An Auto Regressive Distributed Lag (ARDL) Approach to Understanding the Impact of Agriculture, Industry, and the Service Sector on GDP in Bangladesh

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ABSTRACT: The agriculture, industry, and service sectors are the three main sectors of Bangladesh's economy. Using the ARDL model, this study experimentally investigated the short-term and long-term effects of these three sectors on Bangladesh's GDP from 2005 to 2022. This study based on secondary data collected from World Development Indicator, World Bank. The intended results have been determined by applying a variety of econometric time series analysis techniques, such as the Augmented Dickey-Fuller test, the Autoregressive Distributed Lag (ARDL) bound test and the Granger Causality test. The Augmented Dickey-Fuller test has assured that neither series is integrated at level two. The outcome of the F-bounds test confirmed that the existence of a long-run relationship among the examined variables. The short-run and long-run coefficient revealed that there exists a positive impact of the agriculture, industry and service sector on GDP in Bangladesh. The long-run result shows that a 1% increase in agriculture sector increases the GDP by about of 0.173%, a 1% increase in industry sector increases the GDP by about 0.294%, and a 1% increase in service sector increases the GDP by about 0.533%. The short-run result shows that a 1% increase in agriculture sector increases the GDP by about 0.204248%, a 1% increase in industry sector increases the GDP by about 0.348179% and a 1% increase in service sector increases the GDP by about 0.631402%. The result of Granger Causality test shows that service sector and GDP Granger cause bi-directionally. All the outcomes are theoretically consistent and the policy recommendation are made based on our findings.

KEYWORDS: Agriculture, industry, service, GDP, ARDL model, F-bound test, Granger Causality test, World Bank.

1. INTRODUCTION

Macroeconomic policy in any nation prioritizes economic growth, with the gross domestic product (GDP) perceived as a crucial measure of this growth. If a country's GDP expands more quickly compared to the population, it suggests that the GDP per person of that nation is increasing and that the people's standard of living is rising as well. Numerous factors, including agricultural sector, industrial sector, exchange rates, currency rates, and inflation, all affect a nation's GDP.

Bangladesh has a sizable developing market economy. Being the second-biggest economy in the region of South Asia, Bangladesh's economy ranks 25th in terms of purchasing power parity and 33rd in nominal terms worldwide. A number of financial institutions view Bangladesh as one of the Next Eleven. The market has been changing, moving from frontier status to emerging market status. Bangladesh has membership recognition in both the South Asian Free Trade Area and the World Trade Organization. In the fiscal year 2021–2022, after the global pandemic, Bangladesh's GDP increased at a pace of 7.2%. Bangladesh has one of the fastest-growing economies in the world.

There are the three main sectors of the Bangladeshi economy. They are agriculture (i), industry (ii), and services .

The agriculture sector is centred on the exploitation of raw materials. In the manufacturing industry, basic materials are blended to produce final commodities with higher added value. The intangible component of offering clients services is what the service industry is all about. Bangladesh's three main sectors are divided into fifteen subsectors. Two of these fifteen sectors comprise the vast agriculture sector: (i) agriculture and forestry and (ii) fisheries. In contrast, the broad industry sector comprises the following: (i) manufacturing; (ii) mining and quarrying; (iii) gas, water, and power delivery; and (iv) the building sector. The following industries' combined outputs are included in the broad service sector: (i) wholesale and retail trade; (ii) hotels and restaurants; (iv) financial intermediations; (v) real estate, renting, and commercial activities; (vi) public administration and defence; (vii) education; (viii) health and social work; and (ix) community, social, and personal services.

Now we see the GDP growth by agricultural sector, industrial sector and service sector in the following figure.

