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Modelling Economic Growth in The Gambia: The role of Remittance and Inflation through ARDL Estimation

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ABSTRACT
This study explores the relationship between remittances received, inflation and economic growth in The Gambia using annual time series from 2003 to 2024. Employing the Autoregressive Distributed Lag (ARDL) bounds testing model to assess both shot-run and long-run interactions among variables. Remittance inflows have increased dramatically in The Gambia in the last two decades. The result confirms a long-run equilibrium with Error Correction Model (ECM) showing a negative and statistically significant coefficient, indicating a stable long run adjustment mechanism towards equilibrium. However, while remittances and inflation exhibit positive long-run effects on economic growth, these effects are statistically insignificant, suggesting that remittances are primarily directed towards consumption rather than productive investments, and that inflation impact maybe offset by other macroeconomic factors. To enhance the developmental impact of remittance inflows, the study targets financial instruments such as diaspora bonds, matched investment schemes, and remittance-supported business tax incentives. It also recommends inflation targeting policies to reserve purchasing power and macroeconomic stability. The originality of the study lies in its empirical application of the ARDL framework to the Gambia's remittance and growth nexus, offering policy with a relevant insight for harnessing the financial inflows for sustainable economic development.

Introduction

The flow of cash into an economy has its macroeconomic challenges especially for small economies like The Gambia. The rate of inflation is associated with an increase in foreign capital inflows within the country. This occurs as a result the receipts from the foreign capital inflows will lead to an improvement in the demand for goods and services thereby will lead to a rise in price of non-tradeable goods. As firms are conscious about the rise in price and demand, this results in the boosting of output which will require more factors of production and higher wages. These chain effects will create additional pressures for domestic price

evaluation and hence the appreciation of the real exchange rate. This in turn will further drive the rate of inflation up and exchange rate appreciation (Foday & Sheriff, 2021).

Furthermore, Giuliano and Ruiz-Arranz (2006) reported the inflows of remittance represent a substantial portion of external capital flows, and also exceeds export revenues, foreign direct investment and official development assistance. Additionally, World Bank's (2020a), report suggest that there were 48 billion dollars of remittance inflows to sub-Saharan Africa in 2019, however it was reduced to 23% in 2020 due to the Covid19 pandemic. Moreover, India with 80 billion US dollar received in remittances is regarded as the highest recipient of remittance inflows in the developing countries followed by China with 67.4 billion US dollar, Philippines and Mexico with 33.5 billion US dollar, Egypt with 25.7 billion US dollar, Pakistan with 20.9 billion US dollar, Ukraine with 16.5 billion US dollar, Bangladesh and Vietnam with 15.9 billion US dollar (Ceesay et al., 2019; Jallow et al., 2023). Avdiu and Meyer (2021) highlight that it has increased to 58 million despite the Coronavirus pandemic in The Gambia. In 2022, (Naveed et al., 2013), reveal that The Gambia receives a remittance of 23% of its GDP, regarded as the highest receiving remittance per GDP among the countries in West African Zone (WAMZ), Additionally, this inflow of remittance can influence the Gambian economy through the spending and resource movement effect (Jallow et al., 2023).

The spending effect occurs when such remittance is sent to the Gambia, this leads to a rise in the income level of households, thereby resulting in a higher level of consumption since the expenditures of the household increase as more income is earned. The demand increases local business and acts as a catalyst to boost the economy of the corresponding region. An increase in spending in these sectors can enhance the living standard as well as having a great implication on poverty in the country.

Resource movement effect has effect on how income is distributed within the economy since remittance also makes a significant contribution to the economy. When families gaine more income, they are likely to spend on education, health, and investment is small businesses. This can also increase the human capital for strengthening productivity and economic development. Furthermore, the receipts from remittance can lead to the inflow of more labour into the production of non-tradeable goods and services which potentially leads to higher wages in these industries.

Remittance significantly contributed to the reduction of poverty in Africa by increasing of those emigrant families. This rise in the income of these households will increase consumer spending, the accumulation of assets, self-employment and investment in small micro enterprises. Remittance can drive the economic growth by boosting productivity of labour through investment in human capital and the contribution of gross capital formation. In 2016, Gambian emigrants in diaspora sent 181 million US dollars in remittance in The Gambia to their household members and loved ones, which contributes to 22% of the GDP of the Gambia (News, October 2018). Its economy relies more on external funding for the country's development. However, as reported by the African Development Bank (AFDB), the FDI and the official development of the country have been declining over the recent years. The economic growth and the remittance in the Gambia show a positive and upward trend during past seven years. However, due to the global economic crises and the political instability in the Middle East and Northern Africa, these trends have declined between 2010 and 2011. Migrants in Africa have remained and serve as the major source of Finance in their respective countries, as a result, remittance inflows have risen substantially over the last half decade

which amounted to 51% of private inflows in 2016 as compared to 425 in 2010 (Ceesay et al., 2019).

