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Abstract  
The object behind this study is to explore the long run association between economic growth and financial structure in Pakistan context. For this purpose we have used the data from the period of 1975 to 2008, and applied Johansen cointegration technique to find out the long run association among the selected variables. Weighted sum of structure activity and structure size of the financial sector is used as a proxy of financial structure. The study finds that the proxy of financial structure is positively correlated with economic growth. The result also pointed out that the channel of transmission mechanism of financial development to growth is efficient to the financial sector not the volume of investment.

Keywords: Financial development, financial structure, Economic growth, Co integration.
JEL Classification: G2, O4, C4

1. Introduction  
According to an economic theory; empirical findings show that the well functioning and well-organized financial sector is necessary for the long run economic growth. Schumpeter (1911) argued that financial intermediation through the banking channel played a crucial role in economic activity and accelerate the saving and improve the productivity. Recent financial theory also emphasized the financial intermediation and its role between debtor and creditor, capital formation, analyzing the usage of funds, managing the risk, better mobilization of saving are the key actors to support the economic growth process (Levine 1997).
Econometrics analysis is heavily used to find out the empirical evidence between financial development and economic growth (King and Levine 1993). Huge volume of financial development is required, which affects significantly and strongly correlated with social infrastructure, gross physical capital formation and growth.

The merits of bank based v/s market based financial system have long debate over the history of many decades but there is no consensus at empirical as well as theoretical level of this debate. Analysis shows that the superiority of one type of financial model over the other. Sitglitz (1985) argued in his analysis that bank based financial system is much better than market based financial system as far as Levine, Boyd and Smith (1997 and 1998) argue oppositely. Levine further argues and rejects the both systems i.e the banks based financial system and market based financial system and recommended an overall financial service that can be important to support economic activity. Huybens et.al. (1999) emphasizes the complementarities between bank based financial system and market based financial system. The theoretical debate about the financial structure cumulative into four views of different economists such as bank based financial system, market based financial system, the law and finance and the financial service.

Likewise, Beck et.al (2002) emphasized that UK, US, Japan and Germany had practiced the ages of divergent economic growth rates, however, “it is very difficult to draw broad conclusions about bank-based and market-based financial systems from only four countries”. They argue that the empirical appraisal of the role of financial structure should be based on wide dataset that include wide-ranging national experiences.

The hurdle of asymmetric information, adverse selection and moral hazards were not serving in financial institutions and financial market, and they operate efficiently resulting in this scenario financial structure is irrelevant but empirically it is not possible. The nations demonstrate different production structure, condition of banking system, capital and money market development so the structural changes in financial system required significant amount of time and efforts. Thus we conclude that the different countries of the world need different financial provision required for the diverse financial needs.

In this study the Cobb Douglas production function is used to measure the impact of financial structure, financial development on economic growth and activity. The long run association is determined between real per capita GDP, financial structure; financial development and per capita physical stock of capital with the help Johansen Cointegration test and apply fully modified ordinary least square (FMOLS). To analyze the short run dynamics the ECM (Error correction model) has been used and with the help of ADF (Augmented Dicky-Fuller) test the stationery of data has been checked.

The rest of the paper is arranged as follows. In the section-2 the theoretical arguments were discussed; in section-3 a discussion of the existing empirical evidence. In Section-4 application of model specifications and the econometric methods. Section-5 consists the dataset; In Section-6 the empirical results were discussed and in section-7 summarization and conclusion.

2. Theoretical Considerations
The presented theory of financial structure argued that there is a long run association between financial structure and economic development. These theories are bank based financial system; market based financial system, financial service and the law and finance. The bank based financial structure theory highlighted the significant role of banks on economic growth and also pointed out that deficiency of market based financial systems. The theory of bank based financial system is argued that banks can accelerate economic development more efficiently as compare to market based financial system in developing and under developed countries, in case of nationalized banks, market failures can be defeated and allocation of saving can be commenced deliberately. This is most significant in the early stages of economic development when the institutional background is not strong to support market activities (Gerschenkron, 1962). Those banks in the economy are free from regulatory restriction can
develop information gathering, economies of scale and processing. They can also be very efficient to mobilize saving and other resources and better managing the risk (for more details on these aspects of bank-based systems, see Levine, 2002, and Beck and Levine, 2004). Agency problems and Short termism tackle very smartly a comparison in bank based financial system to market based financial system (Stiglitz, 1985; Singh, 1997).