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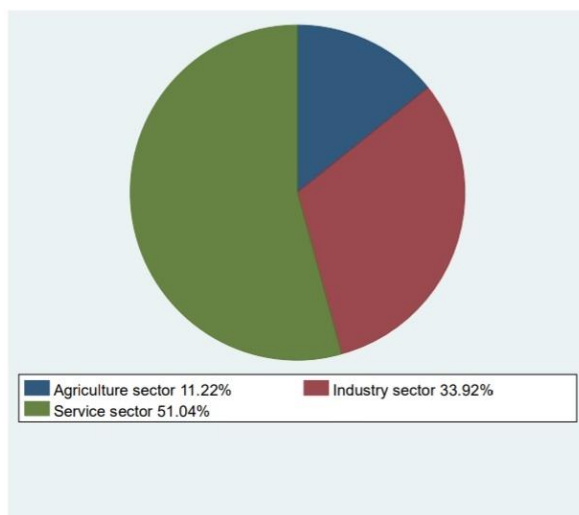
Figure(1.a): GDP growth by three broad sector.
Data Source : World Development Indicator.

According to the data of World Development Indicator, the share of agriculture sector, industry sector and service sector in Bangladesh's GDP were 11.22%, 33.92% and 51.04% respectively in 2022.

1.2 The contribution of Bangladesh's agriculture sector to economic growth :

Food cannot exist without agriculture, and life cannot survive without food. Without strong agricultural growth not a developing nation could afford to feed its most insecure population. Moreover, cultivation produces raw materials and generates revenue. Sayemul Islam and associates, 2020 Bangladesh, a developing nation with 147,570 square kilometers of territory, is mostly an agricultural country. Since Bangladesh's independence in 1971, agriculture has been the main industry, employing 45% of the labor force and contributing roughly 17% of the country's GDP. Approximately 84% of the rural population in the nation makes a living from agriculture, either directly or indirectly. Most people living in rural areas depend on farming for their primary source of employment. Agriculture sector 11.22% Industry sector 33.92% Service sector 51.04% 4 Bangladesh's and many other rural economies remain largely depend on agriculture, even if industrialization has a significant impact on the modern economy. Research has demonstrated a favorable correlation between agriculture and economic growth.(M. T. Rahman, 2017) Over time, Bangladesh's GDP has been less and less dependent on agriculture. Despite this, agriculture remains the primary cause of the nation's economic growth and has been contributing increasingly to nonagricultural growth. Any country's economic development can benefit from the agriculture industry in four ways: through contributions to the product, market, factor, and foreign exchange markets. When a country is still developing, agriculture is seen as more of the main engine of development than other existing economic sectors.

## 1.3 The role of industry sector in economic growth of Bangladesh:

Public utilities, mining, manufacturing, and construction make up Bangladesh's industry sector, which is progressively growing along with the country's employment rate. According to Kaldor (1967), manufacturing propels economic expansion because industrial commodities have a higher income elasticity of demand. Despite these negative circumstances, the economy has risen impressively steadily over the last five years, averaging 6.3%. According to Rahman (2011), the export industry has grown at an average pace of 30%. The industry sector's overall GDP contribution has increased over the last 20 years in Bangladesh. The BBS estimates that the GDP contribution of the broad industry sector in FY 2022–2023 would be 37.56 percent, which is an increase from 36.92 percent in FY 2021–2022.In order to support the people, the government continuously implements coordinated and inclusive policies. To ensure the desired growth rate in the industrial sector, the government has prioritised projects like social security building, infrastructure removal barriers to accelerate private investment and economic growth, human resource development, profitable public institutions, and infrastructure strengthening for the industrial sectors (Bangladesh Economic Review, 2023).

