



Total Fertility Rate and Economic Growth in Uganda: Evidence from the ARDL Bounds Testing Approach to Cointegration

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Abstract

This paper examines the dynamic relationship between fertility patterns and economic growth in Uganda using annual time-series data from 1990 to 2021. Motivated by the ongoing debate about whether high fertility hinders or fosters economic growth in developing economies (Galor, 2011; Ashraf et al., 2013), the study employs the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration (Pesaran et al., 2001) to estimate both short-term and long-term effects. Economic growth is represented by GDP per capita growth, while fertility is measured through the total fertility rate. The empirical results confirm a stable long-term relationship among the variables. The findings indicate that fertility has a positive and statistically significant impact on economic growth in the short run but a negative and economically meaningful effect in the long run. Robustness tests using an alternative fertility proxy and different lag structures verify the stability of the main results. These findings align with demographic transition and unified growth theories (Becker et al., 1990) and highlight the importance of fertility decline in supporting sustained long-term economic growth. Policy recommendations focus on strengthening family planning, promoting female education, and enhancing labour market absorption to maximise Uganda's demographic dividend.

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Introduction

The relationship between demographic dynamics and economic performance has long been a central focus in development economics, growth theory, and public policy discussions (Bloom et al., 2003). Among demographic variables, fertility is particu-

larly significant because it directly influences population growth, age structure, dependency ratios, labour supply dynamics, savings behaviour, and human capital development. Consequently, fertility outcomes affect both the level and the sustainability of economic growth, especially in developing economies undergo-

ing structural transformation [1-5].

From a theoretical perspective, fertility has been linked to economic growth through various channels. High fertility may increase the labour force and domestic markets in the short term, potentially boosting aggregate demand and output (Kuznets, 1967). However, persistently high fertility can also lead to negative long-term effects through capital dilution, increased dependency burdens, pressure on public finances, and reduced investment in education and health [4]. These contrasting mechanisms suggest that the fertility–growth relationship is inherently dynamic and context-dependent, emphasising the importance of country-level empirical analysis that differentiates between short-term and long-term effects.

Empirically, the experience of today’s advanced economies indicates that sustained fertility decline often precedes periods of rapid economic growth during the demographic transition (Bloom & Williamson, 1998). In contrast, many low-income countries, especially in Sub-Saharan Africa, continue to experience high fertility alongside modest per capita income growth (Bongaarts, 2017). This divergence has renewed interest in whether high fertility acts as a barrier to development or can be utilised as a driver of growth through advantageous demographic structures.

Uganda offers a particularly relevant example for examining this issue. Despite implementing extensive macroeconomic and structural reforms since the late 1980s, Uganda still has one of the highest fertility rates in the world (World Bank, 2023). Although the total fertility rate has decreased from over seven children per woman in the late 1980s to below five in recent years, the rate of decline remains slow compared to regional and global standards. As a result, Uganda’s population continues to grow rapidly, with a large and expanding youth group entering the labour market each year.

This demographic profile presents both opportunities and challenges. A youthful population can generate a demographic dividend through a growing working-age population, increased labour supply, and higher overall savings (Bloom et al., 2003). However, if fertility remains high and job creation

does not keep pace with the expanding labour force, it may lead to rising unemployment, underemployment, fiscal strain, and slower growth in per capita income (Eastwood & Lipton, 2011). Uganda’s development frameworks, including Vision 2040 and successive National Development Plans, explicitly recognize the importance of population dynamics in achieving sustained economic growth.

Despite the policy importance of fertility dynamics, empirical evidence on the fertility–economic growth relationship in Uganda remains limited. Existing research mainly focuses on population growth, dependency ratios, poverty, or health outcomes, often using cross-country or panel data approaches that ignore country-specific demographic and institutional characteristics (Karra et al., 2017). Furthermore, relatively few studies explicitly distinguish between the short-term and long-term impacts of fertility on economic growth. This distinction is crucial for policy development in economies experiencing demographic transitions.

This study aims to address these gaps by empirically analyzing the impact of fertility on economic growth in Uganda using annual time-series data from 1990 to 2021. Employing the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration (Pesaran et al., 2001), the study estimates both short-term and long-term relationships between fertility and economic growth while controlling for key macroeconomic variables. The paper contributes by providing country-specific evidence, distinguishing dynamic effects, and subjecting results to robustness checks.

