

Full Length Research Paper

How development of finance contributes to poverty alleviation and growth: A time series application for Pakistan

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There is a well-recognized debate that financial sector development constitutes an important mechanism for long run economic growth. Through effective mobilization of domestic savings for productive investment, it also plays a crucial role for alleviation of poverty especially for developing nations. This study examines the cointegration and causality between development of financial sector, indicators of economic growth and poverty reduction in Pakistan during the time period ranging over 1975 to 2010. In this regard, annual time series data of different support variables that is, labor force and investment along with target indicators were rendered in the model for the assessment of long run relationship. Moreover, properties of the data were properly diagnosed prior to application of cointegration and causality approaches. The cointegration test finds the existence of long run equilibrium relationship between financial sector development, economic growth and poverty reduction. The multivariate VECM (Vector Error Correction Method) causality test at the end confirms the presence of unidirectional causality from poverty reduction to economic growth, economic growth to finance development, financial development to poverty reduction and economic growth to poverty reduction. It also finds no causality between finance development and economic growth, and poverty reduction and finance development. Major findings can be summarized in a way that economic growth is the policy variable to accelerate financial sector development and both could be used as the policy variable to reduce poverty in the economy.

Key words: Financial sector development, economic growth, poverty reduction.

INTRODUCTION

Financial liberalization is a multidimensional term widely used in literature. A comprehensive definition states that, it is referred to the deregulation of financial sector, stock market and foreign sector capital account. Broadly speaking financial sector of a country is fully liberalized if

any of these two sectors are fully liberalized and third is partially liberalized while partial liberalization of a country is a situation when its two sectors are partially liberalized (Kaminsky and Schmukler, 2003).

Abbreviations: GDP, Gross domestic growth; ARDL, auto regressive distributed lag modeling; PBC, Pakistan Banking Council; SBP, State Bank of Pakistan; IMF, International Monetary Fund; WB, World Bank; MDGs, millennium development goal; IFS, International Financial Statistics; WDI, World Development Indicator; ADF, Augmented Dickey Fuller.

It is the prime goal of all the developing countries to cope with the increasing poverty and achieving the millennium development goal of reducing the poverty to halve by the 2015 (Green et al., 2006). In this regard least developed countries (LDCs) focus on their financial sector contribution to achieve the goal through savings mobilization, proper allocation of resources to better investment activities, facilitating transactions and promoting trade activities (Zhaung et al., 2009). Many developing

countries adopted financial liberalization policies during 1980s and onward by firstly, removing the restrictions from the internal financial institutions. The arguments in favor of this liberalization policy stated that, mark up and interest rate determination in liberalized market should be based on market driven forces, so that to achieve higher pace of economic growth, financial liberalization enhanced through increasing interest rate would helps to allocate funds efficiently along with attraction of savings to bank credit. A market based financial sector enables the economy to allocate funds efficiently and establishes a positive relationship between economic growth and finance. A few important studies like: Goldsmith (1969), Fry (1978), Shaw (1973), Smith (1991) and King (1993), support the McKinnon and Shaw hypothesis regarding a positive relationship between economic growth and financial development. However, Lucas and Robinson (1952) and Stern (1990) concluded with no evidence of robust and positive link between development of financial sector and real sector growth of the economy. On the other hand, a few more studies argued that, there are several conditions of macroeconomic stability and structural change that must be met by developing countries to ensure the success of financial liberalization. Solow (1956) presented the view that a number of countries share some common characteristics; however, each country possesses some unique distinctive features as well. Thus, there is an evolution in the economic behavior of countries over time, and a dynamic model is therefore required to explain the relationship between finance and growth. Development of financial sector catalyzes the process of poverty alleviation through its impact on economic growth. The outcomes depend upon the strength of link between finance and growth and then between growth and poverty. A financially repressed economy is characterized by administered nominal interest rate, and under setting of real interest rate, this low interest rate causes current consumption to be high and saving to be low. Loan rate ceiling results in less productive investment due to low returns on it. On the other hand, a financially liberalized economy ensures the high interest rate resulting into flow of resources to better investment activities and hence economic growth which in turn affects negatively on poverty.

Objectives and organization of the study

This study is aimed to find the nature of link between financial sector development, economic growth and poverty alleviation along with finding the direction of causality between them, considering the case of Pakistan.

