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Financial Sector Reform and Its Impact on Investment and Economic Growth: An Econometric Approach

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INTRODUCTION

The financial sector is central to economic development as it serves the role of intermediary by mobilising savings and subsequently allocating credit for productive activities. However, in many developing countries including Pakistan, administered interest rate, domestic credit controls, high reserve requirements, use of captive banking system to finance large budgetary requirements of the government and controls on international capital inflows have remained the main features of the monetary policy. These repressive policies had their repercussions in the form of excess liquidity with the banking system, disintermediation of cash flows, segmentation of financial markets, underdeveloped money and capital markets, etc. [McKinnon (1973) and Shaw (1973)], therefore, argued that low interest rate ceilings unduly restrict the real flow of loanable funds, thus depressing the quantity of productive investment.

Financial liberalisation, on the other hand, is defined as policy measures designed to deregulate certain operations of the financial system and transform its structure with a view to achieving a liberalised market oriented system with an appropriate regulatory framework. The financial sector reforms would lead to increase in loanable funds by attracting more household savings to bank deposits due to higher interest rates. This, in turn, would result in greater investment and faster economic growth.

In Pakistan, various measures have been undertaken in the early 1990s to liberalise the financial sector as part of the overall structural adjustment programme (SAP) with the objective to improve the effectiveness of monetary policy. These policies were implemented by making a shift from direct to indirect monetary control and greater reliance on market forces. The main financial liberalisation policies were aimed at liberalising interest rates, reducing controls on credit, enhancing competition and efficiency in the financial system, strengthening the

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supervisory framework, promoting growth and deepening of the financial markets. In this context, the following measures have already been implemented to date as part of the broader financial sector reforms:

- Efforts have been made to enhance the health of and competition within the banking sector by privatising two nationalised banks, as well as allowing 11 new scheduled commercial banks to be set up in the private sector.
- Debt management reforms were introduced to promote primary and secondary securities markets. The prudential supervisory framework has been established to foster sound credit decisions.
- Interest rate rationalisation was introduced by paring down concessional and direct credit schemes.
- The exchange and payment reforms have also been undertaken in the areas of foreign investment and foreign trade.

The adoption of these measures would give way to greater flexibility in the interest rate movements, an enhanced role for the market forces in credit allocation, gradual deepening of the money and securities markets, and enhancing competition and efficiency in the financial system. Against this background, the paper develops and estimates a medium-sized 24-equation macroeconometric model for the financial sector of Pakistan. The model provides a detailed consistent treatment of financial variables by disaggregating the financial assets held by the households, private business and enterprises. The behaviour of demand for these assets is then linked with the overall national saving and, subsequently, with investment and gross domestic product (GDP). This model will be useful device in not only generating *ex-ante* forecasts but, more importantly, it will provide answers to numerous interesting and critical counterfactual policy questions in the context of Pakistan's financial sector reforms. For example, if the reforms had to take place in the early eighties rather than the nineties, the model will quantitatively estimate the counterfactual loss foregone in terms of lower GDP, savings and investments in Pakistan. It is expected that these counterfactual policy simulation results may be useful to the policy-makers in designing more accurate and practical future monetary policies in Pakistan.

II. A MODEL FOR FINANCIAL SECTOR

While the financial sector reform is initiated by bringing about changes within the monetary sector only, the impact of such a reform, however, is expected to be multifacit and wide-ranging influencing many other sectors of the economy. A single equation approach, in this context, to evaluate the implication of this reform may not only be inadequate but, at the same time, it could even be misleading. This is due to the fact that, with a single equation approach, an increase in the interest rate for

deposit, for instance, may show a greater demand for time deposits. But in terms of total financial assets, the impact of such a change on it may be ambiguous because of the possibilities of substitution among other financial assets (e.g., currency, unfunded debt, floating debt and permanent debt).