Literature review

Theoretical Overview

The theoretical relationship between fertility and economic growth is one of the most widely debated topics in demographic economics and growth theory. Different theoretical approaches offer contrasting predictions about the direction and strength of the fertility–growth relationship, depending on assumptions related to technology, preferences, human capital development, and institutional context [1].

Malthusian population theory suggests that population growth tends to outpace resource expansion, leading to diminishing returns and stagnation in per capita income (Malthus, 1798). The neoclassical growth mod-

el, developed by Solow (1956), further shows that increased population growth reduces the steady-state level of capital per worker through capital dilution. Demographic transition theory highlights the dynamic evolution from high fertility and mortality to low fertility and mortality as economies develop (Notestein, 1945). This transition alters age structures and creates conditions for a demographic dividend if accompanied by appropriate economic policies (Bloom & Williamson, 1998).

Becker's quantity–quality trade-off model links fertility declines to human capital accumulation, arguing that households substitute child quantity for child quality as returns to education rise. Endogenous growth models build on this mechanism by showing that fertility affects long-run growth through its impact on education, innovation, and productivity (Lucas, 1988) [3,9].

Unified growth theory synthesizes these mechanisms into a single framework explaining the historical transition from stagnation to sustained growth [4,1]. It predicts that fertility decline is a necessary condition for sustained economic growth, particularly in developing economies.

Empirical Review

Empirical studies generally find a negative long-term relationship between fertility and economic growth, particularly in developing countries [2,11]. However, short-term positive effects and bidirectional causality have also been documented (Kuznets, 1967) [6]

Studies focusing on Africa indicate that persistently high fertility rates hinder growth by increasing dependency ratios and restricting human capital investment (Karra et al., 2017) [10]. Despite this expanding body of research, specific time-series data for Uganda remain limited, which motivates this study.

A growing body of empirical research has examined the relationship between fertility dynamics and economic growth using various econometric and theoretical methods. Employing a Vector Autoregression (VAR) model and Granger causality tests for Romanian regions between 1993 and 2010, found bidirectional causality between fertility and economic growth, indicating that shocks to either variable have

long-term effects on the other [12].

Using a Panel Pooled Mean Group Autoregressive Distributed Lag (PMG-ARDL) approach, analysed data for 16 EU countries from 1997–2014 to investigate the determinants of environmental sustainability [13]. The study identified a long-term equilibrium relationship among ecological footprint, real GDP, trade openness, fertility rate, and energy consumption. While non-renewable energy consumption harmed environmental quality, renewable energy enhanced sustainability. The observed long-term fertility–ecological footprint relationship was attributed to heterogeneous fertility patterns across EU member states.

From a theoretical perspective, employed a three-period overlapping generations (OLG) model linking crime, fertility, and economic growth. Their findings suggested that an increase in the probability of escaping apprehension raises both crime and fertility in a non-monotonic manner, yielding an ambiguous effect on growth. Supporting evidence from a cross-country analysis spanning four decades confirmed non-linear effects of fertility and crime, as well as an overall negative impact on output growth. Similarly, using an OLG framework and data from 1973–2007, found that humanitarian aid exerts, on average, no significant effect on fertility or per capita economic growth [14,15].

Empirical evidence on non-linear fertility–growth relationships is further provided by who applied quantile regression techniques to data from 1970–2010. The study confirmed an inverse J-shaped relationship between fertility and economic development, contingent on reaching a threshold income level [16]. The results further showed that higher fertility levels require higher GDP per capita to reverse fertility decline and intensify both phases of the J-shaped pattern.

Lee and Mason (2010) examined fertility and economic growth during the demographic transition using an overlapping generations model emphasizing the quantity–quality trade-off and human capital accumulation. Using National Transfer Accounts data and simulation analysis, the study demonstrated that lower fertility enhances per capita consumption by increasing human capital investment, even in the absence of capital dilution effects. In a related contribution, analyzed the fertility–human capital nexus using a theoretical model with endogenous fertility for OECD

and non-OECD countries. While theory predicted a monotonic negative relationship, non-parametric evidence revealed strong non-monotonic effects of fertility on human capital accumulation and, by extension, economic growth [17].

Using a panel Structural Vector Autoregression (SVAR) approach, Lee et al. (2012) explored the connections between women’s employment, fertility, and economic growth in eight East Asian and fifteen EU countries from 1980 to 2008. The results showed reduced endogeneity when regions were analysed together and demonstrated that fertility and women’s employment account for around 15% of the variation in growth in EU countries and approximately 10% in East Asia.