The bank based market system also opens the information for public, thereby reducing motivation for investor to take and obtain information. Asymmetric information emphasizes more in market based as compare to bank based financial system (Boyd et.al 1986). Bank is the only source which reduces the asymmetric information through generating the long run association with firms and corporations, monitoring the firms and contains moral hazard as a result bank based financial system produces better improvement in allocation of resources and corporate governance as compare to market based financial system. (Stiglitz, 1985; Bhide, 1993). Market based financial system theory pointed out the advantages of well operating markets in promoting successful economic activity and remove the problem of bank based financial system. Large, liquid and well organized and well performing markets promote the economic growth and profit and enhance corporate governance and minimize and diversified the risk. Levine, 2002 argued that market based financial systems lessen the inefficiencies which are normally linked with banks and accelerate economic development and growth in better way. Changes in financial structure are very important when a nation passes through the various steps of economics development and it is possible when the nation follows the market based financial system. World Bank (2001) identified the big hurdle in the way of market based financial system is asymmetric information in developing countries. It is argued that the complication of modern economic and business activities have largely increased the variety of ways in which insider can try to keep secrete firm performance but due to technological advancement, better accounting techniques and legal practice have improved the tools of detection the asymmetry information between borrower and lender in developing countries.

Merton and Bodie, 1995; Levine, 1997 argued that the financial services are vital key for new born firms, industrial growth, expansion and economic development. The third theory of financial structure is based on financial service included with the bank based financial system and market based financial system. This theory mostly concerns with the financial services and their delivery. In the financial service, the problem is not relating with finance but it focuses on the formation of an environment where the finance facilities and services are efficiently and soundly provided. The approach is highlighting the comparatively better operating of bank and market based system rather than the type of financial structure. The theory also pointed out that market based and bank based system are the components of financial structure system (Boyd and Smith, 1998; Levine, 1997).

Under these conditions, financial structure reduces market imperfections and provides better financial services cause to encourage the saving, resource mobilization, better risk management, investment opportunities, improved corporate control and boost the liquidity condition. Levine (2002) argues that financial services pointed out that how to formulate the better operating banks and markets base systems, additionally the law and finance theory (La Porta et al. 1998; Levine, 1999). The role of legal system is generating a growth promoting financial structure with lawful rights, enforcement mechanisms and improves the efficiency of financial intermediaries. It is argued that law and finance theory is better way to analysis the financial structure as compare to bank based and market based system. Rajan and Zingales (1998) argued that the most of developing countries’ legal system is very worse thus taken benefits from a bank based system are difficult. The market based financial system can be improved by better legal systems.

3. Existing Empirical Evidence
As discussed in the section-1 there are a number of studies which have been conducted towards the comparisons between banks based financial system and market based financial system in various
countries i.e. US, UK, Germany and Japan. These researches give the evidences about the difference between bank based and market based financial system and their role in economic growth (Hoshi et al., 1991; Mork et al. 1999; Weinstein et al. 1998).

Wenger and Kaserer, 1998; Levine, 1997 their Studies relating to the most of the developed countries like US and UK which concentrate the role of market captures as firm control strategy and give the argument in favor of market based financial system. Market based financial system plays a key role during the Japanese financial crises in 1990s (Weinstein and Yafeh, 1998). Goldsmith (1969) have the comparison of Germany and UK for the period 1864-1914 that show a weak association between economic growth and financial structure. Levine and Beck (2002) using the panel data of 42 nations, in which 36 nations are industrial based economy and test of hypothesis reflects the association of financial structure with economic growth is disproportionally. The result does not support the economic theory that financial structure does not support industrial growth, efficient capital allocation and distribution of wealth.

Demirguc-Kunt and Levine (2001) design a new panel based data and compile a number of research studies on financial structure association with economic growth. The main finding of their work is that the financial system works more efficiently in developed countries and richer countries because they have more efficient stock markets as compare to banks. Levine (1996) analyzes the data of forty five developing and developed nations for the period 1986-1993. The result shows that in developed economy market based financial structure works efficiently while in developing countries bank based financial system is more dominant.

Levine and Zevros (1998) design the panel regressions for the different developed and developing countries for the period 1976 to 1993. The results show that market based financial system provides supporting role to bank based financial system. Market based financial system accelerates economic activities through liquidity provision and reduce the investment risk as a result corporation access capital by liquid equity matters. Beck and Levine (2004) also highlight that stock market (market base) as well as banks (bank base) both have significantly and economically affects the economic growth. The study of World Bank (2001) also concluded the similar result.

