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65**Armed Conflicts and Africa's Financial Sector Development***Bonaventura Mlamka^{1*}, John M. Mtui¹ and Jehovaness Aikaeli¹*¹ University of Dar es salaam Business School, Tanzania* Correspondence: bmlamka2019@gmail.com

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**Abstract**

This study examined different aspects of armed conflicts, specifically persistence, intensity, and location, on the financial sector across Africa. Based on Pooled OLS estimation across 51 African states from 1991 to 2020, the study found that persistent armed conflicts during financial reforms are associated with the underdevelopment of the financial sector. This adverse effect is most pronounced in high-intensity (i.e., war) conflicts at the 1% significance level. On the other hand, it was found that conflicts fought over government control have a significant negative effect on financial sector development at the 1% significance level compared to those based on territorial contest, likely owing to their relative proximity to financial hubs/capital cities. Consistent with this logic, the study revealed that low-intensity conflicts produced significant adverse effects at the 5% significance level only when associated with government contest. These baseline estimates are largely consistent with the Huber-Tukey robust regression results and contribute to the literature on conflict economics by highlighting differential effects of various forms of armed conflicts, with the following implications. Firstly, curbing both the outbreak and persistence of armed conflicts can enable African states to benefit from the cumulative gains of financial reforms. This can be achieved through broad-based initiatives that promote both negative and positive peace. Secondly, enhanced state capacity, particularly the ability to contain the diffusion of conflict into critical economic sectors, including financial hubs, can reduce the associated economic cost.

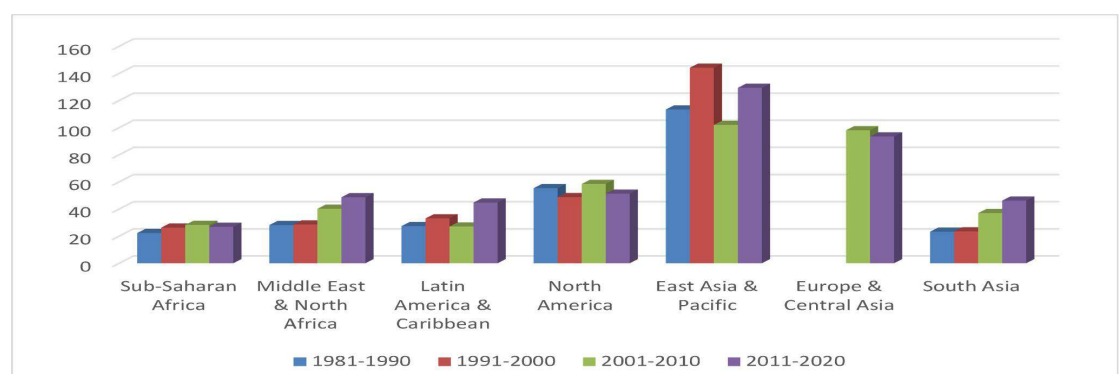
Keywords: Armed Conflict, Financial Sector Development, Pooled OLS, Africa

Introduction

At the core of minimizing information security breaches in organizations is good IT infrastructure and The robust financial sector is pivotal in any country's economic development. This stems from its key roles in enhancing market exchange and risk management, mobilising and pooling savings, and efficiently allocating capital (Quintyn & Verdier, 2010). It also strengthens the monetary policy transmission and plays a critical role in reducing inequality and poverty (Beyer et al., 2024; Levine, 2021). Such roles are fundamental for sustained economic growth and welfare improvement. In most African countries, the financial sector remains relatively underdeveloped compared to other regions despite years of reforms from the late 1980's. It exhibits limited depth and diversity, largely due to the dominance of banks, and is associated with Africa's broader economic underdevelopment (Haber, 2010; Mlachila et al., 2016).

Globally, Sub-Saharan Africa (SSA) continues to have the lowest financial depth, as measured by the ratio of domestic credit to the private sector by banks relative to GDP. Even when considering successive periods of pre- and post-financial reforms, few gains have been achieved so far (Figure 1). Likewise, the efficiency and access indicators for 2011-2020 also point to a similar pattern, where the average interest rate spread in Sub-Saharan Africa was 7.7%, exceeding the world average of 5.8%. In addition, depositors with commercial banks (per 1000 adults) averaged 173.7, below the world average of 604. Nonetheless, notable financial-sector diversity persists across African economies. For instance, during the 2011-2020 period, the middle-income economies of Mauritius, Tunisia, Morocco, Cape Verde, and South Africa recorded the highest financial depth, ranging between 60.7% and 90.6%. In contrast, the lowest figures were observed in largely low-income economies, such as Sierra Leone, DRC, Gambia, Malawi, and Sudan, where financial depth ranged between 5.5% and 7.9% (Honohan, 2010).