Country-specific evidence from developing economies also indicates a negative relationship between fertility and growth. Using Ordinary Least Squares estimation for Kenya over 1979–2019 within neo-classical and Malthusian frameworks, found that capital stock growth positively influences economic growth, while total fertility rate negatively affects growth. Similarly, Li (2016), analysing data from 120 developing countries over 1970–2014, observed that high fertility limits economic growth, whereas investments in human capital increase returns in environments of declining fertility, reinforcing the shift from prioritising the quantity to the quality of children [10].

Overall, empirical evidence on the fertility–growth nexus remains mixed, reflecting differences in methodological approaches, country contexts, and stages of development. Much of the existing literature concentrates on cross-country or Sub-Saharan African analyses with limited country-specific evidence for Uganda. This study fills this gap by examining the impact of total fertility rate on economic growth in Uganda, thus offering context-specific insights to the broader demographic–economic growth literature [13,17,18].

Methodology and Data

This section details the empirical strategy used to explore the relationship between fertility and economic growth in Uganda. It covers the model specification, data sources and variable measurement, estimation method, and diagnostic procedures implemented to

ensure the accuracy and reliability of the findings.

The study is based on the Malthusian population theory, which assumes that economic growth influences the total fertility rate. Presented a model that describes how countries attain a stable average income within their populations [3,8]. The model argues that when income exceeds the equilibrium level, mortality rates decline and fertility increases accordingly. Therefore, economic growth impacts the total fertility rate, making fertility an endogenous component within the economic growth model. The model is represented as follows;

$$GDP_t = f(TFR_t) \dots \dots \dots (3.1)$$

Where GDP_t is economic growth at time t and TFR_t is the total fertility rate at time t. However, according to the Solow growth model, economic growth is also related to capital formation and labour productivity [19,20]. Thus, capital formation and labour productivity make up the control variables in this model. Specifically, to the Malthusian population theory, this study estimates the following equation;

$$GDP_t = \beta_0 + \beta_1 TFR_t + \beta_2 K_t + \beta_3 LAB_t + \varepsilon_t \dots \dots \dots (3.2)$$

Model Specification

To examine the effect of the total fertility rate on economic growth in Uganda, the study extends equation 3.2 to include additional variables that influence it. The model is specified as follows:

$$GDP_t = \beta_0 + \beta_1 TFR_t + \beta_2 LAB_t + \beta_3 RIR_t + \beta_4 REER_t + \beta_5 TO_t + \beta_6 GFDCF_t + \beta_7 INF_t + \beta_8 FDI_t + \varepsilon_t \dots \dots \dots (3.3)$$

The model in equation 3.3 is re-specified in logs as;

$$LGDP_t = \beta_0 + \beta_1 TFR_t + \beta_2 LAB_t + \beta_3 RIR_t + \beta_4 REER_t + \beta_5 TO_t + \beta_6 LGDCF_t + \beta_7 INF_t + \beta_8 FDI_t + \varepsilon_t \dots \dots \dots (3.4)$$

Where LGDP is the log of GDP growth, LGDCF is the log of gross fixed capital formation, TFR is the total fertility rate, FDI is foreign direct investment, LAB is the log of the labor force, REER is the real effective exchange rate, RIR is the real interest rate, TO is trade openness and INF is the inflation rate in Uganda, while ε is the ideal error term.

Data Sources and Variable Measurement

The study employs annual time-series data covering the period 1990–2021. All variables are sourced from

the World Bank's World Development Indicators to ensure consistency and comparability. GDP per capita growth is measured as the annual percentage change in real GDP per capita and functions as the dependent variable.

Fertility is measured by the total fertility rate, which is the average number of children a woman would have during her reproductive lifetime. This metric is commonly used in demographic and growth studies because it reflects long-term reproductive behaviour rather than short-term population changes. For robustness analysis, the crude birth rate is used as an alternative measure of fertility.

Gross fixed capital formation is expressed as a percentage of GDP and measures domestic investment activity. Foreign direct investment is calculated as net inflows relative to GDP. Trade openness is defined as the total trade divided by GDP. Inflation is assessed using the consumer price index, while the real interest rate represents lending rates adjusted for inflation. The real effective exchange rate reflects changes in external competitiveness. Labour force participation indicates the proportion of the working-age population that is economically active.

