Effects of Financial Structure and Financial Development on Economic Growth: A Case Study of Pakistan

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Abstract

This paper examines the empirical relationship between long-run growth and financial structure, measures by weighted sum of structure- activity and structure-size. We find that this proxy is positively correlated with growth and financial structure significantly explains output levels in case of Pakistan. We argue that the latter finding is the result of financial liberalization in a poor regulatory environment. Our findings also show that the main channel of transmission from financial development to growth is the efficiency, rather than the volume, of investment. We also test for several hypotheses about the prospective role of financial structure and financial development on economic growth

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Key words: Financial development, Financial structure, Economic growth, Cointegration

1, Introduction

There is a large body of theoretical and empirical literature to support the proposition that an efficient, well functioning financial system is a necessary condition for long-term economic growth. Almost a century ago, Schumpeter [1911] argued that financial intermediation through the banking system played a pivotal role in economic development by affection the allocation of saving and thereby improving productivity, technical change and economic growth. Modern financial theory emphasize the intermediation role between borrowers and savers, thereby performing the function of saving mobilization, capital fund allocation, monitoring of the use of funds, and managing risk, which together support the economic growth process [Levine 1997].

The empirical investigation of the financial development and economic growth relationship had relied heavily on econometric analysis [King and Levine 1993]. The findings of King and Levine [1993a] are representative of this body of literature higher level of financial need development are significantly and robustly correlated with faster current and future rates of economic growth, Physical capital Accumulation and economic efficiency improvements, and finance does not follow; growth finance seems importantly to lead to economic growth.

The debate on the relative merits of bank-based versus market-based financial systems has a long history of over a century. Nonetheless, there is hardly any consensus at the theoretical level. Competing theoretical models posit the superiority of one type of financial system over the other or they simply relegate financial structure as irrelevant. On the one hand, Stiglitz (1985), to name but a few, argue that the bank-based system is superior to the market-based one. On the other hand, Levine (1997), Boyd and Smith (1998), among others, suggest the opposite. Still, Levine (1997) maintain that it is neither the banks nor the markets; instead, it is the provision of overall financial services that is crucial in promoting growth. Similarly, Huybens and Smith (1999) underline the complementarities between banks and markets in the provision of financial services. The theoretical debate on financial structure culminates into four distinct views: the bank-based, the market-based, the financial services and the law and finance.

Highlighting their shortcomings, argues that these four industrialized countries have resembling real per capita income levels and they historically share similar growth rates. Consequently, it is hard to attribute their analogous growth rates to alternative forms of either the bank-based or the market-based financial system. Similarly, Beck and Levine (2002) and Levine (2002) assert that although UK, US, Germany and Japan did experience periods of divergent growth rates, nonetheless, "it is very difficult to draw broad conclusions about bank-based and market-based financial systems from only four countries" (Beck and Levine, 2002, p. 148). They argue that the empirical assessment of the role of financial structure should be based on broad dataset that encompasses wide-ranging national experiences.

If the problems of information asymmetries, moral hazards and adverse selection were not acute in financial markets and financial institutions were operationally efficient (a feasible scenario if financial institutions are of sufficiently high quality) then either form of financial system (market-based or bank-based) should, in principal, provide just about the same financial services for augmenting growth. Financial structure, in this scenario, would be irrelevant. However, the reality is far from it. Countries exhibit different 'states of the world', they have different production structures, levels of banking, financial and capital market development. These structural make ups tend to be rigid requiring significant amount of time and effort for any change. Thus, different 'states of the world' may require different financial arrangements to cater for the diverse financial needs.

This paper complements the existing empirical literature by way of new results based on time-series analyses, and compare our results with the existing empirical literature.

Our basic specification augments the Cobb–Douglas production function by measures of financial structure and financial development. The long-run relationship between real per capita GDP, per capita physical capital stock, and measures of financial development and financial structure is estimated through co-integration tests. We check stationary of the time series using Augmented Dickey Fuller (ADF) unit root test, Johansson Co-Integration technique and error correction method (ECM) for short run dynamics and apply the Fully Modified Ordinary Least square(FMOLS).

