GOVERNMENT BORROWING AND FINANCIAL DEVELOPMENT: A CASE FOR PAKISTAN

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ABSTRACT: *Private sector of any economy plays an important role in the economic development of the country. It not only provides employment to the people of the country but also offers goods and services according to the taste of the people. Private investment mainly depends on private borrowing which works as blood for private sector. Private borrowing or credit to private sector is important part of the financial system which measures the depth of financial development. This paper aims to investigate the impact of government borrowing from the central and commercial banks on financial development. In this paper, government borrowing is measured by public domestic debt while credit to private sector (private borrowing) is used as proxy of financial development. Usually, it is observed that when a government borrows more money from banks it creates a shortage for private borrowers. So in this way, the volume of private investment declines. Some other factors also affect private borrowing like taxes, savings and inflation. This study has used yearly time-series data of Pakistan from 1972 to 2015. ARDL bounds-testing approach to cointegration has been used to investigate the relationship of variables. The data is taken from WDI, the reports of the state bank of Pakistan and different issues of economic survey of Pakistan.*

KEYWORDS: *Domestic debt, Financial development, Financial depth, Private borrowing*

1. INRODUCTION

Financial development is usually measured as a ratio of private credit to Gross domestic product (GDP) and the ratio of stock market capitalization to GDP (Rajan & Zingales, 1998). Financial development plays a vital role in the economic growth of a country (Berkes, Panizza, & Arcand, 2012). The ratio of private credit to GDP is used as financial development by (Dabla-Norris & Srivisal, 2013). Financial development negatively affects government borrowing (Ardagna, Caselli, & Lane, 2007; Fielding, 2006; Stiglitz, 1993).

In the past, fiscal management of Pakistan was not appealing because of the poorly managed tax system and improper performance of all the institutions. A continuous rise in budget deficit put pressure on the banking sector which was unable to provide credit to the private sector for investment. Government borrowing greatly affected the financial development in Pakistan.

Figure 1 Revenue-Expenditure Gap (% of GDP)

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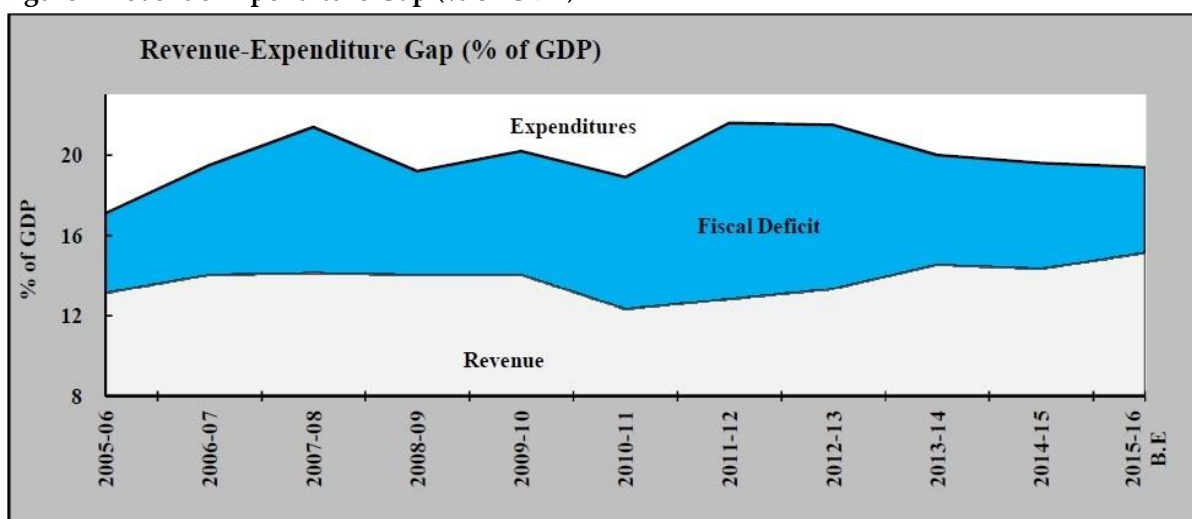
In figure 1, we can see that fiscal deficit has increased with more magnitude from 2011 to 2013. Government borrowing reached to Rs.567.5 billion in 2016 while this was Rs. 539.4 billion in last year.