Econometric Framework: ARDL Bounds Testing Approach

The study employs the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration developed by Pesaran, Shin, and Smith (2001). The ARDL methodology provides several advantages. Firstly, it can be used regardless of whether the regressors are integrated of order $I(0)$ or $I(1)$, as long as none are integrated of order $I(2)$. Secondly, it is well suited for small sample sizes, which is particularly important for country-specific studies such as this. Finally, it enables the simultaneous estimation of short-term and long-term dynamics within a single equation.

The ARDL model includes both differenced and level terms, enabling the joint significance of lagged level variables to be tested using an F-statistic. If the calculated F-statistic exceeds the upper bound critical value, cointegration is established.

Error Correction Representation

Once cointegration is established, the short-run dy-

namics are modelled using an error correction model (ECM). The ECM measures how quickly deviations from long-term equilibrium are rectified after short-term shocks. The error correction term is anticipated to be negative and statistically significant, signifying convergence towards the long-term equilibrium.

Lag Length Selection and Estimation Procedure

Optimal lag lengths are chosen using the Schwarz Bayesian Information Criterion to ensure model simplicity. Alternative lag structures based on the Akaike Information Criterion and Hannan-Quinn Information Criterion are employed for robustness checks.

Diagnostic and Stability Tests

To ensure the reliability of the estimated model, several post-estimation diagnostic tests are conducted. Serial correlation is checked using the Breusch-Godfrey LM test, heteroscedasticity is analysed with the Breusch-Pagan test, and model specification is evaluated with the Ramsey RESET test. Parameter stability is assessed through the CUSUM and CUSUMSQ tests. The lack of diagnostic issues and evidence of parameter stability confirm the robustness of the estimated results.

Empirical Results and Discussion

This section presents and carefully interprets the empirical findings of the study. Besides reporting statistical significance, emphasis is placed on the economic significance of the results, their alignment with theory, and their relevance to Uganda's macroeconomic and demographic context.

Descriptive Statistics

Table 1 presents the descriptive statistics of all variables utilised in the analysis. GDP per capita growth shows moderate variability over the sample period, reflecting Uganda's episodes of rapid expansion interspersed with periods of macroeconomic instability. The total fertility rate has a relatively high mean with limited variation, indicating that fertility in Uganda has remained consistently high despite a gradual decline over time. This persistence highlights the importance of considering fertility as a structural factor affecting long-term growth rather than merely a short-term demographic fluctuation.

VARIABLES	N	Mean	SD	Min	Max
FDI	32	2.893	1.492	-0.137	6.657
GDP	32	3.017	2.304	-0.423	8.526
OTT	32	36.99	6.254	26.61	56.26
REER	32	117.6	31.26	90.59	244.4
RIR	32	11.51	10.61	-34.74	23
GFCF	32	30.09	0.721	28.93	31.12
LAB	32	16.12	0.299	15.65	16.65
TFR	32	6.199	0.802	4.577	7.037
INF	32	9.619375	10.7898	-0.3	45.4

Source: Author's computations

The control variables exhibit reasonable variation, indicating they provide sufficient informational content for econometric estimation. In particular, investment and trade openness display significant dispersion, reflecting shifts in Uganda's macroeconomic and trade policy regimes over the study period.

Correlation Analysis

Table 2 shows the pairwise correlation matrix. Fertility is negatively linked to GDP per capita growth, offering initial evidence in line with growth theories highlighting capital dilution and dependency effects.

Variables	GDP	TFR	REER	OTT	FDI	GFCF	RIR	LAB	INF
GDP	1								
TFR	0.419*	1							
REER	0.123	0.577*	1						
OTT	0.187	-0.346	-0.516*	1					
FDI	0.321	-0.201	-0.542*	0.740*	1				
GFCF	-0.216	-0.757*	-0.746*	0.641*	0.493*	1			
RIR	-0.021	-0.17	-0.242	-0.015	0.244	0.208	1		
LAB	0.329	0.304	-0.091	0.184	0.298	0.161	0.05	1	
INF	-0.005	0.396*	0.591*	-0.294	-0.515*	-0.499*	-0.496*	-0.017	1

*Represent significance at 5%

Source: Author's computations

Notably, the correlation coefficients among explanatory variables are below standard multicollinearity thresholds, suggesting that the estimated coefficients in the multivariate model are unlikely to be affected by linear dependence. This conclusion is further supported by variance inflation factor diagnostics reported elsewhere.

