

Impressions of Agriculture, Manufacturing and Services Exports on Economic Expansion in Pakistan

Sumaira Batool¹, Dr. Saima Urooge², Syed Muhammad Faraz Raza³, Muhammad Qasim Javaid^{4*} & Asif Ali⁵

¹Department of Economics, Women University Multan, Email: sumairaimran14@gmail.com

²Assistant Professor, Department of Economics, Islamia College Peshawar, Email: saimaurooge@icp.edu.pk

³School of Economics and Management, Wuhan University, China, Email: farazraza10@gmail.com

⁴School of Business, Zhengzhou University, Henan, China, Email: qasim939@yahoo.com

⁵School of Business, Zhengzhou University, Henan, China, Email: asifalilakho33@yahoo.com

ARTICLE INFO			ABSTRACT
Article History:			<i>This study's objective is to examine the linear impressions of disaggregated industrial exports including agriculture, manufacturing and services on economic expansion in Pakistan. Rendering to this, the data of export indicators is taken from 1980 to 2020. For estimation purposes, existing study has applied the linear ARDL model for long and short term estimations. The linear short-term estimation indicate that agriculture exports and the manufacturing exports has surged the economic expansion of Pakistan in the short term. In accordance with the long term ARDL linear estimation, the values of agricultural exports and manufacturing exports are increasing Pakistan's economic expansion. Simultaneously, the services exports are negatively influencing economic progress of Pakistan, while the effect is inconsequential. At the same time, it is evident that the error corrected term has adjusted the error from short to long period of given time. Therefore, by implementing a comprehensive policy strategy, Pakistan can optimize its capabilities in high-value service sectors like information and technology, banking, and professional consulting, therefore fostering sustained economic expansion.</i>
Received:	January	14, 2025	
Revised:	February	08, 2025	
Accepted:	February	10, 2025	
Available Online:	February	12, 2025	
Keywords:			
Agriculture Exports, Manufacturing Exports, Services Exports, ARDL Model, Pakistan's Economic Expansion			
Corresponding Author:			
Muhammad Qasim Javaid			
Email:			
qasim939@yahoo.com			

 OPEN ACCESS



Introduction

Pakistan's core sector, namely agriculture, makes a substantial contribution to the country's exports and imports. Crucial export items include agricultural goods such as rice, cotton, fruits, and vegetables. The processing and export of these agricultural products are reflected in the industrial value added in this sector of the economy. Pakistan may acquire agricultural equipment, fertilizers,

and technology in order to increase agricultural production in the primary industry. This enhances the value generated in the agriculture supply chain. Pakistan is highly dependent on its secondary sector, namely the textile industry, for its export activities. The industrial value added in this industry signifies the conversion of raw resources into final products for global markets. Specifically, the textile and garment sector considerably contributes to the revenues generated from exports. Additional exported commodities embrace chemicals, processed food products, and certain manufacturing items. In the secondary sector, there is a possibility of importing equipment, raw materials, and technology specifically for the purpose of manufacturing operations. Pakistan may also engage in the importation of finished items in areas where local manufacturing is inadequate. Imports have played an integral part in growing the production capacity and overall value added in the industrial sector. The tertiary sector in Pakistan serves an instrumental part in the country's export industry by providing services such as information and technology (IT) outsourcing, financial services, and transfers from workers abroad. The export revenue of IT services has undergone tremendous growth. The tertiary industry may acquire technology, software, and knowledge from outside to facilitate the expansion of companies such as IT and banking. Educational services may beneficially impact imports since they contribute to the development of skills and knowledge inside the nation. Pakistan's economy has historically relied on agriculture and textiles, but a concerted attempt is now to diversify the economy and strengthen the industrial value added in numerous industries. Economic policies and efforts that focus on enhancing the business climate, attracting foreign investment, and fostering innovation have an impact on the patterns of industrial value added in Pakistan's export and import activity.

