

Agricultural Exports Contribution to Economic Growth in Pakistan

Hira Nasir¹ | Sabahat Subhan²

¹Research Scholar, Faculty of Economics,
National University of Modern Languages

²Assistant Professor, Faculty of Economics,
National University of Modern Languages

Correspondence

Hira Nasir

(hirachohan4@gmail.com)

Submitted: August 13, 2020

Revised: September 22, 2020

Accepted: November 08, 2020

Published online: December 30, 2020

ABSTRACT

The main aim of this research is to analyze Pakistan's agricultural and economic implications. This study also sheds light on agricultural challenges and their possible solutions. This article uses time-series data from 1990 to 2020 and is collected from various websites such as the Pakistan Bureau of Statistics, Government of Pakistan (GOP), World Development Indicators (WDI). The analysis was performed using ARDL co-integration mode, bound tests, and an error-correction model. The survey results show that cotton exports are negatively or slightly correlated with economic growth. In contrast, Rice and wheat exports have a positive and important link to long-term and short-term economic growth. In addition, there is a one-way relation between agricultural commodities and economic growth such as rice exports. Based on calculated results, this study recommends the governing bodies in Pakistan transform agricultural exports into value-added products, stimulate private investment, and improve traditional agricultural production techniques to bring about structural changes in agricultural exports.

Keywords: Pakistan, Agricultural exports, ARDL, Unit root, Economic Growth

1 | INTRODUCTION

The country's principal purpose is to achieve economic growth and advancements using commerce as a major driver of growth. Global commerce, according to neoclassical and classical economists, has a direct impact on economic growth and profitability. According to Keynesianism, exports are the main external source of income used to purchase capital, industrial and technological goods. It also indirectly contributes to economic growth by encouraging competition, positive externalities, technological development, and eliminating inefficiencies (Faridi, 2012). International trade in agricultural products can transform the livelihoods of agriculturally dependent countries by allowing farmers to export agricultural products to generate income and promote farming production. It also has an impact on households' access to appropriate food through affecting commodity pricing, producers' market access, and labor rights (Otieno and Ogalo, 2008). Pakistan's agricultural sector has been working to restore Pakistan's economy since its independence. Although initially considered the dominant sector, the production performance of the

agricultural sector is gradually declining due to the instability of its political, social, environmental, and climatic characteristics. It employs about 38.5 percent of the total workforce and accounts for over 19.2 percent of Growth Domestic Product (GDP). In terms of livelihoods, 65 to 70 percent of the rural population lives in rural areas and is directly or indirectly dependent on this industry. **Source Government of Pakistan (GOP) 2021**

The agricultural sector is closely related to the rest of the economy, which is ignored in the statistics. It is a major supplier of raw materials for the manufacturing industry. Pakistan's exports have suffered as a result. insecticides, fertilizers, tractors, and farming implements all have the largest market in the world. Agriculture's dilemma has switched from "independence" to "commercialization," which is referred to as agricultural economic activities. Production operations are realized at the maximum profitability level. The concept of self-sufficiency has also developed into profit maximization. Gross Domestic Product (GDP) is one of the most important indicators of economic structure. Key crops (wheat,

rice, sorghum, maize, and cotton) contribute upto 23.60% to the added value in agriculture and 4.45% to GDP. Other crops account for 10.80% of agricultural value-added and 2.04% of GDP.

Pakistan's main crops include agricultural products such as wheat, rice, cotton, and other important; crops. The export sector faces a variety of challenges due to its high dependence on raw materials. Initially, 99% of Pakistan's exports and imports consisted of just five raw materials. Raw jute, raw cotton, raw wool, leather, and tea. The shift in export structure began early in Pakistan's economic policy towards industrialization. 4,444 Agricultural sector performance in 2021 is generally encouraging, up 2.77% from the target of 2.8%. The main crops (wheat, rice, sugarcane, maize, and cotton) increased by 4.65%. Production of 4,444 key carip crops such as sugarcane, maize, and rice in 2020 exceeded production targets, showing a significant improvement of 4,444 compared to the previous year. Sugarcane production increased by 22.0% from 66.38 million tons to 81.09 million tons, rice increased by 13.6% from 44,444 tons to 74,144.44 million tons, 84.19 million tons, and corn increased 7.4% to 846.85 million tons, up 7.4%. I did. It was primarily affected by planted area reductions, monsoon torrential rains (), and pest infestations. Cotton production was 7,064 million bales, a decrease of 22.8% from 4,444 bales in the previous year at 9,148 million bales. Government of Pakistan (GOP). We must focus on agricultural commodities that Pakistan export and understand the impact and contribution of agricultural exports on Pakistan's economy.

