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Financial Development and Economic Growth: The Case of Pakistan

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I. INTRODUCTION

The pioneering contributions of Goldsmith (1969), Mckinnon (1973) and Shaw (1973) regarding the relationship between financial development and economic growth has remained an important issue of debate in developing economies. The theoretical argument for linking financial development to growth is that a well-developed financial system performs several critical functions to enhance the efficiency of intermediation by reducing information, transaction, and monitoring costs. A modern financial system promotes investment by identifying and funding good business opportunities, mobilises savings, monitors the performance of managers, enables the trading, hedging, and diversification of risk, and facilitates the exchange of goods and services. These functions result in a more efficient allocation of resources, in a more rapid accumulation of physical and human capital, and in faster technological progress, which in turn feed economic growth [Creane, *et al.* (2004)].

Most of the literature has mainly focused on the role of macroeconomic stability, inequality, income and wealth, institutional development, ethnic and religious diversity and financial market imperfections.[1] Among these factors the role of financial

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[1]The terms "financial development" and "financial intermediation" are used interchangeably in this paper. Financial development, however, should be thought of as a broader concept that also includes financial innovations that occur outside the banking system. Because of the lack of data regarding non-bank financial innovation in developing countries like Pakistan, the level of financial intermediation effectively measures the degree of financial development by the banking system. For a comprehensive survey of recent evidence, see Levine (1997).

markets in the growth process has received considerable attention. In this framework, financial development is considered by many economists to be of paramount importance for output growth. Particularly, government restrictions on the banking system such as, interest rate ceiling, high reserve requirements and directed credit programmes hinder financial development and reduce output growth [Mckinnon (1973) and Shaw (1973)]. The early contributions due to Mckinnon (1973) and Shaw (1973) postulate that the government intervention in the pricing and allocation of loanable funds impedes financial repression mainly depressing real interest rates. Governments are faced with only limited options such as inflationary financing, thus even further deteriorating the real interest rate. Mckinnon emphasises that the order and appropriate sequencing of financial reforms in the financial sector would be much more effective once price stabilisation has taken place. In fact, financial development is not lonely a function of liberalising monetary instruments but "consistent macroeconomic policy package comprising a range of policies, including temporary financial market supervision in order to monitor credit worthiness of borrowers and to avoid distortions such as moral hazards and adverse selection".[2]

The endogenous growth literature stresses the influence of financial markets on economic growth.[3] Benhabib and Spiegel (2000) argue that a positive relationship is expected between financial development and total factor productivity growth and investment. However, their results are very sensitive to model specification. Furthermore, Beck, *et al*. (2000) find that financial development has a large and positive impact on total factor productivity, which feeds through to overall GDP growth [Neusser and Kugler (1998)]. A number of theorists have emphasised the role of financial development in better identifying investment opportunities, reducing investment in liquid but unproductive assets, mobilising savings, boosting technological innovation, and improving risk taking.[4]

The problem with the previous studies is that a positive relationship between financial development and output growth can exist for different reasons. As output increases the demand for financial services increases too, this in turn has a positive effect on financial development. Robinson (1952) argues that "*by and large, it seems to be the case that where enterprise leads finance flows*". Kuznets (1955) states that financial market begins to grow as the economy approaches the intermediate stage of the growth process and develop once the economy becomes mature. Lucas (1988) states that "*the importance of financial matters is very badly overstressed*" while Chandavarkar (1992) notes that "*none of the pioneers of development economics… Even list finance as a factor of development*" [Luintel and Khan (1999)]. Thus the demand for the particular types of financial services generated by economic development.

[2]See for example, Galbis (1993), Kapur (1992) and Hanson and Neal (1985).

[3]For further detail, see among others Bencivenga, *et al*. (1995), Greenwood and Smith (1997) and Obstfeld (1994).

[4]See Levine (1997) for further detail.

Many empirical studies have investigated the relationship between financial depth, defined as ratio of total bank deposit liabilities to nominal GDP and economic growth. But the results are ambiguous. The studies based on the cross section and panel data find positive effects of financial development on output growth even after accounting for other determinants of growth as well as for potential biases induced by simultaneity, omitted variables and unobserved country specific effect on the finance-growth nexus.[5] On the other hand, the studies based on the time series data give contradictory results. Demetriades and Hussein (1996) find the evidence that finance is a leading factor in the process of economic growth. They further found that for the majority of the countries, causality is bi-directional, while in some cases financial development follows economic growth. Luintel and Khan (1999) used a sample of ten less developed countries and concluded that the causality between financial development and output growth is bi-directional for all countries. Finally, studies, which look at the structure and sources of company finance, also conclude that the development of the financial sector facilitates the growth of corporate sector [Rajan and Zingalas (1996)]. All these results show that a consensus on the role of financial development in the process of economic growth does not exist so far.