Pakistan is a more import-intensive country, but its exports are gradually growing yearly. In Pakistan, most exports are from the agriculture sector. However, its textile and leather industry has made a remarkable contribution to its export value and economy's growth (Pakistan Bureau of Statistics, 2022; Rehman *et al.*, 2022; Sibt-e-Ali *et al.*, 2018). Moreover, it is famous for its sports products, and the industry in Punjab province has a significant share in its export value. According to facts, the export value was 6.83 billion US dollars in 1990 and increased to 10 billion US dollars in 2000. However, the next decade was better than previous decades following foreign investments and effective industrial export-oriented strategies. In this decade, export value exceeded 10 billion US dollars to 28.06 billion US dollars, about 13.5 percent of Pakistan's economic growth. However, after that, some break years and structural transformations were seen, and the trade balance was in deficit because of higher imports than exports. Therefore, it has not witnessed efficiency in export value, and at the end of 2020, it was about 27.33 billion US dollars. It does not end here; the structural transformation in previous years, the changes in industrial export-oriented strategies, and the opening up of the closed industries have shown their efficiency in the shape of significant progress in export value. The export value recorded about 35.57 billion US dollars, a 23.75% increase from 2020 and 10% of Pakistan's GDP (Khan and Khan, 2019; Pakistan Bureau of Statistics, 2022; World Development Indicators, 2022; Macrotrends, 2022). The study intends to examine the significant and encouraging impact of disaggregated industries' export value on economic expansion in Pakistan.

Literature Review

According to Tiffin and Irz (2006), most developing countries' economic growth engine is agriculture. While some developing economies have not shown this fact, no causation is found between agricultural value added and economic growth. The agriculture sector in most countries is considered the factor of employment, and the employment rate in agriculture is more significant than in other industrial sectors. Timmer (2009) states that agriculture share are substantial for

employment and gross domestic product share. However, agriculture, on the one hand, fulfills the employment requirement while its value-added contributions to the respective economies' economic growth. In Pakistan, agriculture is the largest sector in its share of economic growth and also fulfills human demand. However, the agricultural value added is a constructive factor in promoting Pakistan's economic growth (Shah *et al.*, 2015; Nadia *et al.*, 2020; Ullah *et al.*, 2023; Shah *et al.*, 2021). Raza *et al.* (2023) analyzed the increase in agricultural value, energy intensity, and economic output in Pakistan from 1981 to 2020. The findings revealed that agricultural energy intensity and value addition are significant for agriculture's economic growth. However, there is a race to foster economic growth in the modern time of globalization and resource extraction. At the same time, energy-intensive agriculture production is favorable for economies to achieve the desired economic growth from the addition of agricultural value. From Pakistan's point of view, its economy gazes at the weedy manufacturing sector. After entering the World Trade Organization, Pakistan's manufacturing sector gained meaningful recognition in the mid-1990s. Following this, another piece of evidence of Pakistan is that the manufacturing and agriculture sectors are recognized tremendously. However, Pakistan's industrial reforms in its manufacturing sector have shown a clear picture of its worth in terms of its economic progression. In this regard, Nadia *et al.* (2020) found that the manufacturing value added is significant and enhances Pakistan's economic growth from 1972 to 2017. However, it is evident that technology in the manufacturing sector is the real addition of economic value in Pakistan and is considered Pakistan's growth engine. Regarding this, the study is adopted by covering the time period of 1985 to 2018 by applying a linear ARDL model. The findings revealed that the technological factor with manufacturing value added enhanced Pakistan's economic growth (Awan and Yaqoob, 2023).

Ahmed and Ahsan (2014) investigated that the value-added services sector is steadily enhancing Pakistan's economic growth and is also an encouraging factor for trade and employment creation. However, the bottleneck has been removed towards this sector in Pakistan in recent eras. Following the reforms in the service sectors, its efficiency towards gaining economic progression is somehow achieved while also assisting in reducing Pakistan's poverty level. In another evidence of Pakistan, it is also evident that the services sector value added towards economic growth of Pakistan is more than half of Pakistan's gross domestic product. Following this, the study used the ARDL method to measure the services value-added from 1975 to 2014, and it is evident that the services value added towards Pakistan's economic growth is substantial in the long and short periods (Ajmair *et al.*, 2016). In one piece of evidence, it is accepted that Pakistan's most contributing sector towards economic growth is the agriculture sector. However, services sectors following structural changes positively affect Pakistan's economic betterment. Further adding the services sector attributes, its determinants, such as foreign direct investment and national expenditures, remain significant and support the services sector value-added to enhance Pakistan's economic growth in the long term (Ambreen *et al.*, 2017).