Figure 1: Average Domestic Credit to the Private sector by Banks 1981-2020 (% of GDP)



Source: World Bank Development Indicators

These lows and diversity across Africa motivate further inquiry into determinants of financial sector development by exploring both traditional and non-traditional areas. One of the non-traditional areas that is comparably less researched, despite its theoretical appeal, is the role of armed conflicts. This is because during the financial reform era (1990-2020), at least 33 African states experienced armed conflicts of varying intensities and duration (Davies et al., 2024; Gleditsch et al., 2002).

The persistence of armed conflicts may have deleterious effects on the economy and financial sector. The effects may include destroying properties, human capital, and institutions, disrupting trade, finance, and investment, depleting resources, and diverting them to support war efforts while sacrificing alternative productive areas (Collier, 1999). Hillier (2007) suggests that the accumulated opportunity cost in Africa from 1990 to 2005 due to armed conflict amounts to \$300 billion. Crippa et al. (2025) indicate that conflicts reduce economic growth by an average of about 1.8 to 2.0 percentage points per year, and these effects are more pronounced in low-income economies.

These conflicts vary in their persistence, intensity and intra-country location across Africa, particularly in countries with less developed financial sectors (Gleditsch et al., 2002; Davies et al., 2024). However, the extent to which these dimensions shape financial sector outcomes remains insufficiently understood. Existing studies rarely examine persistence, intensity and intra-country location jointly or their interactions. This study addresses this gap by analyzing how these conflict characteristics influence the state of the financial sector across Africa, with implications for designing effective policy response. Thus, this study intends to:

- a) examine the effect of armed conflict persistence on the financial sector development in Africa;
- b) compare the effect of high-intensity conflict and low-intensity conflict on the financial sector development in Africa;
- c) compare the effects of armed conflicts occurring in peripheral regions with those taking place in capital cities/financial hubs; and
- d) examine whether low-intensity conflicts occurring in capital cities have disproportionately large effects on the financial sector.

Literature

Theoretical review

Traditional Theories

The discussion of financial sector development has given rise to several competing theories and hypotheses. They include the demand-following hypothesis, supply-leading hypothesis, law and finance theory, endowment theory, and financial liberalisation theory (Aluko & Ajayi, 2018; Mtui, 2025). The demand-following hypothesis argues that an increase in economic growth stimulates demand for financial services, which in turn drives the establishment of new financial institutions (Nyankomo & Stephen, 2015).

On the contrary, the supply-leading hypothesis suggests that financial sector development drives economic growth, by fuelling private sector investment, mobilizing savings and reducing transaction costs. It also stimulates technological innovation by identifying and financing economic agents with innovative ideas and productive processes, thereby fostering economic growth (Levine, 1997).

The law and finance theory emphasises the role of the legal framework and institutions for the development of the financial sector. Accordingly, common law is more conducive to financial sector development, as it offers greater judicial independence from political influence by allowing the courts discretion to enforce laws that safeguard small investors and property rights. Moreover, the judiciary can establish new rules by drawing on precedents from earlier cases, thereby increasing the adaptability of the legal framework. It enables private property owners to transact with confidence, positively impacting financial development (Beck et al., 2003; Mutarindwa et al., 2021).

The endowment theory suggests that institutional differences in the developing economies emanates from geography and colonial origins. It posits that colonial institutions were determined by geographic conditions. Favourable geographical conditions attracted settler populations and led to legal institutions that uphold property rights and contract enforcement, while less attractive regions developed extractive institutions (Acemoglu et al., 2001; Beck et al., 2003; Mutarindwa, et al., 2021). However, critics note that, legal frameworks are dynamic, and that legal origin might be proxying traditionally omitted variables from data analysis such as culture, political instability or initial colonial decisions (Musacchio & Turner, 2013).

McKinnon-Shaw hypothesis suggests that financial repression is a key barrier to financial sector

development. It means that government-imposed restrictions on the banking system, such as interest rate ceilings, high reserve requirements, and directed credit programmes, hinder financial sector development and, in turn, impede economic growth. The policy implication is that liberalisation promotes greater savings mobilisation and credit expansion, while also enhancing allocative efficiency (Aluko & Ajayi, 2018; Khan & Senhadji, 2000).

Armed Conflicts and Financial Sector Development

The theoretical discussion on the impact of armed conflicts on the economy and the financial sector encompasses various themes and perspectives, including direct and indirect effects, immediate and long-term effects, and conditioning factors such as intensity and location of the armed conflicts.