Thus, in order to examine the intra as well as inter sectoral impact of financial sector reforms, we have constructed a medium-sized 24-equation macroeconomic model for Pakistan. The model is not only dynamic and rich in specifications but, more significantly, it is based on a pragmatic approach, which takes into account some of the specific institutional arrangements present in the financial sector of Pakistan. Broadly, the model has been divided into five blocks, namely monetary, savings, government revenue, macroeconomic and definitional blocks. In the following, we present the model without discussion so as to conserve the space.¹

A. Monetary Block

1. Net Financial Assets

$$NFA = CC + TD + UFDBT + \overline{FDEBT} + \overline{PDEBT} - L$$

2. Currency in Circulation

$$CC/NFA = f(Y/NFA, \overline{RD}, \overline{RU}, \overline{RF}, \dot{P}_g^e)$$

3. Total Deposit

$$TD/NFA = f(Y/NFA, \overline{RD}, \overline{RU}, \overline{RF}, \dot{P}_g^e)$$

4. Unfunded Debt

$$UFDBT/NFA = f(Y/NFA, \overline{RD}, \overline{RU}, \overline{RF}, \dot{P}_g^e)$$

5. Demand for Loan

$$L = f(CP, \overline{R}_A)$$

6. Price Level

$$P_g = f(TD/Y, ITR/Y, P_m)$$

7. Net Interest Bearing Financial Assets

$$TIBFA = NFA - CC$$

¹Detailed discussion can be found in Hasan *et al.* (1996)

B. Savings Block**8. Savings in Real Assets**

$$RSA = f[(YR - DTR/P_g), (RD - \dot{P}_g), TD/Y, \overline{R}_m]$$

9. Real Financial Assets

$$RFS = \Delta TIBFA/P_g$$

10. Real National Savings

$$RNS = RSA + RFS$$

C. Government Revenue Block**11. Direct Taxes**

$$DTR = f(Y)$$

12. Indirect Taxes

$$ITR = f(Y, M)$$

13. Total Tax Revenue

$$GTR = DTR + ITR$$

14. Total Revenue

$$GR = GTR + \overline{GNTR} + \overline{S}_{UR}$$

D. Macroeconomic Block**15. Private Investment**

$$I_p = f(\overline{RA}, TD/Y, P_m/P_g, IINFSI)$$

16. Private Consumption

$$CP = f[(YR - DTR/P_g), \overline{R}_m, \overline{RD}]$$

17. Public Investment

$$I_g = f(GR/P_g, \overline{RFA})$$

18. Public Consumption

$$C_g = f(GR/P_g)$$

19. Import

$$MR = f(YR, P_m/P_g)$$

20. National Income

$$Y_R = C_p + I_p + C_g + I_g + \overline{\Delta ST} + \overline{X} - M_R$$

21. Public Infrastructure

$$IINF = I_g - I_{go}$$

22. Index of Public Infrastructure

$$IINFST = [(\overline{IINF} - (-1) + IINF) / \overline{IINF}_0]$$

23. National Income at Current Prices

$$Y = YR \times P_g / 100$$

24. Imports at Current Prices

$$M = MR \times P_m / 100$$

List of Variables

- CC = Currency in Circulation
- C_g = Public Consumption Expenditure
- C_p = Private Consumption Expenditure
- DTR = Direct Taxes
- $FDEBT$ = Floating Debt
- $GNTR$ = Non-tax Revenue
- GTR = Total Tax Revenue
- I_g = Public Investment
- $IINESI$ = Index of Economic Infrastructure Investment
- $IINF$ = Public Infrastructure
- $IINF_{S_0}$ = Initial Stock of Real Public Infrastructure Investment
- I_p = Private Investment
- ITR = Indirect Taxes
- L = Loan
- M = Imports at Current Price
- M_R = Real Imports
- NFA = Net Financial Assets
- $PDEBT$ = Permanent Debt
- \dot{P}_g^e = Expected Rate of Inflation

P_g	=	General Price Level
P_m	=	Import Price Index
R_A	=	Interest Rate on Advances
RD	=	Rate of Return on Time Deposit
RF	=	Rate of Return on Floating Debt
RFA	=	Foreign Aid
RFS	=	Real Financial Assets
R_m	=	Remittances
RNS	=	Real National Savings
RSA	=	Savings in Real Assets
RU	=	Rate of Return on Unfunded Debt
ΔST	=	Changes in Stock
SUR	=	Surcharges
TD	=	Total Deposits
$TIBFA$	=	Net Total Interest Bearing Financial Assets
$UFDBT$	=	Unfunded Debt
X	=	Total Exports of Goods and Services
Y	=	Nominal GDP
YR	=	Real GDP.