1.4 The role of service sector to GDP of Bangladesh:

The idea that the service industry may promote economic growth and reduce poverty is becoming more widely held. According to Hussin and Yik (2012), it is swiftly ascending to the top in most developing countries in terms of GDP percentage and employment. The services sector is quite diverse, starting with financial, business, social, and infrastructure services. Since this industry contributes significantly to Bangladesh's GDP, it is taken into account as a variable in this research. With 51.24% of GDP, the service sector has recently become the largest industry. The World Bank's most recent data indicates that the service sector dominates the
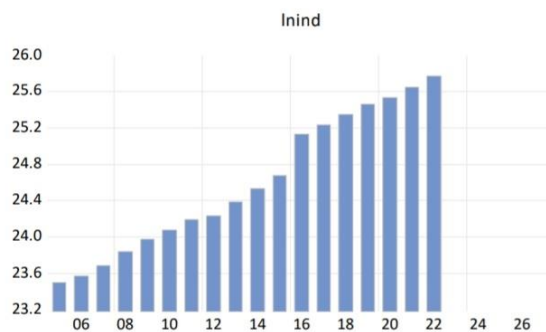
economy of Bangladesh. However, there were distinct circumstances during the decade of 1971–1980. Agriculture, the service sector, and industry all contribute 44%, 11%, and 45% the nation's GDP, in that order.
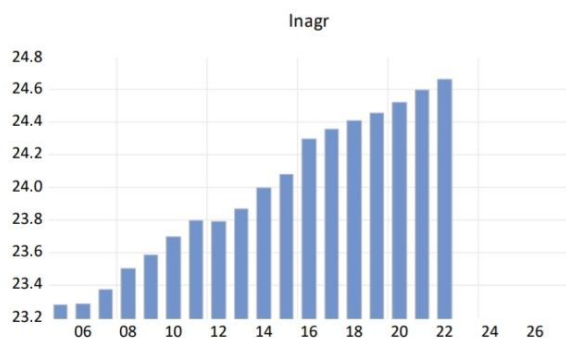
Figure(1.b): The share of agriculture sector on GDP of Bangladesh.

Source: Author's estimation.

Figure(1.c): Industrial contribution to GDP of Bangladesh.
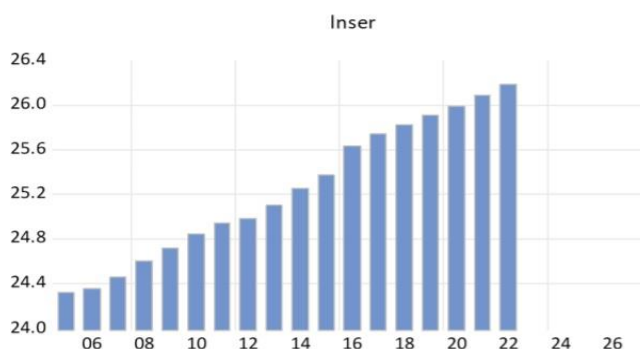
Source: Author's estimation.

Figure (1.d): The contribution of service sector in GDP of Bangladesh economy.

Source: Author's estimation.

In figure 1.b, 1.c and 1.c, we see that there was a positive trend of agriculture, industry and service sector in the GDP of Bangladesh . (Data source: World Development Indicator)

2. LITERATURE REVIEW

(Moyen Uddin, 2015) investigated the causal relationships between Bangladesh's GDP per capita, industry, services, and agriculture between 1980 and 2013. The study discovered that these variables had a long-term causal relationship. Granger causality tests were employed to examine the nature of the association between the variables and discovered a bidirectional association between GDP and agriculture, indicating that, in the case of Bangladesh, both variables have an impact on each other's growth.

(Mostafizur Rahman et al.,2011) used time series data from 1972 to 2008 to investigate the causal relationship between GDP, agricultural, industrial, and service sector output for Bangladesh. The causal link between these variables was investigated in their study using the Granger causality/block exogeneity Wald testing statistics. As to their study's ultimate findings, Bangladesh's GDP is influenced by the country's industrial and agricultural sectors, and vice versa—the GDP does not affect the service sector, but the service sector grows as a result of the GDP.

(Sayemul Islam et al., 2020a) wrote a report investigating the effects of the manufacturing and agriculture sectors on the economies of Bangladesh and India. Their study essentially summarizes how Bangladesh's economy developed through both manufacturing and agricultural, while India's economy was driven exclusively by manufacturing due to agriculture's uneven impact on economic growth. According to (M. T. Rahman, 2017), agriculture is essential to Bangladesh's overall economic performance since it contributes significantly to GDP, is a significant source of foreign exchange earnings, and employs a sizable portion of the people, especially the impoverished.