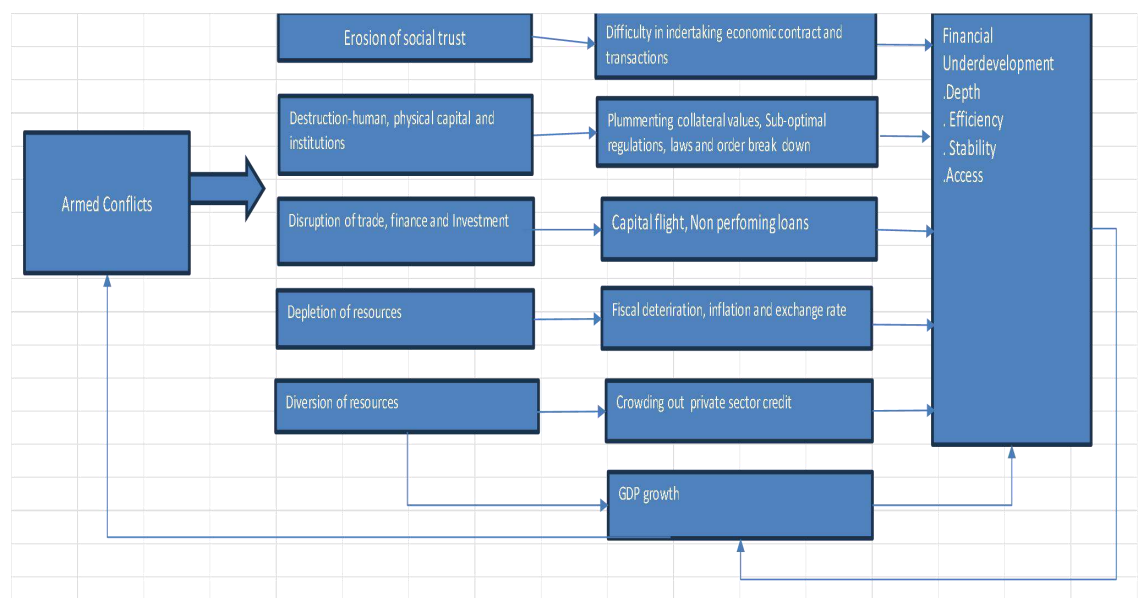
Direct and indirect effects mean conflicts destroy properties and institutions, disrupt trade, finance, and investment, and deplete and divert resources to support war efforts while sacrificing alternative productive areas (Collier, 1999). Furthermore, armed conflicts can exacerbate horizontal inequality among ethnic or religious groups, and vertical inequality across income levels (Baddeley, 2011). Such outcomes impair the depth and efficiency of the financial sector, escalating financial instability risks, and limiting access to financial services.

Certain negative economic impacts of armed conflicts occur during the conflict itself, such as physical destruction, while others, like resource diversion, may persist long after the termination of conflict (Brück & De Groot, 2013). This diversion may continue through unsustainable debt levels, elevated inflation from war-era defence spending, and maintenance of high military expenditure (ratchet effect). The ratchet effect can be driven by protracted pressure from war-era military lobbies, integrating former combatants into regular armed forces and the need to maintain military capabilities to address ongoing security threats. Although high military expenditure may yield economic benefits through enhanced security, it can also exert a significant crowding-out effect on alternative productive investment, potentially offsetting those gains (Collier, 2007; Nkurunziza, 2008).

As noted earlier, some channels through which the financial sector can be choked off include difficult enforcement of contracts due to erosion of social trust, fiscal deterioration, deposit runs and capital flight, sub-optimal regulations, asset market crashes, and plummeting collateral values (Figure 2). Destruction of physical and social capital (institutions) by armed conflicts and ensuing economic recession might lead to asset market crashes and plummeting collateral values, which can heighten default risks, precipitate cautious lending, and subdue the depth of the financial sector (Compaoré et al., 2020; Rother et al., 2016).

The wartime fiscal imbalances, driven by surging military spending and eroding revenue bases, can prompt inflationary financing via accommodative monetary policy, which in turn constrains private sector access to credit (Rother et al., 2016). The resulting inflation can also weaken the seigniorage benefits by exacerbating dollarisation to hedge against wealth loss. Even if monetary policy remains less accommodative, military expenditure financed by treasury bonds might crowd out credit to the private sector and lead to financial repression. In extreme cases, armed conflicts can lead to a temporary shutdown of the Central Bank (e.g. Congo-Brazzaville) or a prolonged closure (e.g. Somalia) (Addison, 2002). Furthermore, war-induced dismantling of the financial sector can create a feedback loop that increase the likelihood of conflict persistence (Baddeley, 2011).