Export value is the prime factor in the value-added industry and the direct factor in promoting economic growth. In this regard, Ellahi *et al.* (2011) elaborated that the openness of trade and trade liberalization is imperative to fostering economic growth in developing economies. Further, the exports of agriculture, manufacturing, services, and technology are vital to its openness and liberalization in developing economies. From Pakistan's perspective, it is initiated that the industrial value added is a supporting indicator of exports and imports. During the efficient industrial value added, exports are imperative for Pakistan's economic growth in the long run. In accordance with the agriculture exports, Shah *et al.* (2015) revealed that agricultural exports are significant for Pakistan's macroeconomic performance. In this regard, the study examined the agricultural and non-agricultural exports and their impact on Pakistan's economic growth.

However, it has been found that agriculture is Pakistan's growth engine, and its exports are imperative to Pakistan's economic performance. However, it is also measured that non-agriculture exports are more acute than agriculture exports towards the economic growth of Pakistan. Further, in another perspective of Pakistan's exports, Nadia *et al.* (2015) elaborated that agriculture value added and manufacturing value-added with their exports significantly influence Pakistan's economic growth. The findings illustrate that the added agricultural value is more significant in Pakistan than the added manufacturing value towards Pakistan's economic growth. However, the trade volume in terms of export value increases more by the agriculture industry and has bidirectional causality between them. Further, with the assistance of added agricultural value, export value contributes more to Pakistan's economic growth (Khan *et al.*, 2021).

In one piece of evidence from Haq *et al.* (2017), trade policies are discussed, which are essential for Pakistan's economic growth. However, it is elaborated that the manufacturing sector of Pakistan is weedy towards economic growth. According to historical moments, Pakistan improved its trade liberalization measures in the 1970s, and the momentum from those measures was gained in the 1990s after entering into the World Trade Organization. However, the findings revealed that the trade volume in terms of export value has increased, enhancing the manufacturing value added and economic growth. Technology application, information, and technology services have made their value-added services more comprehensive and helped achieve targeted economic growth in Pakistan. Furthermore, exporting information and technology and adding value to technology services contribute to Pakistan's economic growth (Javed, 2020). From the perspective of nonlinear effects, Rehman (2016) and Rehman *et al.* (2023) elaborated that the agriculture, manufacturing, and services exports are destructive to Pakistan's economic growth during long-term positive and negative shocks. In contrast, technology exports and foreign direct investment are efficient during positive shocks and damaging during negative shocks towards economic growth. In another perspective of nonlinear estimation, Saleem and Sial (2015) and Saleem *et al.* (2023) illustrated that the exports of industrial products are asymmetric towards the economic growth of Pakistan. It indicates that the positive shock in exports is contributing to economic growth. However, the negative shock in exports is destructive to Pakistan's economic growth in the long run.

Data and Methods

This section deliberates agriculture, manufacturing, and services exports to influence Pakistan's economic progression. For this purpose, the data is collected from 1980 to 2020 from World Development Indicators of the World Bank (2023). Economic expansion is taken as annual percentage of GDP per capita as dependent variable. The independent variables such as agriculture, manufacturing and services are taken as percentages of merchandise exports.

However, the functional form of the symmetric empirical model is given below:

$$ECE = f(AXV, MXV, SXV) \quad (1)$$

The above Equation (1) of linear functional form directs the linear impression of agriculture export (AXV), manufacturing export (MXV), and services export (SXV) on the economic expansion as economic growth (EGP) of Pakistan.

