Financial Liberalization and Economic Growth in Pakistan: Empirical Evidence from Co-integration Analysis

Salma Munir  
Visiting Lecturer, Department of Economics,  
Bahauddin Zakariya University, Multan, Pakistan

Imran Sharif Chaudhry  
Professor of Economics, Department of Economics,  
Bahauddin Zakariya University, Multan, Pakistan  
E-mail: imran@bzu.edu.pk

Mohammad Hanif Akhtar  
Chairman, Department of Finance and Accounting  
CBA, Prince Sultan University, Riyadh 11586, KSA  
Email: mhanif@psu.edu.sa

Abstract:  
The present study is an attempt to investigate the empirical linkages among economic growth and financial liberalization in Pakistan during 1972-2010 by using annual time series data. ADF unit root test is used to check the stationary of variables. Long run relationship is confirmed through Johansen co-integration test. VECM is employed to check short run dynamics among variables. The main data sources are various publications of state bank of Pakistan, economic survey of Pakistan and SBP annual reports. The empirical results show that there exists a positive relationship between financial liberalization and economic growth. Deposit rate has positive impact on economic growth while lending rate has negative impact on economic growth which is according to financial liberalization theory.

Keywords:  Financial liberalization; Economic growth; Co-integration; Deposit rate; Lending rate; Pakistan

I. Introduction

In the economic literature, there is a lot of discussion about the relationship between financial liberalization and economic growth. A strong and positive link between financial and economic growth is observed according to the literature. It has been argued that financial liberalization policies increase the efficiency in the production process and positively influence economic growth. This argument is observed to be true by the fact that countries with more open financial policies may grow faster than those with restricted financial policies. Positive impacts on economic growth are expected by an increasing openness and liberalization policies (Levine, 1997; McKinnon, 1973; Shaw, 1973 and World Bank, 1989).

The McKinnon-Shaw thesis of “financial repression” has provided the new way of thinking in the 1970s and 1980s. It has influenced the thinking of the International Monetary Fund (IMF) and the World Bank. This influence is observed from the financial policies used for stabilization purposes. The essential message of the McKinnon-Shaw
thesis is that a low or negative real rate of interest discourages savings and hence reduces the availability of loanable funds for investment, which in turn lowers the rate of economic growth. On the other hand, an increase in the real interest rate may encourage the savers to save more, which will enhance investment level.

Schumpeter (1911) argued that services provided by financial intermediaries are essential for economic development. Financial liberalization provides strength to financial markets and hence promotes economic growth (McKinnon, 1973 and Shaw, 1973). In recent years, many developing countries have implemented financial liberalization policies with the aim to improve the effectiveness of monetary policy through greater reliance on market forces. The main liberalization policies were aimed at liberalizing interest rates, reducing controls on credit, enhancing competition and efficiency in the financial system, strengthening the supervisory framework, and promoting the growth and deepening of financial markets.

Financial liberalization is basically a multidimensional and gradual process. It refers to reduction of any sort of regulations on the financial industry of a given country. According to financial liberalization theory, the macroeconomic stability and economic growth of countries can be enhanced by deregulating the domestic financial market and allowing the market to define the interest rate and controlling the capital. It includes official government policies that concentrate on deregulating credit controls, deregulating interest rate controls, removing entry barriers for foreign financial institutions, privatizing financial institutions and removing restrictions on foreign financial transactions. So, financial liberalization has both a domestic and foreign dimension. Moreover, it also concentrates on introducing or strengthening the price mechanism in the market, as well as improving the conditions for market competition.

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

Many developing countries including Pakistan have taken lot of steps towards financial liberalization to achieve higher level of growth. Now it is important to conduct an empirical research to determine the effectiveness of financial liberalization policies with regard to growth in a developing country like Pakistan. Examining the impact of financial liberalization policies is particularly important in the case of Pakistan, which followed restrictive policies till early 1990s. A low level of financial savings, investment and economic growth were the costs of these restrictive policies.