(Z. Rahman & Hossain, n.d.) were able to establish the causal link between agricultural and Bangladesh's economic expansion. According to their study's cointegration test results, Bangladesh's economic growth and agriculture have a long-standing association. The Granger causality test indicates a two-period-behind unidirectional association between agricultural and economic expansion.

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Their study's VAR results verified that variations in agricultural output have a more profound impact on changes in economic growth. This suggests that developing Bangladesh's agricultural sector will successfully spur economic growth.

(Reed, 2009) determined the inter-sector links in agriculture and their significance for Poland's and Romania's economic development. They used a VECM strategy, defended the connections between the manufacturing, trade, service, and agricultural sectors, and used the Johansen procedure of co-integration to determine the presence of both short- and longterm inter-sectorial associations.

(Mohammed, 2020) investigated the nature of the causal connection between agricultural growth and economic expansion. Despite the quantitative assessments of agriculture's role in economic growth in developing nations, there aren't many empirical research in the Arab World on this topic. Thus, this study uses time-series techniques to investigate the causal relationship between agricultural and economic growth in a selection of eight Arab countries.

(Baig et al., 2020) The most significant question, "Does agriculture affect economic growth?," between 1966 and 2016," was responded to in India. The researchers employed the ARDL and Granger's Causality Model to ascertain the causative relationship between economic growth, manufacturing, and agriculture across both short and long time periods.

(Yousuf et al., 2019) studied the contribution of the service-related sector to Bangladesh's economic growth between 1973 and 2017 . The business and family domains are interconnected with the service sector. The findings of their investigation imply that Bangladesh's economy may grow more as a result of the progress of service-related factor.

(Shahidul Islam et al.,2012) examined the service sector's relative contribution to other sectors, the effects of trade liberalization, and offered suggestions for the sector's future growth. A ten-year sample of GDP data, spanning from 2000–1, is used to analyze how the service sector compares to other sectors (agricultural and industry). This study demonstrated that the service sector is growing at a faster rate than the agricultural sector but at a slower rate than the industrial sector. Additionally, it showed that the overall trade deficit in services has been rising annually.

(Muhammad Ajmair et al., 2016) used annual data from 1975 to 2014 and the ARDL technique of estimate to assess the factors influencing the growth of the services sector output. The study's findings demonstrated that, over the long term, the following factors are significant predictors of the output growth of the services sector: population growth, market size, government spending, and foreign trade. Short-term factors influencing the growth of the services industry include personal remittances and international trade. From the above literature review , it becomes evident that a multitude of academics have undertaken extensive studies on the impacts of many variables including agriculture sector, industrial sector, service sector and GDP . In Bangladesh, there is a lack of research that establishes the impact of agriculture ,industry and service sector on GDP of Bangladesh over the period of recent years .

Thus, using the ARDL model spanning the years 2005–2022, this study experimentally investigated the short- run and long-term effects of these three sectors on GDP in Bangladesh. The study's primary goals are listed below.

Main Objectives:
• To measure the short-run and long-run relationship between the concerned variables and their overall impact on GDP.
• To show the casual relationship among agriculture ,industry and service sector for GDP growth in Bangladesh.

3.   METHODOLOGY
3.1 Source and Description of data
This study conducted research using secondary data from the World Development Indicator, a World Bank data series spanning the years 2005–2022. GDP (current US dollars), value added in forestry, agriculture, and fisheries (current US dollars), industry (including construction) (current US dollars), and services (current US dollars) are all included by the data. In this study, the value contributed of forestry, fisheries, and agriculture (in current US dollars) represented the agriculture sector; the value added of industry (including construction) represented the industry sector; and the value added of services (in current US dollars) represented the service sector.

