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Abstract:

This paper empirically investigates the impact of trade and financial liberalization on economic growth in Pakistan using annual observations over the period 1961-2005. The analysis is based on the bound testing approach of cointegration advanced by Pesaran et al (2001). The empirical findings suggest that both trade and financial policies play an important role in enhancing growth in Pakistan in the long-run. However, the short-run response of real deposit rate and trade policy variable is very low, suggesting further acceleration of reform process. The feedback coefficient suggests a very slow rate of adjustment towards long-run equilibrium. The estimated short-run dynamics are stable as indicated by CUSUMQ test.

Trade Liberalization, Financial Reforms and Growth

Introduction

The relationship between trade liberalization, finance reforms and economic growth has been well documented in the economic literature. A considerable body of literature suggests a strong and positive link between trade liberalization, financial development and economic growth. It has been argued that trade and financial liberalization policies reduce the inefficiency in the production process and positively influence economic growth. This argument is strengthened by the fact that countries with more open trade and financial policies may grow faster than those with restricted trade and financial policies. An increasing openness is expected to have positive impacts on economic growth (Jin, 2000; Fry, 1995, 1997; Darrat, 1999; Levine, 1997; Mckinnon, 1973; Shaw, 1973 and World Bank, 1989). There is growing consensus that both liberalization policies are expected to exert positive impacts on economic growth.

Shumpeter (1911) argued that services provided by financial intermediaries are essential for economic development. Financial liberalization deepens financial markets and thereby promotes economic growth (Mckinnon, 1973 and Shaw, 1973). Steps towards financial and trade liberalization were taken by many developing countries including Pakistan to achieve higher level of growth. Thus, an empirical research is

needed to determine the effectiveness of financial and trade liberalization policies with regard to growth in a developing country like Pakistan. Examining the impacts of both policies is particularly important in the case of Pakistan which followed restrictive policies till early 1990s. The costs of these restrictive policies have been enormous and reflected in a low level of financial savings, investment and economic growth.

The positive relationship between financial and trade variables and economic growth is explained by incorporating efficiency effects which mainly results from the reduction of rent seeking and from the gains in internal and external economies of scale due to financial and trade liberalization (Bhagwati, 1988; Lee, 1993; Krueger, 1998; Fry, 1995, 1997). This efficiency effect considered as a major source of long-run growth. The endogenous growth theory predicts that both financial and trade liberalization along with investment in physical and human capital enhance economic growth (Romer, 1986; Lucas, 1988, Rivera-Batiz and Romer, 1991; and King and Levine, 1993).

Research suggests that financial deepening effectively channels savings to productive investment opportunities, improves corporate governance, reduces transaction and information costs, and enhances specialization, and so forth (Bencivenga and Smith, 1991; De Gregorio and Guidotti, 1995; Greenwood and Jovanovic, 1990; Levine, 2004).

Financial development can affect growth through three main channels (Aziz and Duenwald, 2002): (i) it can increase the marginal productivity of capital by collecting information to evaluate alternative investment projects and by risk sharing; (ii) it can

raise the proportion of savings channeled to investment via financial development — by reducing the resources absorbed by financial intermediaries and thus increasing the efficiency of financial intermediation; and (iii) it can raise the private saving rate.

Ansari (2002) has noted that financial development contribute to economic growth in the following ways: (i) financial markets enable small savers to pool funds, (ii) savers have a wider range of instruments stimulating savings, (iii) efficient allocation of capital is achieved as the proportion of financial saving in total wealth rises, (iv) more wealth is created as financial intermediaries redirect savings from the individuals and the slow-growing sectors to the fast-growing sectors, (v) financial intermediaries partially overcome the problem of adverse selection in the credit market, and (vi) financial markets encourages specialization in production, development of entrepreneurship, and adoption of new technology.

Similarly, removal of trade restrictions help to stabilize the development process by improving efficiency and return economies from distorted factor prices to production frontiers. Moreover, trade openness will improve domestic technology, production process will be more efficient, and hence productivity will rise (Jin, 2000). Trade liberalization and growth relations may occur through investment, and trade openness may provide greater access to investment goods (Levine and Renelt, 1992). Countries that liberalize their external sector and reduce impediments to international trade can experience relatively higher economic growth. It is generally agreed that an open trade regime is crucial for economic growth and development (Sukar and Ramakrishna, 2002).

The main objective of both liberalization policies is to increase productivity through reducing inefficiency in investment. The existing literature examines the impact of financial¹ and trade liberalization² separately despite their shared importance in increasing efficiency of investment. The empirical evidence related to the joint impact of financial and trade variable on economic growth is underdeveloped. The joint impact of both variables was highlighted by Roubini and Sala-i-Martin (1991) and Barro (1991). The inclusion of both variable by Roubini and Sala-i-Martin (1991) highlighted the importance of both financial and trade variables in the economic growth. Thus our testable hypothesis is that *both financial development and trade liberalization jointly increase economic growth.*

This paper makes *three* main contributions to the empirical literature on trade, finance and growth. *First*, it examines the joint impact of trade liberalization and financial development on growth in Pakistan. *Second*, unlike previous studies instead of using different indicators of financial development separately, we used financial development index as a proxy for government financial policy to assess its impact on real GDP. *Thirdly*, it applies recent econometric techniques of cointegration namely, the bound testing approach to cointegration developed by Pesaran *et al* (2001) to examine the relationship between trade, finance and growth. This modeling technique does not require any precise identification of the order of integration of the underlying data. Furthermore, ARDL estimation is applicable even the explanatory variables are endogenous, and the

¹ Khan *et al* (2005).

² Din *et al* (2003).

existence of a long run relationship is independent of whether the explanatory variables are $I(0)$, or $I(1)$.

