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The conflict-growth nexus in Fragile States: Empirical evidence from Somalia

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Abstract

This study examines the long-term impact of armed conflict on Somalia's economic growth from 1997 to 2022, addressing the limited country-specific evidence on the conflict-growth nexus in fragile states. Annual data from the World Bank and the Uppsala Conflict Data Program are utilized, with conflict intensity measured by conflict-related deaths. The cointegration test confirms a stable long-run relationship, indicating that cointegration techniques are the appropriate estimation method. The results reveal that armed conflict has a substantial adverse effect on economic growth, as increased conflict reduces GDP through capital destruction, labor displacement, and weakened investor confidence. On the other hand, foreign aid positively supports economic growth through developmental projects and budget support, while unemployment negatively affects growth. Persistent unemployment erodes hope and drives the young generation toward risky migration routes to Europe, yet it does not compensate for the losses from sustained violence. The findings highlight the severe economic costs of insecurity and underscore that sustainable peace and institutional rebuilding are prerequisites for recovery. This study contributes to the fragile states literature by empirically examining Somalia's conflict-growth dynamics and offering policy-relevant lessons for conflict resolution and targeted economic interventions.

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1. Introduction

Globally, armed conflict continues to be one of the biggest obstacles to economic development and progress. Large-scale interstate conflicts have become less common during the past century, but political violence, insurgencies, and internal armed conflicts still cause significant human and financial losses worldwide. Conflict frequently leads to steep drops in GDP growth, greater poverty, and less investment because it impairs institutional capacity, damages infrastructure, displaces communities, and interrupts production (Le, Bui, & Uddin, 2022). The average yearly GDP growth of conflict-affected nations is estimated to be 2.2 percentage points lower than that of peaceful states, with compounding consequences that reduce the possibility for long-term development (Fang, Kothari, McLoughlin, & Yenice, 2020).

Sub-Saharan Africa (SSA), which has seen some of the highest rates of conflict recurrence during the past 50 years, is especially affected economically. Decline in agricultural output, trade disruptions, capital flight, and the degradation of public services have all been associated with armed conflicts in Sub-Saharan Africa (Winne & Peersman, 2021). According to the World Bank (2024) conflict reduces the region's potential GDP growth by 30%, with affected nations experiencing longer and more severe recessions than those in other parts of the world. Beyond the immediate financial losses, wars in SSA exacerbate structural development challenges such as chronic income inequality, inadequate infrastructure, and limited access to essential

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services. Spillover effects further compound the damage, including refugee flows, cross-border insecurity, and disruptions to regional markets (Ogbe, Abdullahi, & Ding, 2024).

Somalia is one of the most persistent and complicated examples of conflict-driven economic fragility in SSA. Since the central authority collapsed in 1991, the country has been plagued by clan-based conflicts, extremism, and recurring humanitarian crises (Menkhaus, 2014). These dynamics have significantly harmed the performance of its core economic sectors, agriculture, livestock, and fisheries, while discouraging foreign investment and limiting trade. Despite intermittent economic recoveries spurred by remittances and humanitarian relief, the country remains mired in a cycle of slow growth, vulnerability to climate shocks, and governance flaws (IMF, 2022).

The trajectory of Somalia's conflict has evolved through several distinct phases. Following the Ogaden War between Somalia and Ethiopia in 1977-1978, clan-based militias – often supported by Ethiopia and other external actors – emerged as armed opponents to the central government throughout the 1980s. In 1991, these militias overthrew the regime, but lacking a unified political agenda for governance, they quickly turned on one another in a power struggle that escalated into protracted clan-based civil warfare (Ingiriis, 2019). This warlord-dominated period persisted, with intermittent fighting, until 2006. The excesses and brutality of the warlords eventually provoked an armed uprising led by the Islamic Courts Union (ICU), which briefly consolidated authority and ended the era of fragmented warlord rule. However, internal divisions within the ICU, coupled with the rise of its more radical offshoot, al-Shabaab – linked to international terrorist networks – led to renewed instability (Mwangi, 2012). The fragmentation of the ICU and the subsequent insurgency by al-Shabaab undermined prospects for sustained governance and security.

