Sources of Banking Sector Development: Case of Pakistan

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Abstract

This study intends to examine the sources of banking sector development of Pakistan, using capital formation, interest rate, trade deficit, general price level, and remittances as the proposed indicators. There is a lack of studies that investigate the impact of investment and trade deficit on the development of the banking sector. The empirical data for the study is taken from World Development Indicators for 38 years. For reliable estimates, the ARDL cointegration technique has been used to estimate the long-run determinants of the development of the banking sector and financial inclusion. Domestic credit to the private sector has been used as a proxy for the banking sector development because of its market orientation. The results show that an increase in the investment, imports and general price level leads to an increase in the provision of domestic credit which leads to banking sector development.

Keyword: ARDL co-integrating bounds, banking sector development, financial inclusion.

JEL Classification: G21; O16

Introduction

The financial sector ensures the availability of capital for production activities in any economy. It is an important sector as it mobilizes domestic savings which in turn are used for generating returns (Schumpeter, 1911; King & Levine, 1993; Dementraides & Hussein 1996; Ahmed & Ansari, 1998). Since the financial sector directs investment to a portfolio of highly productive investments, this mechanism ensures higher returns and lower risks than their

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private investment counterparts (Hassan & Kalim, 2017; Kalim & Arshed, 2018). Besides, a functional financial sector supports the private sector to develop individual businesses and it also facilitates growth-related activities in any country. Hence the development of the financial sector is an important component for expanding economic growth (Kalim, Mushtaq & Arshed, 2016; Mushtaq, Arshed & Kalim, 2018; Gbenga, James & Adeyinka, 2019).

Cetorelli and Gambera (2001) propose that the development of the banking sector can have beneficial after effect in causing industrial growth in a country. Further, the development of the banking sector triggers the process of financial inclusion of the masses, whereby their savings can earn a positive interest rate and they can access the insurance market (Wokabi & Fatoki, 2019). The growth-promoting effect of the financial sector helps in controlling cost-push inflation (Sulaiman, Arshed & Hassan, 2016).

This study proposes private sector credit as a share of the gross domestic product as an indicator for the financial sector development and financial inclusion which is earlier proposed by (Khan & Semlali, 2000; Ang & McKibbin 2007; Wokabi & Fatoki 2019). Several empirical studies provide evidence of the positive relationship between financial sector development and economic growth (Shaw, 1973; Khan et al., 2005; Ang & McKibbin, 2007). They highlight the provision of credit to increase the investments and lending in the real economy and suggest it leads to steady-state growth supported by the endogenous growth theory. The importance of the role of development in the financial and banking sector can be illustrated by a World Bank study such as Beck et al. (2000), according to which a well-functioning sector helps the economy to evade financial crises like in Southeast Asia and Latin America. Some recent studies show that when the financial sector participates in asset-based investments, its growth-promoting effect increases (Kalim et al., 2016; Mushtaq et al., 2018). Many studies have shown that variables like economic progress (Ang & McKibbin, 2007), FDI, foreign remittances, investment, and trade

boost the domestic credit to the private sector hence lead to the development of the financial sector.

After exploring the connection between the development of the financial sector and economic progress, this study would like to explore some that could explain the changing behavior of output growth for the Pakistan economy. The motivation for conducting this study comes from observing the financial crisis and economic booms due to the growth in the banking sector. The empirical literature on financial growth relationship with banking sector growth in the presence of investment, remittances, and trade as control variables is not convincing for Pakistan. The prime reason is that markets in Pakistan are imperfect; literacy level represents a small proportion of the formal sector mainly depending on multi-sector growth. It is, for this reason, this study has chosen the variables which we believe can provide us with the tools to faster and more stable financial growth.

2. Literature Review

Many studies use the demand leading arguments to prove that long-run economic growth leads to a developed banking system. Some studies provide the logic that economic growth increases the efficiency of the banking system (Khan & Semlali, 2000; Ma & Jalil, 2008). However, in the case of Pakistan, low resource mobilization results in low economic growth (Khan et al., 2005). Several studies hint the evidence for supply leading and demand following theories which explain bi-directional causality and some show the evidence for even reverse causal effect of economic growth on the development of financial sector (Andrianova & Demetriades, 2008; DFID, 2004; Honohan, 2004; Khan & Khan, 2007). Studies that propose bi-directional causality provide a reason that in such case development of the financial sector to maturity is caused by economic growth (Jung, 1986; Demetriads & Hussain, 1996). Subsequently, the impact reverses, and the financial sector becomes the engine of economic growth (Anderson & Lin, 2003; Favara, 2003; Creane et al., 2004). In a recent study, Abebrese et al. (2017) examine how financial sector liberalization affects production activities in Ghana. They consider bounds approach co-integration to explore the long-run relationship between

economic progress and financial sector liberalization for the sample period from 1970 to 2013. This study considers two proxies to measure financial sector liberalization: private sector credit and domestic deposits. The results disclose that private sector credit significantly accelerates production activities, but domestic deposits significantly reduce production activities in Ghana. Moreover, the study also examines the causal relationship between financial sector liberalization and economic progress and results provide evidence of unidirectional causality from the private sector to economic progress and from economic progress to domestic deposits. A more recent study by Hassan et al. (2019) compares the developed and developing economies and proves that the fruitfulness of the financial sector is more in the developed economies because of a better integrated financial system.