Pakistan is basically an underdeveloped country and facing a lot of problems like unstable political system, low levels of education, high unemployment, less efficient banking sector, rural based industries and less modernized technology. To achieve high economic growth, there are many social and economic policies which can be implemented and policy of financial liberalization is one of them.
An ardently desirous financial sector reform program was started at the end of 1989 in Pakistan. The major goals were (i) to liberalize interest rates by switching from an administered interest rate setting to a market-based interest rate determination; (ii) to enhance competition and efficiency in the financial system by recapitalizing and restructuring the nationalized commercial banks and allowing private banks to enter the market; (iii) to create and encourage the development of a secondary market for government securities; (iv) to reduce controls on credit by gradually eliminating directed and subsidized credit schemes; and (v) to improve prudential regulations.

According to the theory of financial liberalization, financial liberalization is supposed to increase economic growth. The aim of this study is to investigate the impact of financial liberalization on economic growth in Pakistan by using time series data on different financial indicators from 1973 to 2010.

The rest of this paper is organized as follows: next section will provide a review of related national and international literature. Section 3 will review the economy of Pakistan and analyze the performance of financial sector in Pakistan. Section 4 will introduce the data and methodology used in the thesis. Section 5 will provide the empirical results and section 6 will print out the conclusion of the paper along with the suggested policy implications.

II. Literature Review

A large body of theoretical and empirical literature provides Evidence of significant contributions of finance and economic growth. This section is devoted to review of some theoretical and empirical literature.

Theoretical review of Finance and Economic Growth

The importance of financial development for economic growth can be observed by the work of Bagehot (1873), Schumpeter (1911), Hicks (1969), Levine (1998), King and Levine (1993, 1993a), Rousseau and Wachtel (1998), Rajan and Zingales (1998), and Odedokun (1998). Schumpeter’s view is that a well-functioning financial system would induce technological innovation by identifying, selecting and funding those entrepreneurs that would be expected to successfully implement their products and productive processes. By studying 80 countries over the period 1960-89, King and Levine (1993a) found a highly significant relationship between the initial value of the ratio of liquid liabilities to GDP in 1960 and real per capita income.

Robinson (1952) claim that “where enterprise leads, finance follows” it is economic development which creates the demand for financial services not vice versa. Ram (1999) using data on 95 countries, found that the “empirical evidence does not support the view that financial development promotes economic growth”.

Levine (1997) argued that a financial system performs five basic tasks: (1) facilitate the trading, hedging, diversifying, and pooling of risk, (2) allocate resources, (3) monitor managers and exert corporate control, (4) mobilize savings, and (5) facilitate the exchange of goods and services. Kwan and Zhang (1998) show, by employing exogeneity tests for several high performing Asian countries, that financial deepening has a positive impact on output growth. Levine and Zervos (1998) utilized that data for 47 countries over the period 1976-93 and found that stock market liquidity and banking development
had a positive effect on economic growth, capital accumulation and productivity, even after controlling for various other important factors such as, fiscal policy, trade openness, education and political stability.

The financial repressionists, led by McKinnon (1973) and Shaw (1973) believe that financial liberalization in the form of an appropriate rate of return on Real cash balances is a vehicle of the rate of capital formation and promoting economic growth. According to this hypothesis, a low or negative real interest rate will discourage saving. This will reduce the availability of loan able funds for investment, which in turn lower the rate of economic growth. McKinnon-Shaw model shows that a more liberalized financial system will induce an increase in saving and investment and therefore, promote economic growth. They further assert that higher real interest rate helps channel the funds to the most productive enterprises and facilitate technological innovation and development.

Greenwood and Jovanovic (1990) argue that government intervention in banking system reduces the growth rate of economy. King and Levine (1993b) employ an endogenous growth model in which the financial intermediaries obtain information about the quality of individual projects that is not readily available to private investors and public markets. This information advantage enables financial intermediaries to fund innovative products and productive processes, thereby inducing economic growth [De La Fuente and Marin (1994)].

Lewis (1992) holds the view that raising interest rate on deposits held in the banking sector will have two beneficial effects, the saving effect and the investment effect. Raising the real return available to income – earners cause consumption to fall and the supply of savings to increase. This saving effect alleviates the chronic shortage of investment resources. An increase in the rate of return to deposits relative to returns on other assets will elicit an investment response as wealth-holders move out of the other assets into deposits in the banking system.

