Macroeconomic Environment and Financial Sector's Performance:
Econometric Evidence from Three Traditional Approaches

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Abstract:

The stable macroeconomic conditions are the prerequisites for sound and healthy performance of the financial sector in the country. This study explores the impact of macroeconomic environment on financial sector's performance in Pakistan.

Present paper reveals that previous policies of financial institutions and economic growth have improved the level of financial development. Both increase in government spending as well as foreign remittances pushes the performance of financial sector in the upward direction. Contrarily, the efficiency of financial markets deteriorates on account of rising inflation due to its damaging impact while literacy rate is having negative influence on banking sector in Pakistan. Trade openness along with improved capital inflows opens new directions to improve the development of financial markets in the country. Further more, performance of financial sector is attached with qualified institutions. High savings rate declines the efficiency of banking sector and political instability retards the performance of financial markets.

Key Words: Financial Development, Macroeconomic Environment, Cointegration

JEL Classification: F36, B22, C4

Note: Views are own of authors not representing SPDC.

Introduction

An effective and efficient functioning of the financial sector requires sound and favorable macroeconomic environment in the country. However, in this era of globalization it is imperative for the financial sector to be strongly integrated in the global economy. In

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Pakistan, although, financial markets have been liberalized and operating on competitive basis but still has to go a long way to achieve the required level of development. One may conclude that the process of liberalization created a mushroom growth of both the non-banking financial institutions (NBFIs) and banks, giving rise to profit competition and also their existence. Infact, during the past few years, a major chunk of the financial sector has been shifted from the public sector towards the private ownership in the country[1]. In Pakistan, financial soundness indicators (FSIs) reflect an upward moving trend but there are weaknesses and gaps which demand certain reforms specially the under-developed legal system[23].

Macroeconomic condition which determines the level of credit worthiness of the borrowers, asset quality, increase and decrease in the value of collateral, etc are the main sources of macro-economic shocks to the bank's portfolio. Furthermore, regulatory environment of an economy, level of financial development and level of concentration of the financial sector also explains it's performance. The instruments of monetary policy like inflation, real exchange rate, short-term interest rate work as important determinants of FSIs. According to Sundararajan et.al., (2002), FSIs can capture a range of factors which impose risks to the financial system. So, for long term sustainability of the financial sector, banks should be capable to operate in a competitive environment while mitigating the risk factor.

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[1] The benefits of financial liberalization, as mentioned by Martell and Stultz, (2003) can only be achieved if the system develops to a level that the entire process of liberalization become deep rooted inside the financial sector institutions. Important FSIs consists of capital adequacy, asset quality and profitability which clearly reflects the performance of the banking sector Podpiera (2004).

[2] Infact, the size of the impact on capital adequacy clearly indicates the sector's vulnerability regarding credit risk. According to Stulz (1999), this financial globalization reduce the cost of capital equity on account of the decrease in expected returns to compensate risk.

[3] Considering the risks to the banking sector soundness, increased government intervention is a strong element in enhancing this risk. This involves strict government policies with regard to credit requirements, interest rates and the overall functioning of the banking sector without taking into account the overall market forces creating high lending risks for the sector at large. But, in case of lending to the public sector La Porta and others, 2002, explained that although it is profitable but highly inefficient for the banking sector as banks earn easy profits, engage in little client competition, etc. This impact of public sector borrowing is also harmful in the long run for the banking sector liquidity as it absorbs substantial credit and effect their structural characteristics while crowding out the private sector credit. Specially, inefficient banks of the developing economies often adopt this strategy to earn profits while neglecting the efficiency of the financial sector and harm the overall financial deepening process.

As mentioned earlier, financial liberalization leads to development of financial market as more funds are available in the market on reduced rates. As Claessens et al. (2002) and Levine and Schmukler (2003) pointed out that a shift from domestic towards international markets provides firms to acquire benefits on account of international portfolio diversification. Therefore, removing capital controls provide more productive investment opportunities. The real effects of financial and trade openness can be seen with an increased trading in the stock market. Well developed stock markets along with the developed banking system together raises economic wealth of the country (Rajan and Zingales, 2003). Financial development and trade openness appears to have a positive relationship in countries which are open to capital flows, (Rajan and Zingales 2003, Huang and Temple 2005. Trade openness increases the size of capital markets for both equity and debt finance.

The development of the equity market which is expected after capital account liberalization can only be achieved if the legal and institutional development has reached at the desired level. Capital account liberalization is a prerequisite for liberalization of cross-border transaction of goods as indicated by Aizenman and Noy (2004). Whereas, the development of equity market can only be possible if the banking sector is well developed. Sometimes the growth of equity market in comparison to the size of the market is related with the periods of economic crises and that point of time policy makers suggest reduction in the level of financial openness (Ito, 2004). In short, financial liberalization is beneficial in an environment of strong legal and institutional infrastructure of the financial sector[4].