Hence for the case of Pakistan where the financial sector is not matured as yet, we expect it to be caused by economic growth and other factors like workers' remittances, investment, and trade. Therefore, this study uses credit to the private sector as a proxy for financial inclusion and development in the financial sector.

Demand following theory stipulates that as output in a country increases the demand for financial transactions based services like ATMs, debit cards, credit cards, etc. also increases which subsequently leads to an expansion in the depth of financial sector services. Robinson (1952) in his study states that "*by and large, it seems to be the case that where enterprise leads finance flows.*" Kuznets (1955) expresses that the development of the financial sector boosts economic progress. Higher investment coming to the financial sector could motivate the financial sector to initiate the innovation process of new financial intermediaries so that the excess funds can be dispensed. Here the investment is proposed as a possible factor that could lead to financial development (Khan et al., 2006). Asghar and Hussain (2014) investigate the causal link between the development of the financial sector and economic progress in developing nations over the time of 1978 and 2012. The study investigates the channels through which development of the financial sector impacts economic progress all the more particularly in the setting of Foreign Direct Investment (FDI) and open-

ness and conclude in favor of bidirectional causality between the development of the financial sector and economic progress.

Khan and Butt (2014) attempt to investigate the causals of the development of the financial sector. Private Sector Credit (PSC) is used as a financial sector development / financial inclusion indicator while the independent variables include openness to trade, cost of living, real interest rate and real GDP. This study acquires the data for seven SAARC countries (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka) for the time between 1993 and 2013 from the World Bank. The results from the panel random effect model show that openness to trade and real GDP have a positive impact while real interest rates and cost of living have a negative impact on financial inclusion.

Demetriades and Luintel (1996) and Ngugi and Kabubo (1998) in their study found that for financially underdeveloped economies, the rate of interest plays an important role in the development of financial markets. For these economies increase in interest rate negatively affects financial deepening. Demirgüç-Kunt and Detragiache (1998) indicate that high-interest rates induce problems in the banking sector. (Boyd et al., 2000; Rousseau & Wachtel, 2002) state in their study that a growing theoretical literature describes the hurdles that increasing inflation creates in financial sector development. While exploring these hurdles, this study indicates that there is significant evidence that inflation deters the development of the banking sector. According to panel analysis on 88 countries, Rousseau and Wachtel (2002) propose that if the inflation rate is below 13% then it promotes the positive relationship between economic progress and the development of the financial sector, beyond this threshold, the pressure to provide positive real returns is very difficult to maintain.

Zhuang et al. (2009) review the theoretical and empirical literature regarding financial sector development, with respect to how economic development leads to financial development. This review leads to the following broad conclusions: (i) there is convincing evidence from several country-based and panel data studies that financial sector development plays a vital role in facilitating economic progress and poverty alleviation; (ii) there

are however disagreements over how development in financial sector should be executed; (iii) while broadening the access to finance may be important for poverty reduction, it is also widely believed that these credit programs need to be well designed and effective. In particular, these programs need to be accompanied by other support services such as education, innovation and governance; and (iv) financial inclusion and innovation bring risks, and it is, therefore, essential for the regulatory authority to manage the outcomes. The study argues the conclusions and urges to provide a strong justification for development assistance to target a successful transition to higher financial inclusion. The study also highlights several avenues for future research, in particular, how to sequence the process of financial inclusion. Several studies show that remittances stimulate the process of economic progress and demand, but these remittances pass through the financial system, thus boosting this system.

Giuliano and Arranz (2009) indicate that remittances cause investments in the financial sector. Remittances follow FDI as a major source of foreign finance for developing countries and usually it is twice the amount of foreign aid (Shahbaz et al., 2007; Aggarwal et al., 2011). Remittances have a way to influence financial sector development as prompted by many studies. Similar to FDI, remittances have the potential to stabilize economic turmoil. Noman and Uddin (2011) point three ways with which remittances enhance banking sector development; first excess resources from remittances might be channeled to the acquisition of financial services. Second, the financial sector may benefit in terms of transaction service charges for each remittance. Also, banks have an opportunity to retain the remitted cash in their system. Third, banks can target the unbanked sector to channelize the remittances. A study by Boyd et al. (2001) shows when there is a rise in the inflation in an economy, it puts pressure on the financial sector to allocate resources and the real returns fall which could lead to falling in the usage of the financial sector. Klein and Olivei (2008) show that trade and capital account openness significantly promote the development of financing for the selected countries for years from 1986 to 1995.