**Empirical literature review:**

There is a considerable body of empirical and theoretical literature that postulates a positive relationship between financial sector development and economic growth, using time series analysis. The results have been largely mixed.

Ozdemir and Erbil (2008) investigated the effect of financial liberalization on long run per capita and economic growth in a sample of 10 new EU member countries and Turkey by using quarterly macro panel data. Results showed a positive and significant relation between financial liberalization and economic growth while trade openness is negatively associated with economic growth. The study also assured that rapid openness especially in economies which are in need for a major structural change and time for human capital development can have adverse effects on the performance of the economy.

Burgoon et al. (2008) suggested that political variables represent the domestic and international dimensions of both the input and output phases of financial liberalization mater significantly.
Basher and Khan (2007) concluded that poor country such as Bangladesh would not be able to get benefit from liberalized policies if basic infrastructure and good governance is not available.

Banon (2010) investigated the impact of financial liberalization on economic growth and also examined the determinants of economic growth in Iran. The results suggested that financial intermediation, capital, R & D and financial liberalization have positive and statistically significant impact on economic growth while reserve requirement ratio has negative but statistically insignificant impact on economic growth. Exports were found to have positive but statistically insignificant impact on economic growth. Important findings were about the role of labor. Labor has negative impact on economic growth in case of Iran which suggested that labor force in Iran was not very much productive.

Andriesz and Pilbeam (2003) presented a relationship between financial and stock market liberalization and economic activity in Poland. The results indicated that the causality direction runs from all the financial development indicators to industrial production while relationship between financial development and economic growth is bi-directional for the cases of depth and broader definition of money M2. The study supported supply-leading hypothesis. Finally, finance leads to growth in long run were observed in Poland.

Rousseau and Wachtel (2009) checked the finance-growth relationship and re-examined the core cross-country panel result and found that the impact of financial deepening on growth is statistically significant and positive for developed countries, insignificant and positive for developing countries while negative and insignificant for less developed countries.

Lee and Shin (2007) explored the effect of financial liberalization on economic growth by combining the results of panel model with probit model. According to study, the net effect on growth is larger in the crisis experienced country group than in overall sample group.

Blackburn and Puccio (2005) studied the effect of international financial integration on economic development when the governance is involved in corruption. According to them, financial liberalization is good for development if governance is good, corruption and poverty can coexist persistently unless fundamental reforms take place.

Shabbir (1997) analyzed the relationship between financial intermediation and economic growth and found that simultaneity between financial intermediation and economic growth is relatively more pronounced for advanced country group and the greater degree of financial intermediation leads to higher growth in output per capita.

Ranciere et al. (2006) presented a new empirical decomposition of the effects of financial liberalization on economic growth and on the incidence of crisis. Finally it was observed that financial liberalization has a direct positive effect on per capita GDP growth while the incidence of twin crisis has negative impact on growth. Financial liberalization significantly increases the probability of twin crisis because of high risk
taking and reduced screening of projects by banks. Crisis includes banking crisis and currency crisis.

Sulaiman (2010) conducted a research to investigate the long run association among financial liberalization, international trade openness, real interest rate and economic growth in case of Pakistan’s economy. Results showed that the impact of financial sector development is greater than effectiveness of openness. The capacity of financial intermediaries to supply funds is raised by increase in financial development. A positive and significant effect of real interest rate on real GDP growth and FSDI was observed.

Wadud (2009) reported long run causal relationship between financial development and economic growth for South Asian countries (India, Pakistan and Bangladesh) for the period 1976-2008.

Khalid (2000) attempted to examine the impact of financial liberalization on saving, investment and economic growth of Pakistan to study the benefits from financial liberalization. Results showed that financial liberalization policies have little effect to help the economy. After fifteen years of liberalized policies, most of the indicators of the financial liberalization did not show any significant impact on saving, investment or growth, but recent developments showed some positive effects on Pakistan’s economy.

Chaudhry et al. (2012) examined the impact of financial liberalization indicator on the macroeconomic performance in Pakistan by using time series econometric methodology. The findings revealed the long run and short run relationship between the indicators of financial liberalization and economic growth and investment in Pakistan.

