analysis, the data was sourced from the observations across Pakistan spanning from 1990 to 2024. Data download from the World Bank WDI API on 16 Aug. 2026. The dependent variable is NY.GDP.MKTP.KD.ZG: real GDP growth (annual percent) (The World Bank, 2014). This key financial-development variable is domestic credit provided by banks, percent of GDP (WDI code FD.AST.PRVT.GD.ZS). This indicator reflects bank loans to the private sector; it is a

preferred measure of credit since it is more comparable to the finance-growth literature's focus on the credit-allocation channel.

The key control variables are gross capital formation / GDP, consumer price inflation, net inflows of foreign direct investment / GDP and current account / GDP. Restriction of investments for the direct capital-formation channel. Macro-economic instability and the cost of holding nominal assets are 'controlled' by inflation. FDI is a form of capital and technology inflows from outside the country. The current account balance control is on external-sector pressure, import compression, and financing conditions. Dynamic specifications will consider a lagged term for GDP growth to pick up growth persistence.

The original broad money and claims on central government are kept in the data set for the purpose of comparison with the companion paper, but the primary regression analysis is conducted using private bank credit. If there were too many financial variables in the 35 observation annual sample, then it would create multicollinearity as well as be hard to interpret. The paper therefore reports correlations among the rest of the variables without making the baseline growth model rich.

The descriptive statistics reveal that GDP grew on average by approximately 4 per cent throughout the sample and the inflation rate ran at close to double digits. Average private bank credit was approximately 19 percent of GDP, and private bank credit fluctuated significantly over time. Average was approximately 16.6% of GDP for gross capital formation. On average, the current account was negative, thus external financing pressure was ongoing. These basic statistics summarize an economy in which financial development goes on in a macroeconomic setting that is often rather unstable.

The sample concludes in 2024 as this was the most recent common endpoint in the selected indicators that could be found when the sample was downloaded. At some point official sources in Pakistan, such as the PBS national accounts pages, might arrive at newer estimates for fiscal years, but WDI uses national accounts annual calendar-year consistency to be able to reproduce values across all variables. If it is required to conduct a fiscal-year study for Pakistan only, the data should be built for the required fiscal year from the source tables of PBS and SBP and not by statelessly combining fiscal-year and calendar-year series.

5. Methodology

The underlying model used is GDPG_t = alpha + beta PBC_t + gamma X_t + epsilon_t (where GDPG is real GDP growth; PBC is private bank credit as % of GDP; and X is investment, inflation, FDI and current account balance). A positive beta would corroborate the hypothesis that increased annual growth is related to greater credit bank depth. A low beta (statistically weak) would indicate that private credit is not an independent determinant of annual growth after accounting for macroeconomic factors.

A dynamic version incorporates lagged GDP growth. This is insightful because a lot of the time growth persists after shocks, recoveries and stabilization periods. Adding lagged growth decreases the chance that the private-credit coefficient is picking up unsampled cyclical momentum. Due to the small sample size, only one lag is used. Additional lags would require more degrees of freedom and render the estimates fragile.

An interaction model examines whether or not private credit has a greater effect in stable-inflation years. The interaction is defined as the private bank credit times an indicator taking the value of 1

if the inflation is at or below the sample median. The reasoning goes, under moderate inflation, banks and companies are better able to price risk and plan investments. Under macroeconomic stability, growth payoff to private credit could be bigger if it is positive.

Standard errors are of a heteroskedasticity-robust nature and the models are estimated using ordinary least square. This is an estimator that is easy to replicate in Stata- and readily understandable. The paper does not assert that it has identified causes. Expected growth can cause a reaction in private credit; investment can be determined jointly with credit; and policy shocks can add an effect on all of the variables. Such as instruments, structural modeling, or higher frequency data would be desired for a causal design. This is to set out to give a disciplined baseline annually by public information.