The rest of the paper is organized as follows: section 2 deals with the brief overview of the financial and trade policies being pursued by Pakistan. Section 3 explains the model specification, data issues and econometric methodology. Empirical findings are discussed in section 4, while some concluding remarks are given in the final section

2 Overview of the Financial and Trade Policies in Pakistan

Economic growth of developing countries is heavily based on the financial sector's credit allocation. Overall financial development is necessary for economic growth at the macro-level (Andersen and Tarp, 2003; Khan and Senhadji, 2000; Levine, 2002). A more advanced intermediation enables firms to raise and manage large amount of funds more effectively, resulting in a rapid economic development. Particularly, the development of financial sector is an important for developing countries because bank-based system has greater impact on growth at the early stage than does a market-oriented system (Fase and Abma, 2003; Tadesse, 2002; Iimi, 2004). This section briefly reviews the financial and trade liberalization policies pursued by the government to enhance growth.

2.1 Financial Sector Reforms

In Pakistan, the banking sector reforms were initiated under broader macroeconomic structural adjustment programs in the early 1990s. Through these

reforms, the government has been aiming to make the financial industry more competitive and transparent by privatizing formerly nationalized commercial banks, liberalizing interest rates and credit ceilings, strengthening the supervisory capacity of central bank and standardized accounting and auditing systems (Iimi, 2004).

Prior to the 1990s, the financial sector in Pakistan remained heavily controlled³. Interest rates were set administratively and were usually remained negative in real terms. Monetary policy was conducted primarily through direct allocation of credit. 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, state-owned financial institutions hold almost 93.8 percent of the total assets of the entire financial sector at the end of 1980s. Moreover, the status of financial institutions were precarious due to, *inter alia*, high intermediation costs resulting from overstaffing, large number of loss-incurring branches, poor governance with low quality banking services, accumulation of non-performing loans and inadequate market capitalization. These inefficiencies and distortions caused severe macroeconomic difficulties in the late 1970s and 1980s. In order to remove these distortions and spur economic growth, the government of Pakistan undertook a wide range of reforms in the early 1990s to strengthen its financial system and to provide an adequate macroeconomic environment.

³ All commercial banks were nationalized in January, 1974, with the aim at making credit availability to highly priority sectors of the economy which previously had limited access to investable funds (see Haque and Kardar, 1993 for detailed account).

The objectives of these reforms were to prepare industrial conditions for market competition, strengthening corporate governance and supervision, and adopting a market-based indirect system of monetary, exchange and credit management. In the *first phase* of financial reforms⁴, the government liberalizes the market entry of private and foreign banks⁵ in order to gain efficiency and enhance competition within the financial sector. *Secondly*, small nationalized banks, such as MCB and ABL, were partially privatized. *Thirdly*, major state-owned commercial banks and DFIs were downsized in terms of branches and employees. *Fourthly*, credit ceiling as an instrument of credit control was abolished, credit-deposit ratio (CDR) was also abolished and open market operation is now instrument of monetary policy and SBP at regular intervals conducted auctions of government securities. *Fifthly*, loan recovery process was strengthened by establishing banking courts and standardizing loan classification and accounting rules. *Finally*, State Bank of Pakistan (SBP) was granted full autonomy.

Despite these efforts of financial liberalization, financial markets segmentation continued owning continuing controls on interest rates on government debts and to specialized credit programmes. As a result, the *second phase* of banking sector reforms⁶ was introduced in 1997. These reforms addressed the fundamental causes of crisis and corruption and strengthen the corporate governance and financial discipline. In this regard, the cost structure of banks was *firstly* restructured through capital maintenance

⁴ The early phase of financial reforms started in the late 1980s to earlier 1990s.

⁵ 10 new private banks started their operations in 1991 and 23 private domestic banks operating in the country including HBL, ABL, MCB and UBL. The process of liberalization started in the early 1990s and except NBP more than 50 percent shares of the public sector have been privatized. There are about 14 foreign banks have been operating in the country.

⁶ The second phase of banking sector reforms started from 1997 to 2001.

and increased by public funds. *Secondly*, partially privatized commercial banks were privatized completely. *Third*, bank branches were fully liberalized and allow private banks to grow faster and increase their market share. *Fourthly*, loan collateral foreclosure was facilitated and strengthened to reduce default costs and to expand lending to lower tier markets, including consumer banking. *Fifthly*, national savings schemes were reformed so as to integrate with the financial market. *Sixthly*, mandatory placement of foreign currency deposits was withdrawn. *Lastly*, Strengthened SBP to play more effective role as regulator and guardian of the banking sector and phase out the direct and concessional credit programmes to promote market integration.

To promote intermediation and to attract funds held abroad by Pakistani nationals, the resident Pakistanis were allowed to open foreign currency accounts (FCAs), 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.

To facilitate the flow of sufficient short- term liquidity at variable rate it was necessary to expand the money market potential by making it accessible 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 the range of operators on the money market by the creation of new financial products, such as deposit certificates, treasury bills and bonds, which are naturally negotiable.

2.1.1 Impact of financial Reforms

The object of the financial and operational reform policies were to strengthened the microeconomic foundations of the banking system. However, the pace of deposit mobilization remained slow and the reforms were partially effective (Khan, 2003).

Generally, financial sector developments include⁷: (1) Financial deepening, which consists of the growth of financial instruments commonly measured by the ratio of monetary aggregates to GDP. (2) Financial broadening, which implies an increase in the number of financial institutions, financial transactions through cheques, and financial instruments. (3) Financial liberalization, which indicates deregulation of interest rates, free movement of foreign capital, and removal of other restrictions.