III. Financial Liberalization from Pakistan’s Perspective

Economic Development in Pakistan

After 1947, Pakistan’s economy was under uneven development due to violence and refugee problems. Economic performance was very poor in first decade. After 1960, economic performance was improved and many development policies were undertaken to maintain improved GDP level at 5-6% with cyclical downturns. Yet Pakistan was facing many problems which were creating hindrance in the way of development. Basic reasons of the problems were political instability, high expenditures on defense, high population and ignorance of social sector (education, health, entertainment etc.). Trade sector was liberalized but financial sector was under government supervision. Pakistan’s economy was agrarian so agriculture sector was preferred and industrial sector was completely ignored. Pakistan could not achieve high growth rates till first four decades after independence due to political instability. Every development plan was demolished due to rapid change in government.
During 1990, terrorism, lawlessness and political instability created many economic and financial difficulties. Some economic factors were also responsible for decline in growth. These factors were financial resource limitation, fiscal imbalance, and inadequate infrastructure, declining export demand, declining foreign reserves and increasing international debt.

Financial Sector of Pakistan

A sound and well functioning financial sector is necessary to support economic growth of a country. Pakistan has a wide range of financial institutions; specialized banks, commercial banks, National savings schemes, development finance institutions, investment Banks, stock exchanges, insurance companies, corporate brokerage houses, discount houses, microfinance Institutions, leasing companies and Islamic banks. A whole range of products and services both on the Assets and liabilities side are offered by these institutions.

Before 1971, the primary focus of the Government was on developing commercial banks in the private sector and creating development institutions backed by Government. The private sector development, however, almost closed during the period 1971-1990, due to the nationalization policy of the Government. During this period, the banking sector was under the Government’s control. Since 1990s, the Government has followed more liberal and market-based reforms.

The financial system in Pakistan remains largely undiversified and inefficient, while the status of financial institutions is not batter due to large number of loss-incurring branches, poor governance with low quality banking services, high intermediation costs resulting from overstaffing, accumulation of non-performing loans and inadequate capitalization. In order to remove these inefficiencies, the government of Pakistan undertook financial reforms as part of wider process of structural adjustment programs (SAP) in the early 1990’s to strengthen its financial system and to provide an adequate macroeconomic environment. The adjustment programs describe a series of liberalization and deregulation policies encompassing most of the economic activities including reforms in the financial sector.

Basically these reforms were under taken due to some reasons and these reasons were i) to reduce the fragmentation of the markets and to develop capital markets, ii) to strengthen the health and competitiveness of banking system by recapitalizing and restructuring the nationalized commercial banks (NCBs) increasing their autonomy and accountability, iii) to create an environment for financial institutions and markets to improve their governance and supervision, iv) to adopt system of monetary exchange and credit management for better allocation of resources, v) to avoid bank insolvency due to interest rate controls, high reserve requirements and distortions in the tax system, vi) to create and encourage the development of secondary market for government securities, vii) to improve the prudential regulations and supervision of all financial institutions and viii) to allow free entry of private banks in the financial market.

Financial Reforms in Pakistan

In the early 1990s, financial sector changes were started under structural adjustment programs (SAP). Financial sector was very restricted in Pakistan. To liberalize this sector some reforms were introduced and these reforms were: Public
banking was transferred into non-public banking. Foreign exchange system and equity markets became more liberalized. Foreign investors can easily inflow and outflow their investments, profits etc. Government interference was reduced. More efficient public debt system was established. Rate of interest was raised to allocate credit in response to market signals. Nationalized commercial banks were recapitalized and restructured. Regulations and supervisions of financial system were improved. Private Banks were allowed to enter in market. Interest rate was liberalized. Monetary policy was conducted more efficiently through greater reliance on indirect instruments. The management of non-performing loans was improved and Bank liabilities were reduced and new capital was invested.

The following developments in the economic and social sector have been identified after liberalization of markets and implementation of economic reforms: i) High GDP growth resulting from output and sales growth; ii) Monetary stability, iii) Developments of money and security markets, iv) Improvements in the standard of living and poverty reduction (based on economic growth) and v) Development and reinforcement of the banking sector and enhancement of its role in the social and economic development of the country.