A study by Aluko and Ajayi (2018) on 25 Sub Saharan countries between 1997 to 2014, their panel GMM estimates show that the investment in the economy leads to an increase in the banking sector development. According to them, higher investment opportunities provide a channel for banks to invest and earn. Similarly, a study by Gozgor (2018) on 61 developing economies confirms that higher interest rates reduce the demand for capital, hence banks are not able to extend credit easily. This leads to a negative effect on the development of the banking sector. But Wokabi and Fatoki (2019) using a small sample of East African countries' advocate that interest rate has an insignificant effect on the development of the banking sector.

Most of the studies propose bidirectional causality between the development of the financial sector, growth, and trade. This presence of bidirectional causality can cause the model to be inconsistent even if it is based on the bounds testing approach to cointegration by Pesaran et al. (2001). This study ensures the consistency of the model by checking the presence of reverse causality for the proposed model.

3. Methodology and Data Specification

The time-series data of Pakistan for the proposed variables are taken from WDI and IFS from 1976 to 2014. Domestic credit to the private sector is used as a market-oriented indicator for the development of the financial sector (Ljungwall & Li, 2007) and financial inclusion. In this study interest rate, worker remittances, domestic investment, and openness to trade are used as proposed variables and Pesaran et al. (2001) methodology are used to estimate long-run cointegrated relationship and its convergence from short-run fluctuations. All the variables are in natural logarithm form to account for any heterogeneity (Arshed, Anwar, Kousar & Bukhari, 2018).

3.1. Estimation Model

The following is the stochastic version of the economic model generated to estimate the determinants of banking sector development. ARDL cointegrating bounds approach is used to estimate

reliable coefficient values and the diagnostic test is applied to confirm if the residuals (μ_t) fulfill the desirable properties.

$$lnDCPS_t = \beta_{0} + \beta_1 lnGFCF_t + \beta_2 Intrate_t + \beta_3\, InTD_t + \beta_4\, LnCPI_t + \beta_5 LnREMIT_t + \mu_t$$

        DCPS: Domestic Credit to Private Sector
        GFCF: Gross Fixed Capital Formation as share of GDP
        INTRATE: Money Market Rate (interest rate)
        TD: Imports / Exports
        CPI: Consumer price index
        REMIT: Worker's Remittances as % of GDP

Table 1
Source and Definition of the Variables

Variables	Description	Source
lnDCPS	Natural Log (Domestic Credit to Private Sector / Real GDP)	WDI, WB
lnGFCF	Natural Log (Gross Fixed Capital Formation / Real GDP)	WDI, WB
Intrate	Money Market Rate as Interest Rate (IFS, IMF)	IFS, IMF
lnTD	Natural Log (Ratio of Imports to Exports)	WDI, WB
lnCPI	Natural Log (Consumer Price Index)	WDI, WB
lnREMIT	Natural Log (Personal Remittances / Real GDP)	WDI, WB

3.2. Descriptive Statistics

Before proceeding to the estimation, the indicators which are used in the model need to be assessed in terms of their fulfilling the assumption of data being normal (Lind, Marchal & Wathen, 2012). Here, Jarque and Bera (1987) test is used which checks the skewness to be equal to 0 and Kurtosis to be equal to 3 to suggest that the data of the indicator is normally distributed. The more the distance of skewness is from 0 and kurtosis is from 3 the more the variable becomes distinct from the normally distributed series.

For regression analysis, either the variables are normal or the sample size should be more than 30 so we can apply any inference on the estimates. Since our sample is 38 hence data is not normally distributed suggested by Jarque-Bera test is not the issue, but this test helps indicate that the series might tend towards the lowest value or highest value (skewness) or there are more than a

standard number of outliers / extreme values (kurtosis). From Table 2, it can be seen that, other than the Domestic Credit to Private sector (LnDCPS) all of the indicators are normally distributed and for the case of LnDCPS the value of kurtosis is 4.85 which is higher than the standard of 3 suggesting that there are more than standard number of extreme values in the data consequently making the tails of the distribution thicker than the normal distribution. When we compare the volatility of the indicators, most prominent of them is the interest rate having standard deviation of 2.43, while we are determining the causes of change in domestic credit to private sector and we have considered interest rate as a possible determining factor then volatility of interest rate becomes an important factor in creating change in domestic credit to private sector.

Table 2
Descriptive Statistics

Variables	InDCPS$_t$	InGFCF$_t$	Intrate$_t$	InTD$_t$	InCPI$_t$	InREMIT$_t$
Mean	3.1787	2.9689	8.8530	0.6853	3.3085	4.9104
Median	3.1940	3.0381	8.9300	0.6239	3.3540	4.7061
Maximum	3.3940	3.2039	12.4720	1.5987	4.8843	6.4428
Minimum	2.7565	2.5822	2.1392	0.0963	1.8615	3.4197
Std. Dev.	0.1365	0.1705	2.4356	0.4141	0.8780	0.7149
Skewness	−1.1530	−0.5975	−0.7544	0.6858	0.0842	0.5996
Kurtosis	4.8497	2.2645	3.5720	2.4464	1.8902	2.6322
Jarque-Bera	13.8374	3.1175	4.1225	3.4641	1.9952	2.4910
Probability	0.0010	0.2104	0.1273	0.1769	0.3688	0.2878
Sum	120.79	112.82	336.41	26.04	125.72	186.59
Sum Sq. Dev.	0.6897	1.0759	219.48	6.3448	28.523	18.911
Observa-tions	38	38	38	38	38	38