After liberalization, the price of financial services was intended to be determined by the banks on competitive basis, with little intervention from the SBP. To achieve the twin objectives of reducing government cost of borrowing on domestic debt and encouraging private sector credit expansion, the SBP has been pursuing a relatively easy monetary policy since July 1995 to July 2000. The weighted average lending rate gradually come down from 15.6 percent in 1998 to 8.81⁸ percent in June 2005, but the real interest rate has increased from 3.6 percent in 1996 to 10.9 percent in 2000 and then following the declining trend and reached to -0.49 percent in June 2005 (see table 1). This reduction in lending rate indicates a little improvement in the profitability of the

⁷ See for example Ansari (2002), p.79.

⁸ Although in 2004 the rate fell to 7.28 percent.

banks but purely *ad hoc* and not in the lines of the liberalization. Similarly, the weighted average deposit rate reduced from 6.8 percent in 1998 to 1.37 percent in June 2005; the real deposit rate remained negative except for the period 1999-2002. This reduction in the deposit rate will reduce the savings even further.

Table 1: Interest Rate Behaviour in Pakistan

Year	Inflation Rate	Weighted average Lending Rate		Weighted average Deposit Rate		Interest Rate Spread	
		Nominal	Real	Nominal	Real	Nominal	Real
1990-95	10.57	12.55	1.98	6.53	-4.05	6.02	5.95
1996	10.8	14.4	3.6	6.4	-4.4	8.00	8.00
1997	11.8	14.6	2.8	6.8	-5.0	7.8	7.8
1998	7.8	15.6	7.8	6.8	-1.0	8.8	8.8
1999	5.7	14.8	9.1	6.5	0.8	8.3	8.3
2000	3.6	13.52	10.9	5.47	1.9	8.05	9.00
2001	4.4	13.61	9.21	5.27	0.87	8.34	8.34
2002	3.5	13.19	9.69	3.61	0.11	9.58	9.58
2003	3.1	9.40	6.3	1.61	-1.49	7.79	7.79
2004	4.6	7.28	2.68	0.95	-3.65	6.33	6.33
2005	9.3	8.81	-0.49	1.37	-7.93	7.44	7.44

Source: SBP Annual Reports (various issues)

The interest rate spread⁹ is an important indicator for the financial sector's competitiveness and profitability. Spread typically declined when competition among banks increases to access the financial market to increase their customer's base. But in Pakistan, the high lending rate and low deposit rate have generated large spread¹⁰ nearing

⁹ Interest Rate Spread = (Average Lending Rate – Average Deposit Rate).

¹⁰ High interest rate spread is generated by factors such as high administrative costs, overstaffing and unavoidable burden of non-performing loans (for further detail, SBP's financial sector assessment 2003-2004).

7.44 percent in June 2005 as against 6.33 percent in 2004. The high lending rate will increase the cost of borrowing and hence discourage investment. The low deposit rates discourage both consumption and savings, resulting high debt/GDP ratio, deterioration of banks balance sheet, lowering economic growth, and increase in poverty. Furthermore, the large spread also reflects perceived sovereign risk (Khan, 2003). Hence, measures should be taken to bring down the interest rate spread close to zero in order to enhance both savings, investment in the country.

To measure the improvement in the financial sector following the financial reforms process, the standard indicators used in this study include the ratios of M₂/GDP, BDL/GDP, MCH/GDP, PSC/GDP, SMC/GDP, CC/M₂ and CC/GDP¹¹. Table 2 represents the entire situation regarding the financial sector of Pakistan.

Table 2 shows that the ratio of M₂/GDP increased steadily. It should be noted that a large ratio of M₂/GDP represents a more developed and efficient financial sector. In 1990 the average monetary assets were around 32.27 percent of GDP, while it was reached to 49.4 percent of the GDP in 2004 and slightly come down to 48.6 percent of the GDP in 2005 because the other instruments outside the M₂ become available¹². Since M₂ is more saving-investment oriented and the steady growth in M₂/GDP caused positive impact on economic growth. However, M₂/GDP recorded gradual growth, showing an improvement

¹¹ BDL, MCH, PSC, SMC are respectively bank deposit liabilities, money cleared through clearing house, private sector credit and stock market capitalization.

¹² This is due to the lack of access to the banking system, the use of credit as means of payments etc. As financial liberalization began and other financial instruments were developed, this ratio tends to decline (Khan, 2003).

Table 2: Indicators of Financial Deepening (in percent)

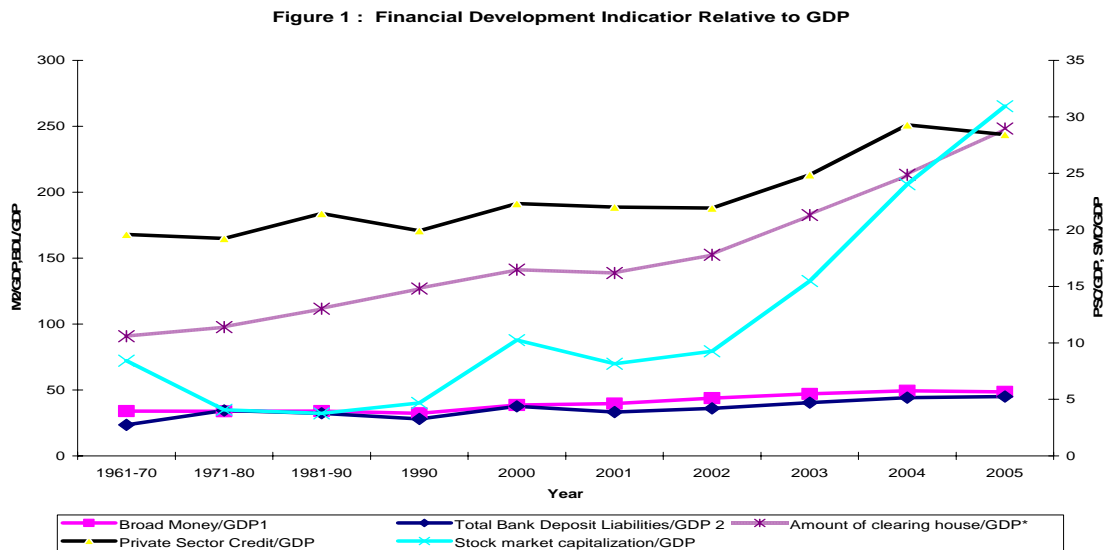
Indicators	1961-70	1971-80	1981-90	1990	2000	2001	2002	2003	2004	2005
Broad Money/GDP ¹	34.03	33.90	34.02	32.27	38.59	39.64	43.80	46.99	49.36	48.61
Total Bank Deposit Liabilities/GDP ²	23.52	34.47	32.36	27.91	37.51	33.23	36.03	40.32	44.16	45.02
Amount of clearing house/GDP*	90.74	97.70	111.63	126.88	141.23	138.68	152.48	182.72	213.26	248.26
Currency/M ₂	45.13	32.29	32.28	37.56	27.80	26.02	25.30	25.04	23.99	23.00
Currency/GDP	16.06	13.53	13.29	14.73	10.82	10.31	11.08	11.77	11.84	11.18
Private Sector Credit/GDP	19.60	19.24	21.45	19.92	22.33	22.02	21.92	24.87	29.30	28.44
Stock market capitalization/GDP	8.42	4.08	3.75	4.68	10.24	8.15	9.26	15.48	24.05	30.95