The role of financial factor in economic development of Pakistan is not well researched. This study is an attempt to fill this gap. The objective of the present study is to examine the relationship between financial development and economic growth in Pakistan for the period 1971-2004. We also examine the structural stability of the finance-growth relationship in the presence of financial sector reforms—which were integral part of the liberalisation process of the economy initiated in early 1990. The major components of the financial sector reforms related to the deregulation of the commercial bank's lending rates, lowering of their reserve requirements and the introduction of prudential regulations and standards broadly along with the lines recommended by the Basle Committee on Banking Supervisions.[6]

The rest of the paper is organised as follows. Section II overview the financial sector reforms in Pakistan. Model specification and data issues are presented in Section III. Econometric methodology and empirical findings are given in Section IV, while some concluding remarks are given in the final section.

II. THE FINANCIAL SYSTEM AND ECONOMIC PERFORMANCE IN PAKISTAN

Pakistan has made a notable efforts over the past one and half decades to reform its financial system. Considered as an integral part of macroeconomic policy, the financial reforms are expected to bring about significant economic benefits, particularly through a more effective mobilisation of domestic savings and a more efficient allocation of resources.

[5]See for example, Gelb (1989), King and Levine (1993, 1993a), Khan and Senhadji (2000) and Levine, *et al*. (2000).

[6]For further detail, see Khan (2003).

Following independence in 1947 up to the end of 1980s, the government of Pakistan was mainly concerned with establishing the necessary infrastructure to support its different macroeconomic policies. The financial sector in Pakistan remained heavily controlled. Interest rates were set administratively and were usually negative in real terms (see Figure 1). Monetary policy was conducted primarily through the direct allocation of credit. The money market was under-developed, and bond and equity markets were virtually nonexistent. Commercial banks often had to lend priority sectors with little concern for the borrowing firm's profitability. Despite the opening of non-bank financial sector for private investment in mid-1980s, public sector financial institutions held the bulk of assets, deposits, advances and investments of the entire financial sector at the end of 1980s. Table 1 gives the clear picture of the pre-reform era.

Fig. 1. Real Deposit Rate in Pakistan, 1971-2004

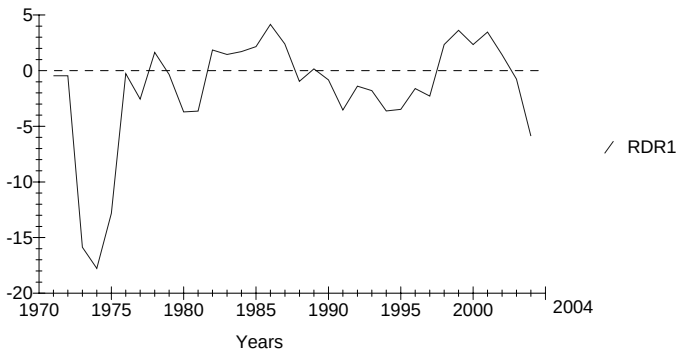


Table 1

Structure of the Financial Sector in 1990

(Shares in % and Amount in Billion Rupees)

		Assets		Advances		Investment	
Number		Amount	Share	Amount	Share	Amount	Share
Banks	24	425.6	61.5	218.5	48.7	111.3	89.0
State-owned	7	392.3	56.7	201.2	44.8	104.1	83.2
Private	–	–	–	–	–	–	–
Foreign	17	33.4	4.8	17.3	3.9	7.3	5.8
NBFIs[1]	36	133.9	19.4	98.3	21.9	13.7	11.0
State-owned	13	124.3	18.0	94.7	21.1	13.3	10.6
Private	23	9.6	1.4	3.6	0.8	0.4	0.3
CDNS	1	131.9	19.1	131.9	29.4	–	–
Equity Markets[2]	2	90.0	–	–	–	–	–
Total	63	691.5	100.0	448.7	100.0	125.1	100.0

Source: Pakistan: Financial Sector Assessment 1990-2000 (SBP), p.13.

[1]NBFIs also include four specialised banks and HBFC.

[2]Market capitalisation of KSE in lieu of assets, not added in total.