The rest of the paper is organized as follows. In the section that follows we briefly discuss the theoretical arguments; this is followed by a discussion of the existing empirical evidence in Section 3. Section 4 outlines our model specifications and the econometric methods employed. Section 5 discusses the dataset; Section 6 discusses the main empirical results, and Section 7 summarizes and concludes.

2. Theoretical considerations

The relationship between financial structure and economic development can be examined on the basis of competing theories of financial structure. These are: the bank-based, the market-based, the financial services and the law and finance. We discuss them briefly in what follows. The bank-based theory emphasizes the positive role of banks in development and growth, and, also, stresses the shortcomings of market-based financial systems. It argues that banks can finance development more effectively than markets in developing economies, and, in the case of state-owned banks, market failures can be overcome and allocation of savings can be undertaken strategically. This is particularly relevant in the early stages of economic development when the institutional background is weak to support market activities (Gerschenkron, 1962). Those banks that are unhampered by regulatory restrictions, can exploit economies of scale and scope in information gathering and processing; they can also be efficient in mobilizing resources and managing risks (for more details on these aspects of bank-based systems, see Levine, 2002, and Beck and Levine, 2004). Indeed, bank based financial systems are in a much better position than market-based systems to address agency problems and short-termism (Stiglitz, 1985; Singh, 1997). The bank based view also stresses the shortcomings of market based systems. The latter reveal

information publicly, thereby reducing incentives for investors to seek and acquire information. Information asymmetries are thus accentuated, more so in market-based rather than in bank based financial systems (Boyd and Prescott, 1986).

Banks can ease distortions emanating from asymmetric information through forming long-run relationships with firms, and, through monitoring, contain moral hazard. As a result, bank-based arrangements can produce better improvement in resource allocation and corporate governance than market-based institutions (Stiglitz, 1985; Bhide, 1993). By contrast, the market-based theory highlights the advantages of well-functioning markets in promoting successful economic performance, and stresses the problems of bank-based financial systems. Big, liquid and well-functioning markets foster growth and profit incentives, enhance corporate governance, and facilitate risk management, diversification and the customization of risk management devices (Levine, 2002, and Beck and Levine, 2004). The inherent inefficiencies of powerful banks are also stressed, for they "can stymie innovation by extracting informational rents and protecting firms with close bank–firm ties from competition … may collude with firm managers against other creditors and impede efficient corporate governance" (Levine, 2002, p. 3). Market-based financial systems reduce the inherent inefficiencies associated with banks and are, thus, better in enhancing economic Development and growth. A related argument is that developed by Boyd and Smith (1998), who demonstrate through a model that allows for financial structure changes as countries go through different stages of development, that countries become more market-based as development proceeds. An issue of concern, identified by a World Bank (2001) study in the case of market-based financial systems in developing countries, is that of asymmetric information. It is argued that "the complexity of much of modern economic and business activity has greatly increased the variety of ways in which insiders can try to conceal firm performance. Although progress in technology, accounting, and legal practice has also improved the tools of detection, on balance the asymmetry of information between users and providers of funds has not been reduced as much in developing countries as it has in advanced economies—and indeed may have deteriorated. The third theory, the financial-services theory stresses the key financial services provided by financial systems (Merton and Bodie, 1995; Levine, 1997). Financial services are crucial to new firm creation, industrial expansion and economic growth. This theory is actually consistent with both the bank-based and the market based views. Although it embraces both, it minimizes their importance in that the distinction between bank based and market-based financial systems matters less than