Note: ¹ Broad money (money + quasi money). 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. ²Total Bank Deposit Liabilities are equal to liquid liabilities minus currency in circulation. Demetriades and Luintel (1996) argue that without deducting currency in circulation, we are left with primarily a measure of monetization, not financial depth (p.360).

* The amount of money cleared through cheques by the clearing house can also be used as an indicator of financial services development.

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

in the financial sector. The ratio of bank deposit liabilities to GDP assesses the degree of monetization in the economy. A steady growth in this ratio over the period of study also indicates an improvement in the financial sector. Similarly the amount of money clear by banks through cheques relative to GDP increases gradually also showing an improvement of financial services offered of financial institutions. Figure 1 depicted the trend behavior of each indicator.



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 privatization 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 monetization in the economy which was 23 percent and 11.18 percent of the GDP in 2005 respectively. The stock market

capitalization, which was 4.68 percent of GDP in 1990, is now 30.95 percent of GDP in 2005.

2.2 Trade Liberalization policy

Pakistan has pursued a mixed economy approach to development following import substitution industrialization policies in order to: (i) strengthen the industrial base (ii) achieve self reliance, (iii) protect domestic infant industries, (iv) insulate the domestic economy into external shocks stemming from international capital markets, and (v) reduce the chronic balance of payments deficits and use scarce foreign exchange resources.

To achieve these objectives, the government imposed various quantitative and qualitative restrictions on trade to protect domestic industries. During the 1960s a more liberal policies being opted by the government where the private sector was encourage to play a greater role.¹³ Consequently, both industrial production and exports registered a reasonable increase during this period. However, this trend was reversed during 1970s because of nationalization of industries, financial institutions and an increasing domination of public sector in the economic activities. Although, the government took various measures such as, devaluation of Pak-rupee vis-à-vis US-dollar, elimination of export bonus scheme and discontinuation of restrictive import licensing scheme to boost exports. But these steps do not register any significant impacts on exports.

¹³ Although highly protected trade regime remained effective in this period. However, some additional policies such as, an overvalued exchange rate, export bonuses, preferential credit access to industries with export potential and automatic renewal of import licenses, were introduced to encourage exports (Yasmin *et al*, 2006)

In the late 1980s, Pakistan was faced with high macroeconomic imbalances as a result of the growing inefficiency and losses in the public sector. To restore the business confidence and to reduce inefficiency and losses in the public sector, the government implemented a wide range of structural and institutional reforms in the early 1990s. The most specific measure undertaken by the government includes:

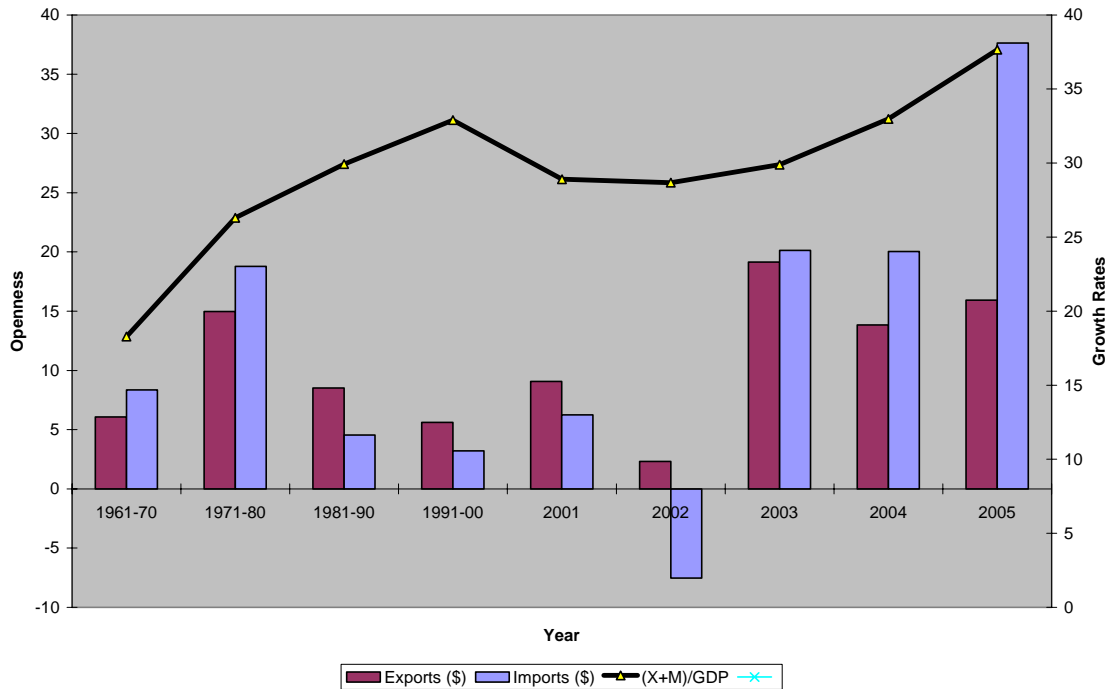
- Reduction of maximum tariff rate on imports from 225 percent in 1986-87 to 25 percent in 2005 (Husain, 2005; Kemal, 2001 and Anwar, 2002). The average tariff rate has come down to 11 percent as compared to 65 percent a decade earlier (Husain, 2005). Similarly, the number of custom duty slabs was reduced from 13 in 1996-97 to 4.
- Quantitative import restrictions were lifted except those relating to security, health, and public morals, religious and cultural related.
- All para-tariffs have been merged in to the statutory tariff regime, and import duties on 4000 items were reduced.