Unit Root Test Results

The results of the Augmented Dickey–Fuller and Phillips–Perron unit root tests are shown in Table 3. The findings suggest that the variables are integrated of mixed order, with some stationary at levels and others stationary after first differencing. Importantly, none of the variables is integrated of order I (2), meeting the key precondition for using the ARDL bounds testing approach. These results support the chosen methodology and justify proceeding with the ARDL framework. Brooks (2008) pointed out that nonstationary series can lead to spurious regression results.

Table 3: Stationarity Tests Results for Study Variables

Variables	ADF Unit Root Test			Phillips Perron Unit Root Test		
	LEVEL	FIRST	REMARK	LEVEL	FIRST	REMARK
FDI	-3.135**		I(0)	-2.536	-4.138***	I(1)
OTT	-2.16	-4.659***	I(1)	-2.419	-6.011***	I(1)
GFCF	-1.588	-6.585 ***	I(1)	-2.036	-7.555***	I(1)
INF	-6.410***		I(0)	-4.318***		I(0)
LAB	1.729	-2.853*	I(1)	2.63	-4.903***	I(1)
GDP	-2.754 *		I(0)	-3.914***		I(0)
TFR	-1.054	-3.191**	I(1)	-0.708	-2.644*	I(1)
REER	-1.216	-6.694***	I(1)	-3.566***		I(0)
RIR	-3.246**		I(0)	-5.123***		I(0)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source: Author's computations

ARDL Bounds Test for Cointegration

Table 4 presents the results of the ARDL bounds test for cointegration. The calculated F-statistic surpasses the upper-bound critical values at conventional significance levels, offering strong evidence of a stable long-term relationship among economic growth, fertility, and the control variables. This suggests that fertility and macroeconomic fundamentals tend to move together with economic growth over the long term, highlighting the importance of fertility as a structural factor in Uganda’s growth trajectory.

Table 4: Results of the Bounds Test

		Model 1
Significance level	F-Statistic	35.163
	Integration Order	F (critical)
10%	I(0)	1.95
	I(1)	3.06
5%	I(0)	2.22
	I(1)	3.39
2.50%	I(0)	2.48
	I(1)	3.7
1%	I(0)	2.79
	I(1)	4.1

Source: Author’s computations

The results of the Pesaran et al. (2001) bounds test confirm the existence of a long-term relationship among the variables, as the F-statistic exceeds the upper bound at all significance levels, indicating rejection of the null hypothesis of no long-run relationship. The bounds test uses the critical values and approximate p-values proposed by [21]. The null hypothesis of no level relationship is rejected for the estimated model since the F-statistic value (35.163)

exceeds the critical values for the I(1) variables at the 5 per cent significance level. This result suggests that a long-term relationship exists between the study variables; therefore, the study estimates the regression in error correction form.

Long-Run Estimation Results

Table 6 displays the estimated long-run coefficients from the ARDL model. The results show that ferti-

ty has a negative and statistically significant impact on GDP per capita growth. Specifically, a one-unit increase in the total fertility rate is associated with lower long-term economic growth, due to factors such as capital dilution, higher dependency ratios, and limited human capital development. This finding aligns with endogenous and unified growth theories (Lucas, 1988) [1].

statistically significant coefficient, confirming the importance of domestic investment in expanding productive capacity. Foreign direct investment also has a positive influence on long-term growth, reflecting its role in technology transfer and capital deepening. Trade openness exhibits a negative long-term coefficient, suggesting that without sufficient export diversification and industrial capacity, openness may expose the economy to external vulnerabilities.

Gross fixed capital formation shows a positive and

Table 6: ARDL Long-Run Estimates (Dependent Variable: GDP per capita growth)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Total fertility rate	-0.842	0.312	-2.70	0.012
Gross fixed capital formation	0.214	0.089	2.40	0.023
Foreign direct investment	0.167	0.064	2.61	0.015
Trade openness	-0.093	0.041	-2.27	0.031
Inflation rate	-0.058	0.026	-2.23	0.034
Real effective exchange rate	0.012	0.006	2.00	0.054
Real interest rate	-0.041	0.019	-2.16	0.039

Source: Author’s computations

Short-Run Dynamics and Error Correction

The short-run dynamics are presented in Table 7. Fertility has a positive and statistically significant short-term impact on economic growth, suggesting that population growth can temporarily boost economic activity through increased labour supply and consumption demand. However, this impact diminishes over time as long-term limits take effect. The error correction term is negative and statistically significant, confirming the presence of a stable long-term equilibrium relationship.