Financial development has many aspects and over time the financial sector has got massive importance. Development of financial sector is considered as important for the economic growth of any country. Main objectives of any country's monetary policy consist of controlling inflation, supply of money and to stabilize exchange rate. To bring equilibrium in balance of payment is also an objective of monetary policy. External sector of Pakistan has progressed extensively due to a rise in foreign remittances, stability in exchange rate. State bank of Pakistan took bold steps in monetary policy and decreased the rate of interest at 5.75 percent which is the lowest one in last forty four years. During last 10 years credit to private sector has increased to Rs. 311.7 billion in 2016 which was Rs. 171.2 billion in 2015. This increase in credit to private sector has played a vital role in the development of the manufacturing sector (Economic Survey of Pakistan).

Figure 2 SBP Policy Rate
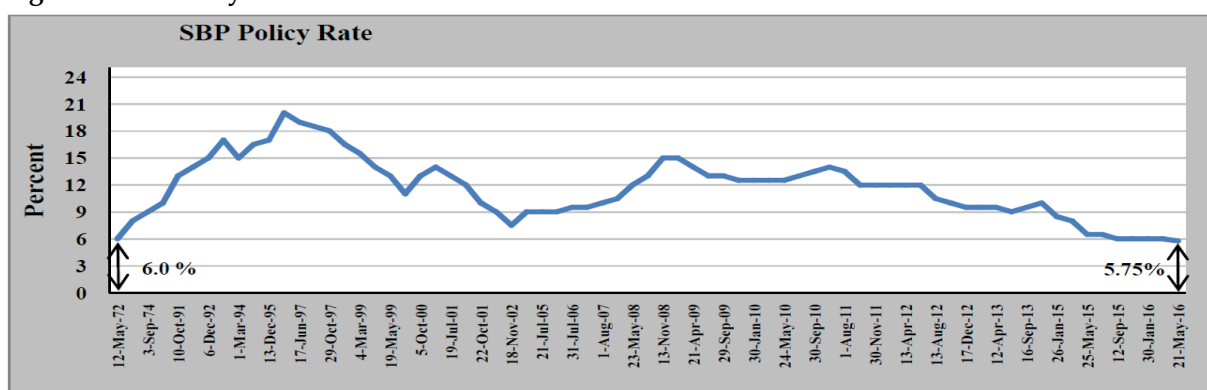
Financial sector of Pakistan also has some limitation regarding access because only 47% population use banking sector while 53% population do not have any interaction with banking system. There are many reasons for this like religious feelings and also the difficulty in the procedure of documentation.

This paper aims to study the impact of government borrowing on financial development in Pakistan. The rest of the paper is organized as follows. Section 2 explains the literature review and section 3 represents the theoretical framework. Data sources and methodology are discussed in section 4 while the last section provides conclusion and policy recommendations.

2. LITERATURE REVIEW

(Demetriades & Rousseau, 2010) investigated the effect of government spending on financial development in England using data from 1960 to 2010. They also extend the analysis for eighty four countries and found that in short-run period government borrowing crowd out financial development. Similarly, financial development also crowds out government borrowing. The findings also describe that in the long-run both are helpful for each other in crowding in. They further expressed that low-income countries do not show a positive impact of government spending on financial development.

(Hussain, Muhammad, Akram, & Lal, 2009) investigated the long-run relationship between government expenditure and private investment. The findings suggest that current expenditures of government e.g. debt servicing and defense expenditures are the cause of crowing out of private investment and the expenditures of government which are developmental in nature are very impressive for the private investment. These developmental expenditures are spent on education and health. They used the time series data of Pakistan from 1975-2008. The technique which they have used is Johansen cointegration.