Research question and objective of the study

- The main aim of this research is to investigate the contribution of agricultural exports to Pakistan's economic growth.
- Analyze trade trends of agricultural commodities in Pakistan. long-run relationships among dependent and independent variables by using co-integration techniques
- Short-run analysis by using ECM (error correction Model)

2 | LITERATURE REVIEW

The study of the relationship between economic growth and agricultural exports relies heavily on econometric data. Over the last two decades, several studies have been completed, with much of the empirical research focusing on the effects of agricultural exports on economic growth.

U Hayat, T shah (2019) studied the impact of agricultural export on the economy. The study evaluates and analyses the relationship between various agricultural sub-sectors and their contribution to the country's agricultural growth. The findings indicate that institutional credit is important in attaining agricultural growth in the country. Other model factors such as agro-based industries, livestock, mechanized inputs, and agricultural exports have all had a favorable impact on agricultural growth and, as a result, on the economy's overall GDP growth.

Fatimah, A. and A. Qayyum (2018) this study uses cointegration analysis and a dynamic error correction technique to investigate the Export-Led Growth hypothesis in Pakistan from 1971 to 2016. Exports are a key and substantial factor of economic growth, according to the study. Pakistan is a country in which Exports, as well as labor force, investment, and other factors, are shown in the analysis. The domestic credit-to-private-sector ratio is crucial both in the long and short run.

Azam (2011), Faridi (2012), Zaher, et al (2014) Arshad et al. (2017) studied the impact of agricultural exports on Pakistan's economic growth. The research shows that exports have an optimistic and significant impact on economic growth.

The relationship between the expansion of agricultural exports commodities and economic growth in Thailand has been studied by Siddique et al. (1999), Ekanayake (1999), Sanjuan et al. (2010), and Khan et al. (1995). The relationship between economic growth, exports, and imports is investigated using Granger's cointegration and causality tests. GDP, exports, and imports are the variables that are taken into account. The Granger causality test reveals that there are positive and significant connections.

The contribution of agricultural exports to economic growth in the least developed nations was studied by Dawson (2005), Kwa, and Bossumu (2007). The study backed up the hypothesis of export-led growth with evidence from developing countries. The study's findings emphasized the importance of agricultural exports in economic growth.

Sanjuan (2010) investigates the role of agricultural exports in developing countries. He used time-series techniques such as co-integration, ARDL, and ECM, and the findings reveal that there is a strong and long-term association between variables.

Lam (2016) analyzed the link between agricultural exports and GDP for four Asian countries (including Indonesia, Malaysia, Thailand, and the Philippines). In Indonesia, the author found a one-way relationship between the long-term and short-term economic growth of agricultural exports. In the Philippines, he noticed a two-way relationship between exports and short-term economic growth. And for Malaysia and Thailand, the author detected that in the long run there is a two-way street between the two.

Victor (2015), Oguntona (2012) studied the impact of agricultural export on Nigerians economy. The empirical analysis of agricultural exports and economic growth in Nigeria was performed using time series. The variable used in the study was GDP as an endogenous variable that measures economic growth as a function of real agricultural exports. The conclusion of the study shows that agricultural exports have made a positive contribution to the Nigerian economy.

In Jordan, Ruba et al. (2014) discovered a link between economic growth and agricultural exports. To identify the direction of the association between the two variables, they applied Granger's approach, which had led to the conclusion that economic growth and exports have a causal relationship, not the other way around.

Chebba (2010) sought to evaluate agriculture's role in economic growth by examining how it interacts with other industries. The multivariate approach of Johansen was utilised to investigate co-integration with other economic sectors in his country. He was especially interested in the non-causality between agriculture and other economic sectors. The findings

revealed that all of the country's economic sectors are intertwined and tend to evolve in lockstep. To investigate whether there is a causal and long-term relationship between exports and economic growth in Nigeria, Ehinomen & Oguntona (2012) used the ARDL and Granger causality tests. The data demonstrated that in Nigeria, there is a one-way relationship between economic growth and agricultural exports, as well as a long-term relationship between exports and economic growth.

3 | THEORETICAL FRAMEWORK AND METHODOLOGY

The method applied in this study is based on descriptive statistics obtained from secondary sources. The impact of agricultural exports on Pakistan's economic growth is studied using time series data. The data used in the study will be 30 years old and collected from different sources such as Bureau of Statistics, the Pakistan Economic Census, and the World Trade Organization. The export analysis of agricultural products such as wheat, rice, sugar cane, and cotton. Different time series data methodologies are utilized in the short and long run on Pakistan's economic growth. A cointegration and error correction model (ECM) is used to estimate the influence of total agricultural exports on economic growth. The GDP is used as the dependent variable and independent variables are the agricultural products such as (Wheat, Rice, Sugar, and Cotton).