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[4] During the period of economic downturns, countries with less developed financial system and lower levels of income provide higher capital ratios as noted by Whong, Choi and Fong (2005). This indicates to the fact that when economy is towards downward trend the quality of it's assets deteriorate. In addition, higher inflation, unemployment and interest rates all worsens asset quality thereby increasing the non-performing loans. Banks are then forced to undertake risk on their capital which then gives high returns. Loan provisioning highlights the necessity of credit expansion in order to reduce the pressure of non-performing loans. Normally there is a lag effect of non-performing loans and banks create cushion for it during the period of credit expansion which also secure them sin case of economic downturn.

Body, et al. (1996), and Azariadis and Smith (1996), argued that, if inflation is high enough, returns on savings are reduced which leads to a reduction in savings and savers. Similarly, the pool of borrowers is swamped, informational frictions become more severe and therefore credit becomes scarce in such an economy[5]. Furthermore, these economies obviously present less efficient financial markets because of the higher interest rates that follow high rates of inflation (Bittencourt, 2006). On the empirical surface, Haslag and Koo (1999), and Boyd, Levine, et al. (2001), reported that moderate inflation has a negative impact on financial development, as theoretically predicted. Moreover, both studies find evidence of nonlinearities, i.e. after a particular threshold–15 percent per year in Boyd, Levine, et al. (2001)–inflation presents only smaller marginal negative effects on financial sector development. The intuition, not backed by theory though, is that the damage on finance is done at rates of inflation lower than the proposed threshold (Bittencourt, 2007). The recent case-study on Brazil by Bittencourt, (2007) & Shahbaz, et, al (2007) for Pakistan; basing on time-series data, suggested that high rate of inflation presented deleterious effects on finance[6].

Haung and Temple analyzed that openness is more linked with bank-based finance as compared with the stock market development, while further explaining that openness to trade and finance are strongly correlated for higher-income countries, but not for lower-income. In fact, trade provides benefits through specialization and scale of economies. A much more complex situation arise when trade increase productivity and living standards especially in the case if trade openness serves to promote financial development in the country. Trade openness may be linked with high risks, including exposure to external shocks and foreign competition[7] as pointed out by Svaleryd and Vlachos (2000). This will encourage the development of financial markets that can be used to diversify these

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[5] On a slightly dissimilar thread, Schreft and Smith (1997), Boyd and Smith (1996), Huybens and Smith (1998), and Huybens and Smith (1999), explored the new side that economies with higher rates of inflation do not approach or reach the steady state point where their capital stocks are high, i.e. there are bifurcations and development traps arise in such economies.

[6] When inflation is very low, credit market frictions may be "non-binding," so that inflation does not distort the flow of information or interfere with resource allocation and growth. However, once the rate of inflation exceeds some threshold level, credit market frictions become binding, and there is a discrete drop in financial sector performance as credit rationing intensifies (Boyd et, al, 2001).

[7] Svalery and Vlachos (2002) also found positive association between financial development and liberal trade policies.

risks, and also help firms to overcome short run adverse shocks [Beck, (2002), and, Svaleryd and Vlachos,(2000)][8]. A robust link between openness and share of investment in the GDP is confirmed by Levine and Renelt (1992), infact this could promote financial development if high investment economies are trading economies. Moreover, the development of equity market also takes place when there is financial opening and succeeding trade opening especially in an economy where there is a well developed legal system. Trade openness is a necessary condition for financial opening. Thus, due to the nature of specialization and sectoral structure, the demand for external finance is influenced by trade openness or through the innovation and technology transfer which requires intensive use of external finance.

A formal model used by Alessandria and Qian (2005) indicate that capital account liberalization has ambiguous effects on the efficiency of domestic financial intermediaries. Aizenman and Noy (2003), Aizenman (2004) and, Chin and Ito (2005) suggest that capital account liberalization is often preceded by goods market openness because trade integration makes restrictions on capital flows which appears difficult to sustain. Thus, increased openness in goods transactions leads to increased openness in the capital account which is crucial for financial development, whereas the reverse situation does not exist. In short, financial development on account of financial opening guided by trade opening only occurs when the level of legal and institutional development is efficiently administered.

Current literature strongly emphasize on the linkages between institutions and trade openness, specially (Becker and Greenberg, 2004) highlights the very fact that how the quality of institutions may affect comparative advantage and international specialization. In this connection that how institutions generate comparative advantage Levchenko (2003) provides model while explaining that the net exports in industries depending on external finance are higher in countries with good finance[9]. Whereas, another work by

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[8] Using stock market for emerging economies, Li. et. al., (2004) find that goods markets openness is associated with greater market wide variations, but not greater firm-specific variations.
[9] Vlachos and Svaleryd use the industry measure introduced by Rajan and Zingales, which was initially shown to capture how much an industry's growth rate depends on financially development. Hence, Vlachos

Grossman and Helpman (2004) show that how institutional problems limit the amount of outsourcing to low-wage countries. Many authors like Coeffee, (2000); La Porta. et.al, (1990); Rajan and Zingales, (1998); Stulz and Williamson, (2001) discussed the channel through which a country's institutional inheritance affects financial sector development. The emphasis of empirical analysis to the settler mortality hypothesis has been further explained by Beck et, al., (2003) in which he indicates that the cross-variation in financial intermediary and stock market capitalization has been better explained by the initial endowments hypothesis Beck. et. al., (2003) do not investigate any of the intermediate linkages rather emphasize more on the historical determinants of financial development. The relationship between initial endowments and subsequent financial development, for instance, might reflect factors which are important for financial development rather than those focusing towards the development of institutions.