(Khan & Khan, 2007) determined the factors which can affect private investment. For this purpose, they used the annual time series data of Pakistan from 1972 to 2005. They used ARDL (Auto Regressive Distributed Lags) Technique to find the long-run as well as short-run relationships of private investment with government expenditures. Their findings show that governance, quality of institutions, and entrepreneurial skill (Non- Traditional factors) are important factors to increase private investment. They also expressed that the impact of traditional factors is very marginal or even zero.

(Emran & Farazi, 2009) investigated that government borrowing greatly impacts to the private credit. They estimated that private credit will crowd out in the long-run by the value of 80 cents if the government will borrow one dollar from banks. They used panel data of twenty five developing countries from 1984 to 2004. For estimation purposes, they have used the methodology of GMM and PMG.

(Ahmad & Qayyum, 2008) investigated that government current expenditures and interest rate are the cause of low private investment in Pakistan. They also found that uncertainty and instability at macroeconomic level have severe negative impact on private investment. They used fixed private investment in services as a dependent variable while government consumption expenditures, interest rate, and GDP in real terms along with uncertainty (inflation) variable. The analysis was based on annual time series data of Pakistan from 1972 to 2005.

(Ardagna et al., 2007) used panel data of OECD countries and found that government borrowing causes to increase in interest rate which decreases the private credit. They used VAR model for the estimation and concluded that government debt from banks increases the rate of interest in the OECD countries in the long run. This rise in interest rate causes to decline in the private investment which is considered as the blood for the economic growth of countries.

(Fielding, 2006; Stiglitz, 1993) found that the revenue constraint pushes the government toward borrowing which creates problem for the private investors who want to borrow from banking sector. This usually happens in developing countries.

(Kumhof & Tanner, 2005) investigated that the government borrowing not always crowds out the private credit even though it helps to rise in private credit because of government assets with banks. They were of the view that the banking sector becomes more able to take risks of private credit.

(Narayan, 2004) examined the impact of government expenditures on private investment for the country Fiji. He used the data from 1950 to 2001. The study divides the period into two parts. One is from 1950 to 1975 and the other is from 1976 to 2001. The results show that in the first period government expenditures are the cause of crowd-in of private investment and in the second period, it shows weak impact of government expenditures on the crowding-in of private investment.

(Naqvi, 2002) examined that government investment has a great impact on private investment and this investment plays a vital role to enhance economic growth. He used the co-integration VAR based methodology. The variables in the model are private fixed capital formation, Gross Domestic Product (GDP) and public fixed capital formation. He used data for Pakistan from 1964 to 2000.

(Sakr, 1993) determined the factors of private investment in Pakistan. He concluded that private investment is largely dependent on private credit and he also found the positive impact of public investment on private investment. He used the data form 1974 to 1992. The findings express that public investment is only useful when it is made for infrastructure development otherwise it is not beneficial. The study used flexible accelerator model to estimate the relationship.

In the end, it can be concluded that after examining above mentioned studies that government borrowing from the banking sector significantly affects the credit to private sector. This study is an attempt to answer the same question in case of Pakistan.

3. THEORETICAL MODEL

Financial development of the economy is important for the economic growth of a country. Especially credit to private sector is important in many aspects like increase in employment, increase in supply of goods and improvement in standard of living of the people. Government borrowing to finance the budget deficit is critical for the private investment because small amount of finance lefts with the financial institutions to provide credit to private investors. Government borrowing has long-run negative impact on private investment because it crowds out the private investment (Hussain et al., 2009). Similarly, when there is an increase in government spending financed by borrowing from banks, it becomes a cause of an increase in the rate of interest which badly affects the private investment (Ardagna et al., 2007). Government current expenditures and interest rate are the cause of low private investment in Pakistan (Ahmad & Qayyum, 2008).

Massive literature review indicates the impact of government borrowing on financial development. Current paper examines the long-run as well as short-run impact of government borrowing on financial development of Pakistan's economy. For this purpose the following model is developed.