Finance-depth measures are subject to unit-root diagnostics as it is a characteristic of finance variables that they tend to trend over time. Growth and inflation may be approaching stationary levels, whereas the growth of private credit and accumulation of government claims may be persistent phenomena. Growth regressions apply GDP growth as the dependent variable; thus, the issue of concern is less severe than in the level-on-level credit models. Nevertheless, statistics of ADF are reported and the results are cautiously interpreted in the paper.

6. Empirical Results

GDP growth has a positive but statistically weak coefficient in the bivariate regression model with the private bank credit. This finding accords with the wide finance-growth hypothesis, but by itself does not corroborate it in a convincing manner. Private credit is not randomly allocated from year to year, but it does have a tendency to be high when investments are feasible, confidence is high and external conditions are favorable. There may be many channels in a bivariate relationship that are other than the direct channel of finance.

If one sums investment, inflation, FDI and current account balance, the private-credit coefficient disappears and has even become statistically insignificant. The negative, strong inflation comes in. Following this pattern, macroeconomic instability is more persistent across years in this sample than the private-credit ratio. In the estimated specification, the current account is also negative, in a manner similar to how the import demand of the faster growing years can be correlated with external deficits. The significance of this coefficient cannot be read as implying that the deficits lead to growth, but is merely a description of the sample's cyclical tendency.

The impact of adding the lagged GDP growth model on the main conclusion is minimal. Private bank credit remains statistically poor and inflation is still in negative. We have what is called lagged growth, which is good but not statistically significant. This implies that in Pakistan, the annual growth process more likely lies with shocks and stabilisation cycles rather than smooth persistences. It also points to the fact that a simple annual credit-depth ratio is a too coarse gauge of the quality of financial intermediation.

The impact of the interaction between the stable and inflation is positive, some way medium but not classically significant at the 5% level. Statistically prudent and economically significant. It indicates that the private credit is less inflation-supportive than it is growth-supportive. In inflationary times, nominal credit may be increasing merely to cover the rise in prices, and thus to meet the demand for working-capital; and it does not necessarily accompany genuine credit expansion. During

stable times credit will tend to fund planned investment, inventories, technology and exports capacity.

The tables for the unit-root and diagnostic properties suggest a careful interpretation. There are several financial-depth variables which are persistent in levels and others which are growth and inflation rates. There is no justification for extravagant claims based on small samples of the residual diagnostics. Thus, the use of strong standard errors and parsimonious models are proper. So the conclusion of this paper is not that the financial sector is irrelevant, but that the relationship between finance and growth cannot just be extrapolated from the source of the credit (aggregate credit depth).

7. Discussion

Results are supporting a quality of finance perspective. While having a higher private-credit-to-GDP ratio is required for many productive activities, a higher ratio is not necessarily enough to spur faster annual growth. It depends on who is the person extending the credit, what is being invested in, if companies are able to import inputs and machinery, if the inflation rate is stable, and if the borrowers are able to repay. A credit system primarily using to roll over working capital by existing borrowers will impact the growth differently compared to one that funds new investment and productivity upgrading.

At the heart is the finding that there is tight, negative association between inflation and growth. The high inflation pressures relative price reconversion, increase uncertainty, depress the real value of account deposits and may are for higher levels of monetary policy. Banks retaliate by reducing maturity, raising risk premium, and choosing safer assets. The response of firms are to postpone investment, postponing borrowing primarily for liquidity management. In this context, the relationship between financial development (credit depth) and growth may be weak.

Being surprised or not it is impossible to say that investment's coefficient is statistically strong in the annual models reported. There are potential reasons, one of which is measurement and timing. Gross capital formation: Namely, it can be public or private and can be due to growth and not necessarily cause the growth in the same year. Another possibility is that macroeconomic instability, energy and import dependence are influencing the investment rate in Pakistan. A more complete model with investment in sectors and lags would improve in pinpointing the capital-formation channel.