Table 3: Growth Rates of Exports and Imports and Degree of Openness (%)

Year	1961-70	1971-80	1981-90	1991-00	2001	2002	2003	2004	2005
Exports (\$)	6.07	14.97	8.52	5.61	9.07	2.32	19.14	13.84	15.93
Imports (\$)	8.35	18.78	4.54	3.22	6.25	-7.53	20.13	20.04	37.64
(X+M)/GDP	18.28	26.31	29.93	32.90	28.91	28.68	29.89	32.99	37.65

Source: State Bank of Pakistan (Handbook of Pakistan Economy, 2005)

Figure 3: Exports, Imports and Degree of Openness (%)



These measures have brought down effective rate of protection, eliminate the anti-export bias and promote competitive and efficient industries. A number of laws¹⁴ were also been promulgated to bring the trade regime in line with WTO regulations.

Despite the substantial reduction in tariff rate, removal of all non-tariff barriers and successive devaluation of the currency¹⁵, the growth in exports in the 1990s was only 5.6 percent per annum as compared to 14.97 percent in the 1970s and 8.5 percent in the 1980s (see table 3 and figure 3). However, the overall trade to GDP ratio has risen from 26.31 percent in 1970s to 37.65 percent today in Pakistan. This gives an indication of higher level of trade integration

¹⁴ Such as anti-dumping, countervailing measures and intellectual property rights.

¹⁵ The average annual depreciation of exchange rate was about 10 percent in the 1990s (i.e. Rs.24 in 1990 to Rs.60 in 2000).

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 interbank foreign exchange market also marked an important step towards decentralizing the management of foreign exchange and allowing market forces to play a greater role in exchange rate determination (SBP, 2000).

3 Model Specification, Methodology and Data Issues

Theoretical literature predicts that real income, financial development and real interest rate are positively correlated. The positive relationship between the level of output and financial development resulted from the complementarity between money and capital (Mckinnon, 1973). Furthermore, the removal of ceilings on deposit rate results in positive real interest rate which increase savings and hence economic growth. King and Levine (1993a, b) predict a positive relationship between real income, financial development and real interest rate.

Based on these theoretical postulates, the relationship between real output and financial development can be specified as:

$$LRGDP_t = \alpha_0 + \alpha_1 LFS D_t + \alpha_2 RDR_t + \varepsilon_t \quad (1)$$

Where RGDP is real output, FSD is the financial sector development, RDR is the real deposit rate and ε is an error term. Except real deposit rate, all the variables are expressed in logarithmic form.

Theoretical and empirical research indicates a strong and positive correlation between trade liberalization and economic growth over long period of time. Sachs and Warner (1995) has pointed out that open economies has grown about 2.5 per cent faster than closed economies and the difference is larger among developing countries. Jin (2000) argued that trade liberalization and openness has provided an important base of economic activity. Thus, an increasing openness is expected to have a positive impact on economic growth.¹⁶ Barro (1991) provided evidence that increasing openness had a positive effect on GDP growth per capita. Edwards (1992) also found a positive and significant effect of openness on GDP growth. It can be argued that through the openness countries are able to benefit from information spillovers such as scientific advances and improvements. Sukar and Ramakrishna (2002) argued that countries that liberalize their external sector and reduce impediments to international trade can experience relatively higher economic growth. Thus, we extend equation (1) by incorporating the variable *TOPEN* which capture the impact of trade liberalization on real output. Now equation (1) can be written as:

$$LRGDP_t = \alpha_0 + \alpha_1 LFS D_t + \alpha_2 RDR_t + \alpha_4 LTOPEN + \varepsilon_t \quad (2)$$

¹⁶ More recent studies after the Asian Economic Crisis of 1997-99, have challenged some of these findings. Rodrigues and Rodrik (1999) have raised question about measuring the degree of openness, and have identified many other factors that affect growth. They concluded that trade liberalization does always leads to higher growth. Batra (1992), Batra and Slottje (1993) and Leamer (1995) concluded that freer trade is the primary source of economic downturns.

To examine the long run relationship between real GDP, trade liberalization, financial development, and real deposit rate, we employ bound testing approach to cointegration within the framework of Autoregressive Distributed Lag (ARDL) developed by Pesaran *et al* (2001). There are several reasons for the use of bound test. *Firstly*, the bivariate cointegration test introduced by Engle and Granger (1987) and the multivariate cointegration technique proposed by Stock and Watson (1988), Johansen (1988, 1991) and Johansen and Juselius (1990) are more appropriate for large sample size. Hence, bound testing procedure of cointegration is more appropriate for a small sample size (Pesaran *et al*, 2001; Tang, 2001, 2002a). *Secondly*, bound testing approach avoids the pre-testing of unit roots. *Thirdly*, the long run and short run parameters of the model are estimated simultaneously. *Fourth*, all the variables are assumed to be endogenous. *Finally*, this method does not require that the variables in a time series regression equation are integrated of order one. Bound test could be implemented regardless of whether the underlying variables are I (0), I (1), or fractionally integrated.