The inefficiencies and distortions of this financial system were exacerbated by the emergence of severe macroeconomic difficulties in Pakistan in the late 1970s and 1980s. In order to overcome the financial problems and spur economic growth, the government of Pakistan embarked on a wide range of stabilisation and structural reform programme. Financial reforms were an important component of this broad programme. The objectives of these reforms were to create level playing field for financial institutions and markets for instilling competition, strengthening their governance and supervision, and adopting a market-based indirect system of monetary, exchange and credit management for better allocation of financial resources. Reforms covered seven areas: financial liberalisation, institutional strengthening, domestic debt, and monetary management, banking law, foreign exchange and capital market.

To achieve the twin objectives of reducing government cost of borrowing on domestic debt and encouraging private sector credit expansion, SBP has been pursuing a relatively easy monetary policy. The interest rates on NSS were reduced from 16 percent to 11 percent during 1999-2001. The weighted average lending rate came down from 14.6 percent in mid-1996 to 13.7 percent in February 2001. During the same period, the weighted average deposit rate declined from 8.0 percent to 6.4 percent. The reduction in lending rate indicates a little improvement in the profitability of the banks. However, the average interest rate spread (average lending rate minus average deposit rate) remained very high—nearing 7.3 percent in February 2001, as against 6.6 percent in June 1999. Moreover, a reduction in deposit rate was expected to reduce the saving rate even further [Khan (2003)]. As a result of high inflation rate, the real rate of return on deposits is often negative. The high lending rate increase the cost of borrowing and hence discourage investment, while low deposit rates discourage both consumption and saving, resulting in high debt/GDP ratio and lower economic growth. Figure 1 show that over the period 1998-2002 the real interest rate became positive and varied between 2 and 5 percent after having been negative over the period 1989-1997.[7]

To promote intermediation and to attract funds held abroad by Pakistani nationals, the resident Pakistanis were allowed to open foreign currency accounts (FCAs) with banks in Pakistan, which were freely transferable abroad. These accounts were exempted from income and wealth tax, and no question was to be asked about the source of foreign exchange. Persons holding FCAs could also obtain rupee loans against such accounts.

One of the key objectives of these reforms was to facilitate the flow of sufficient short-term liquidity at variable rate to meet current needs for liquidity. For this, it was necessary to expand the money market potential by making it accessible

[7]For the period 1971 to 2003, the average real interest rate (which is defined as the nominal interest rate minus rate of inflation) remained negative (i.e. –0.05), while for the same period, the real interest rate varied between 5.39 to –18.00 percent.

to new operators, particularly to those who were experiencing an excess of liquidity, such as insurance companies, microfinance institutions, SME bank as well as investment banks. This widening of the range of operators on the money market was followed by the creation of new financial products, such as deposit certificates, treasury bills and bonds, which are naturally negotiable.

In order to encourage foreign direct investment, restrictions on capital inflows and outflows were gradually lifted. Investors were also allowed to purchase up to 100 percent of the equity in industrial companies on repatriable basis without any prior approval. Furthermore, investment shares issued to non-residents could be exported and remittance of dividend and disinvestments proceeds was permissible without any prior permission of SBP. In 1994, restrictions on some capital transactions were partially relaxed, and foreign borrowing and certain outward investments were allowed to some extent. Full convertibility of the Pak-rupee was established on current international transactions. The establishment of an inter-bank foreign exchange market also marked an important step towards decentralising the management of foreign exchange and allowing market forces to play a greater role in exchange rate determination.

These financial reforms have a positive impact on the indicators of financial deepening in Pakistan as presented in Table 2.

Table 2

Indicators of Financial Deepening (in Percent)

Indicators	1961–70	1971–80	1981–90	1990	2000	2001	2002	2003	2004
Financial Depth[1]	36.14	41.76	41.25	39.20	36.90	36.70	39.90	43.10	49.20
Financial Depth [2]	–	35.00	32.36	27.91	37.51	33.23	36.03	40.32	44.16
Currency/M_2	–	–	32.14	37.6	25.4	24.6	24.7	23.8	23.3
Currency/GDP	–	13.53	13.29	14.7	9.4	9.0	9.9	10.3	10.6
Private Sector Credit/Total Credit	–	–	–	51.5	53.3	55.5	54.3	61.3	93.4
State-owned Bank Assets/Total Assets	–	–	–	92.2	66.6	64.1	70.5	70.1	71.0

Source: IFS CD-ROM and *Pakistan: Financial Sector Assessment 1990-2000, 2001-2002* (Published by SBP).