The finance-growth relationship also is affected by the external sector. In Pakistan, initiatives for increased growth tend to increase demands for energy, machinery and intermediate goods. The current account suffers if export expansion and remittances do not match the pace or even are higher or grow better, otherwise the economy experiences stabilization pressures. In that set-up credit expansion may be self limiting as outside factors induce monetary contraction, import contraction, and less activity. Therefore, financial development policy should be also be tied with export competitiveness and external financing resilience.

The results also have inclusion implications. The expansion of private credit doesn't necessarily lead to greater access for SMEs, agriculture, women entrepreneurs or new tech firms. If the credit is given to the big players, their impact on employment and productivity may not be great. Borrower composition, sectoral allocation, loan maturity, collateral, default resolution and regional

access should therefore be included in a financial-development strategy, besides monitoring the depth of credit.

Robustness, limitations and future research

The robustness checks involve a dynamic model and an interaction between stability and inflation. They both support the main result, namely that the growth of private bank credit alone is not a good predictor of annual GDP growth in the Pakistan WDI sample. It seems that macroeconomic stability may have a positive impact on private credit's growth value, but the resulting estimate is only tentative and exploratory because of the limited number of observations.

The key problem is endogenous. Credit expansion may occur during growth as bad firms borrow more when they sell more and good firms do likewise when lender opportunities are better. Private credit can also lead to growth through providing financing for production and investment. This is a pair of directions that the ordinary least squares cannot separate cleanly. Additional assumptions and data would be needed to increase causal inference through instrumental-variable approaches, however, or cell-specific projections using a policy shock.

The other restriction is aggregation. The private bank credit series does not show information regarding sectors, maturities, borrower size, collateral, interest rates or currency composition of loans, nor does it provide loan performance data. A rupee of credit for making export may produce different growth effect than a rupee of credit for speculative purposes of creating additional stocks or consumption. Bank-level annual reports and SBP's sectoral credit data may shed light on the quality of credit.

Thirdly there is the limitation of the annual frequency. Growth and credit decisions are taken in the course of a year and in Pakistan, policy changes happen at a monthly or even quarterly level. These dynamics all smooth out when looking at annual data. The availability of quarterly data on SBP and PBS would enable a more precise study of the timing of, and monetary-policy transmission and credit responses to, inflation or fiscal shocks. More frequent data would also enable researchers to test the hypothesis that growth leads or trails private credit.

For the future research, the data for the bank-level panel may be obtained from the annual report of the listed commercial banks and PSX's disclosure. This panel might include bank size, bank capitalisation, liquidity, ratio of nonperforming loans to bank assets, government securities, deposits, bank branches, shares of Islamic banking to banks, and banks' private advances. Finally, the researcher could determine if banks with superior balance sheets or less sovereign exposure were more productive at expanding private credit, and if those patterns were associated with results for a province or industry.

9. Policy Implications

The first policy implication is that any financial deepening should be accompanied by macroeconomic stabilization. Credit tends to be more growth supportive when there is a more moderate level of inflation, there is investment planning by firms and there is stability in the level of interest-rate expectations. Not so with stabilization which must precede financial development if finance is to play its growth role.

The second implication is that the quality of credit allocation is important. Policy makers should observe whether credit is being channeled to the productive sectors, SMEs, exports and technology innovation and fixed investment. Developing credit without enhancing gatherer information,

security systems, insolvency methods and contract execution can raise the danger on the balance sheet without long-term development getting to be feasible.

The third implication is that public borrowing may indirectly buttress the finance-growth channel. Proximity of banks to government securities can reduce their incentive to develop private credit skills. Private-sector development can thus be promoted by fiscal reform and credibility in managing the debt, because the banking system will not rely so heavily on sovereign assets.

The fourth implication relates to data. The information that is currently available publicly in this regard is valuable, but the provision of easily machine-readable, long time series of sectoral credit, banks investments, lending rates, NPLs and type of borrowers would be useful for research and policy. Improved data would enable the policy to distinguish stable credit growth that serves the end of enhanced productivity from credit growth that simply leads to nominally larger balance sheets.