(1) $$LFD = \beta_0 + \beta_1 LPDD_t + \beta_2 LT_t + \beta_3 LS_t + \beta_4 LINF_t + \varepsilon_t$$

Where,

LFD=Log of Financial development (Domestic credit to private sector as % of GDP)

LPDD=Log of Public Domestic debt (Rs. Billion)

LT=Log of Net taxes on products (constant LCU)

LS=Log of Gross domestic savings (% of GDP)

LINF=Log of Inflation, consumer prices (annual %)

ε_t = Error Term

4. METHODOLOGY OF RESEARCH

Data Sources

In this study Domestic credit to private sector (% of GDP) is used as dependent variable and this variable indicates the financial development. Public domestic debt, net taxes on products, gross domestic savings, Inflation, consumer prices are used as independent variables. Here inflation is used as economic stability variable. The time span for this study is from 1972-2015. Data for all variables except public domestic debt is taken from World Development Indicators (WDI-2016) online database by World Bank. Data of public domestic debt is obtained from economic survey of Pakistan (Govt, 2016).

Econometric Methodology

Augmented Dickey-Fuller (ADF) Test

Empirical analysis of time series data faces the issue of stationarity. To cope with this problem we have to use unit root tests to confirm the order of integration of time series variables. This study has used Augmented Dickey-Fuller (ADF) unit root test, which was developed by (Dickey & Fuller, 1981). General form of this test is as follows.

(2) $$\Delta W_t = \delta_0 + \delta_{1t} + \delta_{1t} + \delta_2 W_{t-1} + \sum_{k=1}^{\rho} \phi_k \, \Delta W_t - k + u_t$$

(3) $$\Delta W_t = \delta_0 + \delta_2 W_{t-1} + \sum_{k=1}^{\rho} \phi_k \, \Delta W_{t-k} + u_t$$

(4) $$\Delta W_t = \delta_2 W_{t-1} + \sum_{k=1}^{\rho} \phi_k \, \Delta W_{t-k} + u_t$$

ARDL Bounds Testing Procedure

(Pesaran & Pesaran, 1997; Pesaran, Shin, & Smith, 2001) developed bounds testing approach to check long-run relationship which is a prior step before applying ARDL (Auto-Regressive Distributed Lag) technique. For the above purpose, following equations have been estimated which shows the short-run and long-run cointegration among the variables.

(5)
$$\Delta LFD_t = \alpha + \sum_{i-1}^{n} \alpha_{1i}\Delta L(FD_t)_{t-1} + \sum_{i-0}^{n} \alpha_{2i}\Delta L(PDD)_{t-i} + \sum_{i-0}^{n} \alpha_{3i}L\Delta(T)_{t-i}$$
$$+ \sum_{i-0}^{n} \alpha_{4i}\Delta L(S)_{t-i} + \sum_{i-0}^{n} \alpha_{5i}\Delta L(INF)_{t-i} + \delta_1 L(FD)_{t-1} + \delta_2 L(PDD)_{t-1}$$
$$+ \delta_3 L(T)_{t-1} + \delta_4 L(S)_{t-1} + \delta_5 L(INF)_{t-1} + \mu_t$$

Here, FD (Domestic credit to private sector as % of GDP) is a proxy of Financial Development and Δ represent differenced variables.

However, short-run coefficients are denoted by α_s and long-run multipliers are denoted by the δ_s. Optimal lag length of ARDL model is denoted by 'm'.

Below is given the expressions of ARDL for null and alternative hypotheses

$$H_0 = \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = 0$$
$$H_1 = \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq 0$$

Bound test is used to test the above hypotheses and we have computed F-statistics. Further, we have compared the calculated value of F-statistics with tabulated critical values of (Pesaran et al., 2001) table. If calculated value F-statistics is greater than upper bound then we will reject null hypothesis of no co-integration and will accept alternative hypothesis of co-integration. Null hypothesis will not be rejected if the value of F-statistics is less than the lower bound value. If the F-statistics value lies between the lower bound and upper bound then it indicates inconclusive results.

5. RESULTS AND DISCUSSION

The study has used the annual time series data of Pakistan from 1972 to 2015. The stationarity of the series was tested at first step to know about the order of integration. ADF Augmented Dickey Fuller test suggested by (Dickey & Fuller, 1979, 1981) has been used for unit root. ADF test results have been presented in the table 1.