Further, explaining those factors which influence financial development, a study by Law and Demetriades (2005), indicates that simultaneous openness to both trade and capital inflows has a positive influence on financial development, in tandem with [institutions] hypothesis, while the quality of country's institutions has a separate influence on financial development[10]. Basically, economic development is effected by capital account liberalization through the process of financial development. It is often observed that financially liberalized markets have a positive impact on the development of financial markets. These developed financial markets play a major role as they are the main source of funding for the borrowers in case of productive investment opportunities. Capital account liberalization helps in developing the financial system in several ways. Quite often, the cost of equity capital is reduced on account of financial liberalization or because of the process of financial globalization and this provides easy access to the borrowers. This situation emerges on account of lower expected returns, which generally compensate for the risk. Then the inefficient financial institutions no longer exist in this

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and Svaleryd essentially establish that some of the faster growth in finance-dependant industries located in financially well-developed countries actually results in higher exports (rather than domestic consumption).

[10] Svaleryd and Vlachos (2000) suggest that development of institutions is necessary for risk diversifications, e.g. financial markets, mitigate to reduce barriers to trade. In contrast, Roderick (1999) provides evidence that openness to trade also increases the permanent degree of income volatility in an economy.

process of liberalization, thereby, demanding overall reforms of the financial infrastructure. Eventually, an efficient financial system emerges with increased credit availability in the market.

The role of financial system is not only to transform risk and acquire productive investment opportunities at a low cost but also to operate as a transfer mechanism for savings to be moved from those with surplus towards those in need. According to Levine (1997) saving mobilization is one of the key functions of the financial sector – an important determinant of economic growth. In the presence of under developed financial system these private savings are used for housing and other domestic needs while reducing the overall national saving rate. But a widespread deep financial system through introduction of various schemes like superannuation can result in increased sustainable national savings. On the contrary, benefits of sustained level of national savings results in the form of developed financial system with positive effects on growth and productivity in the economy.

Another important component for economic and financial development is the overall stability in the country which is also conducive for human development. The movement or the flow of remittances and savings towards financial institutions and use for human capital formation all require stable environment. Benhabib and Spiegel (1994) propose a measure of human capital accumulation (HCA) to examine cross-country evidence of physical and human capital stocks on the determinants of the capacity of nations to adopt, implement and innovate new technologies. Improvement in the indicators of health, education and general standard of living explains the extent of human development in any country. But a country with weak political and financial environment cannot benefit an individual or the society from the growing trends of globalization.

Thus, changes in technology (Bulter and Merton, 1992), non-financial sector policies like fiscal policies (Bencivenga and Smith, 1991), the legal system (Laporta et al., 1996), political changes and human resources development, impact on the relationship between financial development and economic development. Although, it is difficult to explain the

socio-political instability, but it can be used for econometric analysis as explained by Venieris and Gupta, 1986. In-fact the traditional model of economic growth is changed by incorporating particularly the factors of political violence and socio-political variables in general as indicated by Gupta (1990). Socio-political instability introduces a new element of uncertainty in the decision making process, as shown by Venieris and Gupta (1986). In the absence of social political stability in the economy, development of financial institutions gets restricted and its effects are not conducive for individual or institutions. Trends in our financial system, the effects of regulatory settings on our capital markets access to finance, the process of decision making, etc, all requires social political stability in the economy. Thus, apart from the effective macroeconomic environment, the positive effects of trade-openness, higher degree of remittances inflow and increased level of savings demands well developed financial system in a stable socio-political environment in an economy.

The endeavor utilizes both expressive and empirical methods to analyze the inter-link between financial sector's performance and macroeconomic variables in small developing economy like Pakistan. The present paper is good addition in development literature which provides not only the internal but also external factors that influence the performance of financial sector in the country. To investigate the order of integration running actors in the model, **Ng-Perron** utilized due to its superiority over ADF, P-P & DF-GLS Tests. FMOLS test applied for co-integration while Engle-Granger and CRDW to examine the robustness of long run association between said actors. **ECM** (Error Correction Method) is used for short run dynamics. Rest of the paper is designed as; B section describes model specification and methodological framework is discussed in C part, while D elaborates interpreting design and finally, conclusions are included in the remaining of this paper.