The Gambian economy grew at a rate of 3.94% annually from 1968 to 2017 while maintaining GDP of 964.6 million USD resulting in one of the lowest-income levels among its sub-regional countries. According to GBOS (Gambia Bureau of Statistics) analysis the economy grows through service the sector contributing 57%, Agriculture with 22% while industry with 15%. Agriculture stands as the main economic sector where 75% of citizens depends on farming animals and planting crops. The past years' economic growth has been sustained by developments in tourism activities together with remittance inflows and exports operations. The country remains susceptible to international economic disturbances because it depends heavily on outside transactions. As a primary source for generating foreign exchange rates, the tourism industry provides essential support for national growth trajectories. National growth experienced contraction in 2016 as a result of political instability during the 2016-2017 transition and various external crises. Tourist numbers dropped to 20% below projected figures yet still exceeded visitor statistics from 2014-2015 (Mendy, 2019).

As reported by the World Bank, Recent years have brought different elements which influenced the Gambia's GDP development pattern. The service sector dominated workforce employment since the early 2000's yet has experience GDP contribution reduction from 60% to 51% by 2023 due to productivity static service systems. The GDP keeps expanding through a combination of private and public sector consumption together with investment yet faces some private consumption setbacks related to increasing inflation rates. Public infrastructure development stands as a major growth driver since the country prepared infrastructure projects for the 2024 Organization of Islamic Cooperation (OIC) conference. Total investment grew to 36.4% of GDP in 2023 because of rising public spending and private investment especially in construction which is more than the Sub-Saharan African average record of 21.9% in 2022. The Gambia faced a worsening trade deficit during 2023 as exports expanded by 18.9% yet the negative net exports subtracted from GDP performance resulting in a 32.3% trade deficit compared to 29.6% from the previous year. Security concerns together with a limited range of exportable goods have made this economic situation worse due to cashew timber export restrictions. The GDP outlook reflects rising inflation with an average of 16.9% across 2023. The sustained inflationary period has weakened personal affordability while expanding poverty numbers. The Gambia's GDP data demonstrate persistent economic hurdles throughout 2023 which contradict investment improvement while revealing the diverse obstacles of development within rising inflation rates and foreign markets complexities (Update, 2024). Inflation is a complicated issue to deal with and its a challenge to study especially in developing countries like The Gambia since it is influenced by many factors. A high level of inflation in a country leads to a distortion in the investment and decision making with regards to consumption. Moreover, when if there is no feasibility approach to control it, this may lead to a reduction in output and lowering the rate of employment by increasing unemployment level (Lowe, 2019). The Gambia's inflation rate shows sustainable fluctuations in recent years. However, it rise to 6.3% in 2018. There are various factors that can caused inflation in The Gambia, these factors include the rise in the demand for goods and service, the rise in the cost of production and monetary expansion policy. Inflation is measured using the consumer price index (CPI) which monitors the fluctuations in the price of collection of goods and services that is frequently bought by households. It refers to the general rise in the price of goods and services in an economy over

a period of time. Inflation can be a source for boosting economic growth at the same time a caused for economic recession depending on its nature. A moderate inflation, it is seeing as a sign for economic growth, in The Gambia, For instance if the inflation rate is within the range of 1% to 3%, and when consumers demand for goods and services are solid, business view this as a reason to increase its production and expand their operations. As companies put money into their operations this will create more jobs for the Gambian's, as a result it can boost the economic growth. Likewise, the high rate of inflation can lead to gradual destroy of the purchasing power of the currency, disrupting the economic planning and leading to an economic uncertainty. Therefore, it will be important to manage inflation by implementing policies that balance economic growth with price stability.

Economy of Gambia is dependent on the inflows of remittance that have become a critical source of household income and foreign exchange. But macroeconomic instability especially inflation and the exchange rate is becoming a growing challenge to this dependency, which may erode the real value of remittances and neutralize their developmental effect. In its quest to generate growth , The Gambia faces twofold challenge of putting in place sound monetary policy as well as diversification of its export base, while enhancing the efficiency and productivity of remittances transfers.

Despite the past literature that has been conducted to explore the individual impact of remittances on the economic growth in The Gambia, the literature on the interaction effects of remittances and inflation remains limited. This gap is very critical as inflation can increase or decrease the growth promoting power of remittances, which depends on how these variables interreact among each other and their effect on total demand and investment patterns. The absence of empirical evidence about this interaction makes it difficult in formulating targeted macroeconomic policies.

The study seeks to fill that gap by examining the combined effect of personal remittances and inflation on GDP growth in The Gambia. In particular, it aims to answer: How do personal remittances and inflation interact to influence economic growth in The Gambia? using the Autoregressive Distributed Lag (ARDL) model, to annual the time series data from 2003 to 2024. The study provides empirical insights into both short-run and long-run equilibrium relationship.

THEORETICAL FRAMEWORK

Drawing upon literature on the topic this theoretical framework elaborates several authors' perspectives and theories regarding the combined impact of inflation, exchange rate fluctuations and remittances on economic growth in the Gambia.

Inflation and Economic growth.

Keynes defines true inflation as a situation whereby any further increase in effective demand does not boost the output but solely raises its unit cost in direct proportion to the demand increase. Keynes uses the theory of demand-pull inflation to explain how heightened effective demand such as an increase in government expenditure or consumer expenditure can drive up prices without a corresponding rise in output. Keynes argues that inflation will always arise whenever the aggregate demand exceeds its aggregate supply, particularly when effective demand increases beyond full employment. Additionally, Keynes expanded on the quantity theory of demand to clarify how the variation in supply relates to the changes in the price levels.(Ming-Tang, 2020).

