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The Role of Public Spending and Credit Disbursement in the Agriculture Sector of Pakistan

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Abstract

The current study explores the role of public spending and credit disbursement in the agricultural production of Pakistan during the period 2000 to 2016. In this study, Agriculture Production Growth (APG) is the dependent variable while real GDP, government expenditure, labor force participation and agricultural credit are the independent variables. The stationarity of the data has been investigated through the ADF test. Following this, hypotheses were tested through the ordinary least squares method. In addition, the robustness of the results is ascertained by conducting an LM test and CUSUM stability tests. The findings showed that government expenditure and agriculture credit put expansionary effects on agricultural production in Pakistan. It is suggested that the government should increase expenditures in the agriculture sector for the development of agricultural sector production and economic development of the country.

Key Words: Government Expenditure, Agricultural Production, Ordinary Least Squares, ADF Test

JEL Classification: Q14.

Background of the Study

"Most of the world's poor people earn their living from agriculture, so if we knew the economics of agriculture we would know much of the economies of being poor". (Schultz, 1970). This sector is deemed as the very important contributor to an economy especially in most of the developing countries. Specifically, two features differentiate the role and support of the agriculture sector in the economic growth of underdeveloped countries. First, the agriculture sector, being the main contributor to the economy, contributes almost half of the national income in most of the underdeveloped countries. Moreover, it also contributes to engaging 50% to 80% of the labour force in this sector (Johnston & Mellor, 1961).

In Pakistan, the agricultural sector is putting a vital part in uplifting the economy and it contributes 18.9% to GDP and absorbing 42.3% of the workforce. In addition, the number of agricultural loans made in 2018 increased by 39.4% and reached to 570 billion

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rupees. In the category of specialized banks, ZTBL paid 41.9 percent, 51.9 billion rupees, PPCBL paid 40.5%. Moreover, fourteen domestic private banks paid a total of 112.9 billion rupees. Five Islamic banks showed farmers a growth of 46.7% against the 20 billion rupee target and collectively paid 9.3 billion rupees. As a group, Microfinance Bank pays 79.6 billion rupees for its annual goal of 100 billion rupees, and 15 MFI / RSP pays 18.2 billion rupees for its annual goal of 25 billion rupees for 2017 (Government of Pakistan, 2017-18). The details are given in table 1 as below.

Table 1: Agriculture Credit Disbursement Institution-wise in Pakistan

Banks	2017-18			2016-17		
	Target	Disbursement	Achieved (%)	Target	Disbursement	Achieved (%)
5 Major Commercial Banks	516	292	56.6	342	204.4	59.8
ZTBL	125	51.9	41.5	102.5	46.7	45.5
PPCBL	15	6.1	40.5	12.5	5.9	47.3
DPBs (14)	200	112.9	56.5	137.6	78.1	56.8
Islamic Banks (5)	20	9.3	46.7	11	7.8	71.2
nMFBs(ll)	100	79.6	79.6	60.1	55.2	91.9
MFIsRSPs	25	18.2	72.6	34.3	10.9	31.7
Total	1.00 LOO	570	57	700	409	58.4

Source: State Bank of Pakistan

Similarly, in line with the government**,** the State Bank initiated several schemes for the farmers involved in the agriculture sector such as Credit Guarantee Scheme, Crop Loan Insurance Scheme, Livestock Loan Insurance Scheme and Workshops / Trainings / Capacity & Awareness Building. Under the Credit Guarantee Scheme, the SBP motivated financial institutions to give loans to small farmers in order to meet their requirements. So far, more than 50,000 borrowers have benefited from the scheme. Similarly, the Crop Loan Insurance Scheme aims to secure the farmers producing five major crops, that is, wheat, cotton, rice, sugarcane, and maize. So far 3.8 million borrowers are benefiting from the scheme. Whereas, the Livestock Loan Insurance Scheme helps in securing finance for sectors of livestock and dairy in the events of accidents, natural calamities, and diseases. Moreover, loans up to Rs 5 million for purchase of livestock are distributed under the scheme. Lastly, under the Workshops /Training/ Capacity & Awareness Building more than 150,000 farmers have availed the facilities offered in 35 agriculture-intensive districts throughout Pakistan (Government of Pakistan, 201-18).

The present study intends to examine the influence of public spending and credit disbursement on the agriculture development of Pakistan. The main motive behind this study is that the agriculture sector is the dominant sector, fulfilling all types of needs and the majority of the population are attached to this sector in the country. So, it can be

interesting to see that when the government expenditures in this sector. How to increase public spending and credit disbursement affecting the agriculture sector production. Thus, the key purpose of this research is:

To find out the influence of public spending on agricultural production in Pakistan, and the hypotheses of the study are:

H0: Public spending has no connection with the growth of the agricultural sector in Pakistan.

H1: Public spending promotes the growth of the agricultural sector in Pakistan.

Literature Review

Selvaraj (1993) examined the influence of public spending on agricultural productivity in India using time-series data over the two time periods 1951-52 and 1988-89. Government expenditure, gross cropped area, and agriculture labor force were the independent variables and GDP was the dependent variable. It is concluded that government expenditure policies contribute to the development of the agricultural sector in India.