3.2 Methods of Data Analysis
We first use the Augmented Dicky Fuller unit root test to ascertain whether the chosen variables are stationary or non-stationary. The use of the Augmented Dicky Fuller test is one method to prevent inaccurate regression results. The VAR Lag Selection Criteria will then be used to determine the ideal lag for the ARDL bound test and Error Correction Model. Using the ARDL bound test technique, the next step searches for a long-term relationship between the variables. The Error Correction Model will be used to ascertain the variables' long-term equilibrium and short-term dynamics. Lastly, we will use the Granger Causality Test to determine the casual relationship between the growth of Bangladesh's GDP and the industrial, services, and agriculture sectors.

3.3 Model Specification
We have used the following econometric model to investigate the relationship between   Bangladesh's GDP growth and the agriculture, industrial, and service sectors. In our econometric model, GDP is the dependent variable, and the sectors of agriculture, industry, and services are the independent variables. Here is how the model is expressed.

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$lnGDP= f (lnAgr, lnInd, lnServ)$

$lnGDP_t = \beta_0 + \beta_1 \, lnAgr_t + \beta_2 \, lnInd_t + \beta_3 \, lnServ_t + \mu_t$

Where, lnGDP= Natural log of GDP (current US$), lnAgr= Natural log of agriculture sector value added (current US$), lnInd = Natural log of industry(including construction) value added(current US$), lnServ = Natural log of services, value added (current US$), β_0 , β_1, β_2, β_3 = Parameters to be estimated, μ= Stochastic term, and t = 1, 2, 3,……., 18(Time period is from 2005-2022).

3.4 Unit Root Test

A non-stationary time series is a stochastic process with unit roots or structural breakdowns. Conversely, unit roots are mostly responsible for non-stationarity. It indicates that the time series under study is non-stationary if a unit root is present; it indicates that the time series is stationary if it is absent Nkoro and Uko (2016). The majority of time series that arise in the economy will need to be differenced in order to become stationary, according to Nelson and Plooser (1982). In fact, the majority of economic variables exhibit a trend and are hence typically non-stationary. Therefore, before moving forward with more analysis, it was essential to confirm the variables' stationary qualities . This study used the Augmented Dickey Fuller (ADF) test for unit root testing (Dickey and Fuller, 1979, 1981). To remove autocorrelation, the ADF test incorporates additional lagged components of the dependent and independent variables, which are GDP per capita, the agricultural sector, the industrial sector, and the services sector.

3.5 ARDL Model Specification

In particular, this cointegration testing approach aids in determining whether or not the endogenous variable influences the cointegration of the model's underlying variables. The main advantage of this model is that it may be used to identify long-term correlations between variables regardless if they are stationary at first difference, stationary at level, or a mix of the two,   as no variable can be stationary at the second difference. AIC (Akaike Information Criterion) was used to determine the ideal latency for every model.(Sayemul Islam et al., 2020b)

Construction of the following case is part of the study:

Dependent variable: lnGDP;   Independent variable: lnAgr, lnInd and lnservice

$\Delta lnGDP_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\Delta lnGDP_{t-1} + \sum_{i=1}^{q} \beta_{2i} \, \Delta lnAgr_{t-i} + \sum_{i=1}^{q} \beta_{3i}\Delta lnInd_{t-1}$

$+ \sum_{i=1}^{q} \beta_{4i}\Delta lnSer_{t-i} + \alpha_{1i}lnGDP_{t-1} + \alpha_{2i}lnAgr_{t-1} + \alpha_{3i}lnInd_{t-1} + \alpha_{4i} \, lnServ_{t-1} + \mu_t$

The ARDL model was utilised in conjunction with the F-bounds test (Peasaran et al., 2001) to verify a long-term association existing between the variables.   F-statistics greater than the upper and lower boundaries' crucial values guarantee long-term associations between the variables. Long run coefficients were found by applying the F-bound Approach. The short run coefficients and error correction term were displayed by the error correction model as follows:

$\Delta lnGDP_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\Delta lnGDP_{t-1} + \sum_{i=1}^{q} \beta_{2i} \, \Delta lnAgr_{t-i} + \sum_{i=1}^{q} \beta_{3i}\Delta lnInd_{t-1}$

$+ \sum_{i=1}^{q} \beta_{4i}\Delta lnSer_{t-I} + \pi_1 \, ECT_{t-1} + \mu_t$

Short-term causality is indicated by the significant values of the coefficients of the other explanatory variables, whereas long-term causality is indicated by the significant value of the error correction term (ECT) coefficient π.