The unit root results indicate that all the variables are stationary at first difference while log of inflation is also stationary at level. When we have mixed order of integration for time series variables, the recommended method to estimate cointegration along with long-run and short-run coefficient is ARDL.

Optimal Lag Length

With the help of different lag selection criteria, we have reached this point that optimal lag length is 3. Results are given in table 2.

Table 1 Augmented Dickey-Fuller (ADF) Unit Root Test

Variables	1(0)	1(1)
	Intercept	Intercept
L(FD)	-1.112494	-5.236169*
L(PDD)	-0.637321	-4.793666**
L(INF)	-3.297743**	-7.127943*
Ln(S)	-2.004105	-7.094072*
L(T)	-1.932311	-8.531699*

*, **, *** has been used to mention the level of significance at 1%, 5% and 10% respectively.

Table 2 VAR Lag Order Selection Criteria

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-90.87796	NA	7.39e-05	4.676974	4.885946	4.753070
1	133.7310	383.4786	4.41e-09	-5.060047	-3.806213*	-4.603470
2	152.6367	27.66691	6.29e-09	-4.762765	-2.464070	-3.925707
3	199.8154	57.53500*	2.48e-09*	-5.844652*	-2.501097	-4.627114*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Estimated ARDL Bounds Testing Approach

The existence of long-run relationship is checked through ARDL bounds test. Null hypothesis of this test indicates that no long-run relationship exists among the variables while the alternative hypothesis indicates long-run relationship exists among the variables. The results of ARDL bounds test are given in table 3. The value of F-statistic is 4.85 which is more than the upper bound value at 5% and 10% level of significance. When calculated value exceeds upper bound, we can reject null hypothesis of no long run relationship and accept alternative hypothesis that reveals existence of co-integration among variables. This shows that the variables in the model are related in the long-run. This finding provides basis for applying ARDL approach.

TABLE 3 ARDL Bounds Testing Approach

F-Statistics	10% significance		5% significance	
	LB I(0)	UB I(1)	LB I(0)	UB I(1)
4.89	2.45	3.52	2.86	4.01

After confirming long-run relationship among variables, we move towards estimation of long-run coefficients. The long-run results are shown in table 4.

Long-run results indicate that all variables have significant impact on financial development. Public domestic debt which is government borrowing has a negative and significant impact on financial development. The results show that 1% increase in public domestic debt reduces financial development by 0.14%. Inflation and savings are negatively with the financial development having values 0.22 and 0.27 respectively. The role of taxes on products is positive in financial development which shows that

1% increase in taxes will improve financial development by 0.51%.

Table 4 Estimated Long Run Coefficients using the ARDL Approach

ARDL(1, 1, 3, 0, 3) Dependent variable is LFD				
41 observations used for estimation from 1972 to 2015				
Regressors	Coefficient	Standard Error	T-Ratio	Probability
Constant	-8.225104	3.840863	-2.141473*	[0.0411]
LPDD	-0.142168	0.031432	-4.523037*	[0.0001]
LINF	-0.227846	0.088733	-2.567778	[0.0159]
LS	-0.277764	0.157899	-1.759122**	[0.0895]
LT	0.518109	0.161783	3.202501*	[0.0034]

* and ** denotes 5% and 10% level of significance, respectively.

Error correction model has been estimated for the short-run parameters based on the following equation.

$$(6) \quad \Delta L(FD_t) = \alpha_0 + \sum_{i-1}^{m} \alpha_{1i} \Delta L(PDD_t)_{t-1} + \sum_{i-0}^{m} \alpha_{2i} \Delta L(INF_t)_{t-i} + \sum_{i-0}^{m} \alpha_{3i} \Delta L(S_t)_{t-i} + \sum_{i-0}^{m} \alpha_{4i} \Delta L(T_t)_{t-i}$$
$$+ \varphi(ECM)_{t-i} + v_t$$

Where 'φ' is the coefficient of ECM which shows speed of adjustment from a short-run disequilibrium point to a long- run equilibrium.