Table 3 shows the association between the variables, the direction, and the significance of the marginal impact is often based on their correlations. From the pair-wise correlation of do-mestic credit to the private sector, it can be said its deviations are positively associated with Gross fixed capital formation (GFCF) and Trade deficit (TD) are negatively associated with interest rate, consumer prices (CPI) and Remittances (Remit). For the case of regression analysis, it is assumed that independent variables are not correlated with each other which can cause the issue of multicol-

linearity, from the correlation table we can see that there is suspected high correlation between GFCF & TD, GFCF & CPI, GFCF & REMIT, TD & CPI, and CPI & REMIT. Gujarati (2012) has proposed criteria to check if the correlations are high enough to cause a problem, this criterion is called Variance Inflating Factor (VIF) which is calculated using the following formula.

$$VIF = \frac{1}{1 - (correlation)^2}$$

If the value of VIF for any pair-wise correlation is higher than 10 then it means that the correlation among those two variables is high enough to cause the problem of multicollinearity. In table 3(b), none of the VIF values calculated is higher than the threshold; hence, it is expected that there is no issue of multicollinearity (Gujarati, 2012).

Table 3
Correlation and VIF Matrices

Table 3(a)					
Coefficient of Correlation Matrix					
Variables	$InDCPS_t$	$InGFCF_t$	$Intrate_t$	$InTD_t$	$InCPI_t$	$InREMIT_t$
$InDCPS_t$	1					
$InGFCF_t$	0.4237	1				
$Intrate_t$	−0.3706	−0.0358	1			
$InTD_t$	0.2041	0.8224	0.1122	1		
$InCPI_t$	−0.34	−0.934	0.1982	−0.8818	1	
$InREMIT_t$	−0.3397	−0.8239	0.0518	−0.667	0.8195	1
Table 3(b)					
Matrix for Variance Inflation Factor					
Variables	$InDCPS_t$	$InGFCF_t$	$Intrate_t$	$InTD_t$	$InCPI_t$	$InREMIT_t$
$InDCPS_t$	–					
$InGFCF_t$	1.2188	–				
$Intrate_t$	1.1592	1.0013	–			
$InTD_t$	1.0435	3.0901	1.0127	–		
$InCPI_t$	1.1307	7.8318	1.0409	4.4975	–	
$InREMIT_t$	1.1304	3.1134	1.0027	1.8015	3.0452	–

3.3. Unit Root Test

Table 4 reports time series unit root tests which are checked with intercept specification. The null hypothesis of these tests is that variable to be tested is stationary at the level on which it is being

tested. The results confirm that all the variables which are used in the model are non-stationary at a level based on Dickey and Fuller (1981) as DF, and Phillips and Perron (1988) as PP tests.

Table 4
Unit Root Tests

Table 4(a) ADF – Test at Level				
Variables	**t**	**Prob.**	**Lags (k)**	**Decision (d)**
InDCPS$_t$	−0.9741	0.7520	1	Non Stationary
InGFCF$_t$	0.0092	0.9533	1	Non Stationary
Intrate$_t$	−2.3159	0.1726	1	Non Stationary
InTD$_t$	−1.7269	0.4096	1	Non Stationary
InCPI$_t$	1.0462	0.9963	0	Non Stationary
InREMIT$_t$	−0.4233	0.8945	1	Non Stationary
Phillip – Perron Test at Level				
InDCPS$_t$	−0.8421	0.7951	1	Non Stationary
InGFCF$_t$	0.2134	0.9699	1	Non Stationary
Intrate$_t$	−2.1995	0.2098	1	Non Stationary
InTD$_t$	−1.1338	0.6920	1	Non Stationary
InCPI$_t$	0.7761	0.9922	1	Non Stationary
InREMIT$_t$	−1.1345	0.6917	1	Non Stationary

Note: k = optimum lag length = 2; I (d) = Integrated order = 1

Table 4(b) ADF – Test at First Difference				
Variables	**t**	**Prob.**	**Lags (k)**	**Decision (d)**
ΔInDCPS$_t$	−3.2582	0.0248	1	Stationary
ΔInGFCF$_t$	−4.2693	0.0019	1	Stationary
ΔIntrate$_t$	−3.7249	0.0079	1	Stationary
ΔInTD$_t$	−5.1192	0.0002	1	Stationary
ΔInCPI$_t$	−2.8848	0.0571	0	Stationary
ΔInREMIT$_t$	−5.0232	0.0002	1	Stationary
Phillip – Perron Test at First Difference				
ΔInDCPS$_t$	−5.1615	0.0001	1	Stationary
ΔInGFCF$_t$	−5.8189	0.0000	1	Stationary
ΔIntrate$_t$	−5.7899	0.0000	1	Stationary
ΔInTD$_t$	−6.7254	0.0000	1	Stationary
ΔInCPI$_t$	−2.8913	0.0563	1	Stationary
ΔInREMIT$_t$	−5.6943	0.0000	1	Stationary