was previously thought; it is financial services themselves that are by far more important, than the form of their delivery (World Bank, 2001). In the financial services view, the issue is not the source of finance. It is rather the creation of an environment where financial services are soundly and efficiently provided. The emphasis is on the creation of better functioning banks and markets rather than on the type of financial structure. This theory suggests that it is neither banks nor markets that matter; it is both banks and markets. They are different components of the financial system; they do not compete, and as such ameliorate different costs, transaction and information, in the system (Boyd and Smith, 1998; Levine, 1997; Demirguc-Kunt and Levine, 2001). Under these circumstances, financial arrangements emerge to ameliorate market imperfections and to provide financial services that are well placed to facilitate savings mobilization and risk management, assess potential investment opportunities, exert corporate control, and enhance liquidity. Consequently, as Levine (2002) argues, "the financial services view places the analytical spotlight on how to create better functioning banks and markets, and relegates the bank-based versus market-based debate to the shadows. There is, finally, the law and finance theory (La Porta et al., 1998; see also, Levine, 1999). It maintains that the role of the legal system in creating a growth-promoting financial sector, with legal rights and enforcement mechanisms, facilitates both markets and intermediaries. It is, thereby, argued that this is by far a better way of studying financial systems rather than concentrating on bank-based or market-based systems. The World Bank (2001) view on the matter points in a systematic way towards "one direction: far from impeding growth, better protection of the property rights of outside financiers favors financial market development and investment. Indeed, Rajan and Zingales (1998) argue that although countries with poor legal systems benefit from a bank-based system, better legal systems improve market-based systems, and as such the latter are preferable. This theory also suggests that it is financial development, and not financial structure per se, that is critical to firm, industry and national economic success.

3. Existing empirical evidence

As mentioned in the introduction, a number of studies have concentrated on comparisons that view Germany and Japan as bank-based systems, while the US and

UK as market-based systems. These studies employ rigorous country-specific measures of financial structure. Studies of Germany and Japan use measures of whether banks own shares or whether a company has a 'main bank' respectively (Hoshi et al., 1991; Mork and Nakkamura, 1999; Weinstein and Yafeh, 1998). They provide evidence that confirms the distinction between bank based and market-based financial systems and their role in economic growth for the countries considered.

However, re-assessment of the role of Japanese financial system in view of the economy's poor performance in the 1990s has concluded against the beneficial effects of bank-based system. Bank dependence can lead to a higher cost of funds for firms, since banks extract rent from their corporate customers (Weinstein and Yafeh, 1998). Studies of the US and the UK concentrate on the role of market takeovers as corporate control devices (Wenger and Kaserer, 1998; Levine, 1997), and conclude in favor of market-based financial systems. Goldsmith (1969), however, argues that such comparisons in the case of Germany and the UK for the period 1864–1914 does not contribute to the debate since "One cannot well claim that a superiority in the German financial structure was responsible for, or even contributed to, a more rapid growth of the German economy as a whole compared to the British economy in the half-century before World War I, since there was not significant difference in the rate of growth of the two economies. Beck and Levine (2002), using a panel of 42 countries and 36 industries, test the hypothesis of whether financial structure helps to grow disproportionately those industries that rely heavily on external finance. Their results do not support their main hypothesis. Measures of financial structure appear ineffectual in explaining industrial growth, new establishment formation and efficient capital allocation. Neither does financial structure explain sectoral industrial growth, i.e. the growth and the rate of new establishments of labor and R&D-intensive industries. By contrast, measures of overall financial development and legal system efficiency significantly explain all these variables. Demirguc-Kunt and Levine (2001) assemble a new cross-country database and compile a number of studies on financial structure and economic growth. This database is utilized throughout the book to analyze, among others, the state of financial structure across countries and its role in economic growth and the sources of growth while controlling for the overall financial development. The main conclusions are: financial systems are more developed in richer countries; higher-income countries have more active and efficient stock markets relative to banks; countries with common law tradition as opposed to civil law tradition are associated with more market-oriented financial systems; countries with civil law tradition tend to

be associated with underdeveloped financial systems. (see, also, Beck and Levine, 2002; Demirguc-Kunt and Maksimovic, 2002). Further, it provides country evidence where again the proposition that financial structure does not matter in economic performance is supported.1 Similarly, Demirguc-Kunt and Levine (1996), using data for forty-four industrial and developing countries for the period 1986 to 1993, conclude that countries with well-developed market-based institutions also had well developed bank-based institutions; and countries with weak market-based institutions also had weak bank based institutions; thereby supporting the view that the distinction between bank-based and market-based financial systems is of no consequence. Interestingly, however, Levine and Zevros (1998), employing cross country regressions for a number of countries covering the period 1976 to 1993, conclude that market-based systems provide different services from bank-based systems. In particular, market-based systems enhance growth through the provision of liquidity, which enables investment to be less risky, so that companies can have access to capital through liquid equity issues (see also, Atje and Jovanovic, 1993, and Harris, 1997). More recently, Beck and Levine (2004) also report that the development of stock market and of banks both have significant and economically large effect on economic growth. The World Bank (2001) reaches similar conclusions by stating that "both development of banking and of market finance help economic growth: each can complement the other". Arestis et al. (2001), though, provide evidence for the superiority of bank-based systems with clear implications for developing economies. As stated above, it is conceded that the result of economic performance being obdurate to financial structure does not necessarily mean that institutional structure is of no consequence to growth (Demirguc- Kunt and Levine, 2001). It could also be that economic structure determines financial structure. More recently, Allen et al. (2006) find that in fact it is economic structure that determines