This critical step applies the linear ARDL model to examine the linear impression of disaggregated industrial exports on the economic expansion of Pakistan. However, the linear ARDL model

consensuses for the estimation of short and long-run impacts. Rendering this purpose, one necessary step is bound testing which is required to approve long run estimation. After this, the long-run ARDL equation of the proposed model for Pakistan is given below:

$$ECE_t = \beta_0 + \beta_1 AXV_t + \beta_2 MXV_t + \beta_3 SXV_t + \mu_t \quad (2)$$

The above equation (2) is equated to measure the linear effect of agriculture exports (AXV), manufacturing exports (MXV), and services exports (SXV) on Pakistan's economic expansion (EGP) in the long period of time.

Further the short-run impressions following the conventional error corrected model is equated below:

$$\Delta ECE_t = \delta_0 + \sum_{i=1}^k \delta_1 \Delta ECE_{t-1} + \sum_{i=0}^k \delta_2 \Delta AXV_{t-1} + \sum_{i=0}^k \delta_3 \Delta MXV_{t-1} + \sum_{i=1}^k \delta_4 \Delta SXV_{t-1} + \beta_1 ECE_{t-1} + \beta_2 AXV_{t-1} + \beta_3 MXV_{t-1} + \beta_4 SXV_{t-1} + u_t \quad (3)$$

The above equation (3) indicates short run impressions as δ 's to examine the linear impressions of agriculture, manufacturing, and services exports on economic expansion in the short period of time in Pakistan. At the same time, the error usually arrived from short to long period is also adjusted through conventional error corrected term.

Results and Interpretation

This section discusses the outcomes of the study's objective of achieving the disaggregated industrial export impressions towards the economic expansion of Pakistan. In this regard, linear ARDL model illustrate the impressions of disaggregated industrial exports on the economic expansion of Pakistan in the periods of short and long terms. However, the initial step of statistical estimation, by means of descriptive statistics and correlation matrix is discussed before moving to the linear estimation. In this regard, the statistical summary of Pakistan model measures the mean, median, maximum, minimum and standard deviation. In table 1, statistical summary is presented which has not shown any insignificance in the model and empirical model is declared as statistical worthy for further estimation.

Table 1: Statistical Descriptive Summary

	ECE	AXV	MXV	SXV
Mean	1.985461	5.581178	75.63292	12.63542
Median	1.834971	2.581174	76.29755	12.25185
Maximum	5.818349	20.47243	85.98637	17.27073
Minimum	-2.970295	0.953789	48.19090	8.221612
Std. Dev.	1.973948	5.573085	9.106116	2.537786

Table 2: Correlation Matrix Summary

	ECE	AXV	MXV	SXV
ECE	1			
AXV	0.3333	1		
MXV	0.3300	0.7187	1	
SXV	-0.1981	0.1848	0.2683	1

Table 2 demonstrates the outcomes of the correlation matrix to indicate the multicollinearity and

correlation strength among variables of Pakistan's empirical model. From Pakistan's perspective, AXV and MXV have a moderate correlation with ECE, as the correlation matrix values are greater than the critical value of 0.30. In contrast, SXV has a negative and weak correlation with ECE. The overall findings of the correlation matrix have not shown the indication of multicollinearity and consider the models for further empirical estimation.

Table 3: Bound Testing Summary

F-statistic	3.564	10%	1.900	3.010
K	4	5%	2.260	3.480
		1%	3.070	4.440

Note: Null Hypothesis: No levels of relationship. Significance levels are indicated by Pesaran et al. (2001) table

Table 3 of linear bound outcomes illustrates the cointegration among variables, which further decides the long-period existence of variables. The F-statistic value is 3.564, which is significant and greater than the lower and upper bounds at 1%, 5%, and 10%, indicating cointegration and long-period existence among variables of Pakistan's empirical model. However, the outcomes suggest further estimation of the linear ARDL model in the short and long periods of given time.