An ARDL representation of equation (2) is formulated as:

$$\Delta LRGDP_t = \beta_0 + \beta_1 LRGDP_{t-1} + \beta_2 X_{t-1} + \sum_{i=1}^k \beta_{3i} \Delta LRGDP_{t-i} + \sum_{i=1}^k \beta_{4i} \Delta X_{t-i} + \varepsilon_t \quad (3)$$

Where X is a vector of explanatory variables (i.e. $LFSD$, RDR , $LTOPRN$), and ε is error term. For the presence of a long run relationship amongst the variables of equation (2) is tested by means of bounds testing procedure proposed by Pesaran *et al* (2001). The bounds testing procedure is based on the F -stat (or Wald statistics) for cointegration analysis. The asymptotic distribution of the F -statistic is non-standard under the null

hypothesis of no cointegration between the examined variables, irrespective of whether the explanatory variables are purely I (0) or I (1). To implement the bound test, the null hypothesis is tested by considering the unrestricted error correction model (UECM) for real GDP in equation (2) and a joint significance test was performed as:

$$H_0 : \beta_0 = \beta_1 = \beta_2 = 0,$$

$$H_1 : \beta_0 \neq \beta_1 \neq \beta_2 \neq 0.$$

Pesaran *et al* computed two sets of critical values 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.¹⁷

Once the long run relationship is identified, then the long run and short-run estimates of the ARDL model can be obtained from equation (3). At the second stage of ARDL cointegration method, it is also possible to perform a parameter stability test for the appropriately selected ARDL representation of the UECM. A general error correction representation of equation (3) can be formulated as follows:

$$\begin{aligned} \Delta LRGDP_t = & \beta_0 + \sum_{i=1}^k \beta_{1i} \Delta LRGDP_{t-i} + \sum_{i=0}^k \beta_{2i} \Delta LFS_{t-i} + \sum_{i=0}^k \beta_{3i} \Delta RDR_{t-i} \\ & + \sum_{i=0}^k \beta_{4i} \Delta LTOPEN_{t-i} + \lambda EC_{t-1} + \eta_t \end{aligned} \quad (4)$$

Where λ is the speed of adjustment parameter and EC is the residuals that are obtained from the estimated cointegration model of equations (2).

¹⁷ This is similar to the Johansen and Juselius multivariate cointegration procedure, which has five alternative cases for long run.

3.1 Data Description

The present study is based on the annual data covering the period from 1961-2005. The recent literature on financial development suggests several indicators used as proxy for the ability of financial intermediation. But in this study we basically calculated four financial development (FD) indicators related to banking and stock market. *Firstly*, total bank deposit liabilities relative to GDP which is calculated by taking the difference between liquid liabilities of the financial system minus currency in circulation divided by GDP.¹⁸ This considered the broadest measure of the financial intermediation. *Secondly*, ratio of private sector credit to GDP, which measures how much intermediation, is performed by the banking system. *Third*, amount of money cleared through clearing house relative to GDP. *Lastly*, ratio of stock market capitalization to GDP.

But the problem is that each indicator of financial development exerted different impact on real GDP and the derived coefficients may be biased. To avoid this problem, and following Kelly and Mavrotas (2003) we use total bank deposit liabilities ratio, value of clearing house ratio, credit allocation to private sector ratio and stock market capitalization ratio, to construct financial sector development index (FSDI). We used FSDI as a proxy of government financial policy.

¹⁸ The standard measure of financial development is the ratio of M2 to GDP (World Bank, 1989). However, this ratio measures the extent of monetization rather than financial development. In developing countries, monetization can be increasing without financial development; therefore, M2/GDP is not a satisfactory indicator of financial development. Therefore, we define ratio total bank deposit liabilities to GDP as proxy of financial development.

Real GDP is obtained as a ratio of nominal GDP¹⁹ to consumer price index (CPI 2000=100). Data on these variables are taken from IFS CD-ROM. The variable TOPEN is calculated by taking the ratio of sum of exports and imports to GDP. Data on exports, imports and deposit rate (DR) are taken from Handbook of Pakistan's Economy published by State Bank of Pakistan (2005). Inflation is calculated as a percentage by taking the log-difference of CPI, while real deposit rate is calculated by taking the difference between deposit rate and inflation rate.

3.2 Construction of Financial Development Index

Measuring financial development is very complex and complicated process because there is no clear cut definition as to what financial development is. Bandiera *et al* (2000) argued that an ideal index of financial sector development should include various aspects of regulatory and institutional reforms. However, measuring this aspect of government policy is very difficult if not possible task (Kelly and Mavrotas, 2003). Inclusion all the policy variables separately in the same model cause serious estimation problems such as, multicollinearity etc. In order of avoid these problems, we use four different types of financial development indicators to construct the financial sector development index by using principal component method.²⁰ These indicators include the ratio of total bank deposit liabilities to GDP which give an indication of the absolute size of the financial institutions, the ratio of clearing house amount to GDP which indicate the wide spread provision of financial services, the ratio of the private credit to GDP which

¹⁹ Nominal GDP is adjusted for 1999-00 base.

²⁰ The method of principal components is discussed in detail in Theil (1971).