Note: [1]Financial depth is measured as broad money (money + quasi money) divided by nominal GDP lagged by one year. Broad money includes the sum of currency outside the banks plus demand, time, savings and foreign currency deposits of residents other than the central government. [2]Financial depth is also measured as liquid liabilities minus currency in circulation, divided by nominal GDP lagged by one year. Demetriades and Luintel (1996) argue that without deducting currency in circulation, we are left with primarily a measure of monetisation, not financial depth (p. 360).

Table 2 shows that financial depth (i.e., M_2/GDP) increased steadily. It should be noted that a large ratio represents a more developed and efficient financial sector. In 1990 the average monetary assets were around 39.20 percent of GDP, while it was reached to 49.2 percent of the GDP in 2004. This ratio has recorded a gradual growth, showing an improvement in the financial sector. An alternative measure of financial depth, which is frequently used, is the ratio of bank deposit liabilities to GDP. This ratio assesses the degree of monetisation in the economy. A steady growth in this ratio over the period of study also indicate an improvement in the financial sector. Both indicators of financial depth can be depicted in Figure 2.

Fig. 2. Financial Sector Development Indicator and GDP

Fig. 2a. M_2/GDP.

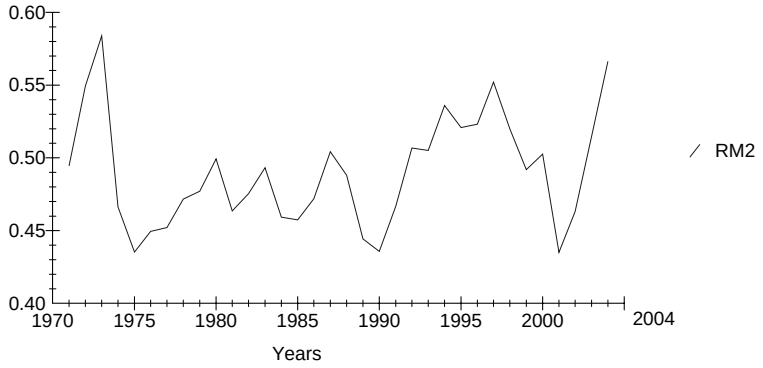
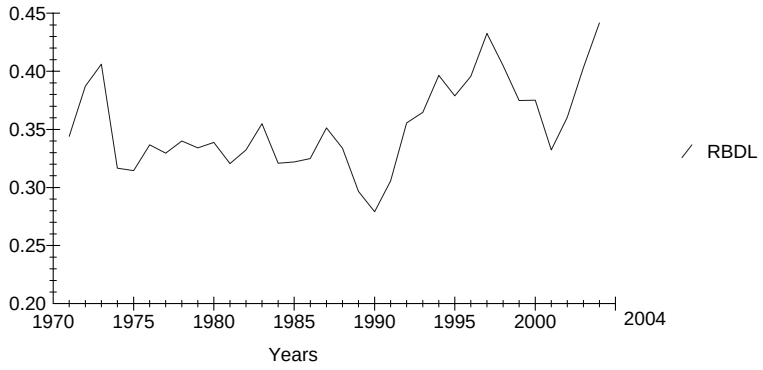


Fig. 2b. BDL/GDP (Ratio of Bank Deposit Liabilities to GDP)



The ratio of private sector credit to GDP indicates an efficient allocation of funds by the banking sector. Even though this ratio has been increasing gradually over the years, there is ample room for further growth given the recent privatisation of the large public sector commercial enterprises. The other tools of financial development include currency to M2 ratio and currency to GDP ratio reflecting the increase in total deposits relative to currency in circulation and degree of monetisation in the economy which was at its highest level in 2004.

III. MODEL SPECIFICATION AND DATA DESCRIPTION

Following the standard literature, we proxy financial development by a measure of financial depth. The theoretical literature predicts that real income, financial depth and real interest rate are positively correlated. The positive relationship between the level of output and financial depth resulted from the complementarity between money and capital [Mckinnon (1973)]. It is assumed that investment is lumpy and self-financed and hence cannot be materialised unless adequate savings are accumulated in the form of bank deposits. On the other hand, financial intermediaries promote investment which, in turn, raises the level of output [Shaw (1973)]. A positive real interest rate increases financial depth through the increased volume of financial saving mobilisation and promotes growth through increasing the volume of productivity of capital. High real interest rates exert a positive effect on the average productivity of physical capital by discouraging investors from investing in low return projects [World Bank (1989); Fry (1997)]. King and Levine (1993, 1993a) predict a positive relationship between real income, financial depth and real interest rate.

