

Impact Of Financial Inclusion On Economic Growth In Pakistan

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Abstract

Financial inclusion (FI, hence forth) which is provision of affordable and reasonable formal financial services to people, is believed as a source of financial sector development of an economy which in turn leads to economic growth. The most of population does not have access to formal financial services in developing economies which is considered as one of the obstacles in economic growth of these economies. Pakistan is amongst the countries where FI is low. This study attempts to investigate the impact of FI on growth of economy in Pakistan by employing Autoregressive Distribution Lag (ARDL) and the Error Correction Model (ECM) for the period of 1985-2017. Financial liberalization is measured by using the principal component analysis (PCA). It is found that economic growth and FI are cointegrated and FI positively impacts economic growth in the short-run with one-year lag suggesting that Pakistan may stimulate its economic growth by emphasizing on improvement of financial system through increased FI.

Keywords: Financial inclusion, Economic growth, Principal Component Analysis, Autoregressive Distribution Lag, Error Correction Model

Introduction

Financial inclusion (FI) is generally considered a source of economic growth. Therefore, many countries including developing nations have developed National Financial Inclusion Strategies (NFIS). Pakistan also launched its NFIS in May 2015 (State Bank of Pakistan, 2015).[§]

The term FI has been defined by several organizations and researcher differently. As per definition of Rangarajan Committee established by Indian Government, FI is “the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost” (Rangarajan Committee, 2008). The FI refers to the percentage of persons and organization that make use of

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formal services of banks, insurance companies and financial institutions. FI basically emphasizes on spreading the services of financial institutions to deprived part of population in order to improve their living standard. So, this exercise in turn increases economic activities and growth and contributes in reducing poverty (The World Bank, 2014).

Financial Inclusion In Pakistan

Financial exclusion is a problem not faced by a single country, rather it is a challenge for the world (Atkinson & Messy, 2013). According to Demirgüç-Kunt et al., (2018), 1.7 billion adult population does not have access to financial services around the world and the majority population are from developing countries. Pakistan is also amongst the countries which observe very low financially included population (less than a quarter). It has only 21% of adult population with formal bank accounts (second lowest).

The current weak situation of FI may not contribute in economic growth as it is observed in other countries (strong positive association between FI and economic growth is reported by Bigirimana & Hongyi (2018), Lenka & Sharma (2017), Sanjaya & Nursechafia (2016) and Sharma 2016) among many others). We aim to explore the nexus of FI and economic growth in Pakistan. FI is measured by developing a composite variable from different dimension of FI. We employ ARDL bounds approach to test cointegration among the variables and then use ECM. We find that in the short-run FI positively impacts growth of economy with one-year lag.

The rest of the paper is followed by a brief literature review, econometric methodology, discussion of results and conclusion.

Literature Review

The link of FI to economic growth is investigated in literature where it is generally believed that FI possesses significant role in the progression of economic growth. FI affects economic growth through financial development. It not only makes capital arrangements simpler but also supports the financing of research and development activities by diverting assets towards innovations (Schumpeter, 1912). Moreover, financial access is improved by FI which brings resources to financial intermediaries to channelize investment to ventures with higher expected return and to provide low cost loans to disadvantaged and lower income people. This in turn increase economic activity and growth. Hence, FI creates empowering conditions in the economy through “supply - leading” (financial

development spurs growth) or a “demand following” (growth leads to financial inclusion) channels (Mohan, 2006).

Several studies in literature document one way relationship between Fland economic growth (from FI to growth) while others show a two way nexus between FI and growth. Abiola et al. (2015), Muneer (2015) and Okoye et al., (2017) investigate the impact of FI on economic growth and poverty reduction in Nigeria. Okoye et al. (2017) find no impact of FI on economic growth. However, they find that poverty was significantly reduced due to FI. Lenka & Sharma (2017), Kim et al. (2018) and Mwaitete & George (2018) report a positive impact of FI on growth from India, 57 Islamic countries and Tanzania respectively. Similarly, Gourène & Mendy (2017) reported two way relationship between FI and growth.

As the review of literature shows that FI stimulates growth of the economies, we are interested to investigate this relationship in Pakistan due to following reasons. Firstly, more than 70% adult population is excluded from financial services which provides the ground for the argument that FI has a little to contribute in economic growth of Pakistan (Zulfiqar, Chaudhary, & Aslam, 2016). Secondly, A major proportion of rural population of Pakistan and females are financially excluded. Thirdly, authorities had been implementing National financial inclusion strategy and other measures such as “Assan account”, “Kamyab Jawan Program” etc but parallel to this, they imposed tax on banking transactions exceeding Rs.50,000 in 2015 which might have affected FI negatively.