Note: k = optimum lag length = 2; I (d) = Integrated order = 1

3.4. Estimation Results

Table 5 reports the results of the (Pesaran et al., 2001) methodology, which tells us about the cointegrating relation between explained and explanatory factors of this study. The F statistic of this model is almost 3.91 which is higher than the 10% upper critical bound of 3.70 which means that there exist long-run cointegrating relations of development of the financial sector and its determinants in Pakistan for the selected period in the present study. From the diagnostic tests it can be concluded that the assumption of non-correlated residuals is not violated, there is normality and the stability (through CUSUM and CUSUMsq) in the model (Pesaran et al., 2001).

Table 5
F Bounds Cointegration Test

Estimated Model			
$\ln \text{DCPS}_t = f\,(\ln \text{GFCF}_t, \text{Intrate}_t, \ln \text{TD}_t, \ln \text{CPI}_t, \ln \text{REMIT}_t)$			
Optimal lags		(1,1,1,1,0,0)	
F – Statistic	3.9083*	**W – Statistic**	23.4498*
Significance Level	**Critical Values for F – Statistic**		
	Lower Critical Bound	**Upper Critical Bound**	
05 Percent	2.9819	4.3270	
10 Percent	2.4864	**3.7057**	
Significance Level	**Critical Values for W – Statistic**		
	Lower Critical Bound	**Lower Critical Bound**	
05 Percent	17.8914	25.9618	
10 Percent	14.9182	22.2340	
Diagnostic Tests			
R²	0.8301	**Adjusted - R²**	0.7734
Equation Log-likelihood	54.1900	**F – Statistics**	14.6532 [0.000]
Serial Correlation	0.1998 [0.655]	**Durbin Watson Statistic**	1.8733
Normality	1.2665 [0.531]	**Durbin's H–Statistic**	0.6795 [0.497]
Schwarz Bayesian Criterion	36.1354	**Akaike Info. Criterion**	44.1900
CUSUM	Stable	**CUSUM Square**	Stable

Note: *;**, and *** demonstrates 10%; 5% and 1% significance level, respectively. Also, [] represent Probability Values.

Table 6
Long Run Coefficients Estimation

Dependent Variable: $\ln DCPS_t$			
Variable	**Coefficients**	**Standard Errors**	**t –Statistic**	**Prob.**
$\ln GFCF_t$	2.3752	0.7025	3.3813	[0.002]
$Intrate_t$	−0.1087	0.0291	−3.7381	[0.001]
$\ln TD_t$	0.6385	0.2654	2.4056	[0.023]
$\ln CPI_t$	0.6997	0.2301	3.0413	[0.005]
$\ln REMIT_t$	−0.0842	0.0756	−1.1133	[0.275]
C	−5.2825	2.6806	−1.9706	[0.059]

From the long-run estimates in table 6, it can be seen that other than remittances, all the variables are significant. The estimated results show that gross capital formation, trade deficit, and consumer price index are significantly elevating domestic credit to the private sector, however, interest rate significantly diminishes domestic credit to the private sector in the long-run in Pakistan. Here we can see that if there is a 1% increase in the investment in the form of capital formation, the banking sector develops by 2.37%. This shows that there is a multiplier effect that if there is an investment, then the private sector gets motivates to acquire more credit. Similarly, if the cost of borrowing in the form of interest rate is increased by 1%, it leads to a decrease in the domestic credit by 0.11%. This shows that the banking sector is a channel from which the tight monetary policy can be conducted. These results also show that if there is a 1% increase in imports as compared to exports then people increase the utilization of the credit provided by the domestic sector by 0.64%. Though remittances do not have a significant effect on the banking sector development, a 1% increase in the cost of goods and services force the people to utilize the credit to meet their expenses by 0.70%. On average these results are similar to the study Rousseau and Wachtel (2002) which indicates that low inflation boosts the banking sector.

Table 7
Short Term Effects and Error Correction Representation

Dependent Variable: $\Delta \ln DCPS_t$

Variable	Coefficient	Standard Error	t	Prob.
$\Delta \ln GFCF_t$	0.4543	0.3174	1.4313	[0.163]
$\Delta Intrate_t$	-0.0222	0.0086	-2.5857	[0.015]
$\Delta \ln TD_t$	0.3126	0.1052	2.9709	[0.006]
$\Delta \ln CPI_t$	0.2915	0.1120	2.5993	[0.014]
$\Delta \ln REMIT_t$	-0.0351	0.0313	-1.1198	[0.272]
ecm_{t-1}	-0.4166	0.1354	-3.0760	[0.004]
Diagnostic Tests				
R^2	0.5200	Mean of Dependent Variable	-0.0090	
Adjusted - R^2	0.3601	S.D. of Dependent Variable	0.0819	
S.E. of Regression	0.0655	F – Statistics $F_{(6, 30)}$	4.8758 [0.001]	
Akaike Information Criterion	44.1900	Equation Log-likelihood	54.1900	
Schwarz Bayesian Criterion	36.1354	Durbin Watson Statistic	1.8733	