Study gap:

As we know from the literature review that old researchers have taken many independent variables as imports exports and so on, but we are only taking exports as independent variables. For collecting data we are adding recent years as well for example data of 30 years from 1990-to 2020

Econometric Model

$$GDP_t = \beta_0 + \beta_1(R_{t-1}) + \beta_2(R_{t-2}) \dots \dots + \beta_n(R_{t-n}) \dots \dots + \alpha_0 + \alpha_1(W_{t-1}) + \alpha_2(W_{t-2}) \dots \dots + \alpha_n(W_{t-n}) \dots (S_{t-1}) (S_{t-2}) \dots \dots + \theta_0 + \theta_1(C_{t-2}) \dots \dots + \theta_n(C_{t-n}) + \epsilon_t$$

$$GDP_t = \rho_1 \sum_{i=0}^n \beta_i (r_{t-i}) + \rho_2 \sum_{j=0}^m \alpha_j (w_{t-j}) + \rho_3 + \rho_4 \sum_{i=0}^p \theta_i (c_{t-i}) + \epsilon_t$$

Where:

GDP = Gross Domestic Product

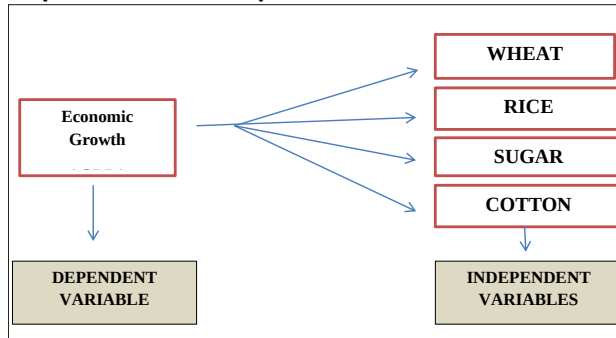
R = Rice

W = Wheat

S = Sugar

C = Cotton

Dependent and Independent Variables:



4 | RESULTS AND DISCUSSION

Data stationarity, the autoregressive distributed lag model, and the bound test method are all covered in this section. To check the order of integration, the Augmented Dickey-Fuller (ADF) test is utilised. ADF testing should be used to justify the use of the ARDL model. Only the autoregressive distributed lag model (ARDL) can be employed in some of the variables are integrated like I (0) and some are integrated like I (1). Otherwise, the basic least squares (OLS) approach is commonly employed when all variables are integrated into I (0). In contrast, the Johansen cointegration approach is only employed when all variables have been integrated into me. (1).

Diagnostic Test

First, for testing the stationarity of each factor, to know whether the coefficient is integrated at first difference or second. Based on the estimation of the unit root test, continue to apply the steps that show the long-term and short-term effects of each variable.

Augmented Dickey-Fuller

Before running the technique, you need to check the data Stationarity, especially with time-series data. Otherwise, the entire regression can be a pseudo-regression. To get consistent and reliable results, you need to convert non-stationary data to stationary data.

Augmented dickey fuller tests are used to test for unit root. p -values determine whether the null hypotheses are accepted or rejected.

- If the p -value is ≤ 0.05 then we will reject the null hypothesis, and accept alternative
- p -value > 0.05 we will accept the null hypothesis

Table 3. Ardl Results.

that there is no relationship between variables

Table 1. Unit Root Test.

VARIABLES	LEVEL	1 ST DIFFERENCE	p-values	Order of integration
GDP	0.041499	-0.73511	0.0007	I(1)
COTTON	-0.69632		0.000	I(0)
WHEAT	-0.51828		0.0082	I(0)
RICE	0.012834	-2.31759	0.0076	I(1)
SUGAR	-0.40384	-1.30247	0.0065	I(1)

Bound test

The bound test for co-integration demonstrates the long-term relationship between the variables. The results suggest that these variables have a long-term association. The findings of the co-integration bound testing are given in the table below.

Table 2. Bound Test.

F-statistic = 4.97893		Lower I(0)	Upper I(1)
Significance	10%	2.4	3.07
	5%	2.43	3.24
	2.5%	2.98	4.34
	1%	4.21	4.38

The critical values of the upper and lower bounds I(1) and I(2) are shown in the table above (0). Because the observed F-statistic value is bigger than the upper bound of F-Statistics, we reject the null hypothesis and accept the alternative hypothesis, which states that the variables have a long-term relationship. (Wheat, Cotton, Sugar, and Rice).