financial structure. The latter develops and prevails in response to the needs of the real economy. Economies dominated by physical-asset intensive firms tend to have a bank-based financial system. Countries with knowledge-based industries and intangible-asset-intensive firms tend to have a market determined financial system. In what follows we outline our empirical specifications and econometric methods thus setting a framework for testing the various propositions we put forward in Section 1 above.

4. Specification and econometric methods

The standard econometric specification of growth models in our study regress real per capita GDP growth on a number of growth determinants. Our approach is time series. Given the non- stationary of data (see Section 6), we estimate the co-integrating (long-run) relationship between output, physical capital stock, financial development and financial structure. Our basic specification is:

$$\log(Q/L)_t = a_0 + a_1 \log(K/L)_t + a_2 \log(F^S)_t + a_3 \log(F^D)_t + e_1 \qquad (1)$$

where, Q is output, L is labor, K is physical capital stock, FS and FD respectively are measures of financial structure and financial development (both defined in Section 5); e1 is the error term. In empirical estimations we use real per capita output (YP) and real per capita capital stock (KP), since consistent time series on labor force do not exist for most of our sample countries. A high value of FS means a system that is more of a market-based variety; while a lower FS means more of a bank-based system. Eq. (1) is our benchmark empirical model. From the theoretical perspective, this can be viewed as a generalized Cobb–Douglas production function, where financial development and financial structure account for total factor productivity. Our specification controls for financial development when modeling the effect of financial structure. We are interested in the significance or otherwise of the coefficient a2, rather than its sign. In either case a significant a2 implies that financial structure matters. A positive and significant a2 signify a market-based financial system while a negative and significant a2 supports the bank-based system. The bank-based view on financial structure predicts a negative and significant a2 (i.e., a2b0) coupled with a positive and significant a3 (i.e., a3N0); the market-based view, on the other hand, predicts both positive and significant a2 and a3 (i.e., a2N0 and a3N0). The financial-services view forecasts an insignificant a2 (i.e., a2=0) accompanied by a positive and significant a3.

5. Data sources, measurement and description

Data on Gross Domestic Product (GDP), Gross physical capital formation (GPCF), GDP deflator and population are obtained from IMF and the WDI. Nominal GDP and GFCF variables are deflated by the GDP deflator. Data on Stock Market Capitalization Ratio (value of listed shares/ GDP), Stock Market Total Value Traded Ratio (total shares traded on stock market exchange/GDP), Stock Market Turnover Ratio (value of total shares traded/average real market capitalization) and Private Credit Ratio (Private Credit by Deposit Money Banks and Other Institutions/ GDP) are directly obtained from the World Bank dataset.

Measures of financial structures and financial development are computed following Beck and Levine (2002) and Levine (2002). Two measures of financial structure employed are: (i) Structure-Activity (SA), which is computed as the log of the ratio of Stock Market Total Value Traded to Private Credit, and (ii) Structure-Size (SZ), measured as the log of the ratio of Stock Market Capitalization to Private Credit. The Structure-Activity measures the activity of stock market relative to banks and other financial institutions. This measure is important because stock market activity and size are entirely different issues. Stock markets could be sizable because of the large number of listings but they may have very little activity because of the lack of active trading. The Structure-Size measures the size of stock market relative to the rest of the financial sector (bank and non-bank institutions). The aggregate measure of financial structure (FS) is the weighted sum of all the principal components of the two variables SA and SZ, which captures their total variation.