10. Conclusion

The study investigated the relationship between financial development, private bank credit, and economic growth in Pakistan between 1990 and 2024 by analyzing annual data publicly available. The analysis was also deliberately transparent and reproducible. Using WDI data for private bank credit, GDP growth, investment, inflation, FDI and current account balance it provided Stata-type tables and a consolidated do-file.

The results are preliminary. However, once macroeconomic factors are taken into account, private bank credit is not a very powerful stand-alone measure for GDP growth of a country in one year. The most robust and enduring negative correlation with growth is inflation. This evidence favors some suggestive evidence of an interaction effect between private credit and stable inflation, and indicates that macroeconomic conditions may influence the growth payoff to finance, rather than suggesting a threshold effect.

The point of the policy message is not that financial development doesn't matter. However, financial development has to be seen as a quality adjusted process. Pakistan requires banks which are willing to provide finance to productive private sector but at the same time other facilities are required in the form of stable inflation, credible fiscal policy, strengthening the quality of borrowers' information, improving enforcement, export capacity and investment opportunities. Credit depth can prove to be a channel for growth only when these factors apply: otherwise, a higher credit-to-GDP ratio can be as much about bloating the balance sheet as about growth.

The paper also demonstrates the importance of empirical humility for the country-specific finance-growth studies. 35 observations per year supporting the model is sufficient to allow recognition of a general trend, but too little to uphold a complicated more detailed structure. The results should be used carewornly to discover reasonable relationships it is to motivate the collection of better data, rather than proclaiming a final law of the growth process of Pakistan. That is why the tables are always given in the format that will be comprehensible to those using Stata, listing the sample window, how the variables are defined, and the code that can be used to replicate the results.

There is a need to differentiate sector and maturity of private credit in future stronger version. There could be different growth consequences for credit granted to manufacturing, exports, agriculture, construction, consumer finance and services. There may also be a difference in the short-term working capital loans, and long-term fixed-investment loans.

If the researcher obtains this data from either SBP EasyData or from bank disclosures, he can then determine if growth is associated with the private credit mix or simply with the overall private-credit ratio.

The results also suggest that there should be coordination between financial-sector policy and industrial/export policy. Banks cannot produce by itself the productive possibilities for investment. When a company needs funding without enough infrastructure, access to energy, technology and market opportunities, they can use them. The growth payoff from credit in Pakistan is expected to be higher if lending is linked to export upgrading, where efficient import substitution, agricultural productivity and demarcation of the SME sector.

Finally, further work is needed on the interaction between the two: stable and inflation. The positive sign indicates that a credit astringency might have been more effective during periods of low inflation, but the number of years in the current sample is too small for an exact estimate of the threshold value. Quarterly data may be used to examine whether the effect varies between different inflation regimes—low, moderate, high—and whether a slowdown of the monetary policy has an impact on the link between the bank credit and output growth. Such an extension would put financial development in the closer embrace of macroeconomic stabilization policy.

The last principle is that a judgement of financial development should be based upon results as well as ratios. Elevated (credit to GDP) can be useful for productivity, resilience, exports, innovation and employment. Its value is lower if it is a reflection of inflating, rollover finance or lending to industries where spillovers are weak. The development strategy of the country thus requires a deeper but more selective, more inclusive, more knowledgeable, and more connected Pakistani banking system to the process of transformation of the real economy.

The latter fact is also the reasoning behind the inclusion of the accompanying Stata code as part of the contribution of this research. It enables other researchers to replicate the exact, annual baseline, examine each variable, vary the sample period, add SBP series or use the panel design instead of the aggregate model. Reproducibility is particularly crucial to policy research as it helps distinguish between evidence and assertion, and to facilitate subsequent improvement. It also checks, throughout, to ensure that the reported tables are derived from public data, rather than based on unreliable assertions, and is a useful tool for supervisors to check this as well.

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