While large-scale clan conflict has diminished in recent years, the primary security challenge now stems from terrorism and violent terrorism from al-Shabaab and Daish. Decades of shifting conflict dynamics, spanning clan-based civil strife, warlordism, and religious extremism, have cumulatively devastated Somalia's fundamental resources for economic growth and development, including physical infrastructure, human capital, and state institutions.

While substantial literature examines the economic costs of conflict in Sub-Saharan Africa (SSA), empirical evidence specific to Somalia remains limited. Existing regional studies often overlook Somalia's distinct conflict dynamics. Furthermore, research on Somali conflicts has predominantly focused on political and humanitarian dimensions, neglecting the impact of armed conflict on economic growth and development. This study addresses this critical gap by empirically investigating the relationship between conflict intensity and economic growth in Somalia. The paper contributes to the broader debate on the conflict-growth nexus in fragile states.

The rest of the study is organized as follows: The first section provides a brief review of the related literature. The second section presents the methods and materials, showcasing the econometric models used and the justification behind them. The third section offers the empirical findings and discussion, while the fourth section presents the concluding remarks and policy recommendations.

2. Literature Review

The disruptive effects of armed conflict, ranging from capital destruction and loss of human capital to institutional collapse and erosion of investor confidence, remain a critical determinant of economic prosperity. The magnitude and nature of these impacts are highly context-specific, shaped by an economy's structural characteristics as well as the type, intensity, and duration of the conflict.

According to Ogbe et al. (2024) the empirical literature examining the economic consequences of armed conflict can be grouped into three categories. The first category adopted a comparative approach, evaluating conflict-affected states against non-conflict counterparts to estimate the economic trajectory that might have occurred in the absence of war (Abadie & Gardeazabal, 2003; FitzGerald, Stewart, & Wang, 2000). The second employed an accounting framework to quantify the costs of conflict, factoring in declines in tax revenues, increases in military expenditure, and the reallocation of public resources away from development priorities (Collier et al., 2003; FitzGerald et al., 2000; Künü, Hopoğlu, & Bozma, 2016). The third, and by far the most extensive category, is based on regression-based econometric analysis, which seeks to identify statistical associations between conflict variables and measures of economic performance, such as growth rates (Gyimah-Brempong & Corley, 2005; Madsen & Zaman, 2025).

Theoretical literature offers two divergent perspectives on the economic implications of armed conflict. The positive-growth perspective, grounded in Keynesian principles, argues that military expenditure – when strategically managed – can stimulate aggregate demand, boost output, and generate beneficial spillovers (Benoit, 1978). Historical experiences, such as those of the Second World War, illustrate how wars have, in certain contexts, accelerated technological innovation, enhanced workforce skills through advanced military training, and strengthened institutional capacity (Blattman & Miguel, 2010; Dunne, Smith, & Willenbockel, 2005). In contrast, the negative-growth perspective, which dominates contemporary debate, contends that conflict diverts resources away from productive investment (Landau, 1996) and erodes human capital, thereby undermining the foundations of long-term economic development (Awaworyi Churchill & Yew, 2018; Ganegodage & Rambaldi, 2014).

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Empirical evidence from diverse regions consistently underscores the long-term economic destruction caused by armed conflict. For example, Madsen and Zaman (2025) demonstrated that 19th-century Latin American wars redirected resources from education and research toward military purposes, leaving a legacy of persistent underdevelopment. In modern Europe, Knezović and Tkalec (2025) found that while military expenditure on its own does not significantly influence GDP growth, the occurrence of conflict, measured by battle-related deaths, has a clear and substantial negative effect on economic performance. These patterns are particularly pronounced in fragile states, where conflict often fosters war economies that can generate artificial short-term growth while embedding deep structural weaknesses. Ghafoori et al. (2025) documented this dynamic in Afghanistan, where decades of conflict sustained an opium-dependent economy heavily reliant on foreign military spending. Similarly, Suliman, Khwanda, and Ramana Murthy (2024) estimated that the war in Syria destroyed over US$442 billion in capital and triggered the near-total collapse of trade, with the economic devastation further compounded by geopolitical interventions and sanctions.