B. Model Specification and Data Collection

In order to understand the relationship between macroeconomic environment and performance of   financial sector in the case of small developing like Pakistan, the log-

linear models are used [Bowers and Pierce (1975) and Ehrlich's (1975)]. Log linear specifications are sensitive to functional form. But on the basis of theoretical and empirical grounds, Ehrlich (1977) and Layson (1983) argue that the log linear form is superior to the linear form. In fact, both Cameron (1994) and Ehrlich (1996) suggest that a log-linear form is more likely to find evidence of a deterrent effect than a linear form. This makes our results more favorable to the deterrence hypothesis. The version of study is an enhancement of Butt, et, al (2006) & Shahbaz, et, al (2007) while equation are being modeled as given below following whole discussion of above literature:

$$LFD = \lambda_\circ + \lambda_1 LFD_{t-1} + \lambda_2 LGNPC + \lambda_3 LINF + \lambda_4 LGS + \lambda_5 LREM + \lambda_6 LTR + \eta_t \dots (1)$$

$$LFD = \gamma_\circ + \gamma_1 LFD_{t-1} + \gamma_2 LINF + \gamma_3 LREM + \gamma_4 LLINS + \gamma_5 LSAV + \gamma_6 PL + \mu_t \dots (2)$$

$$LFD = \partial_\circ + \partial_1 LFD_{t-1} + \partial_2 LGNPC + \partial_3 LINF + \partial_4 LTGDP + \partial_5 LSAV + \partial_6 PL + v_t \dots (3)$$

$$LFD = \alpha_\circ + \alpha_1 LFD_{t-1} + \alpha_1 LGNPC + \alpha_2 LINF + \alpha_3 LSAV + \alpha_4 LCIF + + \pi_t \dots (4)$$

We have included the lag of dependant variable (FD), this seems to be having positive impact because previous finance generates current finance. Literature is full on the evidence that there is causal relationship between finance and real per capita (GNPC), Inflation (INF) impacts negatively financial sector's performance through its detrimental effects. This also shows the phenomenon of monetary instability and effects the financial intermediary development with all its costs. Expecting the positive impact of government spending (GS), the reason for this is positive sign because government expenditures on infrastructure including education and health activities which contribute in development. More skilled human resource (LTR) will be having positive impact on development of financial sector through its absorption of innovative technology.

Remittances (REM) can improve efficiency of financial sector in developing countries especially in Pakistan is as "*money transferred through financial institutions paves the*

way for recipients to demand and gain access to other financial products and services and vice versa" (Orozco and Fedewa, 2005). Furthermore, remittance transfer services not only allow banks to "get to know" but also reach out recipients with limited financial intermediation (Aggarwal, et, al, 2006). Remittances may improve the efficiency of credit markets if banks become more enthusiastic for provision of credit to remittance recipients because remittances receive by recipients are more significant and stable (Shahbaz, et, al, 2007). Productive policies of financial institutions (INS) contribute towards efficient working of financial sector (Shahbaz, et, al, 2007). Political instability (PL) is very much detrimental for financial sector in an economy. In such an environment banks can not sustain their policies and people do not trust on banks especially and they prefer to save their money in real forms.

Enhancement in public savings (SAV) will advance banking sector to raise efficiency of financial sector. Openness to trade (TGDP) may also influence the demand for external finance through the space of innovation and technology transfer, activities that are likely to make intensive use of external finance along-with improvement in financial markets and finally, If economy becomes more open to foreign competition or to internal flows of capital (CIF) then there is an improvement in the performance of financial sector[11].

Data of all variables has been obtained from Economic Survey of Pakistan (various issues), World Development Indicators (WDI, 2007) and data of financial institutions has generated by authors own (this is an index)[12].

C. Methodological Framework

Recently, Ng-Perron (2001) developed four test statistics utilizing GLS de-trended data D_t^d. The calculates values of said tests based on   forms of Philip-Perron (1988) Z_α and Z_t statistics, the Bhargava (1986) R_1 statistics, and The Elliot, Rotherberg and Stock (1996) generated optimal best statistics. The terms are defining as following below:

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[11] Definition of data is given in the appendix.
[12] Available on request

$$k = \sum_{t=2}^{T} (D_{t-1}^d)^2 / T^2 \dots (5)$$

While de-trended GLS tailored statistics are as given below:

$$MZ_a^d = (T^{-1}(D_T^d)^2 - f_\circ)/(2k), \ MZ_t^d = MZ_a \times MSB, \ MSB^d = (k/f_\circ)^{1/2},$$

$$MP_T^d = \left\{ (\bar{c}^{-2} k - \bar{c} T^{-1}(D_T^d)^2 / f_\circ, and, (\bar{c}^{-2} k + (1-\bar{c})T^{-1}(D_T^d)^2 / f_\circ \dots (6) \right.$$

If $x_t = \{1\}$ in fist case and $x_t = \{1, t\}$ in second[13].

Many econometric techniques are available to investigate the existence of long run gossip among running actors in concerned model but to scrutinize the affect of macroeconomic variables on financial sector in the case of small developing economy like Pakistan, FMOLS (Fully Modified Ordinary Least Square) employed. FMOLS was originally designed first time by [Philips and Hansen, (1990); Pedroni, (1995, 2000); and, Philips and Moon, (1999)] to provide optimal estimates of Co-integration regressions (Bum and Jeon, 2005). This technique employs Kernal estimators of the Nuisance parameters that affect the asymptotic distribution of the OLS estimator. In order to achieve asymptotic efficiency, this technique modifies least squares to account for serial correlation effects and test for the endogeneity in the regressors that result from the existence of a Co-integrating Relationships[14]. Although this non-parametric approach is an elegant way to deal with nuisance parameters, it may be problematic especially in fairly very small samples. To apply the FMOLS for estimating long-run parameters, the condition that there exists a Co-integration relation between a set of *I(1)* variables is satisfied. Therefore

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[13] $\bar{\alpha} = -7$, If $x_t = \{1\}$ and $\bar{c} = -13.7$ $\bar{\alpha} = -7$, If $x_t = \{1, t\}$

[14] See Philip and Hansen (1990), Hansen (1995) for details.