Besides Keyne's theory, studies have investigated the role of inflation in affecting economic performance in different parts of the world. Research on the analysis roots of

inflation in The Gambia, argues that inflation can significantly impact the economy by the reducing purchasing power of its currency. This raises the prices of goods and services and undermines the competitiveness of domestic products in global markets. Moreover, inflation often leads to economic inequality in a country, a lower standard of living and a reduction in foreign investment and economic growth. Additionally, there is a negative impact of inflation on people's well-being especially those with low incomes, by making essential items like food, housing, and healthcare less affordable (Sowe et al., 2023). Inflation increases the production cost, when reducing profits and complicating the achievement of investment objectives (Sowe et al., 2023). A study was conducted to analyze data from approximately 100 countries from 1960 to 1990 to investigate the impact of inflation on economic performance. The study shows that a 10% increase in inflation per year will lead to a decrease in the real GDP growth per capita by 0.2-0.3%, meaning that inflation has a negative effect on economic growth (Barro, 1995). High inflation diminished the purchasing power, discourage investment and spending thereby creating uncertainty. This will decline the overall economic growth and productivity which results to a low standard of living.

Among the studies conducted in Malaysia on the relationship between inflation and economic growth, it was found out that there is a short run negative relationship between inflation and economic(K. Datta & C. Kumar, 2011). There will be a fall in economic growth if inflation goes higher and vice-versa. The real case problem for the worldwide, a higher inflation with even there is no fall in wages of its citizen the country does not fall but it offset the amount of wage or income in the country which leads to a low standard of living to its citizenship.

A study conducted using OLS method from the period of 1996 to 2023 investigating the relationship between inflation and economic growth. This study shows that inflation has a positive impact on economic growth in the short-run and negative impact in the long-run. This indicates that inflation supports economic growth in the short-run, whiles in the long-run, it harms economic growth. This brings the attention of the author to find necessary effective approach on the control of inflation for a sustainable economic growth (Nguyen Quang Linh, 2024).

However, the interaction between inflation and GDP plays an important role in examining the path of the economy in countries. Among studies find out that high levels of inflation will diminish the purchasing power and discourage both foreign investment and domestic investment thereby hindering the economic growth. A high inflation raise the price of goods and services and reduction in the economic activity, it creates economic uncertainty and increasing cost which reduce the profits margins, creating an increase of risk in investment which discourages growth and development (Yuliawan et al., 2024). Conversely, a recent researcher suggested that moderate inflation has a positive impact on economic growth, whiles high inflation hinders economic growth. Suggesting that maintaining a moderate inflation in rate crucial for sustainable long-term economic growth (Hwang & Wu, 2011).

Remittances and Economic growth

In recent times, remittances play a key role in helping r developing economies secure external financing, boost household consumption, finance investments and boost their total economic growth. invest and grow their economies. rely on remittances to increase their external funds, promote household spending, invest and help their economies advance.

Different theories have been developed to understand why people send remittances, all of which offer distinctive statements about their economic effects.

According to Solimano (2003), four leading theories explain why migrants send money to their home country. The act of remitting funds that is stem from genuine love and duty towards their families, as described in the altruism theory, migrants provide financial support to ensure well-being to family and loved ones. While others are driven by self-interest which emerges as a result of enhancing personal wealth through investments in assets in their home country, called self-interest theory. Additionally, remittances can function as loan repayment to family members who supported their migration or education financially. Lastly, the Co-insurance theory act as a financial safety measure wherein migrant aids the family during financial challenges, spreading of risk internationally (Aboulezz, 2016). Remittances play a crucial role in improving household welfare, encouraging investment, fostering the development of human capital and maintaining economic stability all of which to essential for growth. Empirical evidence shows, remittances are positively and statistically significant relationship with economic growth for Asian countries (Remittances and Economic Growth: Empirical Analysis from a Panel of Selected Asian Nations, 2022.). This highlights the fact that remittances are indeed very important in terms of improving living standards, reducing poverty and establishing a more stable source of income than other types of international financial flows. Similarly, study on employment in agriculture, migration, bilateral aids, economic growth and remittance in the Gambia, the author found that there exist a positive and statistically significant relationship between remittance and economic growth in the Gambia, stating that a 10 percent increase in remittances will lead to a 0.14 percentage increase in growth (Employment in Agriculture, Migration, Bilateral Aids, Economic Growth and Remittance: Evidence from the Gambia, 2020). (Ceesay et al., 2019) in the study reveals that the inflow of personal remittances in The Gambia indicates a positive and significant relationship with economic growth both in the short run and long run. In addition to that these remittances significantly improve household welfare, stimulates investment, and promotes human capital development. Furthermore, another study on human capital flight, Remittances and the problem of achieving sustainable economic growth in Africa shows that remittances demonstrate a positive connection with economic growth in The Gambia (Adewumi et al., 2019). Zaman et al. (2021) , on exploring the relationship between remittances received, education expenditures, energy use, income, poverty, and economic growth shows that the inflow of remittance has a positive influence and a significant relationship with economic growth in the long run. However, Sobiech (2019) argues that remittances can significantly impact economic only when financial development is at low levels. Thus, the impact of remittances will tend to be significant only if the financial sector of the country is less developed. As an extension, Nyamongo et al. (2012) reveals that lack of stability in remittances negatively impact economic growth even though remittances are a key driver for economic growth in African countries. suggesting that the fluctuation of remittances is a challenge because of its unpredictable and causes economic instability with negate the positive effects in growth.