However, the economic development has been slowed down since 2008, as the macroeconomic situation was not so much good due to adverse security developments, large increase in the prices of some commodities such as oil and food, global financial turmoil, and national political and security issues.

IV. Data and Methodology
Data sources
As discussed earlier, the purpose of the study is to investigate empirically the impact of financial liberalization on economic growth in Pakistan. Empirically it is not easy and simple to calculate the magnitude of financial liberalization and to measure its size. There are many variables and proxies which are used to measure the financial liberalization globally, some significant variables (which are widely accepted indicators) used in this study are trade openness, deposit rate, lending rate and broad money (M2). Employment, total investment and foreign direct investment (FDI) are used as control variables in this analysis. Economic growth is measured by gross domestic product (GDP). An annual time series data over a sample period from 1972-2010 is employed to serve the purpose. The main data sources are various publications of state bank of Pakistan, economic survey of Pakistan and SBP annual reports.

Methodology
The major tool for investigation of economic models is ordinary least squares regression (OLS) in time series econometrics. OLS is commonly used for econometric analysis but the problem is that it requires that the used variables to be stationery. However in real life, most of the economic series are not stationary. Augmented Dickey Fuller (ADF) test is employed to test for stationary.

Unit Root Tests
A stationary series is known to have a constant mean, constant variance and constant auto-covariance for each lag and that is why the notion of non-stationary is
important. If series are non-stationary, then differences should be taken until series will be stationary. However, there is possibility of losing the long-run information by taking differences for making series stationary. Therefore, it is preferable to use the variables in their original orders of integration (Vuranok, 2009). Augmented Dickey Fuller is a test which is provided by E-Views software to find the order of integration of the variables. The ADF test is used to decide if the series are stationary or not and can be set as:

\[ Y_t = Y_0 + \alpha t + \gamma Y_{t-1} + \mu_t \]

\[ Y_t = Y_t - Y_{t-1} \]

Where,

- \( Y_t \): dependant variable
- \( Y_0 \): constant term
- \( \alpha \): trend variable
- \( \mu_t \): stochastic disturbance term

The related hypothesis are:

- \( H_0: \gamma = 0 \) (\( Y_t \) is non-stationary)
- \( H_1: \gamma \neq 0 \) (\( Y_t \) is not non-stationary)

Co-integration Test

Mostly economic series are not stationer at level so it is not possible to get accurate results by using Ordinary Least Square method (OLS). If the economic series have become non-stationary at level and have same integration order then co-integration approach is used. This approach is used to check significance of long run relationship among variables. Before applying this approach, the optimal lag length is required. The optimal lag length is determined by the Akaike information criterion (AIC) or Schwartz Bayesian criterion (SBC).

Vector Error Correction Model

For short run relationship Error Correction Model (ECM) is employed. The Vector Error Correction Model (VECM) is most convenient model used to check the short run relationship among variables.

V. An Empirical Analysis

a. Elementary Data Analysis

The data set consists of thirty eight years of annual observations from 1972 to 2010 on selected variables. Important statistics of the data are presented in table 1. Table shows the average values of all variables with their standard deviations. Skewness is a measure of lack of symmetry. Variables like LnTINV, LnM2 and DR are left skewed and rests of the variables are rightly skewed. Kurtosis is a measure of tallness or flatness relative to normal distribution. LnGDP, EMPL, LnTINV, LDR and LnM2 are platykurtic (fat or short tailed) while other variables are leptokurtic (long-tailed or higher peak). Jarque-Bera test of normality suggests that residuals are not normally distributed for FDI as its value of probability is 0.00 while residuals of all other variables are normally distributed.
Table 1: Elementary Data Analysis of Selected Variables