Engle and Granger (1987) discussed that, a set of economic series is not stationary, there may have to exist some linear combination of the variables that is stationary. Now, when all the variables are non-stationary at their level but stationary in their 1st difference, this allows proceeding further for the implementation of Johansen co-integration technique. Economically speaking, two variables will be co-integrated if they have a long-term relationship between them. Of course, the system approach developed by Johansen (1991); Johansen and Juselius,(1990) can also be applied to a set of variables containing possibly a mixture of I(0) and I(1) [Pesaran and Pesaran, (1997) and Pesaran et al., (2001, p.315)]. The general form of the vector error correction model is as follows:

$$Z_t = \sum_{i=1}^{p-1} \psi Z_{t-1} + \alpha_\circ + \eta_t \quad (7)$$

This can also be written in standard form as:

$$\Delta Z_t = \sum_{i=1}^{p-1} \Pi_i \Delta Z_{t-k} - \partial Z_{t-k} + \alpha_1 + \varepsilon_t \quad (8)$$

Where; $\Pi_i = -I + \partial_1 + \partial_2 + ... + \partial_t$

$i = 1,2,3,...k-1$ and $\partial = I - \partial_1 - \partial_2 - ....\partial_k$

Where p represents total number of variables considered in the model. The matrix Π captures the long run relationship between the p-variables. Now for the Johansson Test; we have employed the Trace test, which is based on the evaluation of $H_\circ(r-1)$ against the null hypothesis of $H_\circ(r)$, where r indicates number of co-integrating vectors. The co-integration test provides an analytical statistical framework for investigating the long run relationship between economic variables in the model. Johansen and Juselius (1990) provide critical values for the two statistics. The statistical distribution depends on the number of non-stationary components and model telling constant and trend term. To determine the non-stationary components, it is necessary to

choose the lag length for VAR portion of the model. To overcome this problem, this work determines the optimal lag length using Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC)[15]. The lowest values of AIC and SBC to select the lags give the most desirable results.

To ascertain the goodness of fit of the **FMOLS** model, the diagnostic and the stability tests are conducted. The diagnostic tests examine the serial correlation, functional form, normality of error term, autoregressive conditional heteroscedisticity and heteroscedisticity associated with the model. The stability test is conducted by employing the cumulative sum of recursive residuals (**CUSUM**) and the cumulative sum of squares of recursive residuals (**CUSUMsq**). Examining the prediction error of the model is another way of ascertaining the reliability of the **FMOLS** model.

D. Interpreting Design

Initially to employ FMOLS, order of integration of running actors is required and Ng-Perron (2001) employed in order to inspect the stationarity levels of all variables. Literature is full with great use of ADF (Dicky & Fuller, 1979), P-P (Philip & Perron, 1988) & DF-GLS test to examine out the order of integration. These tests "due to their poor size and power properties", are not reliable for small sample data set (Dejong et al, 1992 and Harris, 2003). Said tests seem to over-reject the null hypotheses when it is true and accept it when it is false. But this newly is proposed test by Ng-Perron (2001) seemed to solve this arising problem.

ADF and Ng-Perron tests are applied but decision based on the estimations of Ng-Perron test. Both tests employed to check the robustness about gossips of integrating order of said variables. Results intimate that all variables are non-stationary at their level form. One may conclude that all selected variables are having *I(1)* order of integration that

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[15]The distribution of test statistic is sensitive to the order of lag used. If the lag order is used less than true lag, then the regression estimates will be biased and residual term will be serially correlated. If the order of lag used exceeds the true order, the power of the test is to be reduced.

lends to support for employment of FMOLS for investigating the long run rapport among variables.

Table-1 Unit Root Test

Variables	ADF Test at Level		ADF Test at 1st Difference	
LFD	-2.4642	0.3425	-5.6049	0.0003
LGNPC	-0.9881	0.9298	-5.2525	0.0008
LGS	-1.3547	0.8556	-3.2345	0.0958
LINF	-3.0390	0.1370	-4.4412	0.0067
LREM	-1.8996	0.6327	-3.2654	0.0903
LLTR	-2.7965	0.2081	-4.2324	0.0110
Ng-Perron Test at Level				
Variables	MZa	MZt	MSB	MPT
LFD	-9.3140	-2.1577	0.2316	9.7848
LGNPC	-4.7808	-1.3144	0.2749	17.6817
LGS	-7.7168	-1.9638	0.2544	11.8097
LINF	-9.7878	-2.1861	0.2233	9.4219
LREM	-2.3081	-1.0349	0.4483	37.6522
LLTR	-1.0352	-0.4212	0.4069	39.4343
Ng-Perron Test 1st Difference				
LFD	-17.1882***	-2.9315	0.1705	5.3016
LGNPC	-15.6619*	-2.7218	0.1737	1.8464
LGS	-15.2592**	-2.7408	0.1796	6.0962
LINF	-16.0299***	-2.7528	0.1717	6.1421
LREM	-15.3548***	-2.7499	0.1790	6.0568
LLTR	-18.7777**	-2.6993	0.1437	6.9177