III. RESULTS

The results are discussed in the following paragraphs. Given the existence of long-run relationship, based on PP cointegration test, we used a simple OLS technique to estimate the behavioural equations of the model.² By and large, all the estimated regression equations have high adjusted R^2 and significant t -values with correct signs implying that the individual equations not only explain the postulated behaviour well in the model but, at the same time, individual stipulated parameters can be meaningfully interpreted. Based on other estimated statistical tests (e.g., LM, ARCH, and CUSUM), we can safely argue that the estimated regression equations are free from the statistical problems of serial correlation, heteroscedasticity and instability of the parameters.

Based on the estimated equations of the model the policy simulation exercise undertaken in this paper is essentially *counterfactual* in character. The key objective in carrying out this type of exercise is to investigate and unfold the conundrum as to what would have happened in Pakistan, in terms of the impact (measured by key economic variables) and the ensuing monetary cost (or loss of revenue in the form of investment and output), had this country introduced the reforms earlier in the

²The estimated regression coefficients of the model and various test statistics are available on request from the authors.

eighties rather than later as done so in the nineties. In order to cover the broader aspects of the financial reform and, at the same time, keeping the discussion more manageable, we report results of the impact of three categories of policy simulation on key selected macroeconomic variables. Furthermore, for each type of policy simulation, we also calculate the corresponding expected loss of revenue (in rupees) due to late implementation of the reforms. The three broad categories of reform considered are:

1. Interest Rate Liberalisation;
2. Spread Reducing Reform; and
3. Financial Deepening.

In the following, we discuss the results of these policy simulations.

1. Interest Rate Liberalisation

As a result of repressive monetary policies pursued in Pakistan, the real deposit rates remained negative most of the time during the decade of the 1980s. This type of policy is expected to make non-bank assets relatively more attractive than the bank deposits thus creating financial disintermediation. In order to test the sensitivity of the above policy reforms, we conduct two types of simulation. Firstly, we keep the nominal deposit rates at least as high as 14 years (1981–94) of average inflation rate. This implies that, on average, the real rate of deposits during this period should be non-zero thus enabling the real return on financial assets to be non-negative. The second type of policy simulation in this regard entails the nominal deposit rates to be at least two percentage point above the 14 years (1981–94) average inflation rate making the real rate positive by two percentage point. The cost of late implementation of the reform is evaluated in terms of loss in real private investment and real GDP. The cost of late implementation in rupee term is reported in Tables 1 and 2.

In the first case when real return on financial assets are assumed non-negative Pakistan's economy could have avoided a loss of almost Rs 12 billion in real GDP on cumulative basis since 1980-81 as shown in Table 1. In fact, if the rate of return on deposits were allowed to be 2 percentage point above the 14 years average inflation rate (implying 2 percent positive real return on deposit), the economy could have saved a loss of Rs 78 billion in real GDP on cumulative basis or Rs 6 billion on average each year since 1980-81 as shown in Table 2.

2. Spread-reducing Reform

Another key impediment to the financial sector reform was the government policy of maintaining a large spread between the deposits and the lending rates of the banking system. Under the spread-reducing financial policy simulation, we have

Table 1
Simulation Results of Interest Rate Liberalisation
(Real Return on Deposit in Non-negative)

(Rs in Million)		
Year	Real Private Investment (Cumulative)	Real GDP (Cumulative)
1980-81	223	2748
1981-82	418	4937
1982-83	368	4171
1983-84	560	6878
1984-85	492	5742
1985-86	417	4592
1986-87	363	3773
1987-88	640	8457
1988-89	867	12869
1989-90	742	9936
1990-91	1076	15534
1991-92	1060	15066
1992-93	941	13152
1993-94	840	11749
Cumulative Average	106	1341

Note: Cumulative values are simply the sum of successive marginal values of each year.

Table 2
Simulation Results of interest Rate Liberalisation
(Real Return on Deposit is 2 Percent)

(Rs in Million)		
Year	Real Private Investment (Cumulative)	Real GDP (Cumulative)
1980-81	709	8215
1981-82	1339	14951
1982-83	1642	18303
1983-84	2232	26038
1984-85	2467	28835
1985-86	2703	32076
1986-87	2910	35058
1987-88	3434	43364
1988-89	3886	51826
1989-90	3923	52039
1990-91	4617	63100
1991-92	5044	68446
1992-93	5406	73345
1993-94	5746	77743
Cumulative Average	483	5960

Note: Cumulative values are simply the sum of successive marginal values of each year.

analysed the impact of keeping the differences between the deposit and lending rates at 2 percent on private investment and real GDP. The results, as reported in Table 3, suggest that Pakistan could have saved Rs 22.7 billion in term of loss in real GDP on cumulative basis or Rs 1.65 billion per year since 1980-81.