The conflict-growth relationship is also shaped by resource dependence and demographic pressures. Ajayi (2024) found that in Sub-Saharan Africa (SSA), mineral rents may temporarily stimulate growth, yet civil wars and high population growth exert a severe long-term drag on economic development. Spatial analyses by Ogbe et al. (2024) further revealed that conflicts in neighboring countries can spill over and intensify domestic instability, with impacts varying across SSA subregions, with Central Africa being the most severely affected.

Sub-Saharan Africa (SSA) has drawn significant scholarly attention due to its recurrent conflicts and persistent developmental challenges. Paul Collier and Hoeffler (2002) identified high unemployment, low income, and dependence on primary commodities as central drivers of both the onset and persistence of conflict in the region. Empirical studies by Murdoch and Sandler (2002) and Artadi and Sala-i-Martin (2003) confirmed that war reduces per capita GDP, though the scale and persistence of the effect differ across cases. Additionally, Fang et al. (2020) estimated that intense conflict reduces annual GDP growth by an average of 2.5 percentage points, with losses compounding over time. Newiak, Ouedraogo, Tenison, Yao, and Yenice (2013) further indicated that the economic damage, ranging from 1.3 to 3 percentage points annually, varies with institutional quality, highlighting governance as a key moderating factor. Despite these insights, much of the existing research still treats SSA as uniform, overlooking subregional differences in conflict's economic impacts in Central, East, and West Africa.

The economic costs of violence are not confined to conventional warfare; terrorism, as a form of armed conflict, offers comparable growth-reducing effects. Chenini, Hamida, and Lassoued (2024) found that terrorism significantly depresses growth in developing countries by deterring investment and foreign direct investment (FDI), while such effects are negligible in developed economies. Regional studies support this pattern. For instance, Jesmy, Abd Karim, and Applanaidu (2019) indicate that in South Asia, conflict intensity, measured by military expenditure per warring population, reduces per capita GDP in both the short and long term, with Pakistan, Sri Lanka, and India experiencing the steepest declines. Country-specific analyses add further weight to this narrative. While Bilgel and Karahasan (2019) estimated that Turkey's GDP per capita would have been 21.4% higher in the absence of PKK terrorism, Poveda and Martínez (2023) linked surging violence in Mexico to declining GDP per capita, exacerbated by entrenched poverty, inequality, and unemployment.

From a modeling standpoint, extensions of the Solow growth framework have been employed to analyze the economic mechanics of armed conflict. Filipowicz, Krawiec, and Tokarski (2025) adapted the model to capture the wartime reallocation of labor and capital from civilian production to military purposes, finding that although economies may eventually return to a long-run equilibrium, the short-run disruptions are severe. Complementing this theoretical approach, Gyimah-Brempong and Corley (2005) showed that civil wars significantly decrease growth in Sub-Saharan Africa by reducing physical capital investment, even after accounting for potential endogeneity. Both theoretical modeling and empirical analysis indicate that capital displacement is a central channel through which conflict undermines economic performance.

3. Methodology

3.1. Data and Variables

This study examines the impact of conflict on economic growth in Somalia over the period 1997 to 2022. The analysis utilizes annual data sourced from the World Bank's World Development Indicators and the Uppsala Conflict Data program (UCDP), ensuring both credibility and consistency. Conflict is measured by the number of conflict-related deaths, serving as a proxy for intensity and disruption. The selection of variables is grounded in both theoretical relevance and empirical support from recent literature in development economics and conflict studies. The variables are transformed into natural logarithms, where appropriate, to stabilize variance and enable accurate and reliable interpretation of the results.