In short-run, table 7, other than gross fixed capital formation and remittances, all variables are significantly effecting banking sector development and similar signs of interest rate, trade deficit and consumer price index have been witnessed for the short-run as these were witnessed in long run. The coefficient of the first period lagged term of the error term is -0.42 and it is significant. This shows that if there is any 1% deviation from the long-run equilibrium, then it is reverted to equilibrium by following 42 % speed of convergence each year. Hence, long-run and stable equilibrium are restored (correction of all the disequilibrium) in about 2.38 years (Banerjee et al., 1998). Mean and variance of error term also remains stable during the period taken for this study as confirmed by the graphical representation of CUSUM and CUSUM square graphs. Moreover, we also test whether domestic credit to private sector affects any of the explanatory variables

considered in this study and from table 9 it is confirmed that explanatory variables only affect domestic credit to the private sector but domestic credit to private does not affect the independent variables. Therefore, there is the absence of the endogeneity issue confirming the consistency of the estimates.

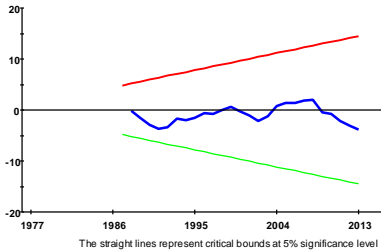**Table 8**
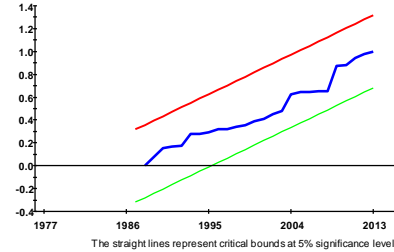*Cusum and Cusum of Square Representations*

Figure 1: CUSUM of Residuals   *Figure 2*: CUSUM sq of Residuals

Table 9
Exogeneity Tests for Independent Variables

Model	SIC Lag order	F Bound Test	I(1) Upper bound 5% and 10%	Df
Dependent: $\ln REMIT_t$ **Independent:** $\ln DCPS_t$, $\ln GFCF_t$, $Intrate_t$, $\ln TD_t$, $\ln CPI_t$	(1,0,0,0,0,0)	1.47	4.32, 3.70	38
Dependent: $\ln GFCF_t$ **Independent:** $\ln DCPS_t$, $\ln REMIT_t$, $Intrate_t$, $\ln TD_t$, $\ln CPI_t$	(1,0,0,1,1,0)	2.87	4.32, 3.70	38
Dependent: $Intrate_t$ **Independent:** $\ln GFCF_t$, $\ln DCPS_t$, $\ln REMIT_t$, $\ln TD_t$, $\ln CPI_t$	(1,0,0,0,0,1)	3.24	4.32, 3.70	38
Dependent: $\ln TD_t$ **Independent:** $Intrate_t$, $\ln GFCF_t$, $\ln DCPS_t$, $\ln REMIT_t$, $\ln CPI_t$	(1,1,1,0,0,0)	2.61	4.32, 3.70	38
Dependent: $\ln CPI_t$ **Independent:** $\ln TD_t$, In-	(1,0,0,0,0,0)	1.11	4.32, 3.70	38

trate$_t$, lnGFCF$_t$, lnDCPS$_t$,
lnREMIT$_t$

4. Conclusion

This study aims to investigate the factors affecting domestic credit to the private sector using the ARDL bounds testing approach for the period from 1976 to 2014. Since the development of the banking sector plays a catalyst role in improving the effectiveness of the real sector on economic progress, this notion is used in this study to investigate the determinants of the development of the banking sector which helps the policymakers to achieve economic growth targets.

From the empirical results, it is concluded that gross fixed capital formation, interest rate, remittances, trade deficit, and consumer price index have a long-run relationship with domestic credit to the private sector for the selected period in Pakistan. This long-run relation is deemed reliable as it passed the ARDL cointegration test and all the post regression diagnostics are clear. This study also conducts the exogeneity test of all independent variables to ensure that the estimates provided by this study are consistent. The convergence coefficient dictated that, if there is any policy intervention to improve the banking sector development, using the proposed theory by this study then it takes 2.38 years in the form of policy lag to reveal the improvement in the banking sector.

It is further concluded that gross fixed capital formation, trade deficit and inflation in the form of the consumer price index have positive and significant but interest rate has negative and significant effects on domestic credit to the private sector in both long and short-run excluding gross fixed capital formation for the case of Pakistan. This study reveals that the banking sector develops when people are prone to access domestic credit, it can be because of an increase in investment in the economy. It can increase because of ease of access to imports or it can increase because of an increase in the general price level until the overall price level is not harmfully high. Also, if the government is supporting the tight monetary policy by increasing the interest rate, then people are discouraged to access credit as the cost of borrowing is higher.