4.   RESULTS AND DISCUSSION

Table 1: Result of Augmented Dicky Fuller Test

Variables	With Intercept						Remarks
	At Level			At First Difference			
	t- statistics	5% critical value	p-value	t- statistics	5% critical value	p-value	I(d)
lnGDP	-2.023	-1.771	0.0540**	-2.567	-1.782	0.0123	I(0)
lnAgr	-0.291	-1.753	0.3873	-3.794	-1.761	0.0010	I(1)
lnInd	-0.194	-1.771	0.4247	-2.532	-1.782	0.0132**	I(1)
lnServ	-0.665	-1.771	0.2589	-2.631	-1.782	0.0110**	I(1)

Source: Author's Estimation.

Note: Significance for 10%, 5%, and 1% is shown by (*), (**), and (***), respectively.

Table 1 demonstrates that not all of the variables are stationary in the level form. This indicates that the variables lnAgr, lnInd, and lnSer are integrated of order 1, I(1), whereas lnGDP is integrated of order zero, I(0).

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Table 2: Result of Optimal Lag Length Criteria

Lags	LL	LR	FPE	AIC	HQIC	SBIC
0	69.5945		.000016	-8.19931	-8.18942	-8.00616
1	72.4712	5.7533*	.000013*	-8.4339*	-8.42153*	-8.19246*
2	73.4183	1.8943	.000013	-8.42729	-8.41246	-8.13757

    Source: Authors Estimation.

Note: The criterion chosen lag order is indicated by *.

Table 2 shows the lag order selection criterion for the VAR. Generally speaking, the criterion with the lowest value should be chosen because the better the model, the lower the value. Taking into account all the factors, our ideal lag length is 1.

Table 3: Results of F-Bounds Test

F-statistics= 60.99 Number of independent variables,K=3		
Critical values	Lower bounds, I(0)	Upper bounds, I(1)
10%	2.37	3.2
5%	2.79	3.67
2.5%	3.15	4.08
1%	3.65	4.66

    Source: Author's estimation.

The ARDL bounds test result indicates that the f-statistic has a value of 60.99. Our model'sestimated f-statistic value exceeds the upper bound at the 1% level of significance. Consequently, the null hypothesis may be disproved, and the results demonstrate the long-term link between our variables.

Table 4: Estimated Long-run coefficient of the ARDL model.

Variables	Coefficient	Standard error	t-statistic	p-value
LnAgre	0.172550	0.048448	3.562	0.0045***
lnind	0.294144	0.018170	16.188	0.0000***
lnser	0.533414	0.053573	9.957	0.0000***

    Source: Author's estimation.
    Note: (*), (**), (***) indicates significance for 10%, 5% and 1% respectively.

Table 4 demonstrates that, at the 1% level of significance, the agricultural, industrial, and service sectors are all statistically significant. According to the results, Bangladesh's GDPis positively impacted by the industrial, service, and agriculture sectors. The result illustrates that if other things remain in the same an increase of 1% in agriculture sector will lead to a sustained growth of 0.173% in GDP. It is statistically significant that an increase in agriculture sector will cause an increase in GDP which rises the growth rate of Bangladesh economy. Similarly, the result shows that if other things remain in the same a rise of 1% in industry sector will consequence a enduring growth of 0.294% in GDP. This result implies that an improvement of industry sector will cause an improvement of GDP growth of Bangladesh. If we look at the coefficient of service sector, we also see that if other things remain in the same a 1% increase in service sector will cause 0.533% increase of GDP of Bangladesh.