3.1.1. Dependent Variable

Real GDP (LNGDP): The dependent variable is the natural logarithm of real Gross Domestic Product (GDP), expressed in constant 2017 US dollars. Real GDP is a widely recognized indicator of economic performance and is frequently used in growth literature to evaluate macroeconomic trends over time.

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Numerous studies have employed GDP as a key indicator of economic growth in their analysis (Iyoboyi, 2014; Polachek & Sevastianova, 2012).

3.1.2. Independent Variables

Conflicts (LNCONF): The primary independent variable in this study is conflict, measured as the natural logarithm of the total number of conflict-related deaths. This variable reflects the severity and disruptive impact of conflict on economic activity. It has been employed in prior research, such as Ogbe et al. (2024) to quantify the economic consequences of conflict. Conflicts in developing countries like Somalia disrupt economic activity, reduce investment, and damage infrastructure, leading to lower GDP. Therefore, a negative relationship is expected between conflicts and economic growth. As a standard measure of national-level conflict (Croicu & Sundberg, 2017) the Uppsala Conflict Data has also been used by Hesch (2019) and Martin-Shields and Stojetz (2019) in their respective studies.

3.1.3. Control Variables

Foreign Aid (LNAID): Foreign aid is measured by the amount of official development assistance received (ODA). Given Somalia's substantial reliance on external aid, this variable serves to control for macroeconomic influences. Foreign aid has the potential to stimulate growth by funding development projects and stabilizing macroeconomic conditions. However, the effect may be conditional on the effectiveness of those policy interventions. Hence, a positive relationship is expected between foreign aid and economic growth. The extensive use of foreign aid in growth research is well-documented, as evidenced by studies such as Bila, Khumalo, Nkosi, and Arogundade (2023); Ali, Dalmar, and Ali (2018); Yiew and Lau (2018) and Tang and Bundhoo (2017).

Unemployment (LNUNEMP): Unemployment is defined as the share of the labor force actively seeking but unable to secure employment. Expressed in logarithmic form, the variable captures labor market conditions and serves as a proxy for economic health and productivity. Higher unemployment reflects underutilized labor resources and weak or unhealthy economic performance. As a result, a negative association is expected between unemployment and economic growth in the case of Somalia. While Mohamed and Abdi (2024) and Salad (2023) focused on Somalia, other scholars, including Suparman and Muzakir (2023); Iloabuchi (2019) and Priambodo (2021) have used unemployment to examine its effect on economic growth.

Population (LNPOP): Population is included to account for Somalia's demographic and economic potential. It is measured as the total number of individuals residing within the country. A growing population may signal increased labor supply and market size, which can influence long-term economic development. Assuming adequate infrastructure and employment opportunities, a growing population can expand labor supply and consumer demand, contributing to economic growth in the long run. Therefore, a positive relationship is expected between population and economic growth. Abdulle, Jama, and Omar (2025); Mohamed and Doğan (2024); Maestas, Mullen, and Powell (2023) and Peterson (2017) have all studied the effects of population on growth and other macroeconomic indicators.

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Table 1. Description of the variables.

Variable	Abbreviation	Mean	Standard deviation	Min	Max	Measurement/Unit	Proxy	Sources	Expected sign
Real GDP	LNGDP	5.8102	0.2923	5.3700	6.2275	Real Gross Domestic Product	Economic growth	WDI	
Conflicts	LNCONF	7.3267	0.8493	5.3753	8.1798	Total number of conflict-related deaths	Conflict intensity	UCDP	Negative
Foreign Aid	LNAID	20.0936	1.1441	18.2122	21.8367	Amount of official development assistance received	Foreign aid	WDI	Positive
Unemployment	LNUNEMP	2.9449	0.0127	2.9190	2.9787	Number of unemployed people (% of total labor force)	Labor market performance	WDI	Negative
Population	LNPOP	16.2937	0.2379	15.8728	16.6948	Total population	Economic potential	WDI	Positive