Arestis et al. (2001) provides the evidence for the advantage of bank based system as compare to market based system in developing countries. Study stated that economic performance decides which type of financial structure is required for the economic growth to the country. Demirguc-Kunt et al. (2001) draw a conclusion that economic structure settles the financial structure, countries with the knowledge based industries, financial assets and intensive Corporations which favor the market based financial system or vice versa. The outline of this empirical specifications and econometric techniques are used to determine a framework for evaluating the different propositions are taken in Section 1.

4. Specification and Econometric Methods

\[ \log(Q/L)_t = \alpha_0 + \alpha_1 \log(K/L)_t + \alpha_2 \log(FS)_t + \alpha_3 \log(FD)_t + \epsilon_t \]

Q denotes the output level, L denotes labor force, K denotes gross fixed capital formation, FS is for financial structure and FD is for financial development, \( \epsilon_t \) denotes white noise error term. Above equation is core empirical model of this study. FS (Financial Structure) means more domination of bank based financial structure. The above model looks like a generalized Cobb Douglas production function.

Our specification controls the financial development, financial structure, and capital stock. The main focus of this research is to find out the significance of financial structure. This study interested in the significance of the coefficient of financial structure (a2). If financial structure coefficient is significant this suggests that financial structure impacts economic growth. Positive and significant a2 indicated that market based financial system is dominant while the negative sign and significant a2 indicate that bank based financial system is necessary for economic growth. When sign of financial
structure is negative than estimator of financial development must be positive for economic growth or vice versa.

5. Data sources, Measurement and Description
Data of 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, 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) were obtained from the World Bank dataset.

Financial structure is measured as follows: (1) Structure activity (SA) is computed to take log of the ratio of stock market total value traded (volume of shares traded) to private credit and (2) Structure size is computed to take log the ratio of stock market capitalization to private credit. The structure activity highlighted the activity of stock market related to banking sector and other financial institutions. Stock market may be sizable because of large number of public Limited Corporations but lacks of trading activity cause to adverse affects the structure size. The structure size computes the size of stock market relative to the banking sector and other financial institutes. Financial structure is the weighted sum of both structure activity and structure size [Beck and Levine (2002) and Levine (2002)].

Financial development is measured as follows: (1) finance size (FZ) measure as the ratio of private credit ratio and stock market capitalization ratio and (2) finance activity (FA) is measured as log of private credit ratio and stock market value traded ratio. Financial development is aggregate sum of FZ and FA.

6. Econometric Methodology & Results
According to the available knowledge; this study is a first attempt to explore the link between financial structure and economic growth in case of small developing countries like Pakistan, thus empirically research finds the long run association among financial development, financial structure and economic growth and try to find which financial system (market based and bank based) is prevailing in Pakistan. After exploring the long run relationship among the variables, the next step of this study discuss the short run dynamic of the model with the help of ECM (Error Correction Model). The primary step is to find the long run relationship among the variables to check the stationary of the variables. For this purpose the study employed the ADF (Augmented Dickey Fuller) test and check that whether the variables are stationary at same level or not.

ADF Test General Equation as:

\[
\Delta X_t = \phi_0 + \phi_1 X_{t-1} + \sum_{j=1}^{k} \alpha_j \Delta X_{t-j} + \eta_t
\]

Table 1: Unit Root Estimation

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF test at Level</th>
<th>ADF test at 1st Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intercept and trend</td>
<td>Prob-Value</td>
</tr>
<tr>
<td>KP</td>
<td>1.61</td>
<td>0.075</td>
</tr>
<tr>
<td>YP</td>
<td>1.08</td>
<td>0.09</td>
</tr>
<tr>
<td>F^S</td>
<td>3.61</td>
<td>0.23</td>
</tr>
<tr>
<td>F^D</td>
<td>1.3</td>
<td>0.83</td>
</tr>
</tbody>
</table>

**Stationary at 5 % Significance Level**
The result shows in table-1 that all variables are non stationary at level. The stationary of variables are found at first difference level. Table-2 explains the result of Johansen co integration test among the economic growth, physical capital formation, financial structure, and financial development both trace value and maximum Eigen value are used to find out long run relationship among the variables.