Nurudeen and Usman (2010) probed the influence of public spending on the growth of the economy in Nigeria over the period 1979 to 2007. Government expenditure on total capital, regular, education, health, transport, communication, defense, agriculture, inflation, the fiscal balance were the independent variables and the dependent variable was the real GDP. The result showed that the government should increase both capital and regular expenditure, including other expenditures because this increase in expenditures is very beneficial for the economy as a whole.

Chidinma and Kemisola (2012) estimated the input of government expenditure in Nigeria's agriculture and its outcome on the economy between 1980 and 2012. Survey outcomes show that agricultural spending has boosted Nigeria's economy.

Mapfumo et al. (2012) explored the influence of agricultural sector expenditures by the government on Zimbabwe's economic development from 1980 to 2009. GDP was the dependent variable, and government agricultural expenditures are independent variables for promotion, research and development, credit assistance, investment, and consumer spending. Their consequences show that the government's expansion and credit aid agricultural spending negatively affect Zimbabwe's economic development and the government's agricultural spending on research and development positively influenced the growth of the economy.

Egbetunde and Fasanya (2013) studied Nigerian government spending on economic growth. They applied the ARDL method to explore the short-run and long-run association between Nigerian public spending and economic performance. They have taken GDP as a dependent variable and use government, capital, and recurrent expenditure as independent variables. It was found that government spending has a negative impact on growth, while recurrent expenditure positively affects Nigeria's economic growth.

Obilor (2013) studied the impact of Nigerian commercial bank credit on agricultural development from 1984 to 2007. The results show that commercial banks' credit to the agricultural sector has promoted agricultural expansion in Nigeria.

Ayunku and Etale (2015) studied the effect of agricultural spending on Nigeria's economic development from 1977 to 2010. They used ADF and Phillips Perron, cointegration testing and ECM methods for analysis. They have concluded that agricultural

spending, inflation, interest rates, and exchange rates have played an important role in determining Nigeria's economic growth.

Muhammad et al. (2015) examined the effect of government spending on the growth of the Pakistani economy by introducing time series data over the period of 1972 to 2013. They used the ADF test for checking the unit root in data. A co-integration test was followed to find the significance level between the variables. And Granger causality test has been used for investigating the interrelationship between the variables. The co-integration test revealed no long-run association between the variables. It is concluded that the agricultural sector spending put contractionary effects on the economic growth of Pakistan.

Shuaib et al. (2015) investigated the effect of government agricultural expenditure on the growth of the Nigerian economy during the period of 1960 to 2012. The dependent variable of the study was real GDP and the independent variables were agricultural output, recurrent expenditure, non-oil revenue, domestic debt rate, inflation and interest rate. It is concluded that government agriculture expenditure positively influences economic growth in Nigeria.

Chandio, et al. (2016) studied the influence of public spending on agriculture and its relationship with the growth in the economy of Pakistan during the period of 1983 to 2011. Using time-series data. Agricultural output and government expenditure in agriculture sector were the independent variables and GDP was the dependent variable. The study concluded that government spending for the uplifting of agriculture influenced the growth.

Harerimana (2016) examined the effect of public spending on agriculture to enhance the economy in Rwanda from 1997 to 2014 using panel data. GDP was the dependent variable and public spending, agriculture value-added, purchase of goods and services, gross savings, wages and salaries were the independent variables. The conclusion of the study was that government spending n agriculture sector of Rwanda has significantly and positively influenced the economic growth.

Matthew and Mordecai (2016) estimated the influence of government sector agricultural expenditure on agricultural production in Nigeria during the period of 1981 to 2014. They used ADF, Co-integration, Causality test and ECM approach for the analysis of the data. It is concluded that government spending in the agriculture sector put expansionary effects on agriculture output in the long-run and contractionary effects in the short-run.

Aina and Omojola (2017) examined the influence of government disbursement on agricultural productivity in Nigeria. OLS and ECM methods were conducted on time series data (1980 to 2013) for testing hypotheses. Government expenditure on agriculture, interest rate, and exchange rate were the independent variables and agricultural productivity was the dependent variable. The study indicated an association between public spending and agricultural productivity short and long term levels. However, in the short-run, there was a positive association between these two and in the long run, there was a negative relationship between both the variables.

Data and Methodology

This section consists of the data collection and methodology employed in the study. The details are as under

Data and Sources of Data

The present research employed time series yearly data over the period 2000 to 2016. Complete data were gathered from the Economic Surveys of Pakistan, World Development Indicators as well as the World Bank.