Based on these theoretical postulates and following Christopoulos and Tsionas (2004), the relationship between growth and financial depth can be specified as:

$$y_t = \beta_0 + \beta_1 F_t + \beta_2 r_t + \beta_3 S_t + \beta_4 D_{90} + u_t \qquad \ldots \qquad \ldots \qquad (1)$$

Where γ is real output, F is a measure of financial depth, r is the real deposit rate, S is the share of investment and u is an error term. To capture the effect of financial sector reforms introduced by the government of Pakistan in the late 1980s, we have introduced a dummy variable (D_{90}).[8] Except real deposit rate, all the variables are expressed in logarithmic form.

The present study is based on annual data covering the period from 1971 through 2004. Financial depth (F) is calculated by taking the difference between total liquid liabilities minus currency in circulation divided by one period lagged nominal

[8]We introduced a dummy variable D_{90} assigning zero for 1971-1989 and one for 1990-2004.

GDP.[9] *y* is the logarithm of real GDP measured as a ratio of GDP to Consumer Price Index (CPI 2000=100). *S* is the share of investment proxied by the gross fixed capital formation to nominal GDP. The data on these variables has been taken from IFS CD-ROM. Real deposit rate is calculated by taking the difference between the nominal deposit rate and inflation rate. The variable inflation rate is computed as the log-difference of CPI. The data on deposit rate is obtained from the various issues of the State Bank of Pakistan's *Quarterly Bulletins* and *Annual Reports*.

IV. ECONOMETRIC METHODOLOGY AND EMPIRICAL RESULTS

Since our intention is to detect the long run relationship between real GDP, financial depth, real deposit rate and gross fixed capital formation, the appropriate technique to be used is error correction modeling and cointegration analysis. In applying cointegration technique, the first exercise is to determine the degree of integration of each variable in the model. This of course, will depend on which unit root test one can uses. To avoid this difficulty and pre-testing of unit roots, Pesaran and Shin (1995), Pesaran and Pesaran (1997) and Pesaran, *et al.* (2001) outlined a relatively new cointegration test—known as Autoregressive Distributed Lag (ARDL) approach. This method has certain econometric advantages in comparison to other single-equation cointegration procedures. Firstly, endogeneity problems and inability to test hypotheses on the estimated coefficients in the long run associated with the Engle-Granger method are avoided. Secondly, the long run and short run parameters of the model are estimated simultaneously. Third, all the variables are assumed to be endogenous. Fourth, the econometric methodology is relieved of the burden of establishing the order of integration amongst the variables and of pre-testing for unit roots. In fact, whereas all other methods require that the variables in a time series regression equation are integrated of order one, i.e., the variables are I(1), only that of Pesaran, *et al*. could be implemented regardless of whether the underlying variables are I(0), I(1), or fractionally integrated.

An ARDL representation of Equation (1) is formulated as follows:

$$\Delta y_t = \beta_0 + \beta_1 t + \beta_2\, y_{t-1} + \beta_3 x_{t-1} + \beta_4 D_{90} + \sum_{i=1}^{k} \beta_{5i} \Delta y_{t-i} + \sum_{i=1}^{k} \beta_{6i} \Delta x_{t-1} + \varepsilon_t \quad \ldots \quad (2)$$

Where *y* is real GDP, *t* is time trend and *x* is a vector of explanatory variables (i.e. *F, r, S*). Investigation of the presence of a long run relationship amongst the variables of Equation (1) is tested by means of bounds testing procedure of Pesaran, *et al*. (2001). The bounds testing procedure is based on the *F*-stat or Wald

[9]The standard measure of *F* used in the literature is the ratio of broad money—usually M_2—to the level of nominal GDP [World Bank (1989)]. However, this ratio measures the extent of monetisation rather than of financial depth. In developing countries, monetisation can be increasing without financial development; therefore, it is not an entirely satisfactory indicator of financial depth. We, therefore, define financial depth as a ratio of total bank deposit liabilities to one period lagged nominal GDP.