Table 2: Johansen-Juselius cointegration

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Eigen Value</th>
<th>Trace test ($\lambda_{trace}$)</th>
<th>Prob. Value</th>
<th>Maximum eigen value test ($\lambda_{max}$)</th>
<th>Prob. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r \leq 0$</td>
<td>$r &gt; 0$</td>
<td>0.745</td>
<td>45.86</td>
<td>40.17</td>
<td>0.01</td>
</tr>
<tr>
<td>$r \leq 1$</td>
<td>$r &gt; 1$</td>
<td>0.492</td>
<td>28.5</td>
<td>24.27</td>
<td>0.04</td>
</tr>
<tr>
<td>$r \leq 2$</td>
<td>$r &gt; 2$</td>
<td>0.438</td>
<td>13.7</td>
<td>12.32</td>
<td>0.042</td>
</tr>
<tr>
<td>$r \leq 3$</td>
<td>$r &gt; 3$</td>
<td>0.069</td>
<td>4.89</td>
<td>4.13</td>
<td>0.031</td>
</tr>
</tbody>
</table>

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

The finding of Johansen cointegration exhibits in table-2. Both maximum trace value and maximum Eigen value indicated that null hypothesis ($r=0$) of no cointegration against the alternative hypothesis of cointegration is accepted. The trace value statistics is 45.86 which is above the 5% critical value 40.17. ‘p’ value also shows the same result. The null hypothesis of $r=1$ has rejected at 5% critical level as well as the null hypothesis of $r=3$ is also rejected, thus there are three co integration equation according to Johansen co integration were tested in the matrix vector of six co integration equations. So the annual data of 1988-2006 supports the proposition that there are long run cointegration among the economic growth, gross fixed capital formation, financial structure and financial development.

Table-3 depicts the result of ECM (Error Correction Model) and shows that long run cointegration leads to short run dynamic. Technically ECM measures the speed of adjustment, the coefficient of speed of adjustment indicates that how the disequilibrium in the model back to long run cointegration. The ECM hypothesized to be a strength impacting the related series to come back its long run association when these variables deviate from the deviation (Banerjee, 1994).

$$\Delta Y^t = \alpha + \beta_1 \Delta K^p + \beta_2 \Delta F^s + \beta_3 \Delta F^d + \beta_4 \Delta CE(-1) + \eta_t$$

Table 3: ECM Result

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

Significant level 5%

The result of ECM proves short run dynamics in the model which indicates the association among the economic growth, gross fixed capital formation, financial structure and financial development in long run as well as in short run phenomena. The estimated coefficient of lagged value of error term (speed of adjustment) is highly significant and has a negative sign. The value of lagged value of error term is -0.03 suggests very slow adjustment. Nearly 3 percent of disequilibrium is adjusted in given period.
Table 4: FMOLS Regression Result

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(KP)</td>
<td>0.26978</td>
<td>0.05783</td>
<td>4.66481</td>
<td>0.0003</td>
</tr>
<tr>
<td>D(FS)</td>
<td>0.03516</td>
<td>0.01818</td>
<td>2.43</td>
<td>0.0723</td>
</tr>
<tr>
<td>D(FD)</td>
<td>0.09359</td>
<td>0.01284</td>
<td>3.81</td>
<td>0.0204</td>
</tr>
<tr>
<td>C</td>
<td>4.61011</td>
<td>0.25008</td>
<td>18.43426</td>
<td>0</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.9272</td>
<td>F-statistic</td>
<td>129.12</td>
<td></td>
</tr>
</tbody>
</table>

Significant level 5%

Fully modified ordinary least square (FMOLS) result shows a positive and significant association among capital formation, financial structure and financial development. The low value of financial structure supports the bank based financial system dominated in Pakistan. Both financial structure and financial development are significant which support the past work of (Levine and Zervos (1996), and Beck et.al (2004) and Abdul Qayyum(2005).

7. Conclusion and Implications

This research study examined the most burning issue that whether financial development or financial structure substance economic activity and growth or not. Country should follow the bank based financial system or market based financial system. In this study the low value of financial structure coefficient supports the bank based financial system in Pakistan. Short run dynamic postulates that there is disequilibrium in the model and the coefficient values of error correction model are highly significant but very low which show that there is slow adjustment towards long run equilibrium. The finding of this research highlighted that financial structure and financial development are the main source of economic growth. The result reflects that Pakistan should gain if its financial sector grows efficiently but important role must be played by financial institutions to regulate and support financial structure and financial development.

The core message to the policymakers is that they should design the policy which promotes the capital market and remove the hurdles and strengthen the health and competitiveness of the banking system, increase accountability and autonomy of financial institutions, restructuring and recapitalization of financial institutions, improve regulation and supervision of all financial institutions that allowing more private banks and non-bank financial institutions to broaden the financial market and they perform their tasks bitterly to accelerate financial development and improve the financial structure that leads to increase economic growth of Pakistan.
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