Table-2 summarizes the results of Co-integration analysis between financial sector's performance and macroeconomic environment, to test for Co-integration; Johansen informative maximum likelihood approaches both the maximum Eigen values and Trace

statistics utilized[16]. The results from the Johansen Co-integration analysis in Table-2, where both the maximum Eigen value and Trace-test values reveals that null hypothesis of no Co-integration against the alternative of Co-integration. Starting with the null hypothesis of no Co-integration ($R = 0$) among the variables, the trace-test statistics is 234.386, which is above 5% critical value 103.847 respectively (Prob-values are also shown in the **Table-2**). Hence it rejects null hypothesis $R \leq 0$ in the favor of general alternative R = 1. As is the evidence in **Table-2**, the null hypothesis of $R \leq 1$ can be rejected at 1% level of significance hence its alternative of $R = 2$ is accepted.

Table-2 FMOLS Maximum Likelihood Test for Co-integration

Hypotheses	Trace-Test	0.05 critical value	Inst. value	Hypotheses	Maximum Eigen value	0.05 critical value	Inst. value
R = 0	234.386	103.847	0.0000	**R = 0**	95.513	40.956	0.0000
R ≤ 1	138.872	76.972	0.0000	**R = 1**	59.157	34.805	0.0000
R ≤ 2	79.714	54.079	0.0001	**R = 2**	34.001	28.588	0.0092
R ≤ 3	45.713	35.192	0.0026	**R = 3**	27.179	22.299	0.0096
R ≤ 4	18.534	20.261	0.0849	**R = 4**	10.643	15.892	0.2794
R ≤ 5	7.891	9.164	0.0867	**R = 5**	7.891	9.164	0.0867
Engle-Granger Residual Test & CRDW Test for Long Run Association							
Engle-Granger Residual Test	constant	ecm$_{t-1}$	D.W	**CRDW Test**	*1%****	*5%*	*10%*
	0.00163	-0.9871*	1.6898	1.9229	0.511	0.386	0.322

Note: *significant 1 % level of significance and ** representing critical values at different levels of significance

Consequently, one may conclude that there are four Co-integrating relationships (vectors) among the financial development, GNP per capita, inflation, government spending, foreign remittances and literacy rate, turning to the maximum Eigen value test, the null hypothesis of no Co-integration (R = 0) is rejected at 1% level of significance in the favor of general alternative, that is one Co-integrating vector, $R = 1$. The test also rejected the null hypothesis of $R = 1$ in the favor of the alternative $R = 2$. This is

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[16]Optimal lag length is (2) selected using Akaike information criterion (AIC) and Schwartz criterion (SIC) as shown in Table-2

confirmed conclusion overall that there are four Co-integrating relationship amongst the five *I(1)* variables. Therefore, over annual data from 1971 to 2005 appears to support the proposition that in Pakistan, there exists a stable long-run relationship financial sector's performance and macroeconomic environment. Two tests also applied to investigate the robustness of long run friendship among the variables in basic model. One can see results of **Engle-Granger & CRDW Residual Tests** in lower part of **Table-2**. Results of these said tets confirmed the robustness of long run association among the variables[17].

Table-3 FMOLS Long run Elasticities

	Model-1		Model-2		Model-3		Model-4	
		Dependent Variable: LFD						
Variable	Coefficient	Inst-values	Coefficient	Inst-values	Coefficient	Inst-values	Coefficient	Inst-values
Constant	-2.3964	0.0891	-0.2276	0.4977	-0.2991	0.6046	0.5729	0.2905
LFD(-1)	0.3297	0.0160	0.4254	0.0000	0.4048	0.0039	0.3944	0.0050
LGNPC	0.1713	0.0335	-	-	0.2136	0.0095	0.1857	0.0172
LGS	0.1766	0.0449	-	-	-	-	-	-
LINF	-0.0583	0.0075	-0.0753	0.0004	-0.0773	0.0113	-0.0545	0.0139
LRIM	0.0248	0.0248	0.0164	0.0605	-	-	-	-
LLTR	-0.4402	0.0141	-	-	-	-	-	-
LCIF	-	-	-	-	-	-	0.0458	0.0868
LINS	-	-	0.2586	0.0000	-	-	-	-
LTGDP	-	-	-	-	0.1823	0.0538	-	-
LSAV	-	-	-0.0725	0.0189	-0.0982	0.0737	-0.1110	0.0434
PL	-	-	-0.0532	0.0305	-0.0203	0.5129	-	-
R-squared = 0.8492 Adj-R-squared = 0.8157 Akaike Criterion = -2.8819 Schwarz Criterion = -2.5676 F-statistic = 25.357 Durbin-Watson = 1.923			R-squared = 0.9118 Adj-R-squared = 0.8922 Akaike Criterion = -3.418 Schwarz Criterion = -3.104 F-statistic = 46.552 Durbin-Watson = 2.274		R-squared = 0.8259 Adj-R-squared = 0.7872 Akaike Criterion = -2.738 Schwarz Criterion = -2.423 F-statistic = 21.357 Durbin-Watson = 2.098		R-squared = 0.8195 Adj-R-squared = 0.7873 Akaike Criterion = -2.760 Schwarz Criterion = -2.491 F-statistic = 25.439 Durbin-Watson = 2.149	