statistics and is first stage of the ARDL cointegration method. Accordingly, a joint significance test that implies no cointegration, ($H_0 : \beta_2 = \beta_3 = \beta_4 = 0$), should be performed for Equation (2). The *F*-test used for this procedure has a non-standard distribution. Thus, two sets of critical values are computed by Pesaran, *et al.* for a given significance level. One set assumes that all variables are I (0) and other set assumes that they are all I (1). If the computed *F*-statistic exceeds the upper critical bounds value, then the H_0 is rejected. If the *F*-statistic fall into the bounds then the test becomes inconclusive. If the *F*-statistic lies below the lower critical bounds value, it implies no cointegration.[10]

Once a long run relationship is established, then the long run and error correction estimates of the ARDL model can be obtained from Equation (2). At the second stage of the ARDL cointegration method, it is also possible to perform a parameter stability test for the appropriately selected ARDL representation of the error correction model. A general error correction representation of Equation (2) is formulated as follows:

$$\Delta y_t = \beta_0 + \sum_{i=1}^{k} \beta_{1i} \Delta y_{t-i} + \sum_{i=0}^{k} \beta_{2i} \Delta F_{t-i} + \sum_{i=0}^{k} \beta_{3i} \Delta r_{t-i} + \sum_{i=0}^{k} \beta_{4i} \Delta S_{t-i} + \lambda EC_{t-1} + \eta_t \quad (3)$$

Where λ is the speed of adjustment parameter and *EC* is the residual that is obtained from the estimated cointegration model of Equation (1).

The two-step ARDL cointegration procedure is implemented in estimation of Equation (1) for Pakistan using annual data over the period 1971–2004. In the first stage, the order of lags on the first-differenced variables for Equation (2) is usually obtained from unrestricted vector autoregression (VAR) by mean of Akaike Information Criterion (AIC).[11] Given the limited number of observations, we experimented up to 2 years on the first-difference of each variable and computed *F*-statistics for the joint significance of lagged levels of variables in Equation (2). The computed *F*-test statistic for each order of lags is presented in Table 3.

Table 3

Statistics for Selecting Lag Order and the Existence of Long-run Relationship

Order of Lag	AIC	SBC	$\chi^2_{SC(1)}$	*F*-statistics
1	73.2168	64.4223	0.3470E-4	27.8486*
2	71.1001	61.0622	0.10636	5.1943**

[10]This similar to the Johansen and Juselius multivariate cointegration procedure, which has five alternative cases for long run.

[11]Bahmani-Oskooee and Bohl (2000) and Bahmani-Oskooee and Ng (2002) argued that the results of this stage are sensitive to the order of VAR.

Based on the minimum value of AIC, the lag length of order 2 is selected. When 2 lags are imposed, there is strong evidence for cointegration because the calculated *F*-statistic is 5.1943, which is greater than the critical value of the upper level of the bound (i.e. 4.01) at the 5 percent level of significant. This result gives an indication for the existence of a long run relationship among *y*, *F*, *r* and *S*.[12]

Given the existence of a long run relationship, in the next step we used the ARDL cointegration method to estimate the parameters of Equation (1) with maximum order of lag set to 2 to minimise the loss of degrees of freedom. In search of finding the optimal length of the level variables of the long run coefficients, lag selection criteria such as the AIC is utilised. The long run results of Equation (1) based on AIC are reported in panel A of Table 4 along with their appropriate ARDL model. The diagnostic test results of Equation (1) for short run estimates are also displayed in panel B of Table 4.

Table 4

ARDL Estimates

Dependent Variable y_t			
Regressor	Coefficient	*t*-values	*p*-values
Panel A: The Long-run Results			
F_t	3.3663	2.2558	0.035
r_t	0.1792	3.5074	0.002
S_t	0.3550	0.3517	0.729
D_{90}	0.4840	2.4429	0.024
INPT	14.9318	4.6622	0.000
Panel B: The Short-run Diagnostic Test Statistics			
$\chi^2_{SC(1)}$		0.3470E-4	
$\chi^2_{FF(1)}$		2.4203	
$\chi^2_{NO(2)}$		0.8787	
$\chi^2_{Het(1)}$		0.0047338	

Note: ARDL (1, 2, 2, and 2) selected on the basis of AIC. The full table of the short run estimates are available from the author. χ^2_{SC}, χ^2_{FF} χ^2_{NO} and χ^2_{Het} are Lagrange multiplier statistics for test of residual correlation, functional from mis-specification, non-normal errors and heteroskedasticity, respectively. These statistics are distributed as Chi-square values with degree of freedom in parentheses. INPT is the intercept term.

[12]At lag 2, the residuals are white noise as indicated by the Lagrange Multiplier test of serial correlation. i.e. $\chi^2_{SC(1)}$.