Table 4: Linear ARDL Short and Long Run

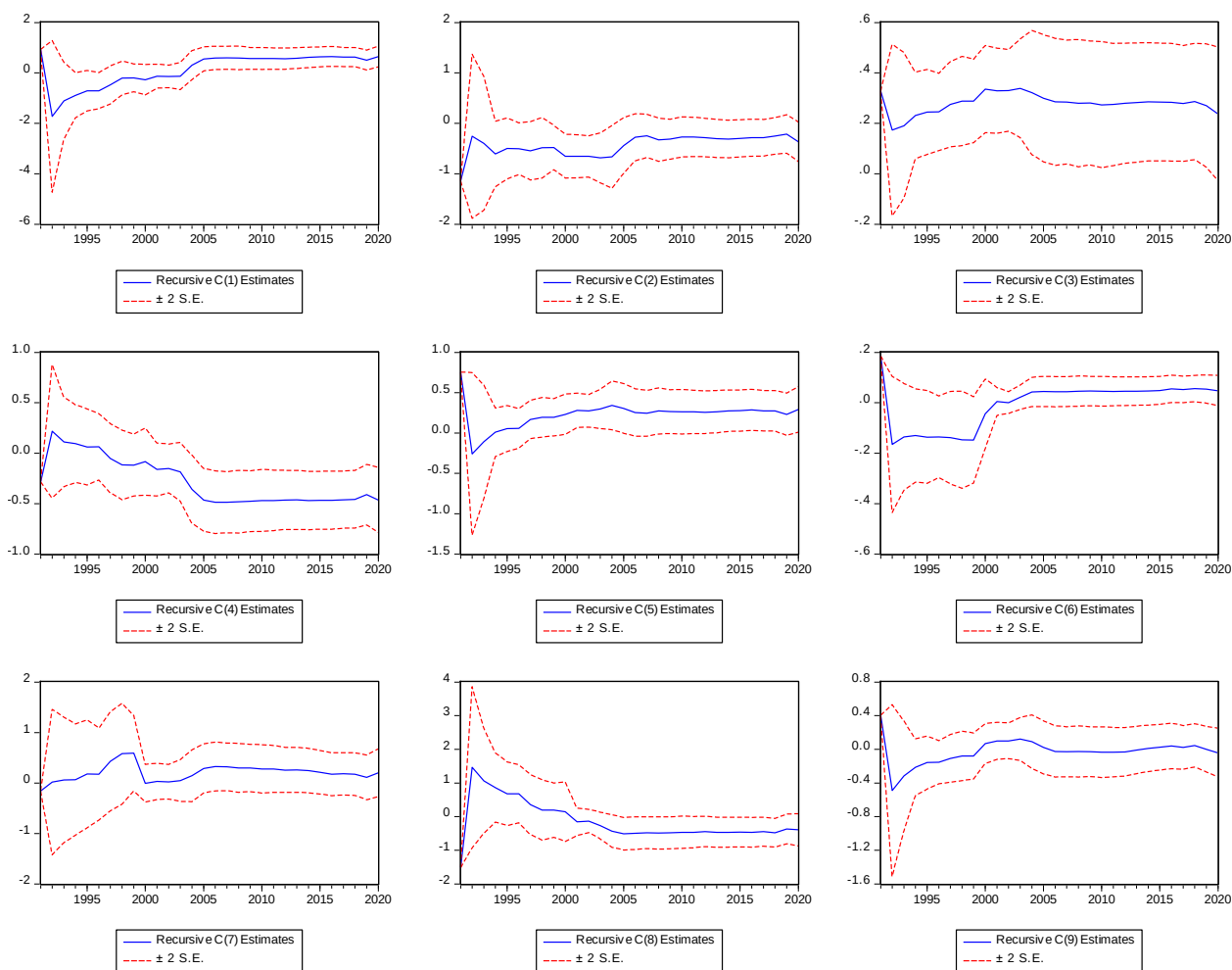
Dependent Variable: D(ECE)				
Short-Run Estimation				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECM(-1)*	-2.635598***	0.427048	-6.171662	0.0000
AXV(-1)	0.064262	0.123160	0.521777	0.6057
MXV**	0.048137	0.030193	1.594346	0.1213
SXV(-1)	-0.191008	0.180032	-1.060966	0.2972
D(ECE(-1))	0.367349*	0.196390	1.870506	0.0712
D(AXV(-1))	0.292625**	0.140863	2.077377	0.0464
D(MXV(-1))	0.237380*	0.132122	1.796671	0.0825
D(SXV(-1))	0.201198	0.237545	0.846990	0.4037
Long-Run Estimation				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AXV	0.089331**	0.035424	2.521764	0.0160
MXV	0.066916*	0.034311	1.950278	0.0605
SXV	-0.245519	0.223327	-1.109865	0.2647

Note: ECM(-1) is error correction term from short to long periods. ** and * indicates the significance levels at 5 and 10 percent's. *** Signposts the significance level of variables at a 1 percent level.