Table 3

Simulation Results of Spread Reducing Reforms
(Difference between the Average Lending and Deposit Rate is 2 Percent)

(Rs in Million)		
Year	Real Private Investment (Cumulative)	Real GDP (Cumulative)
1980-81	238	1849
1981-82	496	3784
1982-83	727	5395
1983-84	953	7165
1984-85	1178	8843
1985-86	1381	10333
1986-87	1541	11179
1987-88	1719	12465
1988-89	1860	13209
1989-90	2010	14156
1990-91	2237	16306
1991-92	2466	18074
1992-93	2723	20358
1993-94	2992	22697
Cumulative Average	222	1645

Note: Cumulative values are simply the sum of successive marginal values of each year.

3. Financial Deepening

Another interesting policy simulation conducted in this study pertains to the impact of financial deepening on the economy. Financial deepening in this context implies a broadening of the monetary base in relation to the real sector of the economy. The basic premise underlying such a reform is that making the financial sector wider and covering larger sectors of the economy will facilitate economic activity and may improve physical investments as well as total output of the economy. This simulation was implemented by increasing the financial deepening variable (TD/Y) by 25 percent as compared to its actual value. Promoting financial deepening policies in the early eighties rather than in the nineties could have saved Pakistan's economy up to about Rs 260 billion in terms of loss in real GDP on cumulative basis or Rs 16.6 billion per year on average basis since 1980-81 (see Table 4).

Table 4
Simulation Results of Financial Deepening
(Financial Deepening Variable Increased by 25 Percent)

(Rs in Million)

Year	Real Private Investment (Cumulative)	Real GDP (Cumulative)
1980-81	1652	17482
1981-82	3153	32283
1982-83	4237	43720
1983-84	5795	62451
1984-85	6867	74999
1985-86	8081	90955
1986-87	9256	106965
1987-88	10848	129702
1988-89	12306	154636
1989-90	13156	169028
1990-91	15092	196951
1991-92	16830	217529
1992-93	18553	239716
1993-94	20262	260489
Cumulative Average	1416	16616

Note: Cumulative values are simply the sum of successive marginal values of each year.

IV. CONCLUDING REMARKS

While the significance of financial reforms in Pakistan introduced in the early 1990s cannot be undermined in that it has brought about some real changes in terms of freeing interest rates, reducing the spread rates between the deposit and lending rates, privatisation of nationalised banks, and many more, what is, however, important from the public policy point of view in this context is to know how much Pakistan's economy could have saved or gained had the reform been introduced earlier in the 1980s. Analysis of this nature which is also known as counterfactual exercise is useful not only in terms of getting an estimate of foregone benefits of delaying reforms in the past but, more importantly, it provides the policy-makers with a better insight into successfully implementing the reform in the future.

With this perspective in mind, this study develops and estimates a 24-equation medium-sized macroeconometric model for Pakistan with a specific focus on the financial sector. Although the model constructed does not explicitly deal with specific institutional arrangements (privatisation, NBFIs, etc.) and management side (prudential regulations, competitions, etc.), of financial reforms, analysis of this paper, nevertheless, quantifies some of the important implications of the reform

within the context of policy simulation exercise. Three important areas of financial reform where this study has made some modest contribution are the ones that relate to identifying the impact of more flexible market determined interest rates; reducing the spread between the deposit and lending rates; and finally, promoting policies to improve financial deepening in the economy.

In general, our findings suggest that the impact of all three financial sector reform policies not only reduce financial disintermediation (McKinnon-Shaw Hypothesis) but the positive influence also permeate into the real sector. In fact, the key finding of this study is that had Pakistan introduced the financial sector reforms in the eighties rather than in the nineties, the economy could have enhanced its output in real terms by over Rs 16.5 billion every year. This figure is by no means a trivial amount given the size of the average annual real output of Rs 344 billion during this period (1981–94).

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