Long-Run Relationship of ARDL Model

The following model we use:

$$GDP_t = \beta_0 + \beta_1 R_t + \beta_2 W_t + \beta_3 C_t + \beta_4 S_t + \epsilon_t \quad (1)$$

The natural logarithm is used on both sides of the eq. (1) to eliminate variations in measurement units, to minimize the gap between the dependent and independent variables, resulting in the eq (2).

$$LGDP_t = \beta_0 + \beta_1 LR_t + \beta_2 LW_t + \beta_3 LC_t + \beta_4 LS_t + \epsilon_t$$

Where:

LGDP = Log of the GDP

LR = Log of the Rice

LW = Log of the Wheat

LC = Log of the Cotton

LS = Log of the Sugar

Variables	Coefficients	Standard Error	T-Stats	Probability
LOGGDP(-1)	0.632374	0.217499	2.907476	0.0122
LOGCOTTON(-1)	-0.054917	0.017315	-3.171679	0.0074
LOGCOTTON(-2)	0.025647	0.019053	1.346132	0.2013
LOGCOTTON(-3)	0.031617	0.021343	1.481370	0.1623
LOGCOTTON(-4)	0.038390	0.023562	1.629307	0.1272
LOGRICE	0.057855	0.101486	0.570075	0.5783
LOGRICE(-1)	0.115143	0.083695	1.375754	0.1921
LOGRICE(-2)	-0.008911	0.082314	-0.108257	0.9154
LOGRICE(-3)	0.174358	0.078135	2.231491	0.0439
LOGRICE(-4)	-0.043562	0.072816	-0.598251	0.5600
LOGSUGAR	0.060083	0.025891	2.320597	0.0372
LOGSUGAR(-1)	0.023588	0.030311	0.778207	0.4504
LOGSUGAR(-2)	-0.038442	0.032177	-1.194717	0.2535
LOGSUGAR(-3)	0.091037	0.034958	2.604181	0.0218
LOGSUGAR(-4)	-0.044198	0.036452	-1.212489	0.2469
LOGWHEAT	-0.067030	0.024532	-2.732322	0.0171
LOGWHEAT(-1)	-0.070031	0.033609	-2.083720	0.0575
LOGWHEAT(-2)	-0.106661	0.033352	-3.198070	0.0070
LOGWHEAT(-3)	0.024166	0.031235	0.773675	0.4530
LOGWHEAT(-4)	0.034929	0.026961	1.295514	0.2177
C	-0.83234	0.583052	-1.274909	0.2247

Used, the above model as follow:

$$LGDP_t = -0.82 + 0.16LR_t - 0.04LW_t - 0.051LC_t + 0.070LS_t + \epsilon_t$$

The table above shows the estimated long-term coefficients using an ARDL approach to co-integration, which proves that the GDP growth rate is very much influenced only by export in the long run. According to the above equation, while other things held constant, when there is a 1% increase in Rice export (LR) it will prime to an increase of 16% in the growth domestic product (GDP) of Pakistan. It also shows that the Rice export had a positive impact on the dependent variable (GDP).

In the case of Wheat export (LW, It has a decreasing coefficient which means, other things are held constant when there is 1% increase in the export of wheat it leads to a decrease of 4% in the GDP of Pakistan. Because Pakistan is unable to fulfill the domestic need for wheat, Pakistan has to import wheat from other countries and it has an adverse effect on GDP. (Pakistan export wheat 1.7 MT and import 3 MT in 2019)

And in the case of Cotton export, there is also a negative relationship between cotton export and the GDP of Pakistan. Other things remain constant, when 1% increase in cotton export, there is 5% decrease in the GDP of Pakistan. Export of cotton is also

unprofitable owing to the same reasons as explained above for the instance of wheat.

Finally, the Sugar export has a positive impact on GDP. Other things remain constant when 1% growths in Sugar export pointers to 7% growth in the gross domestic product (GDP) of Pakistan.

Error Correction Model: Short Run Relationship

This method is used to figure out how the gross domestic product per capita and other independent variables are related in the short run. ECM shows the short-term influence on variables as well as the rate of adjustment. E-views display the results.

Interpretation of results

We use ECM to show that in the short term, the dynamic model captures the speed of convergence to equilibrium and that our dependent and independent variables have a substantial relationship. The ECM coefficient has a value of -0.101, which is negative and significant, indicating the rate of adjustment. In this study, we discovered a ten percent speed of correction. It means that a 10% adjustment point will occur every year in the long run. This error correction model's negative and

Table 4. ECM Results.