Table-3 discusses about the marginal impacts of determinants on financial sector's performance. The coefficient of lag of dependent variable shows positive and significant impact on present periods at 5 percent level of significance, indicating that, present

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[17] For theoretical background see (Ghini, siddiqui, 2006)

performance of financial sector improves financial sector development in future more that 34 percent. Increased real per capita as usual enhances the development of financial sector at 5 % level of significance, there is 17 % improvement in the efficiency of financial sector as real income rise by one percent. Coefficient of government spending also tends to raise the effectiveness of financial sector development at "5 % level of significance". One may conclude that one percent increase in government spending improves the financial sector's efficiency by 17.7 percent.

Inflation has retarding effect on financial sector performance, more inflation means more credit rationings and low money supply, obviously, fewer loans by financial intermediaries to investment projects and there is decline in financial markets efficiency. Furthermore, inflation will have contemporaneous effects on financial sector's performance. High inflation will increase the opportunity costs of holding money that contracts the financial institution's efficiency in inflationary environment. Further, performance of financial sector lowers in high inflation atmosphere if nominal debts do not increase rapidly as GDP (Butt, et, al, 2007). Continuous flows of international remittances are having improving impacts on banking sector. Surprisingly, improvements in human capital resource tends to push down the performance of financial intermediaries, perhaps due to mismatch of education with financial sector requirements, indicates that the skilled labor could not absorb the advanced technology to improve the efficiency of financial sector.

Improvements in financial institution's policies also stimulate banking sector to make financial sector more progressive & efficient as in Model-2. As public savings perk up, financial sector's development declines in Pakistan. The main reason is that there is high difference between lending and deposit rates (spread rate). In long run, people prefer to invest their savings in real assets like, land, gold, government savings schemes, bonds also in shares. The deposit rate on deposits is not attractive that's why every body wants to save his money in productive projects and definitely financial sector will have less deposits in long span of time. Political instability also retards financial sector's development.

Model-3 & 4 expose that impact of trade and capital account openness which affects the financial sector positively and significantly at 5 & 10 percent level of significance respectively. Results are same as *Law and Demetriades (2005), that simultaneous openness to both trade and capital inflows has a positive influence on financial development, in tandem with [institutions] hypothesis, the quality of country's institutions has a separate influence on financial development*.

$$\Delta lfd = \beta_{\circ\circ} + \sum_{J=0}^{n} \beta_1 \Delta lfd_{t-1} + \sum_{j=0}^{n} \beta_2 \Delta \lg npc + \sum_{j=0}^{n} \beta_3 \Delta \lg s + \sum_{j=0}^{n} \beta_4 \Delta l \inf + \sum_{j=0}^{n} \beta_5 \Delta lltr + \sum_{j=0}^{n} \beta_6 \Delta lrem + \eta ecm_{t-1} + \varepsilon_t ....(11)$$

Table-4 FMOLS Short Run Elasticities
Dependent Variable: DLFD

Variable	Coefficient	T-Statistic	Inst-values
Constant	-0.0154	-0.8489	0.4040
DLFD(-1)	0.2678	1.4744	0.1528
DLGNPC	0.2806	3.5070	0.0017
DLGS	0.1439	1.3434	0.1912
DLINF	-0.0346	-1.5289	0.1388
DLLTR	0.3058	0.4397	0.6639
DLREM	0.0147	0.6437	0.5256
Ecm$_{t-1}$	-0.8663	-3.0940	0.0048

R-squared = 0.653289
Adjusted R-squared = 0.556210
Akaike info criterion = -2.946946
Schwarz criterion = -2.584157
F-statistic = 6.729456
Prob(F-statistic) = 0.000156
Durbin-Watson stat = 1.595134

Table-4 gives results of ECM (**Error Correction Model**) formulation of above equation. According to Engle-Granger (1987), Co-integrated variables must have in ECM representation. In the case of small developing economy like Pakistan, this ECM strategy provides solution for spurious correlation regarding short term dynamic relationship financial development and its determinants. Whereas, the long run dynamics appears in the set of regressors. Technically, ECM (Error Correction Term) works as a tool for measuring the speed of adjustment back to Co-integrated relationships. According to

(Banerjee, et al, 1993) when integrated variables deviate, this ECM is a force which affects them, so that, they return towards their long-run relation. Therefore, the longer is the deviation; the greater would be the force tending to correct the deviation.