<table>
<thead>
<tr>
<th></th>
<th>EMPL</th>
<th>LNTINV</th>
<th>OPP</th>
<th>LDR</th>
<th>LNM2</th>
<th>DR</th>
<th>FDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>32.54</td>
<td>12.19</td>
<td>0.34</td>
<td>10.19</td>
<td>13.01</td>
<td>5.82</td>
<td>0.85</td>
</tr>
<tr>
<td>Median</td>
<td>30.62</td>
<td>12.29</td>
<td>0.34</td>
<td>9.39</td>
<td>13.07</td>
<td>6.04</td>
<td>0.58</td>
</tr>
<tr>
<td>Maximum</td>
<td>53.52</td>
<td>14.70</td>
<td>0.48</td>
<td>15.64</td>
<td>15.57</td>
<td>10.66</td>
<td>3.78</td>
</tr>
<tr>
<td>Minimum</td>
<td>18.96</td>
<td>9.06</td>
<td>0.26</td>
<td>5.34</td>
<td>10.21</td>
<td>1.50</td>
<td>0.07</td>
</tr>
<tr>
<td>Std. dev.</td>
<td>9.51</td>
<td>1.58</td>
<td>0.046</td>
<td>3.01</td>
<td>1.61</td>
<td>1.86</td>
<td>0.91</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.62</td>
<td>-0.13</td>
<td>0.64</td>
<td>0.22</td>
<td>-0.101</td>
<td>-0.016</td>
<td>1.87</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>2.47</td>
<td>2.04</td>
<td>3.43</td>
<td>1.71</td>
<td>1.85</td>
<td>3.63</td>
<td>5.91</td>
</tr>
<tr>
<td>Jarque Bera</td>
<td>2.85</td>
<td>1.56</td>
<td>2.89</td>
<td>2.98</td>
<td>2.14</td>
<td>0.62</td>
<td>35.48</td>
</tr>
<tr>
<td>Probability</td>
<td>0.24</td>
<td>0.46</td>
<td>0.24</td>
<td>0.22</td>
<td>0.34</td>
<td>0.73</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Sources: Based on data used in this study

b. Correlation Matrix:
An important issue is degree of association among variables. Degree of association among variables is an econometric issue which shows the correlation between the independent variables with each other and also the correlation between the dependent variable with independent variable. A reason for high degree of association among variables, especially in time series data, may be that the independent variables included in the model share a common trend, that is they all increase or decrease over time.

This degree of relationship or association can be checked through correlation matrix of the variables, which is given table 2:

Table 2: Correlation Matrix of the Variables

<table>
<thead>
<tr>
<th></th>
<th>LnGDP</th>
<th>EMPL</th>
<th>LNTINV</th>
<th>OPP</th>
<th>LDR</th>
<th>LNM2</th>
<th>DR</th>
<th>FDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnGDP</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMPL</td>
<td>0.96</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNTINV</td>
<td>0.99</td>
<td>0.96</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPP</td>
<td>0.59</td>
<td>0.63</td>
<td>0.57</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDR</td>
<td>0.45</td>
<td>0.42</td>
<td>0.47</td>
<td>0.04</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNM2</td>
<td>0.99</td>
<td>0.96</td>
<td>0.99</td>
<td>0.58</td>
<td>0.47</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>-0.10</td>
<td>-0.17</td>
<td>-0.11</td>
<td>-0.14</td>
<td>-0.02</td>
<td>-0.13</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>0.77</td>
<td>0.82</td>
<td>0.78</td>
<td>0.72</td>
<td>0.25</td>
<td>0.77</td>
<td>-0.19</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Authors’ Calculations from E-Views

Results of Unit Root Test
According to Brooks (2002), the series can be stationary if calculated t-statistic in absolute terms is greater than MacKinnon critical values. Its significance level is determined by comparing the t-statistic value with each level of MacKinnon critical values. By applying ADF test, the results are given in following table:
Table 3: Augmented Dickey-Fuller Test (results) ADF with Intercept

<table>
<thead>
<tr>
<th>Variables</th>
<th>level</th>
<th>1st difference</th>
<th>2nd difference</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPL</td>
<td>2.46</td>
<td>-4.28</td>
<td>----</td>
<td>I(1)</td>
</tr>
<tr>
<td>LnTINV</td>
<td>-1.51</td>
<td>-4.76</td>
<td>----</td>
<td>I(1)</td>
</tr>
<tr>
<td>OPP</td>
<td>-1.73</td>
<td>-4.91</td>
<td>----</td>
<td>I(1)</td>
</tr>
<tr>
<td>LDR</td>
<td>-2.62</td>
<td>-4.65</td>
<td>----</td>
<td>I(1)</td>
</tr>
<tr>
<td>LnM2</td>
<td>-1.19</td>
<td>-3.37</td>
<td>----</td>
<td>I(1)</td>
</tr>
<tr>
<td>DR</td>
<td>-2.89</td>
<td>-4.54</td>
<td>----</td>
<td>I(1)</td>
</tr>
<tr>
<td>FDI</td>
<td>-2.61</td>
<td>-3.57</td>
<td>----</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Sources: Author’s calculation from E-views