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3.2. Model Formulation

To analytically assess the hypothesis emerging from the conceptual foundation and prior research, the following long-term growth model is formulated.

$$LNGDP = \beta_0 + \beta_1 \text{LNCONF} + \beta_2 \text{LNAID} + \beta_3 \text{LNUNEMP} + \beta_4 \text{LNPOP} + \varepsilon \quad (1)$$

In this model, economic growth (LNRGDP) serves as the dependent variable, while conflict (LNCONF) is the primary explanatory variable. The analysis also includes three control variables: foreign aid (LNAID), unemployment (LNUNEMP), and population size (LNPOP). The coefficients $\beta 1, \ldots, \beta 4$ capture the respective effects of these variables on economic growth, and the term ε denotes the stochastic error component, accounting for unobserved influences.

3.3. Modeling Approaches

Considering the time series characteristics of the dataset and the likelihood of endogeneity and autocorrelation, this study adopts Dynamic Ordinary Least Squares (DOLS) and Fully Modified Ordinary Least Squares (FMOLS) as the primary estimation methods. These techniques are well-regarded for their robustness in addressing econometric challenges such as small sample bias, simultaneity, endogenous regressors, and serial correlation. Their proven effectiveness and frequent application in empirical economic research justify their selection for this analysis (Hardi, Idroes, Zulham, Suriani, & Saputra, 2023; Iyoboyi, 2014; Kirikkaleli, Adeshola, Adebayo, & Awosusi, 2021; Okunlola, Sani, Ayetigbo, & Oyadeyi, 2024; Yahyaoui & Bouchoucha, 2021).

3.3.1. Fully Modified Ordinary Least Squares (FMOLS)

Originally proposed by Phillips and Hansen (1990) the Fully Modified OLS technique adjusts the standard OLS estimator to account for both serial correlation and endogeneity that typically arise in cointegrated systems. FMOLS achieves this by modifying the dependent variable using non-parametric estimators of the long-run covariance matrix, thereby producing asymptotically unbiased and efficient estimators. The FMOLS estimator is expressed as:

$$\hat{\beta}_{\text{FMOLS}} = (\textstyle\sum_{t=1}^{T} X_t X_t')^{-1} (\sum_{t=1}^{T} X_t Y_t^{+} - T\, \hat{\Omega}_{XY}) \quad (2)$$

Where X_t is the vector of explanatory variables, Y_t^{+} is the transformed dependent variable, T is the sample size, $\widehat{\Omega}_{XY}$ is the long-run covariance between X_t and the error term. This approach corrects for both endogeneity and autocorrelation by incorporating bias adjustments derived from the long-run covariance structure, making FMOLS particularly suitable for estimating cointegrated relationships in time series data.

3.3.2. Dynamic Ordinary Least Squares (DOLS)

The Dynamic Ordinary Least Squares method, developed by Stock and Watson (1993) enhances the cointegration regression by incorporating both leads and lags of the first-differenced explanatory variables. This augmentation helps mitigate endogeneity by ensuring that the error term remains orthogonal to the innovations in the regressors. As a result, DOLS improves the precision and reliability of coefficient estimates, particularly in small sample contexts. The general form of the DOLS model is:

$$Y_t = \alpha + \beta X_t + \textstyle\sum_{j=-q}^{p} \delta_j \Delta X_{t+j} + \varepsilon_t \quad (3)$$

Where, Y_t is the dependent variable, X_t represents the cointegrated regressors, and ΔX_{t+j} denotes the leads and lags of the first differences of X_t. δ_j captures the dynamic adjustments and ε_t is the error term. The inclusion of these dynamic terms helps correct for simultaneity and omitted variable bias, ensuring consistent and efficient long-run parameter estimation.