Short run dynamic behavior clearly indicates that picture is hopeful in short span of time. The entire stream of performance indicators are having signs consistent with the theory but insignificant except for GNP per capita which improves the performance of financial sector. The short run dynamic impacts have maintained their signs even to the long span of time. A fairly high speed of adjustment to the equilibrium level with correct sign after a shock is illustrated by the equilibrium correction coefficient (**Ecm**$_{t-1}$) estimated value of -0.866, which is significant at 1 percent level of significance. The dis-equilibrium of almost 86.6% from the previous year's shock converges goes back to the long run equilibrium in the current year.

Sensitivity Analysis

Finally, the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMsq) are applied while analyzing the stability of the long-run coefficients together with the short run dynamics. Pesaran and Shin (1999) suggested an empirical investigation of the stability of estimated coefficient of the error correction model. A graphical representation of CUSUM and CUSUMsq is provided in Figures 1 and 2. The null hypothesis (*i.e.* that the regression equation is correctly specified) cannot be rejected, following Ouattara, (2004) if the plot of these statistics remains within the critical bounds of the 5% level of significance.

The plots of both the CUSUM and the CUSUMsq are with in the boundaries which are quite evident from figures 1 and 2, therefore, the stability of the long run coefficients of regressors (long run parameters) are confirmed by these statistics which affect country's financial sector's development. In order to evaluate stability of selected model specification the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMsq) of the recursive residual test for the structural stability (*see* Mohsen, and BahmaniOskooee, 2002) can be used. Since, neither the CUSUM nor the CUSUMsq test

statistics exceed the bounds of the 5 percent level of significance (*see* Figures 1 and 2), so the model appears stable and correctly specified.

E. Conclusion

Strong and sustainable macroeconomic situation are the requirements of any developing country like Pakistan especially at the implementation of 3rd generation reforms for financial sector in Pakistan. Certainly, the period from 2000 onwards witnessed rapid growth of financial sector due to the reforms being introduced. Although the second half of 1990s made the process of reforms comparatively costly as the entire economic condition was not much favorable. To experience effectiveness and adequacy in reform implementation and efficient functioning of the financial sector what is needed is sound and favorable macroeconomic environment in the country. In order to compete in this fast changing global economy, Pakistan still has to strive hard to achieve the required level of development, in-spite of the fact that country's financial markets have been liberalized and operating on competitive basis. However, macroeconomic indicators require more improvement because country still lags behind other developing countries in the region with regard to financial deepening and intermediation. Several factors contributed towards remarkable performance of Pakistan's financial sector during 2000-05, like for instance, comparatively favorable macroeconomic indicators, remittances flows, outreach, product innovation, consumer financing, SME financing, etc

Empirical findings of the study reveal that previous policies of financial institutions and economic growth improve the financial development. Rise in the level of government spending and foreign remittances push the performance of financial sector in the upward direction. Rising inflation deteriorates the efficiency of financial markets through its damaging impact while literacy rate is having negative influence on banking sector in Pakistan. Openness in trade and improvements in capital inflows open new directions to enhance the development of financial markets in the country. Further more, performance of financial sector is attached with qualified institutions. More qualified financial institutions means more development in the financial sector. High savings rate declines the efficiency of banking sector and political instability retards the performance of

financial markets. Thus, efforts are still underway for the creation of an enabling environment for the development of financial sector while adopting forward-looking strategies for overcoming the challenges of globalization. To conclude, the entire process of liberalization created a mushroom growth of both of non-banking financial institutions (NBFIs) and banks, giving rise to profit competitions and also their existence in Pakistan.

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Appendix-A

Figure 1

Plot of Cumulative Sum of Recursive Residuals
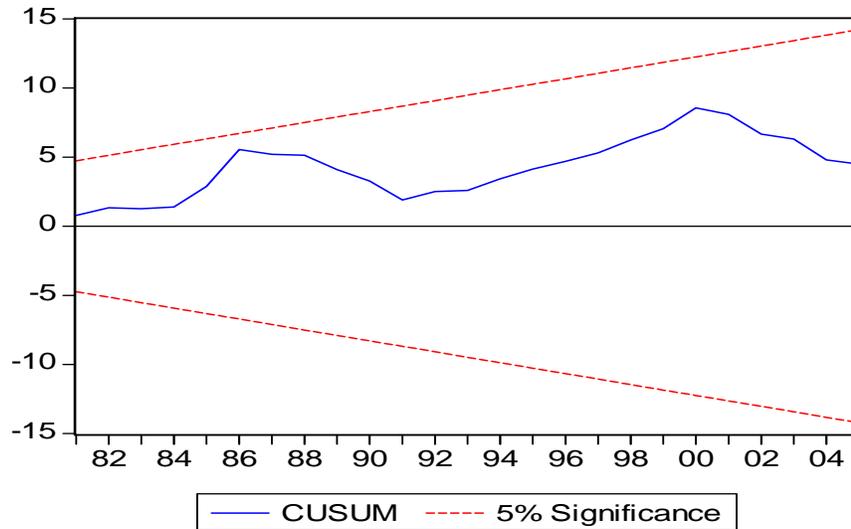
The straight lines represent critical bounds at 5% significance level.

Figure 2

Plot of Cumulative Sum of Squares of Recursive Residuals

The straight lines represent critical bounds at 5% significance level.