Coefficient of ECM indicates that the model will adjust towards the long-run equilibrium from short-run disturbance by the speed of 30% per year. R-Square value is used to analyze the accuracy or fitness of the model. It provides explanatory power of the model that reveals how much variation in the dependent variable is explained by a set of independent variables.

The explanatory power of the model is 92%. The value of F-statistic reveals the overall fitness of the model. The p-value of F-test indicates that the model is highly significant.

Table 5 Error Correction Representation for the Selected ARDL Model

ARDL(1, 1, 3, 0, 3) Dependent variable is LFD				
Time Period 1972-2015				
Regressors	Coefficient	Stand. Error	t-Values	Probability
dC	-2.544165	1.263467	-2.013638	[0.0537]
dL(PDD)	-0.062222	0.166617	-0.373443	[0.7116]
dL(INF)	-0.011431	0.026834	-0.425969	[0.6734]
dL(S)	-0.085917	0.046159	-1.861335	[0.0732]
dL(T)	-0.041138	0.061513	-0.668764	[0.5091]
ecm(-1)	-0.309317	0.088122	-3.510094	[0.0015]

R-Squared   =0.923163   Adj R-squared = 0.890233
F-stat.   F(4, 39)   = 28.03399, Prob(F-stat)= [.000]
Mean of Dependent Variable = 3.153458
S.D. of Dependent Variable   = 0.161657
DW value = 1.619998

Diagnostic Tests

Accuracy, robustness and efficiency of the results can be checked mainly with the diagnostic tests. This study has applied Ramsey's RESET test for functional form, The Lagrange multiplier (LM) test for serial correlation, Breusch-Pagan-Godfrey test for Heteroscedasticity and kurtosis of residuals for normality of residuals. These tests verify that there is no serial correlation, heteroscedasticity or functional form problem. Diagnostic tests results have been shown in the table 6.

Table 6: Details of the Diagnostic Tests

Problem	Test	X^2-statistics	F-statistics
Serial Correlation	Lagrange Multiplier	X^2= 5.741681 [0.1249]	F= 1.357051 [0.2787]
Normality	Skewness and Kurtosis of Residuals	X^2=2.2203 [0.329]	-----
Functional Form	Ramsey's RESET	0.353579 [0.7264]	F=0.125018 [0.7264]
Heteroscedasticity	Breusch-Pagan-Godfrey	X_2= 9.107749 [0.6937]	F= 0.666350 [0.7678]

Test of Model Stability

To check the stability of parameters, CUSUM and CUSUM-square stability tests are applied. Following graph proves the stability of the model that the fitted line stays within 5% critical bounds. So, the null hypothesis is rejected and the alternative hypothesis is accepted which indicates that the model is stable. Graphs show that the speed of adjustment from the short-run towards the long-run is stable at 5% level of significance and fluctuations outside the critical bounds are not found.

Figure 2 Plot of Cumulative Sum of Recursive Residuals
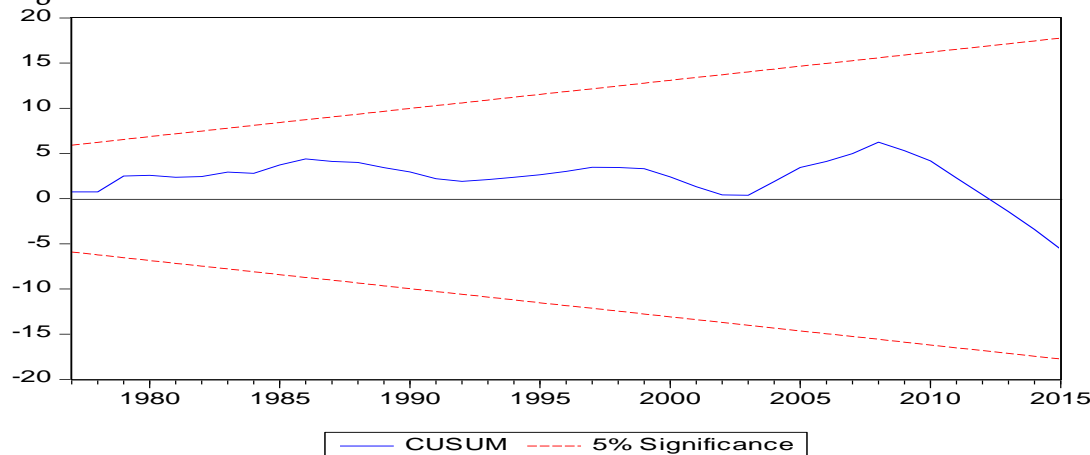
6. CONCLUSION