Table 4 of short-run findings of linear ARDL model illustrates that the economic expansion of previous year D(EGP(-1)) value is 0.367, which is significant at 10 percent, illustrating an increment in Pakistan's economic expansion compared to its previous years. In accordance with the disaggregated industrial export terms, agriculture export value D(AXV(-1)) is 0.292, which is significant at 5 percent, indicating an increase in economic expansion in Pakistan in the short period of given time. Further, the manufacturing exports D(MEXV(-1)) coefficient value is 0.237, which is significant at 10 percent, illustrating the increase in economic expansion in Pakistan in the short period of given time. At the same time, the services exports D(SEXV(-1)) coefficients value is 0.201 in Pakistan and have an insignificant influence on Pakistan's economic expansion. In the

end, the error corrected term as $ECM_{(t-1)}$ value is -2.635 in Pakistan, which is significant at 1 percent-level, indicates the adjustment of error arrived from the short to long periods of given time. Therefore, for more clarification, the estimation suggests long-run effects for better outcomes.

Table 4 illustrates the outcomes of the linear ARDL model, which examines the influence of exports in the agriculture, manufacturing, and services sectors on the economic expansion of Pakistan in the long period of given time. The findings illustrate that the agriculture exports (AXV) coefficient value is 0.089, which is significant at 5 percent in Pakistan. This means that five-units increase in agricultural exports results in 0.089 units of economic progression in Pakistan in the long period of given time. Pakistan is efficient in agriculture sector and it is regarded as leading sector of Pakistan's economy and considered as backbone of Pakistan's economy. However, in terms of exports, the effect is positive but lacks technology, infrastructure, and irregular government policies including export subsidies and market access. However, the findings align with the current outcomes (Ellahi *et al.*, 2011; Nadia *et al.*, 2015; Shah *et al.*, 2015; Haq *et al.*, 2017; Khan and Khan, 2019; Khan *et al.*, 2021; Saleem *et al.*, 2023; Asghar *et al.*, 2024). The manufacturing exports (MXV) coefficient value is 0.066, which is significant at 10 percent in Pakistan in the long period of time. However, Pakistan's manufacturing industry is capable of contributing to economic expansion, and its textile and leather industries are contributing to its economy significantly. However, it is still less efficient than its agriculture industry. The previous findings regarding the efficiency in manufacturing exports towards economic expansion are in line with current evidence (Nadia *et al.*, 2015; Shah *et al.*, 2015; Haq *et al.*, 2017; Javed, 2020).



Graph 1: Recursive Estimates

The services exports (SXV) coefficient value is -0.245 in Pakistan, indicating a decrease in Pakistan's economic expansion, but the effect is insignificant in the long period of given time. The reason is that Pakistan is more indulged in exports of agriculture and manufacturing, and the share of services exports is smaller, which is insignificant to their economic expansion in the long run. Further, Pakistan utilizes their services resources to meet domestic demand and is found less interested in transferring services in terms of exports. However, the findings align with the current outcomes (Ellahi *et al.*, 2011; Nadia *et al.*, 2015; Shah *et al.*, 2015; Haq *et al.*, 2017; Saleem *et al.*, 2023). Further, the study includes recursive estimates as diagnostic test which is applied to Pakistan's linear model. In this regard, it is shown that Pakistan's linear models do not express the statistical problems and the graph given below indicates the model's stability.

Conclusion and Policy Recommendations

This chapter's objective is to examine the impressions of disaggregated industrial exports including agriculture, manufacturing and services on economic expansion in Pakistan. Rendering to this purpose of short and long term estimation, the data of concerned export indicators is taken from 1980 to 2020 from World Development Indicators (2023). Economic expansion is taken as annual percentage of GDP per capita as dependent variable. The independent variables such as agriculture, manufacturing and services are taken as percentages of merchandise exports. In the initial estimation steps, the empirical study employed descriptive statistics and correlation matrix.