Empirical Model

APG = F (GE, LFP, RGDP, AC) (1)

Equation (1) depicts the empirical model of the research. In the model, APG represents the dependent variable and GE, LFP, RGDP, and AC were the independent variables. The details of the variables are given in table 1 as under:

Table 2. Definition and Measurement of Variables

Variables	Symbols	Measurement
Agricultural Production Growth	APG	It is the annual percentage growth rates of agricultural production OF Pakistan
Government Expenditure	GE	Government expenditures in million of Pakistan Rupees
Labor force participation	LFP	It is the annual percentage participation rate of Pakistan
Real Gross Domestic Product	RGDP	Pie annual percentage share of GDP
Agricultural Credit	AC	Agricultural credit in Million of Pak-Rupees

Results and Discussion

For the computation of results, various econometric techniques have been applied to the data. First, the Augmented Dickey-Fuller test has been employed for examining the unit root in the data. After that, Ordinary least squares method has been employed for the estimation of results. Moreover, for the robustness of results of the LM test and CUSUM stability tests have been used.

Table 3. Test Results of ADF

Variables	Trend and intercept		Order of Integration
	Level		
	t-values	p-values	
APG	-3.515526	0.0718	I(0)
AC	-4.173608	0.0809	I(0)
GE	-3.623680	0.0624	I(0)
LFP	-4.853702	0.0073	I(0)
RGDP	-3.789062	0.0532	I(0)

The ADF test result given in table 3 showed that all the variables are stationary at level. Hence, the OLS technique has been employed for the estimation of the study results.

Table 4. Regression Results

Variables	Coeff.	S.Error	t-Stat	Prb.
Constant	0.218352	0.319689	0.683014	0.5101
GE	0.833132	0.446905	1.864225	0.0419
LFP	0.218352	0.319689	0.683014	0.5101
AC	0.584292	0.730928	0.799384	0.0426
RGDP	0.644182	0.361737	1.780802	0.0953
R^2: 0.73				
Adj. R^2: 0.71				
Durb. Watson: 1.83				
F-statistic: 5.526049				
Prob (F-statistic): 0.010689				

Table 4 displays the regression results. The findings showed that government expenditure turned significant at 5% and showed a positive relationship with agricultural production. The results also depicted that agricultural credit and real GDP also showed a significantly positive relationship with agricultural production. Whereas, labour force participation remained insignificant with the expected positive sign. Moreover, the R-squared value is 0.73. Which shows that the explanatory variables explained 73% variation in the dependent variable. Furthermore, the Durbin Watson statistic value is 1.83 showing the absence of a multi co-linearity issue in the data.

Table 5. LM Test Results

F-stat	0.7715	Prob. F(2,8)	0.493
Obs*R-squared	2.5871	Prob. Chi-Square(2)	0.274

Table 5 shows the LM test results. It is evident from the above table that the hypothesis of no serial correlation has not been rejected. Hence, there is no serial correlation issue in the data.

Finally, CUSUM and CUSUMSQ plots are drawn to check the stability of the coefficients in the model. Both the plots are given in Figures 1 and 2 respectively. It is evident that both CUSUM and CUSUMSQ plots are inside of 5% which is reflecting the model is structurally stable. Hence it indicates that the model is structurally stable.

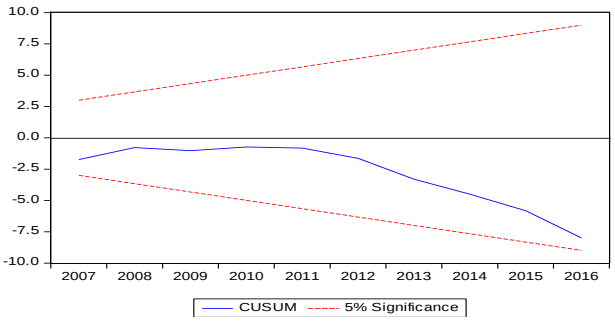

Figure 1. Test Results of CUSUM Stability

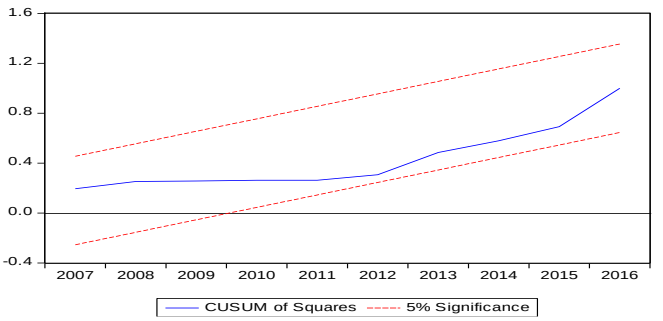

Figure 2.CUSUM Squared Stability Test Results

Conclusion

The study examined the role of public spending and credit disbursement in agricultural production of Pakistan during the period 2000 to 2016. For the estimation of results, the first stationarity of the variables has been checked. After that, the ordinary least squares method has been used for estimating the results of the study. After that, LM test and CUSUM stability test have been employed for the verification of the robustness of results. The outcomes of the research specified that public spending in the agriculture sector, agricultural credit, and real GDP showed a positive and significant association with the agricultural production, whereas, labour force participation turned insignificant. Based on the results of the research, it is therefore advised that the government must increase its expenditure in the agricultural sector, which will ultimately put expansionary effects on the growth of the Pakistani economy.

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