REVIEW OF PREVIOUS LITERATURE

Green et al. (2006) studied the relationship between

small enterprise financing and poverty reduction. It also found the ways through which finance affects economic growth for a sample of developing countries. This study highlighted different priorities regarding the research on small enterprise financing and its linkage with poverty reduction. It provided useful information for all the researchers who are engaged in poverty reduction. A similar case study for Ghana has been conducted by Quartey (2008), who examined the link between financial sector developments, poverty eradication through mobilization of resources. Empirical analysis concluded that financial institutions for that particular case have not channelized the savings to pro-poor growth sectors of economy, and factors found to be responsible for this was deficit financing, higher rate of defaults, lack of proper business management and projects along with no collateral available.

There are various channels through which financial development affects poverty. Two major channels have been highlighted by Jeanneney and Kpodar (2008), these channels affect directly through McKinnon's effect and indirectly through its impact on economic growth. They used a sample of developing countries with time series data ranging over 1966 to 2000. Major findings suggested that poor people get the opportunity of savings and hence they get benefit from banking sectors for transactions. Overall, this study concluded that benefits from financial sector development are more than its cost borne by them. Adam (2011) explored the empirical relation between financial liberalization and poverty reduction for Ghana. Financial liberalization and financial development are two terms which are interchangeably used in the literature, so Adam (2011) used data set over 1970 to 2007 and applied cointegration and causality tests to confirm the relation to explore the link between liberalization of financial sector and poverty reduction. The study found a positive correlation between growth and welfare, and identified credit as an effective way to eradicate poverty, but with the condition that, policy environment is in favor of stability.

Arestis and Caner (2004) analyzed how financial sector is helpful to alleviate the poverty. This theoretical study evaluated the channels through which finance and poverty are linked and found that liberalization of financial sector must be pursued with an aim to eradicate poverty so that poor may get benefits of it, in other case the liberalization of market will provide incentives and benefits to those who are strong enough strategically (Arestis and Caner, 2004). Similarly for India Inoui and Hamori (2010) studied how financial sector development affects poverty reduction. This study utilized panel data set at state level to empirically test the relationship. Time period ranging over 1973 to 2004; furthermore, it applied dynamic generalized method of moments and found that development of financial sector helps to alleviate poverty through its channel of economic growth.

Badr (2005) studied the causality relation between

financial sector liberalization and economic growth. Using time series data over the period 1960 to 2001 for Egypt, the study applied Granger causality technique to identify the directions through which finance affects economic growth. Major findings of the study include that financial sector development causes economic growth because it causes investment to be high. Hence it concluded that raising the financial sector deepening can be a major channel to enhance savings and economic growth in long run. Ma and Jalil (2008) checked the effects of financial liberalization and financial deregulation on the growth rate of real gross domestic growth (GDP) per capita for the case of Pakistan and China. The study used framework of auto regressive distributed lag modeling (ARDL) and two sample data sets, sample I ranging from 1960 to 2006 and sample II from 1979 to 2006. By using liquid liabilities and credit to private sector as financial development indicator this study concluded an evidence a of significant and robust link between real growth rate and liquid liabilities' for China, while a negative relation was found between credit to private sector and growth of real GDP per capita for the case of Pakistan.

Testa (2005) investigated the long run relationship between economic growth and financial development for Japan and US using Engel Granger and Johansson cointegration method. The study used quarterly data ranging from 1957 to 2003 for Japan and US economy and concluded that in case of Japan, economic growth is determined by the investment share in long run and for US case, there is no suitable economic interpretation and the results seemed to be inconclusive. Shrestha and Chowdhry (2005) tested the existence of supply leading hypotheses using the interest rate, investment and savings for Nepal. The study used annual data set over 1970 to 2003 and applied ARDL modeling approach. Major conclusion included that, there is strong and robust effect of real interest rate on savings, and the study also strongly supported the MacKinnon and Shaw financial liberalization hypothesis. A very important policy implication which can be inferred from this study is that, saving and investment rate can be maintained by taking real interest rate as a policy instrument.

Structure of financial sector and poverty trends in Pakistan

Most commonly the poverty is a phenomenon which is defined as number of headcount whose earnings and income lie below the defined poverty line. However, it is a multidimensional term which cannot be defined only by the head count ratios. Another measure is 'Poverty of opportunity' index, which is a composite of deprivation in three vivacious dimensions, health, education and income is quite useful in this regard. This index captures both present as well as future deprivation; many more people are denied basic human opportunities than are denied income. Whereas about one-third of Pakistan's

population is below the poverty line if poverty is defined fairly normally, nearly one-half suffer from serious deprivation of the most basic opportunities of life (Syed, 1999).