As can be seen from Table 4 that the estimates possessed expected signs and apart from the share investment, all other coefficients are statistically significant at the 5 percent level of significance. The results suggest that financial depth and the real deposit rate are particular important factors contributing to economic growth in Pakistan in the long run. The coefficient of financial depth indicates that in the long run a 1 percent increase in financial depth increases real output by 3.37 percent. While the coefficient of real deposit rate also suggests that a 1 percent rise in real deposit rate will increases real output by 0.18 percent in the long run. Although, the coefficient of the share of investment is positive, but statistically insignificant. Finally, the financial reforms exert positive and significant impact on real output over the period of investigation as indicated by the coefficient of the dummy variable (D_{90}).

The ECM output corresponding to the ARDL (1, 2, 2, and 2) is given in Table 5.

Table 5

Error Correction Representation of ARDL Model

Dependent Variable: Δy_t			
Regressor	Coefficient	*t*-value	*p*-value
ΔF_t	0.0956	1.3001	0.206
Δy_{t-1}	0.1191	1.7090	0.101
Δr_t	0.0072	4.8381	0.000
Δr_{t-1}	–0.0041	–2.8802	0.008
ΔS_t	0.3559	6.1964	0.000
ΔS_{t-1}	0.1267	2.1010	0.047
ΔD_{90}	0.0273	1.3971	0.176
ΔINPT	0.8419	3.0675	0.005
EC_{t-1}	–0.0564	–2.3790	0.026
R^2	0.79	R^2_{adj}	0.69
S.E. Regression	0.02	F-stat	9.5432
R.S.S	0.009	AIC	73.2168
Equation-LL	85.2168	DW-stat	1.9869

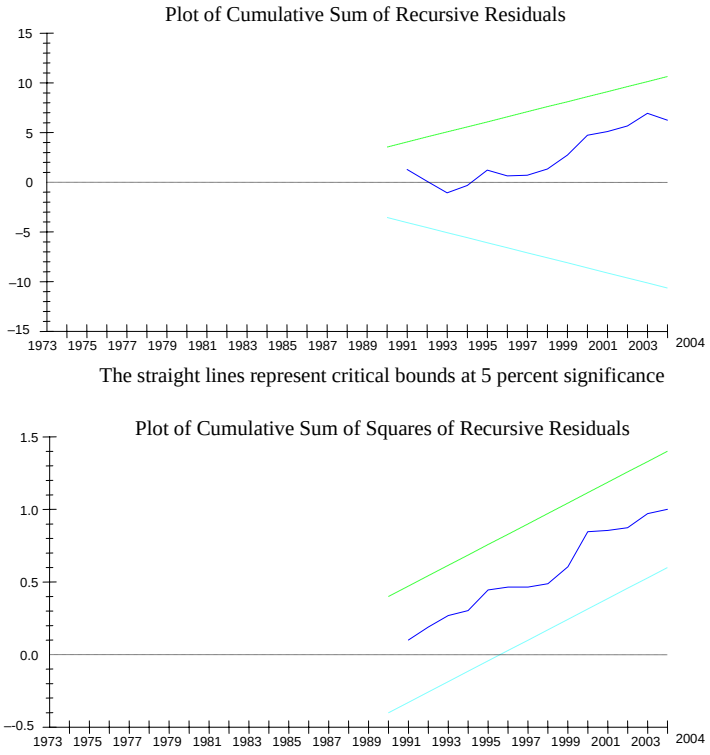
Note: ARDL (1, 2, 2, and 2) selected on the basis of AIC. R.S.S, LL, AIC and DW are respectively residual sum of squares, log likelihood, Akaike's Information Criteria and Durbin Watson stat.

$$EC = y_t - 3.3663F_t - 0.1793r_t - 0.3550S_t - 0.4840D_{90} - 14.9318 \text{ INPT}$$

The estimated lagged error correction term (EC_{t-1}) is negative and highly significant. This result supporting the cointegration among the variables represented by Equation (1). The feedback coefficient is –0.06, which suggests a slow adjustment process. Nearly 6 percent of the disequilibria of the previous period's shock adjust back to the long run equilibrium in the current year. The results further suggest that in the short run financial depth exerted positive impact on the economic growth. However, in the short run, the coefficients on the changes in financial depth ($\Delta F_t, \Delta F_{t-1}$) are hardly significant at the 20 percent and 10 percent level of significance. Although, the short run response of real deposit rate is significant but very small, suggesting that there is a need for further liberalisation of interest rate. Furthermore, the changes in the share of investment exerted positive and significant impact on changes in real output in the short run.