The two underlying measures of financial development are: (i) Finance-Size (FZ), computed as the log of the product of Private Credit Ratio and Stock Market Capitalization Ratio; and (ii) Finance-Activity (FA), which is the log of the product of Private Credit Ratio and Stock Market Value Traded Ratio. Finance-Size measures the overall size of stock market, banks and non-bank financial institutions whereas Finance-Activity measures their total activities. The aggregate measure of financial development (FD) is the weighted sum of all the principal components of FZ and FA.

6. Empirical results

Integration and co-integration tests

Since present study appears to be initial attempt to identify the links between the economic growth and financial structure (the phenomena related to market base or bank based financial system) in the case of small developing economy like Pakistan, therefore we empirically estimated whether a statistically significant relationship exist between some measures of economic growth and financial structure and development in long-run as well as in short run and which system dominant in economy market base or bank base. The preliminary step in this analysis is concerned with establishing the order of integration of each variable. For this purpose, to get reliable results of equation, the implicit assumption is that variables in equation are I(1) and co integrated. We employed the test for the existence of a unit root in the level and first difference of each of the variables in our sample using the Augmented Dickey Fuller (ADF) test. ADF test statistics checks the stationary of series.

ADF Test General Equation $= \Delta X_t = \phi_0 + \phi_1 X_{t-1} + \sum_{j=1}^{k} \alpha_j \Delta X_{t-j} + \eta_t$

Table No. 2

Unit Root Estimation

Variables	ADF test at Level			ADF test at 1st Difference		
	Intercept and trend	Prob-Value	Lags	Intercept and trend	Prob-Value	Lags
KP	1.61	0.75	2	8.2**	0.001	2
YP	1.08	0.9	2	8.8**	0.0001	2
FS	3.6	0.23	1	8.3**	0.001	1
FD	1.3	0.83	1	5.4**	0.003	1

** Stationry at 1st Difference.

The result presented in table-2 reveals that all other variables are non stationary in there Level form. However, the stationary is found in the first differencing level of the variables (Out put, physical capital formation, financial structure and financial development).

Table 3 summarizes the results of Co- integration analysis between out put, physical capital formation, financial structure and financial development, to test for Co-integration. We utilized Johansen Informative Maximum Likelihood approaches both the maximum Eigen values and Trace Statics.

Johansen-Juselius cointegration

Table No.3

Hypothesis		Eigen Value	Trace test (λ_{trace})K=2		Prob. Value	Maximum eigen value test (λ_{max}) k=2				Prob. Value
H0	HA		(λ_{trace})	Critical Values 5%		H0	HA	(λ_{max})	Critical Values 5%	
$r \leq 0$	$r > 0$	0.745	45.86	40.17	0.01	r = 0	r = 0	29.28	24.16	0.01
$r \leq 1$	$r > 1$	0.492	28.5	24.27	0.04	r = 1	r = 1	19.52	17.79	0.04
$r \leq 2$	$r > 2$	0.438	13.7	12.32	0.042	r = 2	r = 2	13.35	11.23	0.05
$r \leq 3$	$r > 3$	0.069	4.89	4.13	0.031	r = 3	r = 3	4.89	4.13	0.03

Note: *r represents number of cointegrating vectors and k represents the number of lags in the unrestricted VAR model.*

The results form the Johansen Co-integration analysis in Table -3, where both the maximum eigen value and trace-test value examine the null hypotheses of no Co-integration ($r \leq 0$) against the alternative of Co-integration. Starting with the null hypothesis of no Co-integration ($r \leq 0$) among the variable, the trace statistics is (45.86) which is above the 5% critical value (40.17) probability value is also shown in the table. Hense it reject null hypothesis in the favor of general alternative that there is one Co-integration equation. As the evidence in the table, the null hypotheses of ($r \leq 1$) can be rejected at 5% level of significance its alternative of 2 Co-integration equation is accepted. Consequently, one may conclude there are 3 Co-integration equation. Therefore our annual data (1988-2006) appears to support the proposition that in Pakistan there exist stable long run relationship among out put, physical capital stock, financial structure and financial development.