Till the early 1980s the financial sector of Pakistan could be described as a classic example of "financial repression", marked with directed credit, subsidized credit, and interest rates were set by government and were negative in real terms and banking sector was nationalized. In this era, the objective of government was to support macro-economic policies. By the end of 1980s it became clear that the goals to be achieved by nationalization were not being met because financial sector became inefficient, private sector crowded out, quality of assets was deteriorated. Pakistan Banking Council (PBC) was set up to control the activities of nationalized banks. Banking sector was not performing at its best due to lack of healthy competition. Supervisory system was weak due to presence of multiple supervisory authorities like State Bank of Pakistan (SBP) and the PBC, the process of nationalization which started in 1974 greatly affected the performance of banking sector and reduced private sector participation.

When government analyzed the performance of nationalized institutions and realized that goals have not been met so they revised the nationalization policy in order to encourage competition and private sector participation on the advice and financial assistance of international financial agencies like the International Monetary Fund (IMF) and World Bank (WB) in the late 1980s. Pakistan initiated the financial sector reforms under broader macro-economic structural adjustment programme in the early 1990s. The objectives of this comprehensive reform process was to enhance competition and making financial industry more transparent and competitive by privatizing nationalized commercial banks along with liberalization of interest rate and credit ceilings. All the financial sector reforms were adopted to achieve the millennium development goal (MDGs) of reducing the poverty. As the financial sector is developed, it allocates credit to different sectors not on priority basis so this credit is used for productive investment projects. It positively contributes to economic growth and also creates employment opportunities.

METHODS, DATA AND VARIABLES' DESCRIPTION

Data and variables

Annual time series data set ranging over the period 1975 to 2010 have been utilized to find the link between finance growth and poverty reduction. The variables include real GDP, as an indicator of economic growth measured by taking the ratio of nominal GDP and Consumer Price Index (CPI). Financial development indicator is ratio of banking credit to private sector to GDP; investment is measured by taking the ratio of gross fixed capital formation to GDP, while for poverty this study has taken a poverty headcount ratio which is measured by taking the percentage of people living below the poverty line. Data have been taken by yearbook of

Table 1. Results for ADF test of unit roots.

Variable	Level	First difference	Order of Integration
lnY _t	0.3973	-5.3540*	I(1)
lnPY	-0.270	-6.2386*	I(1)
lnFSD	-2.521	-4.8709*	I(1)
lnINV _t	-0.3618	-5.1788*	I(1)

* indicates significance at 5%.

International Financial Statistics (IFS) of various issues, Pakistan Economic Survey, World Development Indicator (WDI) and from official website of State SBP. Methodology: the study applied

granger causality test to find the direction of causality. Model to estimate can be written as:

$$\begin{aligned} \ln y_t &= A_0 + \sum_{i=1}^n A_{1i} \ln FSD_{t-i} + \sum_{i=1}^n A_{2i} \ln y_{t-i} + \sum_{i=1}^n A_{3i} PY_{t-i} + \sum_{i=1}^n A_{4i} \ln INV_{t-i} + A_4 EC_{t-i} + u_t \\ \ln FSD_t &= B_0 + \sum_{i=1}^n B_{1i} \ln y_{t-i} + \sum_{i=1}^n B_{2i} \ln FSD_{t-i} + \sum_{i=1}^n B_{3i} PY_{t-i} + \sum_{i=1}^n B_{4i} \ln INV_{t-i} + B_5 EC_{t-i} + v_t \\ \ln PY_t &= C_0 + \sum_{i=1}^n C_{1i} \ln y_{t-i} + \sum_{i=1}^n C_{2i} \ln FSD_{t-i} + \sum_{i=1}^n C_{3i} PY_{t-i} + \sum_{i=1}^n C_{4i} \ln INV + C_5 EC_{t-i} + \omega_t \end{aligned}$$

Here, y_t is real GDP, PY is poverty indicator, INV is proxy for investment and FSD is Financial Sector Development, and u_t , v_t and ω_t are the stochastic error terms. This model is tested for causality, but the preconditions are to test the unit root and finding the order of integration and in the next step we find cointegration among the variables. The three steps of model estimation are first, using the augmented Dickey Fuller (ADF) unit root tests and assuming individual time series as non-stationary, we examine the time series properties of the data. Second, conditional to the results of the unit root test, we check cointegration between the variables specified in each equation using the method proposed by Johansen (1988) and Johansen and Juselius (1990). Third, based on the results of the cointegration we find the causality using granger causality test 5.

RESULTS INTERPRETATION

Results of Augmented Dicky Fuller (ADF) test are reported in Table 1. These results show that all the variables are non-stationary at their levels but stationary at their first difference. Hence, they provide the justification that we can apply to Johansen (1989) cointegration test.