We also performed the CUSUM and CUSUMSQ stability test for estimated error correction model. Figure 4 plots the CUSUM and CUSUMSQ.

Fig. 4. CUSUM and CUSUMSQ Plots for Stability Tests



It can be seen from the Figure 4 that the plots of CUSUM and CUSUMSQ statistics are well within the critical bounds implying that all the coefficients in the error correction model are stable.

V. CONCLUDING REMARKS

This paper has examined the empirical relationship between financial development and economic growth in Pakistan over the period 1971–2004, using Autoregressive Distributed Lag (ARDL) approach. The results show that, in the long run financial depth and real interest exerted positive impact on economic growth. While the share of investment is although positively correlated to real income, but remained insignificant. Furthermore, in the short run economic growth is positively and significantly affected by changes in the share of investment. Moreover, changes in real interest rate exerted positive (negative)[13] impact on growth. However, the response of real interest rate is very small in the short run. The feed back coefficient is negative and significant, suggesting about 0.06 percent disequilibrium in the previous period is corrected in the current year. We find a stable long run relationship between economic growth and financial depth, as indicated by the CUSUM and CUSUMSQ stability tests. Unlike Ireland (1994) and Demetriades and Hussein (1996), our findings are consistent with the view that economic growth is an outcome of the financial development.

Based on the above findings we can derive some important policy implication.

- If policy-makers want to promote growth, then attention should be focused on long run policies, for example, the creation of modern financial institutions, in the banking sector and the stock markets.
- The financial markets affect the cost of external finance to the firm and, therefore, their effects should be materialise through facilitating the investment process.
- Unless conditions for low-cost investment are created, long run growth is impossible.

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[13]In the current period the short run impact of real interest rate is positive, while next period the impact of real interest rate is negative on economic growth.

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Comments

The authors have indeed touched upon an interesting and important topic. Since the advent of endogenous growth theory and the influential work of King and Levine (1993), the debate on the possible role of financial development in promoting economic growth has assumed an important place in the burgeoning growth literature. There are a number of studies on finance-growth nexus, both cross-country and country-specific. However, there is a dearth of literature with reference to Pakistan. In this context this study is very important as it would, hopefully, pave the way for further exploration of the role of financial development in economic growth of Pakistan.

In this study, Autoregressive Distributed Lag Approach (ARDL) is used, which is a relatively new technique, to carry out econometric analysis. According to the authors this technique has certain advantages over other single equation cointegration procedures, the most important being the circumvention of the endogeneity problem which is one of the most important problems in growth literature. However, any explanation as to how this technique overcomes the problem of endogeneity is not given. It would be appropriate if concise explanations of the advantages of this technique are given while finalising the paper.

While presenting the rationale for the financial development indicators, it is stated that financial development helps promote economic growth through the channel of increased investment but the coefficient on investment is insignificant. This is surprising since it is the long run growth that matters. Also, this is contrary to the evidence found in the existing growth literature as according to Levine and Renelt (1992) investment share, which is a proxy used in the literature for physical capital, is the single most robust variable explaining economic growth. The author must give explanation for why the coefficient on investment share is insignificant. Moreover, recently quite a few authors have generated capital stock series using gross capital formation, for example Siddiqui (2003), to carry out analysis on economic growth. The authors can carry out the similar exercise if they want to.

It is stated that due to shorter time series, the lag lengths have been restricted to 2. It is, in a way, putting a priori restrictions on the model and it could very well be that Akaike Information Criterion (AIC) is lower for higher lag lengths. Therefore, AIC at higher lag lengths must also be observed.

Additionally, some studies have also used stock market variables as measure of financial development to test for finance-growth nexus. The authors

can use stock market variables for Pakistan to test for the hypothesis that financial development leads to higher economic growth.

Finally, the empirical evidence on finance-growth nexus is still far from being conclusive. Although evidence for robust association between financial factors and growth has been increasing over time, but the direction of causality has been subject to controversy. The authors in the introductory part of the paper state that the previous studies are problematic in the sense that positive relationship between financial development and economic growth could exist for different reasons since an increase in output could lead to increase in demand for financial services. However, it is not clear from the paper how they have overcome this problem. They themselves have found positive relationship between financial development variables and economic growth in Pakistan. In this regard, it is interesting to note that in the case of Pakistan economic growth was higher in the pre-reform period than in the 1990s.

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