Unit root test result showed that all variables are stationer at first difference so we cannot apply the OLS regression technique on this data. Now the next step is to determine the optimal lag length. Model is estimated for large number of lags and then reduces down to check for the optimal value of Akaike information criterion (AIC) and Schwarz criterion (SBC). By doing this; optimal lag length is found which is lag 1.

Co-integration Results

To determine the sign and magnitude of the long run relationships, the co-integrating vectors have been normalized on LnGDP. The results for the co-integration tests are presented in table 4. It is concluded that there exists five co-integration relationships. Table 5 shows the results regarding the coefficients of β matrices in terms of normalized co-integrating coefficients of 1st equation.

Table 4: Unrestricted Co-integration Rank Test (Maximum Eigen Value)

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>Likelihood Ratio</th>
<th>5% Critical Value</th>
<th>1% Critical Value</th>
<th>Hypothesized No. of CE(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.86</td>
<td>250.29</td>
<td>156.00</td>
<td>168.36</td>
<td>None **</td>
</tr>
<tr>
<td>0.78</td>
<td>179.75</td>
<td>124.24</td>
<td>133.57</td>
<td>At most 1 **</td>
</tr>
<tr>
<td>0.71</td>
<td>125.08</td>
<td>94.15</td>
<td>103.18</td>
<td>At most 2 **</td>
</tr>
<tr>
<td>0.56</td>
<td>80.58</td>
<td>68.52</td>
<td>76.07</td>
<td>At most 3 **</td>
</tr>
<tr>
<td>0.53</td>
<td>50.78</td>
<td>47.21</td>
<td>54.46</td>
<td>At most 4 *</td>
</tr>
<tr>
<td>0.31</td>
<td>23.72</td>
<td>29.68</td>
<td>35.65</td>
<td>At most 5</td>
</tr>
<tr>
<td>0.23</td>
<td>10.44</td>
<td>15.41</td>
<td>20.04</td>
<td>At most 6</td>
</tr>
<tr>
<td>0.02</td>
<td>0.81</td>
<td>3.76</td>
<td>6.65</td>
<td>At most 7</td>
</tr>
</tbody>
</table>

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 5 co-integrating equation(s) at 5% significance level
Table 5: Normalized Co-integrating Coefficients: 1 Co-integrating Equation(s)  
Dependent variable: LnGDP

<table>
<thead>
<tr>
<th>Variables</th>
<th>coefficient</th>
<th>std. error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPL</td>
<td>-0.024</td>
<td>0.005</td>
<td>4.76</td>
</tr>
<tr>
<td>LnTINV</td>
<td>0.245</td>
<td>0.09</td>
<td>2.68</td>
</tr>
<tr>
<td>DR</td>
<td>0.024</td>
<td>0.005</td>
<td>5.04</td>
</tr>
<tr>
<td>LDR</td>
<td>-0.005</td>
<td>0.003</td>
<td>2.06</td>
</tr>
<tr>
<td>LnM2</td>
<td>0.225</td>
<td>0.08</td>
<td>2.78</td>
</tr>
<tr>
<td>OPP</td>
<td>-1.47</td>
<td>0.36</td>
<td>4.04</td>
</tr>
<tr>
<td>FDI</td>
<td>0.149</td>
<td>0.032</td>
<td>4.61</td>
</tr>
<tr>
<td>C</td>
<td>9.81</td>
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<td></td>
</tr>
</tbody>
</table>