Additionally, Cazachevici et al. (2020), study on remittance and economic growth using diverse range of low income and middle-income countries across different regions. while remittances have a positive impact on economic growth, the result of the study shows that the overall impact of remittances on economic growth is low. However, remittances have more significant impact on economic growth in Asia than in Africa. Azizi et al. (2024), further

highlights that remittances have a positive and significant effect on economic growth in countries with high level of human capital whereas no impact on countries with low level of human capital. The study reveals that a in any 100 percent increase in the ration of remittances to GDP will lead to rise in economic growth of a country with high level of capital by 2.4 percent.

Methods

The research adopts quantitative methods that analyse time series econometrics data to explore the dynamics of inflation and remittance on economic growth from the period of 2003 to 2024. The study is using a secondary data extracted from World Development Indicators (WDI). First, we need to perform the famous Augmented Dickey Feuller (ADF) test to examine the stationarity properties of variables because time series data usually demonstrate non-stationarity. It is the most utilised test used to check for the stationarity of variables. it is used to check the stationarity of variables in time series research and to determine if the they are cointegrated (Mohamed & Va, 2010). The Auto Regressive Lag (ARDL) model estimation requires variables that exhibit zero integration and first integration but not second integration or higher orders. Unit root tests verify the variables' mixture of I(0) and I(1) status for the model before estimation begins ("Analyzing the Challenges of Diversifying the Future Economy of Ukraine," 2024). Therefore, it gets chosen due to its flexibility in handling variables with mixed order integration, specifically, a combination of I(0) and I(1) but not I(2) or higher. It is unlike the traditional cointegration techniques such as Johansen or Engle-Granger, ARDL does not require all variables to be integrate of the same order, thereby offering a more robust framework for small sample analysis and long-run relationship estimation.

The study will use Eviews13 since its the most convenient tool compared to STATA, SPSS, Phyton when it comes to timeseries data analysis. The study relies on secondary data from the World Development Indicators (WDI) database from the period 2003 to 2024. The linear equation form of the variables can be expressed as,

$$GDP_t = \beta_0 + \beta_1 INF_t + \beta_2 REMIT_t + \varepsilon_t$$

The variables derived include Gross Domestics Product (GDP) measured as annual percentage growth, CPI in annual percentage for the measure of inflation (INF), Remittance Received (REMIT) express as a percentage of GDP. We make use of the F-bound test for cointegration to confirm the existence of a long-run equilibrium relationship between variables. it is commonly used in ARDL model to identify significant relationships between lagged variable levels to determine a long-term equilibrium condition (Pesaran et al., 2001). The ARDL Model can be expressed as

$$GDP\ growth_t = \alpha_0 + \beta_1 GDP_{t-1} + \beta_2 INF_{t-1} + \beta_3 REMIT_{t-1} + \sum i = 1^{p} \delta_i GDP_{t-i} + \sum k = 0^{q_1} \rho_k INF_{t-k} + \sum j = 0^{q_2} \theta_j + \sum m = 0^{q_2} \partial_m REMIT_{t-m} + \varepsilon_t$$

α_0 is the intercept term, whiles β_1, β_2, β_3 and β_4 measures the long run coefficient, δ_i, ρ_k, $\theta_j and$ ∂_m are the short run dynamics coefficient, where p describe the number of lags for GDP

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growth rates and q reports the lags of the independent variables, ε_t is the error term which measures the error residuals. Moreover, once the long run relationship is confirmed through F-bound test, the Error Correction Model (ECM) will be estimated to capture the short-run relationship. This is estimated as

$$\Delta GDP\ growth_t = \alpha_0 + + \sum i = 1^{p-1} \delta_i \Delta GDP_{t-i} + \sum 0^{q_1-1} \rho_k \Delta INF_{t-k} + \sum j = 0^{q_2-1} \theta_j + \sum m = 0^{q_2-1} \partial_m \Delta REMIT_{t-m} + \gamma ECM_{t-1} + \varepsilon_t$$

Where γ measures how quickly GDP returns to equilibrium after a shock, the coefficient γ should be negative and statistically significant for a valid long-run relationship. The study will perform diagnostic tests as part of the process to verify result validity. The statistical examination of the model requires evaluation of tests including Breusch-Godfrey LM for serial correlation and Breusch-Pagan and White tests for heteroskedasticity as well as Jarque-Bera for normality and Ramsey RESET for model specification. Similarly, CUSUM and CUSUM of Squares test procedure will evaluate the stability of coefficients in the short-run and long-run period.