Research methodology

Data collection & variables of the study

The underlying study is empirically investigating the association between FI and growth by using annual time-series data over the sample period of 1985-2017. The choice of the sample period is dependent on data availability. The annual real GDP growth (dependent variable) is obtained from State Bank of Pakistan reports. FI index (independent variable) is constructed through different proxies of FI i.e. number of bank branches (NBB) per 100,000 adults, total depositor's accounts (DA), total account's deposit (AD) percentage to GDP and total advances by borrowers (AB) percentage to GDP using PCA. These data are also obtained from SBP reports. Annual data on investment (gross fixed capital formation) and openness to trade (export + imports to GDP ratio) are taken from World Development Indicators (WDI). While inflation (control variable) rate is computed from CPI is attained from International Financial statistics (IFS).

Model Specification

The following model is considered to inspect the effect of FI on growth;

$$Y_t = \beta_0 + \beta_1 FI_t + \beta_2 Z_t^* + \mu_t \quad (1)$$

Where, Y represents the real GDP growth is measuring economic growth, FI denotes the financial inclusion Index, Z indicates a vector of control variables which includes Investment, Inflation and trade Openness. While, μ_t is error term. FI index is computed using PCA. PCA has for the most part been utilized to address the issue of multicollinearity by decreasing a course of action of associated variables into a smaller course of action of uncorrelated variables (Stock & Watson, 2002). We constructed FI index using PCA from four proxies of FI as no single proxy reflects fully measuring dimensions of FI . The proxies are Number of branches of banks (NBB) per 100,000 adults, Total depositor's accounts (DA), Total account's deposit (AD) percentage to GDP and Total advances by borrowers (AB) percentage to GDP. To simplify the equation according to PCA technique, the model for FI_i can be express as follows:

$$FI_i = W_{1,i} NBB + W_{2,i} DA + W_{3,i} AD + W_{4,i} AB \quad (2)$$

Where, FI_i is the index of financial inclusion of i^{th} year W_1, W_2, W_3 and W_4 are the respective weights (Principal component score) of different components.

ARDL Bounds Testing Approach

On the basis of unit root test, we test for cointegration using ARDL bounds test approach modeled by Pesaran, Shin, & Smith (2001). ARDL bound test is widely used because it addresses issues that may arise because of autocorrelation and endogeneity (Pesaran et al., 2001). The ARDL model can be specified as:

$$\begin{aligned} \Delta Y_t = & \beta_0 + \sum_{i=1}^p \beta_1 \Delta Y_{t-1} + \sum_{i=1}^p \beta_2 \Delta FI_{t-1} + \sum_{i=1}^p \beta_3 \Delta LNINV_{t-1} + \\ & \sum_{i=1}^p \beta_4 \Delta INF_{t-1} + \sum_{i=1}^p \beta_5 \Delta TO_{t-1} + \gamma_1 Y_{t-1} + \gamma_2 FI_{t-1} + \\ & \gamma_3 LNINV_{t-1} + \gamma_4 INF_{t-1} + \gamma_5 TO_{t-1} + \mu_t \end{aligned} \quad (3)$$

Where Δ is lag operator, β_0 is the intercept, μ_t is the disturbance term, while t is the time period and LN shows that the variable has been transferred in its natural log. The first part of the Equation 3 with $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 correspond the short-run parameters and the rest with $\gamma_1, \gamma_2, \gamma_3, \gamma_4$ and γ_5 to the long-run parameters. In this ARDL framework, the H_0 of no co-integration is that all longrun coefficients are simultaneously zero. The number of lags is chosen utilizing Akaike's Information Criteria and Schwarz-Bayesian criterion. Whenever bound testing approach shows the cointegrating relationship, at that point we get the shortrun dynamic

parameters by evaluating an error correction model (ECM) with the longrun approximations. Thus, the Error Correction Model can be specified as:

$$\Delta Y_t = \beta_0 + \sum_{i=1}^p \beta_1 \Delta Y_{t-1} + \sum_{i=1}^p \beta_2 \Delta FI_{t-1} + \sum_{i=1}^p \beta_3 \Delta \ln INV_{t-1} + \sum_{i=1}^p \beta_4 \Delta INF_{t-1} + \sum_{i=1}^p \beta_5 \Delta TO_{t-1} + \theta ECT_{t-1} + \mu_t \quad (4)$$

θECT_{t-1} represents the error correction term which specifies the adjustment speed to the equilibrium after a short run shock.

Empirical Results

We tested for stationarity of variables by unit root tests. We used ADF (Dickey & Fuller, 1979) and Phillips and Perron (Phillips & Perron, 1988) unit root test. The unit root tests show that investment and RGDP growth are stationary at order I(0) while FI, INF and TO are stationary at I(1). As the considered variables are combination of order zero integration and order one integration, the ARDL model is used.