Hence to increase the overall financial inclusion of the economy, policymakers must also ease in transactions for the purchase of local as well as foreign goods via banking channel. One step can be done by inviting established online payment platforms like PayPal and e-commerce platforms like e-bay and Amazon.

References

Abebrese, G. O., Pickson, R. B., Diabah, B. T. (2017). Financial development and economic growth: Additional evidence from Ghana. *Modern Economy, 8,* 282 – 297.

Aggarwal, R., Demirgüç-Kunt, A., & Pería, M. S. M. (2011). Do remittances promote financial development? *Journal of Development Economics, 96*(2), 255-264. doi: 10.1016/j.jdeveco.2010.10.005

Ahmed, S. M., & Ansari, M. I. (1998). Financial sector development and economic growth: The South-Asian experience. *Journal of Asian Economics, 9*(3), 503-517. doi:10.1016/S1049-0078(99)80100-6

Aluko, O. A., & Ajayi, M. A. (2018). Determinants of banking sector development: Evidence from Sub-Saharan African countries. *Borsa Istanbul Review, 18*(2), 122-139. doi:10.1016/j.bir.2017.11.002

Andrianova S., Demetriades P. (2008) Sources and effectiveness of financial development: What we know and what we need to know. (pp. 10-34) In Guha-Khasnobis B., Mavrotas G. (Ed.) *Financial Development, Institutions, Growth and Poverty Reduction. Studies in Development Economics and Policy.* London: Palgrave Macmillan

Ang, J. B., & McKibbin, W. J. (2007). Financial liberalization, financial sector development, and growth: evidence from Malaysia. *Journal of Development Economics, 84*(1), 215-233. doi:10.1016/j.jdeveco.2006.11.006

Arshed, N., Anwar, A., Kousar, N., & Bukhari, S. (2018). Education enrollment level and income inequality: A case of SAARC economies. *Social Indicators Research, 140*(3), 1211-1224. doi:10.1007/s11205-017-1824-9

Banerjee, A., Dolado, J., & Mestre, R. (1998). Error-correction mechanism tests for cointegration in a single-equation framework. *Journal of Time Series Analysis, 19*(3), 267-283. doi:10.1111/1467-9892.00091

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2000). A new database on the structure and development of the financial sector. *The World Bank Economic Review, 14*(3), 597-605. doi:10.1093/wber/14.3.597

Boyd, J. H., Levine, R., & Smith, B. D. (2001). The impact of inflation on financial sector performance. *Journal of Monetary Economics, 47*(2), 221-248. doi:10.1016/S0304-3932(01)00049-6

Cetorelli, N & Gambera, M. (2001). Banking market structure, financial dependence and growth. *International Evidence from Industry Data. Journal of Finance, 56*(2), 617–648. doi:10.1111/0022-1082.00339

Creane, S., Goyal, R., Mobarak, A. M., & Sab, R. (2004). Evaluating financial sector development in the Middle East and North Africa: new methodology and some new results. *Topics in Middle Eastern and North African Economies, electronic journal, 6, Middle East Economic Association and Loyola University Chicago*. Retrieved from http://www.luc.edu/orgs/meea/

Demetriades, P. O., & Hussein, K. A. (1996). Does financial development cause economic growth? Time-series evidence from 16 countries. *Journal of Development Economics, 51*(2), 387-411. doi:10.1016/S0304-3878(96)00421-X

Demetriades, P. O., & Luintel, K. B. (1996). Financial development, economic growth and banking sector controls: evidence from India. *The Economic Journal, 106*(435) 359-374. doi:10.2307/2235252

Demirgüç-Kunt, A., & Detragiache, E. (1998). The determinants of banking crises in developing and developed countries. *Staff Papers, 45*(1), 81-109. doi:10.2307/3867330

DFID. (2004). *The Importance of Financial Sector Development for Growth and Poverty Reduction.* Policy Division Working Paper, Financial Sector Team, Department for International Development, London

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association, 74*(366a), 427-431. doi:10.1080/01621459.19-79.10482531

Favara, G. (2003). *An empirical reassessment of the relationship between finance and growth* (International Monetary Fund Working Paper Series No. 03/123). Retrieved from https://ssrn.com/abstract=8-79199

Gbenga, O., James, S. O., & Adeyinka, A. J. (2019). Determinant of private sector credit and its implication on economic growth in Nigeria: 2000-2017. *American Economic & Social Review, 5*(1), 10-20. Retrieved from https://www.cribfb.com/journal/index.php/aesr/article/view/242

Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of Development Economics, 90*(1), 144-152. doi:10.1016/j.jdev-eco.2008.10.005

Gozgor, G. (2018). Determinants of the domestic credits in developing economies: The role of political risks. *Research in International Business and Finance, 46*, 430-443. doi: 10.1016/j.ribaf.2018.0-5.002

Gujarati, D. N. (2012). *Basic Econometrics*. NY: Tata McGraw-Hill Education.