Results And Discussion

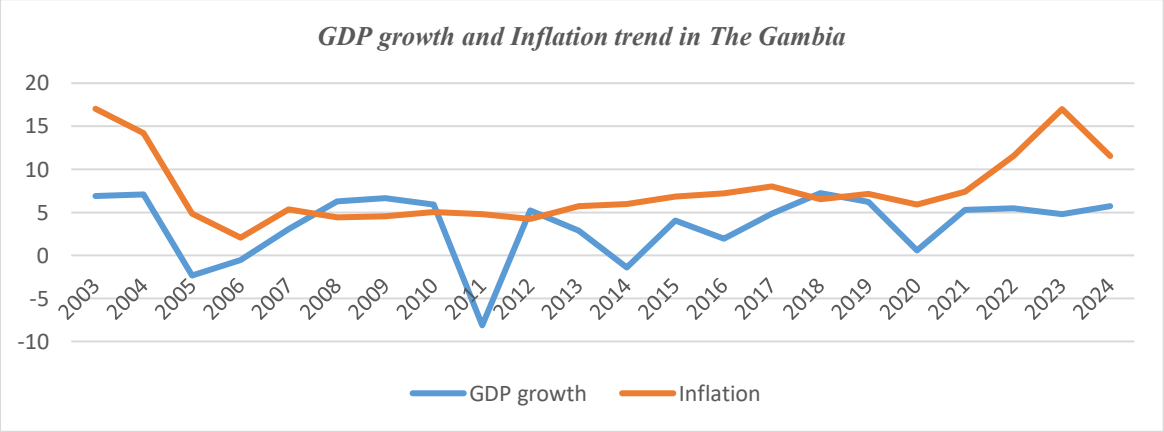


Fig.1. Relationship between Inflation and GDP in The Gambia.

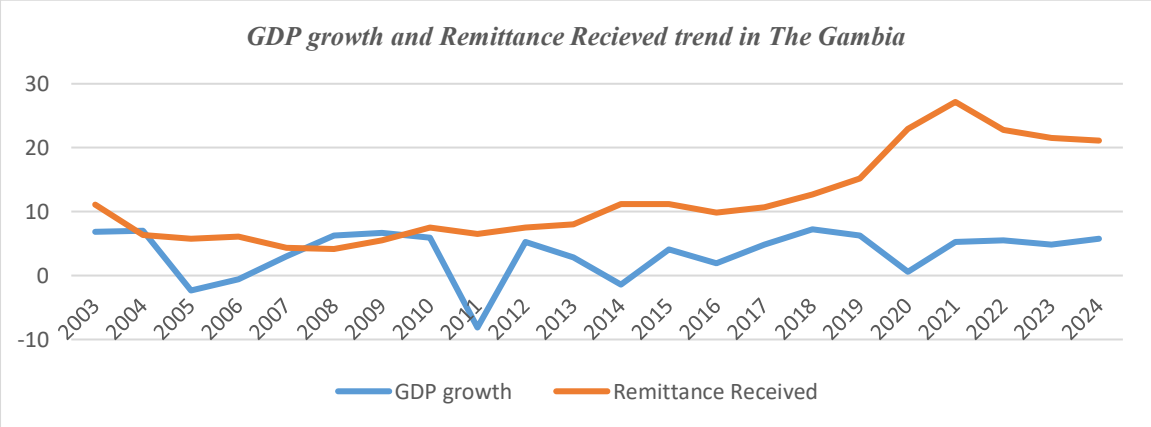


Figure2. shows the trend relationship of remittance and GDP in The Gambia from the period of 2003 to 2024. The trend line reveals a general positive direction but inconsistent relationship.

Empirical results and Discussion

Figure.1 Descriptive Statistics

	GDP growth	INF	REMIT
Mean	3.2506	-0.0029	0.5397
Median	4.8101	0.3346	0.3738
Maximum	7.2349	5.4611	7.7704
Minimum	-8.1304	-9.3681	-4.7863

The descriptive statistics above provide insight into the behaviour of GDP growth, inflation (INF), and remittances (REM) for the period of 21 years. The remittance as a percentage of GDP recorded a mean of 0.5397, while the average GDP growth rate recorded is 3.2506 and average inflation rate recorded is -0.0029. Also the Jarque-Bera test reveals that only remittance with a p-value > 5% significant level is normally distributed, whiles for GDP and inflation are non-normally distributed with a p-value < 5% significant level.

Figure 2. ADF Test Result@5%

Null: there exist a unit root

Variable	**Level**			**First Difference**			**Order of Integration**
	C	C&T	None	C	C&T	None	
GDP growth	0.0019*	0.0067*	0.0060*	0.0003*	0.0022*	0.0000*	**I(0)**
Inflation	0.0810	0.2166	0.1123	0.0089*	0.0414*	0.0021*	**I(1)**
Remittance Received	0.8995	0.3538	0.8130	0.0160*	0.0602*	0.0016*	**I(1)**

*Significant at 5%.

The Augmented Dickey-Fuller (ADF) test measures if a time series is stationary by exploring for a unit root. If the null hypothesis is not rejected by the test, this means the data are not stationary. Therefore, to fix this, differencing is employed to get rid of trends and seasonal effects, so the series is stationary for additional study (Stony Brook University, 2015). The result of the ADF test reveals that only GDP achieved stationarity at level while INF and PRR observed stationarity at first difference. This indicates a mixed order of integration meaning the presence of both I(0) and I(1) variables. The ADRL approach developed by Pesaran et al. (2001) was employed since its the most appropriate estimation technique for the study.