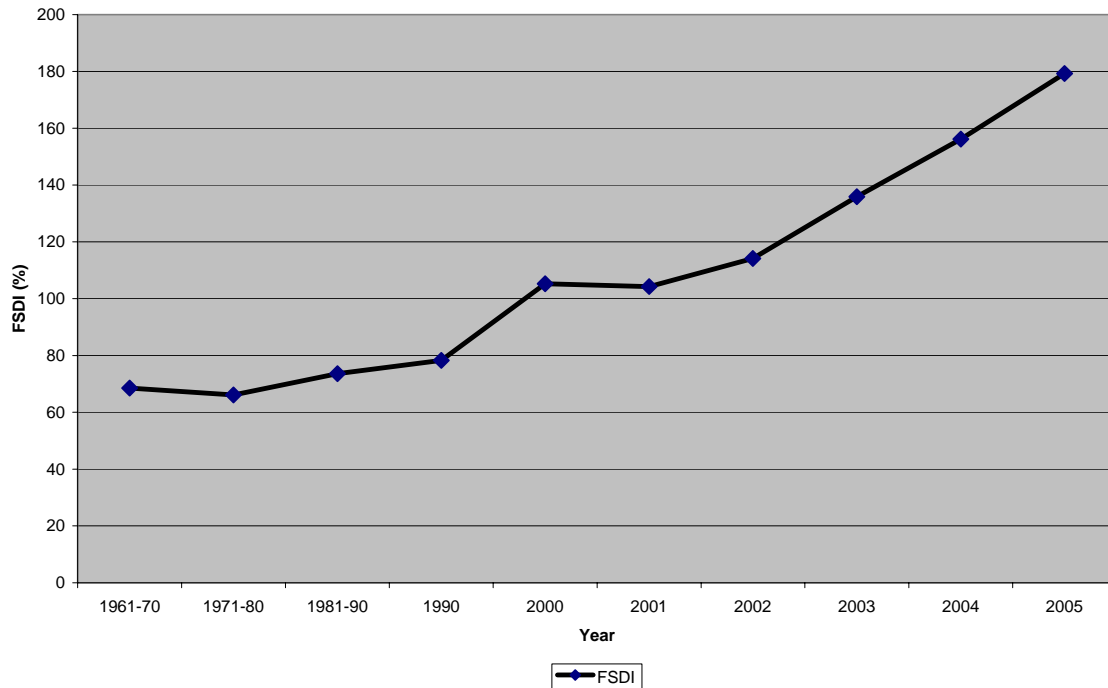
measures the activities of the financial intermediaries and the ratio of the stock market capitalization to GDP. The index represents a particular government financial policy variable. The financial development index also indicates a steady improvement in the financial sector (see table 4 and figure 4).

Table 4: Financial Sector development Index (FSDI)

Year	1961-70	1971-80	1981-90	1990	2000	2001	2002	2003	2004	2005
FSDI	68.57	66.14	73.55	78.29	105.29	104.28	114.11	135.87	156.17	179.23

Source: author's calculation based on IFS and State Bank of Pakistan's data

Figure 4: Financial Sector Development Index



4 Empirical Results

Two-step ARDL cointegration procedure is implemented in estimation of equation (2) for Pakistan using annual observations over the period 1961-2005. In the

first stage, the order of lags on the first-differenced variables for equation (3) is obtained from UECM by mean of Schwarz Bayesian Criterion (SBC)²¹. The SBC gives a more parsimonious number of lags than other criteria such as Akaike Information Criterion (AIC).²² Given the limited number of observations, we experimented up to 2 lags on the first-difference of each variable and computed F -statistics for the joint significance of lagged levels of variables in equation (3). The computed F -test statistic for each order of lags is presented in table 5.

Table 5: Statistics for Selecting Lag Order and the Existence of Long-Run Relationship

No. of Lag	AIC	SBC	$CHSQ_{SC(1)}$	F-statistic
1	97.6794	87.9928	0.2184	28.2522*
2	97.3983	86.9723	0.0811	31.4732*

* Significant at the 1% level of significance.

Based on the minimum value of SBC, the lag length of order 2 is selected. When 2 lags are imposed, there is strong evidence of cointegration because the calculated F -statistic is 31.2522, which is greater than the critical value of the upper level of the bound (i.e. 5.83) at the 5% level of significance. This result gives strong indication for the existence of a long run relationship among the variables included in equation (2).²³

Given the existence of a long run relationship, in the next step we used the ARDL cointegration method to estimate the parameters of equation (2) with maximum order of lag set to 2 based on SBC. The long run results of equation (2) based on SBC are reported

²¹ 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.

²² See Bernstein (2000).

²³ At lag 2, the residuals are white noise as indicated by the Lagrange Multiplier test of serial correlation.

i.e. $CHSQ_{SC(1)}$.

in panel A of table 6. The diagnostic test results of equation (2) based on short run estimates are displayed in panel B of table 6.

The empirical results presented in table 6 indicate that the estimates possessed expected signs and are statistically significant at the 1% level of significance. The overall results are in accordance with the prediction that trade and financial policies have a positive impact on real GDP. These results also imply that liberalization policies enhance economic growth rather than growth inducing liberalization. The contribution of financial policy is more than the trade policy to development which is consistent with the fact that financial liberalization facilitates trade liberalization.

Table 6: ARDL Estimates

Dependent Variable: <i>LRGDP</i>		
Regressor	Coefficient	t-values
<i>LFSDI</i>	1.0291	3.4511*
<i>RDR</i>	0.0329	3.0555*
<i>LTOPEN</i>	0.3715	8.3371*
INPT	9.9908	33.5708*
$\chi^2_{SC(1)}$	0.16400	
$\chi^2_{FF(1)}$	2.9289	
$\chi^2_{NO(2)}$	1.6418	
$\chi^2_{Het(1)}$	1.6413	

Note: ARDL (1, 1, 1, 0) selected on the basis of SBC. The full tables 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 misspecification, 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.