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Table 5: Short-run estimation from ECM

Variables	Coefficients	Standard error	t-statistic	p-value
lnAgr	0.204248	0.052508	3.889	0.0025***
lnInd	0.348179	0.025371	13.724	0.0000***
lnSer(-1)	0.631402	0.102673	6.151	0.0001***
ECT(-1)	-1.183824	0.058052	-20.39254	0.0000***
Constant	1.248836	0.273236	4.570539	0.0008***

Source: Authors estimation.

Note: (*), (**), (***) indicates significance for 10%, 5% and 1% respectively.

The industry sector coefficient is 0.348179 at the current period, which is significant at the 1% level of significance, the service sector coefficient is 0.631402 at the current period, and the short run coefficient of the agriculture sector is 0.204248 at the 1% significant level. According to the research, a 1% rise in the agricultural sector boosts GDP by approximately 0.204248%, a 1% increase in the industry sector boosts GDP by approximately 0.348179%, and a 1% increase in the service sector boosts GDP by approximately 0.631402%, all other things being equal. At a significance level of 1%, the lag-corrected error correction term (ECT) exhibits a negative coefficient of the short-run dynamics with long-run relationships. 1.183824 is the value of this. This shows the long-term relationship between our variables, and the annual error of 118.3824% will be adjusted or shifted in the direction of the long-term equilibrium.

Table 6: Granger Causality between the variables (lnAgr, lnIND, lnSER and lnGDP)

Null Hypothesis	Obs.	F-statistics	Probability	Decision
lnAgr does not Granger Cause lnGDP	17	0.76061	0.3978	Accept
lnGDP does not Granger Cause lnAgr		0.06293	0.8056	Accept
lnInd does not Granger Cause lnGDP	17	2.74389	0.1199	Accept
lnGDP does not Granger Cause lnInd		3.80474	0.0714	Accept
lnSer does not Granger Cause lnGDP	17	8.84415	0.0101	Reject*
lnGDP does not Granger Cause lnSer		8.04303	0.0132	Reject*
lnInd does not Granger Cause lnAgr	17	0.33921	0.5695	Accept
lnAgr does not Granger Cause lnInd		2.07793	0.1714	Accept
lnSer does not Granger Cause lnAgr	17	0.79591	0.3874	Accept
lnAgr does not Granger Cause lnSer		0.13832	0.7155	Accept
lnSer does not Granger Cause lnInd	17	5.15112	0.0396	Reject*
lnInd does not Granger Cause lnSer		3.69931	0.0750	Accept

Source: Author's estimation

(*) denotes significance of the results and rejection of hypothesis.

The result of pairwise Granger Causality test shows that if other things remain in the same service sector and GDP Granger cause each other bi-directionally. But there is no casual relationship between agriculture sector and GDP, as well as industry sector and GDP. In our estimated table 6 we can see that the service sector Granger cause industry sector but industry sector does not Ganger

cause service sector.

Table 7: Residuals Diagnostics Test

Test Name	Test statistic	Value obtained	P-value	Remarks
Jarque-Bera Test	JB- statistic	2.29	0.317	Normally distributed
Serial correlation test (Breusch-Godfrey Serial Correlation LM tests)	F-statistic	0.241	0.5267	No serial correlation
Heteroscedasticity test (Breusch Pagan-Godfrey test)	Chi^2	0.95	0.3300	Homoscedastic