Figure 3. ARDL Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP_growth(-1)	-0.1915	0.2351	-0.8148	0.4279
GDP_growth(-2)	-0.3051	0.2369	-1.2878	0.2173
Remittances Received	0.1266	0.1802	0.7027	0.4930
Inflation	0.2406	0.3873	0.6212	0.5438
C	1.6653	2.1629	0.7699	0.4533

R-squared	0.8166	Mean dependent var	3.1854
Adjusted R-squared	0.7377	S.D. dependent var	3.8607
S.E. of regression	3.8458	Akaike info criterion	5.7442
Sum squared resid	221.8560	Schwarz criterion	5.9931
Log likelihood	-52.4417	Hannan-Quinn criter.	5.7928
F-statistic	1.0369	Durbin-Watson stat	1.9599
Prob(F-statistic)	0.4206		

The results from the ARDL regression reveals both remittance, inflation has an insignificant effect on economic growth with a p-value that exceeds the 5% significant level. The model's R-square (0.2166) tells us that it has a very low explanatory power and from the results of the F-statistics, we confirmed that the overall model of the study is statistically insignificant.

Figure 4. Bound test for co-integration

Null hypothesis: No levels relationship

Test Statistic	Value	Significant	I(0)	I(1)
F-statistic	4.951462	10%	2.915	3.695
		5%	3.583	4.428
		1%	5.155	6.265

The result of the bound test co-integration in the table above reveals that the value of the F-statistics (4.951462) is greater than the upper bound critical value (4.428) at 5% significant level, which sufficient evidence that the null hypothesis at 5% should be rejected. This indicates that there exist a potential long-run relationship between the dependent (GDP_growth) and selected independent variables (Remittances and Inflation) during the

period of 1999 to 2023. The result of the study are in line with and Elijah et al., (2024) and Upadhyay et al. (2022).

Figure 5. Short-run coefficients Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP_growth(-1)***	-1.4966	0.3414	-4.3842	0.0005
Remittances	0.1266	0.1802	0.7027	0.4930
Inflation	0.2406	0.3873	0.6212	0.5438
C	1.6653	2.1629	0.7699	0.4533
COINTEQ***	-1.4966	0.3070	-4.8751	0.0001

Note:,**and***denote statistically significance level at 10%, 5% and 1% respectively.*

The coefficient of the Error Correction Term (ECT) is negative (-1.4966) and statistically significant (p-value is 0.0001). This indicates the presence of a stable long-run equilibrium relationship among the variables. This shows that approximately 149.66% of any short-run disequilibrium is corrected within a period, implying a strong and rapid adjustment towards the long-run equilibrium. However, none of the short-run coefficient for inflation and personal remittances received are statistically significant. The result of the study agreed with the findings of Khan et al. (2019), Ben Haddad & Choukir (2017), and Abdulai (2023).

Figure 6. Long run coefficients Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Remittance	0.0846	0.1170	0.7230	0.4795
Inflation	0.1608	0.2624	0.6128	0.5481
C	1.1127	1.3904	0.8003	0.4346

Note:,**and***denote statistically significance level at 10%, 5% and 1% respectively*

The above figure represents the estimated result of the long-run ARDL model during the period of 2003 to 2024. The examined results of the ARDL long-run result indicates that remittance shows a positive and statistically insignificant effect on economic growth of The Gambia. This suggest that while remittance may contribute to aggregate demand, their impact on economic growth is limited. the plausible explanation lies in the consumption-oriented aspect of the remittance usage where the funds are primarily directed towards household spending and not productive investment. Such trend limits the ability of remittances to boost capital or entrepreneurship, hence limiting their ability to boost growth. Similarly, Inflation exhibits a positive but insignificant relationship with economic growth. This outcome may reflect the complex role of inflation in small economies, where moderate inflation can be an indicator of economic dynamics, but the excessive or volatile weakens the purchasing power and macroeconomic stability. The insignificance also can indicate the existence of counterbalancing macroeconomic variables including exchange rates adjustments, fiscal

policies or external shocks that dilute the direct impact t of inflation on growth. The result of this study is consistent with (Rao & Hassan, 2009) who argued that remittances tend to have indirect effects on economic growth of the recipient countries while their direct impact remains statistically insignificant and Poonam et al. (2024) which emphasizes that the economic impact of remittances varies across context, stating that its effectiveness in promoting economic growth depends heavily on its usage. However, the result of the study contradicts (Cazachevici et al., 2020), (Eggoh et al., 2019) and E. K. Ceesay et al. (2019).