Co-integrated variables imply that they observe long run relationship. The result of the ARDL bounds test of cointegration is reported in Table 1. According to the F-statistics (7.8369), we reject the H_0 of no co-integration at 1% significance level as it is greater than the critical value of upper bound, I(1) of 5.06 at 1% level of significance. Thus, the cointegration test confirms the longrun association between FI and growth.

Table 1: ARDL Bounds Test for Cointegration

Dependent Variable			
Model	Optimal Lag	F-statistic	Result.
RGDP=f(FI, LNINV, INF, TO)	(1, 2, 1, 1, 0)	7.8369***	Co-integrated
F-statistic	Lower Bound	Upper Bound	
10%	2.45	3.52	
5%	2.86	4.01	
1%	3.74	5.06	

Note: *** shows 1% level of significance. The optimum lag length selected based on AIC.

Once cointegration is confirmed, we estimated the ARDL model given equation 3 to find the longrun coefficients. Estimation results are reported in Tables 2. The coefficient of FI and investment are negative which is contrary to the economic theory however, these coefficients are not statistically significant (P-values are very high, i.e. 0.42 and 0.80 respectively) whereas negative sign on coefficient

of inflation is according to expectation which is a statistically significant. The coefficient of trade openness is 0.28 (p-value is 0.04) which shows a statistically significant positive effect on growth of the economy.

Table2: Longrun coefficients using ARDL Model, Dependent Variable: D(RGDP)

Variable	Coefficient	Std. Error	t-Statistic	P-val
Financial Inclusion	-0.2125	0.2583	-0.8224	0.4201
Investment	-0.0242	0.0973	-0.2492	0.8056
Inflation	-0.3174**	0.1546	-2.0529	0.0527
Trade Openness	0.2843**	0.1357	2.0949	0.0485

Note: *, **, *** represent 10%, 5% and 1% level of significance.

After the long-run estimation we get short-run estimation using ECM as given result in Table 3. It is found that FI significantly affects economic growth with lag of one year. The error correction term is also statistically significant with expected negative sign. The coefficient of $ECT_{(t-1)}$ is -0.9010 (P-value is 0.00). This shows the speed of adjustment towards the long-run equilibrium is very high. The diversion from short run in RGDP growth is corrected by 90.10% within a year. The coefficient on investment is significant and positive whereas inflation has an insignificant negative coefficient.

Table3: Estimated Short-Run coefficients using ECM

Variable	Coefficient	Std. Error	t-Statistic	P-val
C	-2.1557***	0.3878	-5.5583	0.0000
ΔFI	-0.4070	0.4886	-0.8328	0.4143
ΔFI_{t-1}	1.8862***	0.4986	3.7829	0.0011
$\Delta LNINV$	0.0619**	0.0250	2.4684	0.0222
ΔINF	-0.0369	0.0772	-0.4783	0.6374
$ECT(-1)^*$	-0.9010***	0.1319	-6.8299	0.0000
R^2	0.7165	AIC		3.4239
$\bar{R}^2$	0.6598	SBC		3.7014
F-statistic	12.639	Durbin-Watson stat		2.3310
Prob(F-statistic)	0.000003			

Note: *, **, *** represents 10%, 5% and 1% significance level.

To verify the appropriateness and validity of above-mentioned results, we run some diagnostic tests like serial correlation test, Heteroscedasticity, Normality tests and the test of model specification (linear), i.e. Ramsey RESET test. The diagnostics show that there is no issue of serial correlation and heteroskedasticity in the model and residuals are normally distributed. The results are reported in Table 4.

Table4: Diagnostic Tests Results

Test	LM-stat	F - stat
1:Breusch-Godfrey Serial-correlation LM Test	3.11(0.21)	1.06(0.36)
2:Heteroskedasticity:Breusch-Pagan-Godfrey	8.34(0.50)	0.85(0.57)
3: Normality Test: JarqueBera	0.14(0.92)	-
4: Ramsey Regression Equation Specification Error (Ramsey RESET) Test		1.77(0.19)

Notes: p-values are given in parenthesis for each test.

Conclusion

The association of FI with economic growth is found positive in many economies as investigated by several studies. The purpose of this study is to explore this relationship in Pakistan in a setup where the FI is observed to be very low.

We measured FI index by using PCA procedures from an array of variables. We used ARDL bounds test approach to find cointegration. As economic growth and FI are cointegrated, we employed ECM. The results show that FI is positively related to economic growth in the long run and as well as in short run in Pakistan. FI does not affect economic growth contemporaneously rather it impacts growth with a lag of one year which is not surprising. The speed of modification towards equilibrium is exceptionally high as shown by the coefficient of ECM. For policy implication, government should speed up process of FI to bring Pakistan at par with its neighboring countries. To develop Pakistan economy through FI, authorities should focus on financial literacy of general public and particularly to the rural and female population of country.

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