  Source: Author's estimation

Tables 7 above indicate that our model is normally distributed and free from autocorrelation and heteroscedasticity problems. This is because all test p-values are greater than the 5% level of significance. The null hypothesis is accepted in these circumstances.
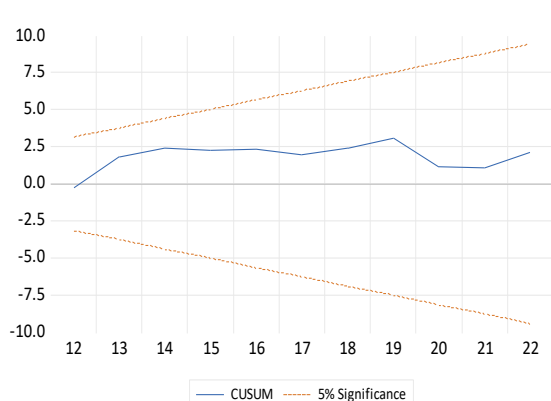

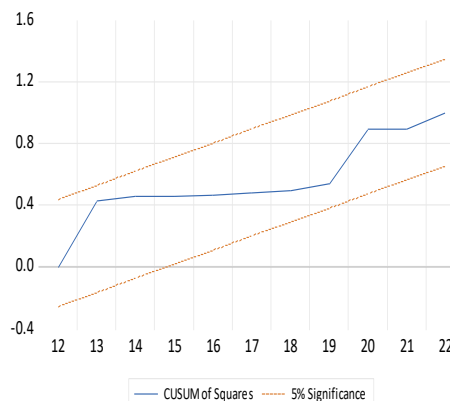**Figure (4.a) :Plot of CUSUM test.**
Source: Author's estimation.

Figure (5.b): Plot of CUSUM of square test.
 Source: Author's estimation.

At a five percent significance level, the empirical results showed that both test plots are inside the critical region. This demonstrates the stability of both the long-run and short-term parameters.

5. CONCLUSION

This study examined the effects of industry, services, and agriculture on Bangladesh's GDP growth between 2005 and 2022. We also demonstrated the short- and long-term effects of our relevant independent factors on dependent variables based on the empirical results of our ARDL model. The extended Dicky Fuller test revealed that not a single variable was stationary at second difference. At first difference, the variables lnGDP, lnInd, and lnServ were all stationary. In contrast, the variable lnAgr was level and stationary. The ARDL model was performed, and the

F-bound test results indicated that the f-statistic was 60.98.

The estimated f-statistic value of our model has exceeded the upper bound at the 1% level of significance. Consequently, the null hypothesis can be rejected., and the results demonstrate the long-term link between our variables. For our model, the error correction term was negative, measuring -1.183824 and at the 1% level of significance, it was statistically significant. According to our analysis, Bangladesh's economic growth has been positively impacted by the country's service, industrial, and agricultural sectors. Furthermore, Bangladesh's manufacturing, services, and agriculture sectors have all shown to have a favourable long-term effect on economic growth. We were also aware of Bangladesh's three main GDP sectors as of right now.

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Policy Recommendation

Our study gives some policy recommendation to improve the contribution of agriculture ,industry and service sector in GDP growth of Bangladesh. These policies are given below.

- To improve the agriculture sector government should take some policies like implementing sustainable farming practices, providing farmers with advanced technology and training, ensuring fair pricing for agricultural products, and promoting water conservation. Additionally, investing in rural infrastructure, supporting research and development and creating effective risk mitigation mechanisms can contribute to the overall growth and resilience of the agriculture sector.

- To enhance the industrial sector, policy makers can focus on streamlining regulatory processes, offering incentives for innovation and technology adoption, investing in skill development programs, and promoting research and development collaborations between industries and academic institutions. Infrastructure development, access to affordable and reliable energy.

- To promote the service sector, implementing policies that prioritize workforce skilldevelopment, improving digitalization and technology adoption, and creating a conducive regulatory environment can be beneficial. Facilitating ease of starting and running businesses, encouraging innovation, and enhancing customerprotection mechanisms are essential. Additionally, investing in robust infrastructure, such as reliable internet connectivity, can significantly boost the service sector.

RESEARCH LIMITATION:

Some limitations of this study include the absence of data that are also associated with the factors we are interested in. Numerous factors can influence Bangladesh's economic growth. For instance, remittances, exchange rates, inflation, foreign direct investment all have an impact on GDP growth.

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