The statistical estimation steps have not shown any serious statistical issue of heterogeneity and multicollinearity and indicates the model of Pakistan as best fitted for further empirical estimation.

This study applied the linear ARDL model for long and short term estimations on Pakistan's empirical model. However, before moving to the linear estimation, the bound testing approach at linear level indicates the cointegration among indicators of the study related to disaggregated exports. The bound testing approach has approved that the model is applicable for long term estimation. In accordance with the linear short-run estimation, previous year economic expansion, agriculture exports and the manufacturing exports has surged the economic expansion in Pakistan in the short term. However, services exports are opposed to it and showing an insignificant impact on Pakistan's economic progress. At the same time, it is evident that the error corrected term has adjusted the error by reducing it from short to long period of given time. In accordance with the long term ARDL linear estimation, the values of agricultural exports and manufacturing exports are increasing Pakistan's economic expansion. Simultaneously, the services exports are negatively influencing economic progress of Pakistan, while the effect is inconsequential. Further, the recursive estimates consider the empirical model as best fitted, statistical sound and stable model.

Following the outcomes, the study has given some finding-based suggestions and policy implications. To improve the economic viability of Pakistan's service sector exports, authorities must prioritize regulatory changes, the development of digital infrastructure, and investment in human resources. Optimizing bureaucratic processes and adhering to international norms may enhance business facilitation, attract foreign investment, and promote sectoral development. Enhancing digital connection and fostering e-commerce via strategic incentives would facilitate service providers' access to global markets more effectively. Moreover, enhancing the workforce's skills via vocational training and collaborations with international companies may improve service quality and foster innovation. Enhancing trade agreements and negotiating advantageous terms with major trading partners may further promote market access. By implementing a comprehensive policy strategy, Pakistan can optimize its capabilities in high-value service sectors like information and technology, banking, and professional consulting, therefore fostering sustained economic expansion.

References

1. Ahmad, D., Afzal, M., & Khan, U. G. (2017). Impact of exports on economic growth empirical evidence of Pakistan. *International Journal of Applied*, 5(2), 9.
2. Ahmed, A., & Ahsan, H. (2014). Contribution of services sector in the economy of Pakistan. *Research Journal Social Sciences*, 3(1).
3. Ahmed, R. R., Ghauri, S. P., Vveinhardt, J., & Streimikiene, D. (2018). An empirical analysis of export, import, and inflation: a case of Pakistan. *Romanian journal of economic forecasting*, 21(3), 117-130.
4. Ajmair, M., Gilal, M. A., & Hussain, K. (2016). Determinants of services sector growth in Pakistan. *European Scientific Journal*, 12(34), 297-306.
5. Alam, K. M., Li, X., & Baig, S. (2019). Impact of Transport Cost and Travel Time on Trade under China-Pakistan Economic Corridor (CPEC). *Journal of Advanced Transportation*, 2019(1), 7178507.
6. Ali, L., & Akhtar, N. (2024). The effectiveness of export, FDI, human capital, and R&D on total factor productivity growth: The case of Pakistan. *Journal of the Knowledge Economy*, 15(1), 3085-3099.