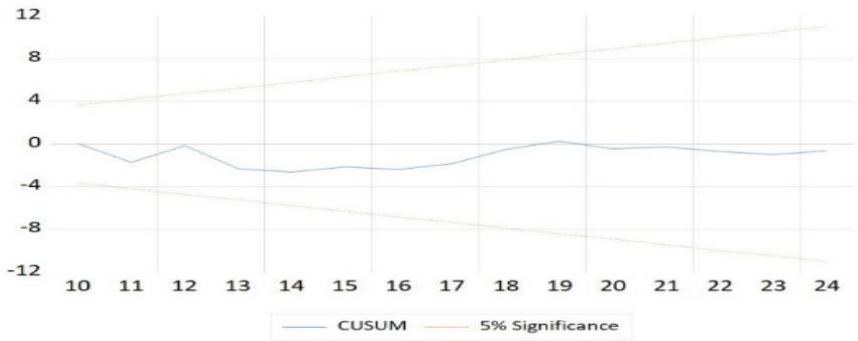
Figure 7. Residual Diagnostic Test @ 5% significant level.

Statistics	*P-values*	*Null Hypothesis*
Heteroskedasticity Test	0.0622	Homoskedasticity
Breusch-Godfrey Serial Correlation LM Test	0.8869	No Serial Correlation
Jaque-Bera Normality Test	0.7501	Normality

The residual diagnostic test was conducted in order to validate the robustness of our ARDL model. The result shows the null hypothesis of homoskedasticity cannot be rejected suggesting constant variance of the residuals while the results of the Breusch-Godfrey Serial Correlation LM test demonstrate no evidence of serial correlation in the residuals. Additionally, the Jaque-Bera test indicates that the residuals are normally distributed.

Stability Test

CUSUMSQ Test



The above graph represents test for CUSUM and CUSUMSQ to evaluate the structural stability of the estimated ARDL model. the results show the plots of both the CUSUM and CUSUMSQ statistics lies within the 5% significance bounds. This demonstrates that the model's coefficients remain stable over the study period.

Conclusion

This study examined the joint impact of remittance received and inflation on economic growth in The Gambia, using ARDL methodology, based on annual data from 2003 to 2024. While remittance received constitute a substantial share of GDP, the analysis reveals that their effect on economic growth is positive but statistically insignificant in both the short run and long run. This outcome likely reflects the dominant use of remittances for household consumption rather than channeling them into productive sectors such as infrastructure, education and manufacturing. Similarly, inflation shows a positive but statistically insignificant impact on economic growth and it is contrary to conventional expectations, suggesting that its potential adverse effect maybe moderated by stabilizing macroeconomic condition or that inflation levels are remained within manageable bounds.

The ARDL bound test confirmed that there exist a long -run relationship among the variables with the Error Correction Model demonstrating a strong and rapid adjustment towards equilibrium. Diagnostic test affirmed the robustness of the model, showing homoscedastic residuals, no serial correlation and residuals are normally distributed. The CUSUM test confirmed coefficient stability were consistent at the 5% significance level.

Significantly, the study fills a significant gap in the literature by exploring the interaction effect of remittances and inflation on economic growth, an area which has not been extensively explored in past research on The Gambia. The novelty of this paper is its empirical interest in the joint effect of these macroeconomic variables in growth dynamics, offering a more detailed picture of their combine effects.

Moreover, to increase the developmental effect of remittances, the policymakers are encouraged to promote diaspora investment through targeted instruments such as diaspora bonds, matched-funding schemes and tax incentives for remittances-backed enterprise. Furthermore, the macroeconomic policy must aim to maintain the stabilizing effect of moderate inflation without increasing its possible threat to the purchasing power and economic stability. These suggestions highlight the significance of financial and monetary planning of strategies in converting remittance inflows into sustainable development sources.

References

Abdulai, A.-M. (2023). The impact of remittances on economic growth in Ghana: An ARDL bound test approach. Cogent Economics & Finance, 11(2). https://doi.org/10.1080/23322039.2023.2243189

Aboulezz, N. (2016). Remittances and Economic Growth Nexus: Empirical Evidence from Ghana. International Journal of Academic Research in Business and Social Sciences, 5(12). https://doi.org/10.6007/ijarbss/v5-i12/1958

Adewumi, S., Ogbodo, C., & Onoh, J. (2019). Human Capital Flight, Remittances and the Problem of Achieving Sustainable Economic Growth in Africa.

Analyzing the Challenges of Diversifying the Future Economy of Ukraine. (2024). Futurity Economics&Law, 125–143. https://doi.org/10.57125/FEL.2024.03.25.08

Azizi, S., Aftabi, A., Azizkhani, M., & Yektansani, K. (2024). Remittances and economic growth: a blessing for middle-income countries, ineffective for low-income countries. Journal of Economic Studies, 51(6), 1285–1303. https://doi.org/10.1108/JES-04-2023-0207

Barro, R. (1995). Inflation and Economic Growth. https://doi.org/10.3386/w5326

Ben Haddad, H., & Choukir, J. (2017). Short- and long-run effects of remittance outflow shocks on the Saudi Arabian economy. International Journal of Economics and Business Research, 14(2), 194. https://doi.org/10.1504/IJEBR.2017.10007794

Cazachevici, A., Havránek, T., & Horvath, R. (2020). Remittances and economic growth: A meta-analysis. World Development. https://doi.org/10.1016/J.WORLDDEV.2020.105021

Ceesay, E. K., Sanneh, T., Jawo, A., Jarju, M., & Jassey, O. (2019). Impact of Personal Remittances Received on Economic Growth in the Gambia. And Applied Research Journal, 1(1), 117.