After establishing the stationarity properties of the variables through unit root testing, cointegration analysis is conducted to examine the existence of long-run equilibrium relationships among them. Once cointegration is confirmed, the study will proceed to estimate the long-run parameters using Dynamic Ordinary Least Squares (DOLS) and Fully Modified Ordinary Least Squares (FMOLS), both of which are well-suited for addressing endogeneity and serial correlation in time series data.

4. Results and Discussion

4.1. Unit Root Test

In time series econometrics, assessing the stationarity of variables is a foundational step to ensure the validity of subsequent analyses. Stationarity implies that a variable's statistical properties, such as mean, variance, and autocorrelation, remain constant over time. Failure to account for non-stationarity can result in spurious regressions and misleading inferences. Therefore, this study employs two widely accepted tests: the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test.

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Table 2. Unit root test at level.

	Augmented Dickey-Fuller		Phillips-Perron	
Variable	**Constant**	**Constant & Trend**	**Constant**	**Constant & Trend**
LNGDP	-1.308	-0.986	-1.203	-0.425
LNCONF	-1.562	-1.812	-1.713	-3.374
LNAID	-1.465	-1.628	-1.298	-2.857
LNUNEMP	-3.391	-3.985	-2.497	-2.393
LNPOP	-0.180	-2.774	-0.786	-1.826

Note: (***), (**), and (*) represent statistical significance at 1%, 5%, and 10% levels, respectively, indicating rejection of the null hypothesis of non-stationarity.

Table 3. Unit root test at first difference.

	Augmented Dickey-Fuller		Phillips-Perron	
Variable	**Constant**	**Constant & Trend**	**Constant**	**Constant & Trend**
LNGDP	-2.848**	-3.051**	-2.945**	-3.151**
LNCONF	-4.932***	-4.896***	-9.276***	-9.290***
LNAID	-5.742***	-5.925***	-7.820***	-8.066***
LNUNEMP	-3.338**	-3.559**	-3.214**	-2.925**
LNPOP	-2.404**	-2.332**	-2.153**	-2.086**

Note: (***), (**), and (*) represent statistical significance at 1%, 5%, and 10% levels, respectively, indicating rejection of the null hypothesis of non-stationarity.

The outcomes of the unit root tests are presented in Tables 2 and 3. These tests were conducted at both the level and first-difference stages, including constant and trend components to account for possible deterministic behavior in the time series. As indicated in Table 2 the null hypothesis of a unit root cannot be rejected for any of the variables at conventional significance thresholds, suggesting that the variables are non-stationary in their level form. However, Table 3 demonstrates that, upon first differencing, all variables reject the null hypothesis at the 5% significance level or better, confirming their stationarity in differenced form. This implies that the series are integrated of order one, I(1), and are therefore appropriate for further analysis using cointegration techniques.

4.2. Cointegration Analysis

Considering the integration orders identified through the Augmented Dickey-Fuller (ADF) and Phillips-Perron unit root tests, this study adopts the Autoregressive Distributed Lag (ARDL) bounds testing approach to evaluate the presence of long-run equilibrium relationships among the variables. The ARDL methodology, developed by Peterson (2017) is mainly well-suited for such scenarios, as it accommodates variables that are integrated at first difference and effectively captures the long-run relationship within a unified framework. The results are presented in Table 4.

Table 4. ARDL F-Bounds cointegration test.

F-Bounds Test		Null Hypothesis: No Level Relationship		
Test Statistic	**Value**	**Significance**	**I(0)**	**I(1)**
F-Statistic	4.621	10%	2.45	3.52
K	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

The ARDL bounds test showed an F-statistic of 4.621, which exceeds the upper bound critical values at the 10%, 5%, and 2.5% levels, indicating the existence of a long-run cointegrating relationship between the variables. Building on these results, the analysis advances by estimating FMOLS and DOLS models, enabling a more detailed examination and precise quantification of the identified long-run dynamics.