7. Ambreen, Z. E. B., Hussain, K., Ahmad, U., & Ajmair, M. (2017). Factors affecting the services sector growth in Pakistan: A time varying parametric approach. *Journal of economics library*, 4(3), 388-395.
8. Asghar, M. M., Tanzeel, M., Ullah, S., & Hussain, S. (2024). Analyzing the economic impact of construction sector in Pakistan. *Zakariya Journal of Social Science*, 3(1), 21-34.
9. Balassa, B. (1965), *Trade Liberalisation and Revealed Comparative Advantage*, The Manchester School, 33, 99-123.
10. Granger, C. W., & Yoon, G. (2002). Hidden Cointegration. U of California, Economics Working Paper,(2002– 02).
11. Iqbal, A., Tang, X., & Rasool, S. F. (2023). Investigating the nexus between CO2 emissions, renewable energy consumption, FDI, exports and economic growth: evidence from BRICS countries. *Environment, Development and Sustainability*, 25(3), 2234-2263.
12. Javed, A. (2020). The scope of information and communication technology enabled services in Promoting Pakistan Economy. *Asian Journal of Economics, Finance and Management*, 165-173.
13. Khan, M. Z. U., & Khan, M. M. (2019). China-Pakistan economic corridor. *Strategic Studies*, 39(2), 67-82.
14. Khan, Z. A., Koondhar, M. A., Khan, I., Ali, U., & Tianjun, L. (2021). Dynamic linkage between industrialization, energy consumption, carbon emission, and agricultural products export of Pakistan: an ARDL approach. *Environmental Science and Pollution Research*, 28, 43698-43710.
15. Lin, B., & Zhou, Y. (2022). Measuring the green economic growth in China: Influencing factors and policy perspectives. *Energy*, 241, 122518.
16. Nadia., Ali, S.W., Pasha, R. (2020). Relationship among Agriculture and Manufacturing Value Added and Economic Growth in Pakistan. *Contemporary Social Sciences*, 1.
17. Nazir, M. R., Tan, Y., & Nazir, M. I. (2021). Financial innovation and economic growth: Empirical evidence from China, India and Pakistan. *International Journal of Finance & Economics*, 26(4), 6036-6059.
18. 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.
19. Rehman, A., Ma, H., Khan, S. U., Murshed, M., Khan, M. K., Ahmad, F., & Chishti, M. Z. (2023). Do exports of communication technology, food, manufacturing, and foreign investments foster economic growth in Pakistan? an Exploration From Asymmetric Technique. *Journal of the Knowledge Economy*, 14(4), 4238-4255.
20. Rehman, N. U. (2016). FDI and economic growth: empirical evidence from Pakistan. *Journal of Economic and Administrative Sciences*, 32(1), 63-76.
21. Rehman, S. U., Ali, S., Idrees, S., Ali, M. S. E., & Zulfiqar, M. (2022). Domestic Private Investment, and Export on Output Growth of Large-Scale Manufacturing Sector in Pakistan: An Application of Bound Tests to Cointegration Approach. *International Journal of Management Research and Emerging Sciences*, 12(2).
22. Saleem, A., & Sial, M. H. (2015). Exports-growth nexus in Pakistan: Cointegration and causality analysis. *Pakistan Economic and Social Review*, 17-46.
23. Saleem, A., Sial, M. H., & Cheema, A. R. (2023). Does an asymmetric nexus exist between exports and economic growth in Pakistan? Recent evidence from a nonlinear ARDL approach. *Economic Change and Restructuring*, 56(1), 297-326.
24. 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.

25. Shah, S. Z. A., ASGHAR, M. M., & RIAZ, U. (2021). Does Urbanization Influence Agriculture Output in Pakistan?. *International Review of Basic and Applied Sciences*, 9(3), 368-376.
26. Shin, Y., Yu, B., & Greenwood-Nimmo, M. (2014). Modelling asymmetric cointegration and dynamic multipliers in a nonlinear ARDL framework. In *Festschrift in honor of Peter Schmidt* (pp. 281-314). Springer, New York, NY.
27. Sibte-e-Ali, M., Chaudhary, I. S., & Farooq, F. (2018). Impact of Human and Social Capital on Economic Development in Pakistan: Empirical Evidence from Primary Data Analysis. *Journal of Accounting and Finance in Emerging Economies*, 4(1), 39-46.
28. Tiffin, R., & Irz, X. (2006). Is agriculture the engine of growth?. *Agricultural economics*, 35(1), 79-89.
29. Timmer, C. P. (2009). A world without agriculture: The structural transformation in historical perspective. AEI Press.
30. Ullah, S., Abro, A. A., ul Mustafa, A. R., & e Ali, M. S. (2023). Determinants of Food Insecurity in Pakistan: An Empirical Investigation at Household Level. *Pakistan Journal of Humanities and Social Sciences*, 11(2), 1368-1376.
31. World Bank (2023). World Development Indicators. <https://databank.worldbank.org/source/world-development-indicators>