Eggoh, J., Bangake, C., & Semedo, G. (2019). Do remittances spur economic growth? Evidence from developing countries. The Journal of International Trade & Economic Development, 28, 391–418. https://doi.org/10.1080/09638199.2019.1568522

Elijah, S., Hamzah, H. Z., Hook, L. S., & Kaliappan, S. R. (2024). Determinants of Migrants Remittances in Malaysia: An Ardl Approach. International Journal of Industrial Engineering and Production Research, 35(1). https://doi.org/10.22068/ijiepr.27.4.321

Employment in agriculture, migration, bilateral aids, economic growth and remittance: Evidence from the Gambia. (n.d.).

Foday, J., & Sheriff, T. (2021). The Impact of Remittance Flow on Real Effective Exchange Rate: Empirical Evidence from The Gambia. Munich Personal RePEc Archive, 106045.

Hari Prassed Upadhyay, B. L. P. O. P. , K. R. S. , D. R. S. (2022). Follow this link :

Hwang, J., & Wu, M. (2011). Inflation and Economic Growth in China: An Empirical Analysis. China & World Economy, 19(5), 67–84. https://doi.org/10.1111/j.1749-124X.2011.01259.x

Jallow, C., Note, A., Jallow, C., & Zaim, I. S. (2023). Journal of Development Innovations Vol. 7, No. 1, 2023. 7(2), 41–55.

K. Datta, & C. Kumar. (2011). Relationship between Inflation and Economic Growth in Malaysia. International Conference on Economics and Finance Research IPEDR, 4(2), 415–419.

Khan, M. K., Teng, J. Z., & Khan, M. I. (2019). The effect of migrant remittances on economic growth: An ARDL approach. Engineering Economics, 30(4), 434–441. https://doi.org/10.5755/j01.ee.30.4.21830

Lowe, A. B. (2019). The Impact of Exchange Rate on Inflation: A Case Study of The Gambia(1978-2016). European Scientific Journal ESJ, 15(10), 261–277. https://doi.org/10.19044/esj.2019.v15n10p261

Mendy, S. (2019). on the Inflation Growth Nexus : Evidence From Time Series Methods in the Gambia Master ' S Thesis on the Inflation Growth Nexus : Evidence From Time Series Methods in the Gambia.

Ming-Tang, L. (2020). Keynes's Theory and Inflation. Keynes's Theory and Inflation, 10.

Mohamed, I., & Va, R. (2010). Error Correction Model (ECM).

Naveed et al. (2013). [WIP] Mp r a. Economic Policy, 2116, 0–33.

Nguyen Quang Linh. (2024). The relationship between inflation and economic growth: Empirical evidence from Vietnam in 1996-2023. VNU University of Economics and Business, 4(4), 86. https://doi.org/10.57110/vnu-jeb.v4i4.271

Nyamongo, E., Misati, R., Kipyegon, L., & Ndirangu, L. (2012). Remittances, financial development and economic growth in Africa. Journal of Economics and Business, 64, 240–260. https://doi.org/10.1016/J.JECONBUS.2012.01.001

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3), 289–326. https://doi.org/10.1002/jae.616

Poonam, Ravinder, & Saini, V. (2024). Understanding the Role of Exports and FDI in Remittances-Growth Nexus in Globalised India. The Indian Economic Journal. https://doi.org/10.1177/00194662241262506

Rao, B., & Hassan, G. (2009). A panel data analysis of the growth effects of remittances. Economic Modelling, 28, 701–709. https://doi.org/10.1016/J.ECONMOD.2010.05.011

Remittances and Economic Growth: Empirical Analysis from a Panel of Selected Asian Nations. (n.d.).

Sobiech, I. (2019). Remittances, finance and growth: Does financial development foster the impact of remittances on economic growth? World Development. https://doi.org/10.1016/J.WORLDDEV.2018.08.016

Sowe, A., Mohsin, M. I. A., Economics, M. M.-I. J. of I., & 2023, U. (2023). Analysing the Roots of Inflation in the Gambia: an Islamic Approach To Resolving the Issue. Ijiefer.Kuis.Edu.My, 6(2), 110–120.

Stony Brook University, C. of E. and A. S. (2015). Unit Root & Augmented Dickey-Fuller (ADF) Test Covariance Stationary series.

Update, E. (2024). Gambia-The2024(World Bank).

Yuliawan, R., Murdiawati, M., Faqih, M., Haris, R. A., & Sulistyawati, A. (2024). The Impact of Monetary Policy, Inflation Rates, and Foreign Direct Investment on Economic Growth in Developing Countries. Join: Journal of Social Science, 1(4), 373–380. https://doi.org/10.59613/gjq7cm27

Zaman, S., Wang, Z., & Zaman, Q. uz. (2021). Exploring the relationship between remittances received, education expenditures, energy use, income, poverty, and economic growth: fresh empirical evidence in the context of selected remittances receiving countries. Environmental Science and Pollution Research, 28(14), 17865–17877. https://doi.org/10.1007/s11356-020-11943-1