4.3. Empirical Results

Following the confirmation of a long-run equilibrium through the cointegration analysis, the study proceeds to a more detailed examination of the underlying dynamics. To ensure robustness and address potential econometric concerns such as endogeneity, serial correlation, and small-sample bias, two complementary estimation techniques are employed: the Dynamic Ordinary Least Squares (DOLS) and the Fully Modified Ordinary Least Squares (FMOLS). The corresponding estimation results from these models are presented in Table 5.

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Table 5. Regression results.

VARIABLES	FMOLS	DOLS
LNCONF	-0.0657**	-0.1933***
	(0.0294)	(0. 0226)
LNAID	0.1878***	0.3582***
	(0.0493)	(0.0320)
LNUNEMP	-4.7677***	-8.938***
	(0.9281)	(0.6288)
LNPOP	0.4636**	-0.0762
	(0.2058)	(0.1420)
	9.0032**	27.6597***
Constant	(3.6642)	(3.1537)

Note: (***), (**), and (*) represent statistical significance at 1%, 5%, and 10% levels, respectively. Standard errors are in parentheses. LNGDP: Real GDP, LNCONF: Number of conflict-related deaths, LNAID: Foreign aid, LNUNEMP: Number of unemployed people, LNPOP: Total population.

The results reveal a statistically significant negative relationship between conflict and economic growth in Somalia, confirming that conflict exerts a detrimental effect on economic growth. Specifically, an increase in conflict-related deaths is associated with a reduction in GDP, consistent across both estimation methods. This finding aligns with theoretical expectations and the broader literature, which documents the destructive effects of conflict on physical and human capital, increasing uncertainty, reducing investment, and damaging infrastructure, all of which undermine economic performance in fragile states (McIntosh & Buckley, 2015; Pellillo, 2012; World Bank, 2025). In fact, Polachek and Sevastianova (2012) report that the adverse impact of conflict on economic growth is particularly greater in high-fatality incidents and is most evident in non-democratic regimes, low-income economies, and African states. Comparable patterns have also been documented in Afghanistan (Galdo, Acevedo, & Rama, 2020) and Syria (United Nations Development Programme, 2025) where prolonged conflict has significantly constrained economic activity, disrupted institutional functioning, and slowed post-conflict recovery.

Foreign aid shows a positive and highly significant impact on economic growth in both estimations (0.1878 in FMOLS and 0.3582 in DOLS), indicating that external assistance contributes meaningfully to Somalia's economic performance. Foreign aid is a critical resource for reconstruction and economic stabilization, particularly in fragile states. Therefore, this result suggests that, despite concerns about aid dependency and governance, external assistance has played a crucial role in supporting Somalia's economic recovery and development, particularly by funding essential services and infrastructure (World Bank, 2025). It also supports Ali et al. (2018) who also found a positive relationship between foreign aid and economic growth in Somalia.

Unemployment is found to have a strong negative association with economic growth in both models (-4.7677 in FMOLS and -8.938 in DOLS), highlighting the severe economic consequences of labor market inefficiencies. In conflict-prone countries, high unemployment reflects underutilized human capital and weak demand, which directly suppresses output and growth. This is consistent with empirical evidence from Somalia, where high unemployment exacerbates poverty and social instability, further impeding economic development. Mohamed and Abdi (2024) and Salad (2023)found similar outcomes for Somalia, lending further support to Okun's law by affirming the negative linkage between the unemployment rates and economic growth.

The population variable shows mixed results. It indicates a positive and significant relationship in the FMOLS model (0.4636), suggesting that demographic expansion may support economic growth through increased labor supply and market size. However, it is statistically insignificant in the DOLS model (-0.0762), indicating that the growth-enhancing effects of population may be conditional on other structural factors such as employment opportunities and infrastructure. This divergence in findings is also reflected in existing literature. For instance, Mohamed and Doğan (2024) identified a positive association between population growth and economic expansion, whereas Abdulle et al. (2025) reported a negative linkage. Although the negative relationship in our case is insignificant, the contrasting results underscore the complexity of the relationship and suggest that the impact of demographic trends on economic performance may be dependent on context or other factors.