The study also found a positive and significant impact of FSDI and RDR on real GDP. This positive impact supports the prediction of Mckinnon and Shaw hypothesis. An increase in real interest rate facilitates financial savings and real income. Moreover, an acceleration of financial development raises the capacity of financial intermediaries to supply funds which help to enhance investment and economic growth. Since the magnitude of financial policy (financial development) is higher than that of real interest rate which support the argument that in a developing country like Pakistan the availability of funds rather the cost of funds is an important to raise real income. The low coefficient of real interest rate implies that an increase in interest rate alone is unable to expedite economic growth. These findings are consistent with earlier findings derived by Khan (2005).

We also find a positive and significant impact of trade liberalization policy on real GDP. This result imply that trade liberalization allows market forces to channel resources towards relatively productive sectors and hence leads to a rise in efficiency. It also increases markets for new products and generate economies of scale. These results confirmed the earlier findings of Din *et al* (2003). The ECM output corresponding to the ARDL (1, 1, 1, 0) is given in table 7.

The estimated lagged error correction term ECM_{t-1} is negative and highly significant. This result supports the cointegration among the variables represented by equation (2). The feedback coefficient is -0.09, suggesting a slow adjustment process. Nearly 9 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 sector development index exerted negative and insignificant impact on the economic growth.

Table 7: Error Correction Representation of ARDL Model

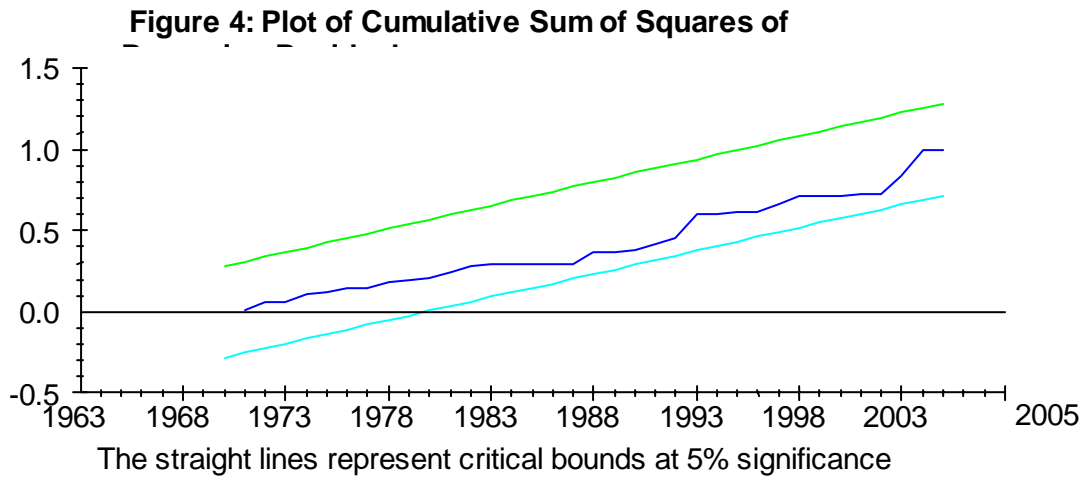
Dependent Variable: $\Delta LR GDP$		
Regressor	Coefficient	t-values
$\Delta LFSDI$	-0.0806	-1.7654
ΔRDR	0.0057	4.2958*
$\Delta LTOPEN$	0.0334	2.6122**
$\Delta INPT$	0.8974	3.3162*
Ecm_{1t-1}	-0.0898	-3.0555*
R^2	0.36	
R^2_{adj}	0.25	
F-stat	5.066	
AIC	97.4013	
SBC	91.2371	
S.E Regression	0.02	
R.S.S	0.20	
Equation-LL	104.4013	
DW-stat	2.12	

Note: ARDL (1, 1, 1, and 0) selected on the basis of SBC. R.S.S, LL, AIC and DW are respectively residual sum of squares, log likelihood, Schwarz Bayesian Criteria and Durbin Watson stat.

$$Ecm_1 = LR GDP_t - 1.0291LFSDI_t - 0.0329RDR_t - 0.3715LTOPEN_t - 9.9908INPT_t$$

This result implies that economic growth is long run process not short-run. The short-run response of real deposit rate is significant but very small, suggesting that there is a need for further liberalization of interest rate. Furthermore, the changes in the trade policy exerted positive and significant impact on economic growth in the short run. However, the impact of trade policy changes is so small in the short run.

To assess the structural stability of the estimated model, we also performed the CUSUMSQ test of stability. Figure 5 plots the CUSUMSQ.



It can be seen respectively from the figure 5 that the plots of CUSUMSQ statistic is well within the critical bounds implying that all the coefficients in the estimated model are stable.

5 Conclusions

This paper examines the impact of trade and financial policies and real interest rate on real GDP in Pakistan over the period 1961-2005. The study utilized bound testing approach of cointegration advanced by Pesaran *et al* (2001). Empirical results reveal the presence of a long-run relationship between real GDP, trade liberalization, financial development and real interest rate. The results further show that in the long-run FSDI, RDR and LTOPEN exerted positive impact on real GDP. However, in the short run FSDI exerted negative association with economic growth, but remain statistically insignificant.

The study also found a positive impact of trade openness on economic growth both in the long as well as in the short-run. This result highlighted the importance of trade liberalization in order to enhance economic growth. However, financial liberalization has relatively higher impact of real GDP than does trade liberalization in the long-run. The low effectiveness of real interest rate indicates that interest rates alone are unlikely to expedite economic growth. The feed back coefficient is negative and significant, but the speed of adjustment is rather slow. Based on these findings, the study suggest that Pakistan should go more of trade and financial liberalization to enhance more economic growth. Further, the continuation of such policies with strong commitment is also recommended in order to promote economic growth.

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