There exists long run relationship among all variables. All variables are statistically significant. Employment has negative impact on economic growth because of inefficiency and less productivity of labor force in Pakistan. Coefficient of LnTINV shows elasticity of TINV towards GDP. 1% increase in TINV leads to 2.4% increase in GDP. Deposit rate and M2 (money supply) both have positive impact on economic growth which is true according to financial liberalization theory. 1% increase in DR leads to 4.6% increase in economic growth. Coefficient of LnM2 also shows elasticity of M2 towards economic growth according to results, M2 has highly elastic relationship with economic growth. Lending rate has negative impact on economic growth which is consistent with financial liberalization literature. Trade openness has negative impact on economic growth which is not theoretically accepted but Pakistan is underdeveloped country and facing lot of social and economic problems. Due to some reasons like political instability, corruption, favoritism, smuggling and terrorism, there is no proper implementation of policies regarding trade which in turn leads to negative impact on economic growth. FDI has positive impact on economic growth.

Vector Error Correction Model results

After observing long run association among variables, it is also possible to explore the short run relationship among variables by using ECM framework. Here the Vector Error Correction Model (VECM) is employed to capture the short run dynamics and long run relationships among variables. Table 6 gives the short run relationship among variables and the set of short run coefficients in the VECM which relates the changes in LnGDP to changes in other variables and error term in the lagged periods.

Table 6: VECM results for short run dynamics

| Dependent variable LnGDP |
|--------------------------|--------------------------|
| Independent variable     | coefficient | t-statistic |  
| Constant                 | 0.045        | 3.92        |
| DLNGDP(-1))              | 0.23         | 1.44        |
| DEMPL(-1))               | -0.002       | -0.92       |
| DLNTINV(-1))             | -0.019       | -0.48       |
| D(DR(-1))                | 0.0003       | 0.11        |
| D(LDR(-1))               | -0.003       | -1.92       |
| D(LNM2(-1))              | -0.01        | -0.16       |
| D(OPP(-1))               | 0.157        | 1.38        |
| D(FDI(-1))               | 0.013        | 1.78        |
| CointEq1                 | -0.014       | -0.32       |

R-squared 0.48
Adj. R-squared 0.30
F-statistic 2.68
Empirical results showed that employment and investment both have negative impact on economic growth which is not significant. Theory states that investment has positive impact on economic growth but as we know, Pakistan is an underdeveloped country passing through lot of difficulties. Sometime loans for investment are provided to unhealthy and less productive projects due to favoritism, lawlessness and careless behaviors, which influence the economic growth negatively. Deposit rate, trade openness and foreign direct investment have positive impact on economic growth while landing rate has negative impact on growth which is significant. The coefficient of CointEq1 indicates the speed of adjustment and here 1.4% adjustment is observed. It means 1.4% of disequilibrium is corrected each year.

VI. Conclusion and some policy implications

According to this study, most of the financial liberalization indicators show positive impact on economic growth. All the discussions and empirical results of this study confirm that the financial liberalization policies have played a very effective role in macroeconomic performance of Pakistan and also played a key role in boosting economic growth. This study provides us the empirical evidence on the relationship between financial liberalization and economic growth. Main indicators of financial liberalization are deposit rate and lending rate. The empirical analysis is carried out by using time series data from 1972-2010. According to empirical results, the unit root test based on ADF indicates that all variables are non-stationary at their level form and become stationary at their first difference, since the variables are integrated of same order, I(1).

Johansen’s co-integration test indicates that there exists a long run relationship between economic growth and financial liberalization indicators. Deposit rate shows positive impact on economic growth while lending rate shows negative impact on economic growth and both have statistically significant impact on economic growth. The results of short run dynamics by using VECM suggest that trade openness and deposit rate have positive impact on economic growth while FDI and lending rate have negative impact on economic growth. After this discussion, it is important to understand that what should be done to make all financial policies successful. In short, Pakistan has made a lot of progress in financial sector by adopting lot of financial policies, but, at the same time, there are lot of dangerous challenges ahead and a very complex action is needed to meet these challenges so all policies should be implemented actively. To achieve high growth levels and benefits of financial liberalization policies, it is very necessary to implement policies with credibility and also provide conducive environment to get required results. Political system, infrastructure, social evils and lot of other factors can be a cause of the failure of implemented policies in developing countries like Pakistan.

References


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