4.4. Robustness Check

To further validate the reliability of the long-run coefficients derived from the Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) estimations, the Canonical Cointegrating Regression (CCR) approach was utilized as an additional robustness check. The inclusion of the CCR model serves to corroborate the persistence and coherence of the long-run associations previously identified, thereby mitigating concerns regarding model dependency. The result of the robustness check is presented in Table 6.

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Table 6. Robustness check results.

Variables	CCR
LNCONF	-0.1074**
	(0.0449)
LNAID	0.2605***
	(0.0737)
LNUNEMP	-5.1259***
	(0.9819)
LNPOP	0.2342
	(0.2760)
Constant	12.6368**
	(4.6318)

Note: (***), (**), and (*) represent statistical significance at 1%, 5%, and 10% levels, respectively. Standard errors are in parentheses. LNGDP: Real GDP, LNCONF: Number of conflict-related deaths, LNAID: Foreign aid, LNUNEMP: Number of unemployed people, LNPOP: Total population.

The robustness check using CCR estimation validates our main empirical findings of the FMOLS and DOLS and strengthens confidence in the reliability of the estimated relationships between conflict, control variables, and economic growth in Somalia. The consistent signs and significance levels across models affirm that conflict negatively affects economic growth, while foreign aid contributes positively. However, while unemployment remains a critical barrier to growth, the effects of population appear insignificant. The alignment of results obtained through multiple estimation approaches reinforces the reliability of the study's findings and underscores the significant influence of conflict, foreign aid, and unemployment on economic development in Somalia.

5. Conclusion, Policy Implications, and Future Research

This study presents clear and consistent evidence that armed conflict has a persistent and significant negative impact on Somalia's economic growth over the period 1997-2022. Higher conflict-related deaths substantially reduce GDP, reflecting the destruction of capital, displacement of labor, and erosion of investor confidence. In contrast, foreign aid plays a positive role, while unemployment imposes a strong growth-reducing effect. Although population growth shows mixed results, its potential benefits appear contingent upon structural improvements in employment opportunities and infrastructure. These findings highlight that sustained peace and political stability are essential prerequisites for economic recovery in fragile states like Somalia.

Policy priorities should center on advancing inclusive conflict resolution, with political unity between the central government and regional states constituting a fundamental prerequisite. A politically unified and integrated governance system would close institutional vacuums that terrorist organizations could otherwise exploit, thereby enhancing national stability. Equally important are comprehensive security sector reforms aimed at reducing violence and strengthening state capacity to maintain peace. Foreign aid should be strategically directed toward infrastructure rehabilitation, private sector revitalization, and agricultural modernization to address structural bottlenecks and stimulate broad-based growth. Parallel to these efforts, targeted labor market interventions – such as job creation programs, vocational training, and skills development – are essential for reducing unemployment and fostering economic resilience. Finally, robust governance mechanisms must be instituted to ensure the transparency, accountability, and effectiveness of aid utilization, thereby maximizing its developmental impact and reducing the risk of aid dependency.

Notwithstanding these contributions, the study has certain limitations that future research should address. The analysis is conducted at the national level, which may obscure important sub-regional variations in the conflict-growth relationship. Subsequent studies should capture this heterogeneity by integrating micro-level datasets or survey-based evidence into the conflict-growth framework, and by employing high-frequency and geospatial data to better identify short-term and localized effects. Such approaches would provide deeper insights into how relatively stable sub-regions differ from more conflict-affected areas in terms of economic activity, livelihoods, and overall well-being. Furthermore, comparative analyses with other fragile and post-conflict states would enrich the understanding of recovery dynamics and yield transferable lessons for designing effective, context-specific economic and governance strategies.

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