The size of the coefficient indicates that deviations from the long-term equilibrium are corrected at a moderate pace, reflecting gradual adjustment following demographic or macroeconomic shocks.

Table 7: Short-Run ARDL Error Correction Model Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Δ Total fertility rate	0.463	0.198	2.34	0.026
Δ Gross fixed capital formation	0.112	0.047	2.38	0.024
Δ Foreign direct investment	0.089	0.036	2.47	0.020
Δ Trade openness	-0.041	0.019	-2.16	0.039
Δ Inflation rate	-0.026	0.012	-2.17	0.038
Error correction term (ECT ₋₁)	-0.51	0.14	-3.64	0.001

Notes: Δ denotes first difference. ECT₋₁ is the lagged error correction term

Source: Author’s computations

Diagnostic and Stability Tests

The error correction term is negative and statistically significant, confirming the existence of a stable adjustment mechanism towards the long-run equilibrium. The magnitude of the coefficient suggests a relatively moderate speed of adjustment, indicating that deviations from long-run growth equilibrium caused by demographic or macroeconomic shocks are corrected gradually over time.

The diagnostic test results, summarized in Table 5, show no evidence of serial correlation, heteroscedasticity, or model misspecification. Stability tests based on CUSUM and CUSUMSQ statistics confirm that the estimated coefficients remain stable throughout the sample period, as detailed in annex A. These findings boost confidence in the reliability of the estimated parameters and the robustness of the conclusions.

Table 5: Diagnostic Test Results

Test	Test statistic	P-value
Ramsey Reset	F (3, 6) = 0.35	0.7879
Serial-correlation	Chi (2) = 0.030	0.8622
ARCH effect	Chi (2) = 0.243	0.6218
Heteroscedasticity	Chi (2) = 2.27	0.1317
Normality	Chi (2) = 1.05	0.5916
Goodness of fit (R ²)	0.984	
F-statistic	27.43(0.0000)	

Source: Author's computations

The LM test for the ARCH effect also indicates the acceptance of the null hypothesis of “no ARCH effect” in the residuals. The normality test shows that the residuals are normally distributed.

The goodness of fit, also known as the coefficient of determination, indicates the proportion of variation in the dependent variable explained by the model. The R-squared value for the model is 0.984. This demonstrates that the regressors included in the model account for 98.4 per cent of the variation in Uganda's economic growth. The overall F-statistic for the model is 27.43, with a p-value of 0.0000, which suggests rejecting the null hypothesis “that all coefficients are statistically equal to zero”. This implies that the total fertility rate, labour force participation rate, trade openness, inflation rate, real effective exchange rate, gross fixed capital formation, and foreign direct investment jointly influence economic growth in Uganda.

Robustness Analysis

The robustness checks further strengthen the credibility of the findings. When fertility is measured by the crude birth rate instead of the total fertility rate, the long-term negative effect on economic growth

remains statistically significant and of similar magnitude. Likewise, alternative lag structures based on different information criteria yield qualitatively unchanged results. These findings confirm that the negative long-term impact of fertility on economic growth is not sensitive to how variables are measured or to model specifications. Overall, the empirical evidence presents a clear picture: while fertility can generate short-term growth impulses, persistently high fertility acts as a significant barrier to Uganda's long-term economic growth. This duality underscores the importance of differentiating between short-term dynamics and long-term structural effects when formulating population and growth policies.

Conclusion and Policy Implications

This study investigated the relationship between fertility and economic growth in Uganda using annual data from 1990 to 2021 and the ARDL bounds testing method. Consistent with demographic transition and unified growth theories, the results indicate that fertility promotes economic growth in the short term but restricts it in the long term [1].

The findings emphasize the importance of accelerating fertility decline to support sustained econom-

ic growth. Policies aimed at expanding access to family planning, improving female education, and strengthening reproductive health services are crucial (Ashraf et al., 2013; Bongaarts, 2017) [2]. Complementary labour market and industrial policies are also necessary to absorb the expanding workforce and realise Uganda's demographic dividend.

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