Results indicate that there exist long-run relationship between the variables of the model. Long-run results show that public domestic debt has a significant negative impact on financial development. Savings and inflation also impact negatively. Taxes have positive impact on financial development. From these results, we can recommend that public domestic debt should be reduced so that the private sector can get the credit from banking sector. This will bring development in the financial sector. Savings also impact negatively so they should be reduced in the long-run because for long-run growth, consumption should increase and then private sector will demand the credit. Inflation has negative impact on financial development so it should be stable in long run. Taxes play positive role because it will decrease the borrowing need of government due to increased tax revenues and availability of the

credit will increase for the private sector. Short-run results are also significant and the speed of adjustment is reasonable.

REFERENCES

Ahmad, I., & Qayyum, A. (2008). Effect of Government Spending and Macro-Economic Uncertainty on Private Investment in Services Sector: Evidence from Pakistan. *European Journal of Economics, Finance and Administrative Sciences*, (11).

Ardagna, S., Caselli, F., & Lane, T. (2007). Fiscal discipline and the cost of public debt service: some estimates for OECD countries. *The BE Journal of Macroeconomics*, *7*(1).

Berkes, M. E., Panizza, U., & Arcand, M. J.-L. (2012). *Too much finance?* International Monetary Fund.

Dabla-Norris, M. E., & Srivisal, M. N. (2013). *Revisiting the link between finance and macroeconomic volatility*. International Monetary Fund.

Demetriades, P. O., & Rousseau, P. L. (2010). Government, Trade Openness and Financial Development. *NBER Working Paper*.

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.

Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, 1057–1072.

Emran, M. S., & Farazi, S. (2009). Lazy banks? Government borrowing and private credit in developing countries. *Government Borrowing and Private Credit in Developing Countries (June 11, 2009)*.

Fielding, A. H. (2006). *Cluster and classification techniques for the biosciences*. Cambridge University Press.

Govt, P. (2016). Economic Survey of Pakistan. *Government of Pakistan, Economic Advisor's Wing, Finance Division, Islamabad, Pakistan*.

Hussain, A., Muhammad, S. D., Akram, K., & Lal, I. (2009). Effectiveness of government expenditure crowding-in or crowding-out: empirical evidence in case of Pakistan. *European Journal of Economics, Finance and Administrative Sciences*, (16).

Khan, S., & Khan, M. A. (2007). *What Determines Private Investment? The Case of Pakistan*. Pakistan Institute of Development Economics.

Kumhof, M. M., & Tanner, M. E. (2005). *Government debt: A key role in financial intermediation*. International Monetary Fund.

Naqvi, N. H. (2002). Crowding-in or crowding-out? Modelling the relationship between public and private fixed capital formation using co-integration analysis: The case of Pakistan 1964-2000. *The Pakistan Development Review*, 255–275.

Narayan, P. K. (2004). Do public investments crowd out private investments? Fresh evidence from Fiji. *Journal of Policy Modeling*, *26*(6), 747–753.

Pesaran, M. H., & Pesaran, B. (1997). *Microfit 4.0: Interactive econometric analysis*. Oxford University Press.

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. https://doi.org/10.1002/jae.616

Rajan, R. G., & Zingales, L. (1998). Which capitalism? Lessons form the east Asian crisis. *Journal of Applied Corporate Finance*, *11*(3), 40–48.

Sakr, M. K. (1993). *Determinants of private investment in Pakistan*. International Monetary Fund.

Stiglitz, J. E. (1993). Post Walrasian and post Marxian economics. *Journal of Economic Perspectives*, *7*(1), 109–114.