To test the cointegration of the variables we applied Johansen maximum likelihood test (λ -Tra and λ -Max) which measures in terms of Vector Auto Regressive (VAR) error correction model (Table 2). It is seen that the maximum Eigenvalues test (λ -max) here are the existence of two cointegrating vectors, while trace statistics (λ -trace) indicates the existence of three cointegrating vectors at the 5% level of significance.

By using adjusted max test statistics, it indicated that, there is one cointegrating vector which included in the model and two vectors by using adjusted trace statistics. It is proved from both statistics that, there is cointegration

among real GDP, poverty, investment, private and financial sector development. Now we find long run output function that is of real GDP by normalizing the first cointegrated vector on the growth rate. The result of long run relationship is reported in Table 3.

It is seen from Table 3 that the coefficient of investment is positive (0.798) and t-stat is significant, which means that there is a positive and robust link between investment and economic growth. The coefficient of poverty is negative and insignificant implying that, high economic growth is linked with reduction in poverty and a negative link exists between poverty and economic growth. This result confirms the findings of Khan and Khan (2005) and Ghani and Din (2006). The estimated coefficient of private sector credit relative to GDP is 0.053 which is insignificant, but it confirms that the long run relationship between financial sector development and economic growth is positive it is because of the fact that disbursement of credit to domestic sector enhances the private investment which positively affects growth rate.

Table 4 reports results of multivariate VECM causality. Results confirm a unidirectional causal link between poverty reduction and economic growth, between growth to financial sector development accordance with the "demand following view", given by Robinson (1952). This of an economy, it causes the demands of financial sector to be high and hence growth of financial sector development in the economy.

Conclusion

This study aimed to find the link between financial sector development, poverty reduction and economic growth for

Table 2. Results of Johansen tests for cointegration.

Maximum eigenvalues test ($\lambda - \max$)				
H ₀	H ₁	Test Stat	(T-K/T) adjusted max statistic	Critical value (5%)
r=0	r=1	32.356*	29.16*	31.57
r=1	r=2	22.959	19.68	26.561
r=2	r=3	24.081*	21.38	19.148
r=3	r=4	9.861	5.16	12.244
r=4	r=5	2.389	1.90	5.8526
Trace test ($\lambda - \text{trace}$)				
r=0	r \geq 1	109.45*	88.57*	70.728
r=1	r \geq 2	69.301*	54.69*	45.856
r=2	r \geq 3	34.174*	29.58*	29.381
r=3	r \geq 4	10.890	8.442	11.424
r=4	r \geq 5	2.149	1.943	3.815

* indicates significance at 5% level.

Table 3. Normalized coefficients of cointegrating vector on real GDP.

Variable	Coefficient	S. E.	t-statistics
Ln(y _t)	-0.685*	0.168	4.76**
ln (INV)	0.798*	0.356	3.65*
ln(PY)	0.125	0.158	-0.356
ln(FSD)	0.053	0.025	0.910
C	-15.65	-	-

* indicates significance at 5% and ** indicate significance at 1% level of significance.

Table 4. Results of multivariate VECM causality test.

Variable	Independent variable				
	$\Delta \ln Y_t$	$\Delta \ln \text{FSD}$	$\Delta \ln \text{INV}$	ΔPY	ECT_{t-1}
$\Delta \ln Y_t$	-	21.682 (0.0006)	1.1278 (0.5690)	2.157 (0.6890)	-0.5689** (-2.1354)
$\Delta \ln \text{FSD}$	2.569 (0.1420)	-	1.687 (0.4259)	8.2353 (0.0258)	1.3362 (0.2134)
$\Delta \ln (\text{INV})$	8.813 (0.0061)	16.556 (0.0001)	-	0.4623 (0.8260)	-0.5686 (-0.8283)
ΔPY	11.818 (0.0039)	0.026 (0.9903)	1.365 (0.2600)	-	3.8921 (0.1251)

* is significant at 1%, ** at 5% and *** at 10%. By normalizing the cointegrating vectors on the GDP as proxy for economic growth we derived ECT_{t-1} . T-statistics are given and values in parenthesis show probabilities for F-statistics, respectively.

Pakistan over the period 1975 to 2010. Firstly the time series properties of data are diagnosed to further apply the cointegration and causality results. Unit root test

result confirmed that all the variables are integrated of same order and further we applied cointegration test by Johanson. Our results showed that, there was

cointegration among the variables, and accordingly, the long run equilibrium relationship was confirmed. In Overall, we can summarize our result in such a way that high index of economic growth is responsible for the development of financial sector and collectively both play an important role for financial development and both have significant influence on poverty eradication in the economy.

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