Table 4 reports the result of Error Correction Model formulation of equation above. According to Engle-Grangle (1987), Co-integrated variables must have in ECM

representation. The ECM strategy provides an answer to problem of spurious correlation in the short run dynamic relationship among out put, physical capital formation, financial structure and financial development. The long run dynamics appear in the set of regressors. Technically, Error Correction Method measure the speed of adjustment back to Co-integrated relationships. The ECM posited to be a force affecting the integrated variables to return their long-run relation when they deviate from the deviation (Banerjee, et al, 1994).

$$\Delta Y^{P} = \alpha + \beta_1 \Delta K^{P} + \beta_2 \Delta F^{S} + \beta_3 \Delta F^{D} + \beta_4 \eta CE(-1) + \upsilon_1$$

Table No. 4

Error Correction Method Result

Variables	Coefficient	Std Error	t – Value	Prob-Value
C	0.0154	0.052	2.924	0.0438
D(KP)	0.1436	0.095	2.4133	0.0358
D(FS)	0.0098	0.064	1.4035	0.0566
D(FD)	0.0601	0.048	-2.675	0.0411
UT(-1)	-0.0332	0.066	-2.469	0.0583
R-squared	0.963415	Adjusted R-squared		0.459082
S.E. of regression	0.015747	Akaike info criterion		-5.234155
Log likelihood	82.10739	Schwarz criterion		-4.986829
D - Watsan	1.81	F-statistic		24.486125

Short run behavior does not show hopeful picture, which indicates our variables out put, physical capital stock, financial structure and financial development are long run phenomena. Physical capital formation increase economic growth significantly in short span of time. Financial development matters economic growth significantly with small changes and financial structure shows insignificant results. The estimated lagged error correction term UT(-1) is negative and highly significant. This result supporting the cointegration among the variables represented in table-3. The feedback coefficient is – 0.03, which suggests a slow adjustment process. Nearly 3 percent of the disequilibria of the previous period's shock adjust back to the long run equilibrium in the current year.

Preliminary investigations show that in our sample FS and FD (the two principal component measures) exhibit very high magnitude of correlation raising concern that their joint use in the estimation may contaminate the signs of the estimated parameters thereby affecting our inferences regarding the bank-based and the market-based financial systems

Table – 5				
FMOLS Regression Result				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(KP)	0.26978	0.05783	4.66481	0.0003
D(FS)	0.03516	0.01818	2.43	0.0723
D(FD)	0.09359	0.01284	3.81	0.0204
C	4.61011	0.25008	18.43426	0
R-squared	0.9272	F-statistic		129.12

According to our (FMOLS) results Table-5, positive, significant and low value of FS support bank base financial system and positive and significant FD support financial development matters economic growth. Both the financial structure and the financial development variables appear significant; this is consistent with the findings of (Levine and Zervos (1996),(Abdul Qayyum(2005) and Beck and Levine (2004).

7. Conclusion and implications

In this paper we have examined the hotly debated issue of whether financial structure or financial development matters for economic growth and financial system are bank based or market based. low value of financial structure(FS) support bank base financial system matter in Pakistan rather than market based. Output level, capital stock, financial structure and financial development variables are co-integrated, in our study, financial structure and financial development appear significant in explaining output levels; this holds under time-series estimates tests.

Short run behavior does not show hopeful picture, physical capital formation increase economic growth significantly in short span of time. Financial development matters

economic growth significantly with small changes and financial structure shows insignificant results. The estimated lagged error correction term UT(-1) is negative and highly significant. The feedback coefficient is –0.03, which suggests a slow adjustment process.

Overall, our findings imply that financial structure and financial development matter for output levels and economic growth. Our analysis goes further, however, by suggesting that the impact of financial development on economic growth is most pronounced at lower income levels so that developing countries like Pakistan will gain most if the growth and development of financial sector. But complimentary role of supporting institutions to regulate and support the development of financial structure in Pakistan is also important. Our findings are more in line with Levine and Zevros (1998), Abdul Qayyum (2005) and Beck and Levine (2004).

The main policy message that emanates from our analyses is that Policy makers should promote capital market and remove the weakness that highlight (Khan Aftab Ahmed). Strengthen the health and competitiveness of the banking system by recapitalizing and restructuring, increase their autonomy and accountability and allowing more private banks and institution to enter the market. Improve prudential regulation and supervision of all financial institution.

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