Hassan, M. S., & Kalim, R. (2017). Stock market and banking sector: are they complementary for economic growth in low human developed economy? *Pakistan Economic and Social Review, 55*(1), 1-30

Hassan, M. S., Arshed, N., Tahir, M. N., & Imtiaz, A. (2019). Economic Prospects of Stock Market Development: A Comparison of Two Worlds. *Paradigms, 13*(1), 117-125 doi: 10.24312/1800134130118

Honohan, P. (2004). Financial development, growth and poverty: how close are the links. In Goodhart C. A. E. (Ed.) *Financial Development and Economic Growth. British Association for the Advancement of Science*. London: Palgrave Macmillan. doi: 10.1057/9780230374270_1

Jarque, C. M., & Bera, A. K. (1987). A test for normality of observations and regression residuals. *International Statistical Review/Revue Internationale de Statistique, 55*(2) 163-172. Retrieved from www.jstor.org/stable/14-03192

Jung, W. S. (1986). Financial development and economic growth: international evidence. *Economic Development and Cultural Change, 34*(2), 333-346. doi: 10.1086/451531

Kalim, R., & Arshed, N. (2018). What determines the social efficiency of Islamic banking investment portfolio? *Journal of Islamic Business and Management, 8*(2), 386-406. doi:10.26501/jibm/2018.0802-004

Kalim, R., Mushtaq, A., & Arshed, N. (2016). Islamic banking and economic growth: *Case of Pakistan. Islamic Banking and Finance Review, 3(*1), 14-28.

Khan, M. A., Qayyum, A., & Ghani, E. (2006). Trade liberalisation, financial sector reforms, and growth [with Comments]. *The Pakistan Development Review*, *45*(4), 711-731. Retrieved from http://www.jstor.org/stable/41260647

Khan, M. A., Qayyum, A., Sheikh, S. A., & Siddique, O. (2005). Financial development and economic growth: The case of Pakistan [with Comments]. *The Pakistan Development Review*, *44*(4), 819-837. Retrieved from http://www.j-stor.org/stable/41261133

Khan, M. M. S., & Semlali, M. A. S. (2000). *Financial Development and Economic Growth: An Overview* (IMF Working Papers No. 0-209). Washington, D.C: International Monetary Fund.

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics, 108*(3), 717-737. doi:10.2307/2118406

Klein, M. W., & Olivei, G. P. (2008). Capital account liberalization, financial depth, and economic growth. *Journal of International Money and Finance, 27*(6), 861-875.

Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 1-28. doi: 10.1016/j.jimon-fin.2008.05.002

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2012). *Statistical techniques in business & economics.* New York, NY: McGraw-Hill/Irwin.

Ljungwall, C., & Li, J. (2007). *Financial sector development, FDI and economic growth in China* (Working paper No. E2007005). China Center for Economic Research.

Ma, Y., & Jalil, A. (2008). Financial development, economic growth and adaptive efficiency: A comparison between China and Pakistan. *China & World Economy, 16*(6), 97-111.

Mushtaq, A., Arshed, N., & Kalim, R. (2018). Islamic Financing Effect on Growth. *Islamic Banking and Finance Review, 5*(1), 56-87

Ngugi, R. W., & Kabubo, J. W. (1998). *Financial sector reforms and interest rate liberalization: The Kenya experience.* AERC, Nairobi, KE.

Noman, A. M., & Uddin, G. S. (2012). Remittances and banking sector development in South Asia. *International Journal of Banking and Finance, 8*(4), 46-55.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289-326.

Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika, 75*(2), 335-346

Robinson, J. (1952). *The Generalisation of the General Theory and other Essays,* (pp. 1-76). London: Palgrave Macmillan.

Rousseau, P. L., & Wachtel, P. (2002). Inflation thresholds and the finance–growth nexus. *Journal of International Money and Finance, 21*(6), 777-793.

Schumpeter, J.A. (1911). *The Theory of Economic Development*. Reprint 1969. Oxford, UK: University Press.

Shahbaz, M., Qureshi, M. N., & Aamir, N. (2007). Remittances and financial sector's performance: under two alternative approaches for Pakistan. *International Research Journal of Finance and Economics, 12(1)*, 133-146.

Shaw, E. S. (1973). *Financial deepening in economic development* (Vol. 270). NY: Oxford University Press.

Sulaiman, I., Arshed, N., & Hassan, M. S. (2016). Stock market development, can it help reduce inflation in SAARC countries? *Journal of Accounting, Finance and Economics, 6*(1), 101-110.

Wokabi, V. W., & Fatoki, O. I. (2019). Determinants of Financial Inclusion In East Africa. *International Journal of Business and Management, 7*(1), 125-143. doi:125-143. 10.20472/B-M.2019.7.1.009

Zhuang, J., Gunatilake, H. M., Niimi, Y., Khan, M. E., Jiang, Y., Hasan, R., & Huang, B. (2009). *Financial sector development, economic growth, and poverty reduction: a literature review* (Asian Development Bank Economics Working Paper Series No. 173). Retrieved from https://ssrn.com/abstract=1617022