Variables	Co-efficient	Error	T-Stats	Probabilit
D(LOGGDP(-1))	-0.308720	0.162488	-1.899958	0.0798
D(LNCOTTON(-2))	-0.070008	0.017199	-4.070519	0.0013
D(LOGRICE(-2))	-0.130796	0.057752	-2.264792	0.0413
D(LOGSUGAR(-2))	-0.046839	0.020446	-2.290879	0.0393
D(LOGWHEAT(-2))	-0.059094	0.023166	-2.550934	0.0241
CointEq(-1)*	-0.101906	0.009283	-6.345590	0.0000

Substantial coefficient suggests the presence of a long-run causal link. The F-statistical probability is likewise statistically significant at the 5% level of significance, indicating that the model is good. Durbin's value is 1.8, indicating that there is no autocorrelation.

5 | CONCLUSION

The relationship between exports and economic growth is gaining popularity. It has been theorized that variations in export rates can affect productivity. Pakistan is working hard to expand exports in this area. This study shows that the claim that "agriculture has a considerable impact on Pakistan's economic growth" is correct. Economic Growth (GDP) and agricultural exports have a positive association. This research backs up the assumption that "agricultural has a significant impact on Pakistan's economic growth." A favorable relationship exists between GDP and agricultural exports.

After estimating and analyzing the results, I believe that if anyone else, including myself, conducts research on this topic in the future, we should include more independent variables such as imports, non-agricultural exports, and so on to examine the relationship as a whole with the economy. This will help us gain a better understanding of this particular sector of the economy. Second, the findings of the study match the economic reality; for example, the findings demonstrate that cotton has a negative relationship with the economy; as we all know, Pakistan's cotton sector is dwindling, and Pakistan imports more cotton than it exports, and vice versa.

6 | REFERENCES

- Hayat, U., Shah, T., & Bacha, M. S. (2019). An Empirical Assessment of the Dynamics of Agricultural Growth in Pakistan. *Sarhad Journal of Agriculture*, 35(3).
- Fatemah, A., & Qayyum, A. (2018). Modeling the impact of exports on the economic growth of Pakistan. *Turkish Economic Review*, 5(1), 56-64.
- Azam, A., & Shafique, M. (2017). Agriculture in Pakistan and its Impact on Economy. A Review. *Inter. J. Adv. Sci. Technol*, 103, 47-60.
- Bakari, S. (2017). The Impact of Olive Oil Exports on Economic Growth: Empirical Analysis from Tunisia. *BİLTÜRK Journal of Economics and Related Studies*, 2(3), 441-458.
- Lam, T. D. (2016). An empirical analysis of the ASEAN-4's causality between exports and output growth. *International Journal of Economics and Financial Issues*, 6(2).
- Ouma, D., Kimani, T., & Manyasa, E. (2016). Agricultural trade and economic growth in East African Community. *African Journal of Economic Review*, 4(2), 203-221.
- Shihab, R. A., Soufan, T., & Abdul-Khaliq, S. (2014). The causal relationship between exports and economic growth in Jordan. *International Journal of Business and Social Science*, 5(3), 302-308.
- Faridi, M. Z. (2012). Contribution of agricultural exports to economic growth in Pakistan. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 6(1), 133-146.
- Chebbi, H. E. (2010). Agriculture and economic growth in Tunisia. *China Agricultural Economic Review*.
- Abdullah, M., & Kalim, R. (2011). Determinants of food price inflation in Pakistan.
- Memon, M. H., Baig, W. S., & Ali, M. (2008). The causal relationship between exports and agricultural GDP in Pakistan.
- Jordaan, A. C., & Eita, J. H. (2007). Export and economic growth in Namibia: a Granger causality analysis. *South African Journal of Economics*, 75(3), 540-547.
- Kwa, A., Bassoume, S., & Murphy, S. (2007). Exploring the Linkages between Agricultural Exports and Sustainable Development. *EcoFair Trade Discussion Papers*, (8).
- Canchari, N. N. U., Rodriguez, C. A. A., & Baral, P. The Impact of Agricultural Exports to China on Economic Growth of Peru: A Short-and Long-Run Analysis.
- Shah, S. W. A., Haq, M. A., & Farooq, R. M. A. (2015). Agricultural export and economic growth: A case study of Pakistan. *Public Policy and Administration Research*, 5(8), 88-96.
- Ekanayake, E. M. (1999). Exports and economic growth in Asian developing countries: Cointegration and error-correction models. *Journal of economic*

development, 24(2), 43-56.

17. Khan, A. H., Malik, A., Hasan, L., & Tahir, R. (1995). Exports, Growth, and Causality: An Application of Co-integration and Error-correction Modelling [with Comments]. *The Pakistan Development Review*, 34(4), 1001-1012.
18. 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.