Figure 2: The Interlinkage of Armed Conflicts and Financial Sector Development



Source: Authors' Conceptualization based on Relevant Literature

When examining the conditioning factors influencing the impact of conflict on the financial sector, two key issues emerge in the literature, namely conflict intensity and geographical location (Hasan & Murshed, 2015). The argument is that high-intensity conflict, as indicated by large numbers of battle-related deaths, reflects a greater degree of destructiveness across social, economic, and political spheres, where law and order break down, complicate the enforcement of contracts and financial transactions. Moreover, governments might resort to regulatory controls which encourage informal markets and constrain formal finance. In the medium to long term, it can also be demanding to reactivate supportive institutions and financial infrastructure, even in a post-conflict setting. Consequently, uncertainty among economic agents (lenders and borrowers) become entrenched, leading to Pareto-inferior outcomes in financial markets. For instance, banks might take time to recapitalise, restructure bad debts, and attract new and returning clients. Rwanda, particularly, the number of bank clients decreased to 42,000 from 400,000 before the genocide during the civil war 1990-1994. In Liberia, two years after the termination of the first civil war, 78% of commercial bank loans were classified as non-performing (Addison, 2002).

The geographical location and scope of armed conflicts have been the subject of various scholarly arguments. Firstly, armed conflict with wider geographical coverage tends to have a more adverse impact than the opposite case. Secondly, some scholars argue that even conflicts with smaller spatial areas can still be very detrimental if they take place near urban areas. This is because the exclusion of cities from armed conflict allows them to continue, driving economic growth through knowledge spillovers, agglomeration effects, and trade links with rural areas (Minhas & Radford, 2017). Buhaug (2010) maintains that rebels' proximity to urban centres is directly proportional to their level of richness.

While the discussions on the war-finance nexus have largely focused on the detrimental impacts, some scholars highlight the positive perspectives, such as the war renewal hypothesis. It postulates that factors such as new post-conflict institutions, and policies can be advantageous to the growth of the financial sector (Voors et al., 2010). This is because, in regular times, changing the profoundly entrenched institutions is challenging. Hence, wars provide this rare opportunity to discontinue unfriendly institutions. However, its survival hinges on several issues, viz., output performance/performance legitimacy, conformity with cultural needs and expectations, and power distribution among the dominant groups (Stubbs, 2018). Nonetheless, some scholars still doubt the capability of war-torn economies to absorb new ideas and technology amidst diminished investors' confidence (Kang & Meernik, 2005; Van Raemdonck & Diehi, 1989).

Similarly, other scholars also emphasise the role of health-related effects and behavioural change, whose influence extends beyond the war era. War-related health disorders undermine the quality of human capital and economic growth, thereby indirectly impacting the financial sector, in line with the prediction of the endogenous growth model (Heger & Neumayer, 2022). It is also argued that traumatic events from armed conflicts affect human emotions and behaviour to the degree of shifting preferences in the domain of evaluating the risks and discounting the future. For instance, traumatic events that induce anger encourage risk-taking behaviour while those promoting fear precipitate risk-averse characteristics. The ensuing self-protective behaviour incentivises economic agents to hold assets that can easily be moved or hidden or opt for investment with immediate returns rather than future returns (Voors et al., 2010). Such developments shape patterns of consumption, saving, and investment, thereby carrying important implications for the development of the financial sector (Voors et al., 2010).

Empirical Review

The empirical works on the drivers of financial sector development are diverse, varying in scope, methodology and results. Existing studies provide mixed support for key theoretical perspectives. Studies such as Beck et al. (2003), Djankov et al. (2007), and McDonald and Schumacher (2007) and Mutarindwa et al. (2021) support the prediction of law and finance and endowment theories. In contrast, Adekunle et al. (2021), found a negative role while Vita et al. (2022) found mixed findings. Further, the demand-following hypothesis has empirical support from: Singh et al. (2010), Odhiambo (2008) and Simwaka et al. (2012), Munyanyi (2017), Adenkunle et al. (2021) and Damasa (2025) while Rachdi and Mbarek (2011) report mixed findings.

In support of the supply-leading hypothesis, confirmations are given by Worku (2021), Ibrahim et al. (2024), Mlambo (2024), Girma and Heseynov (2025), and Bui and Doan (2025), and Mtui (2025). However, Akinlo and Egbetunde (2010), Taivan and Nene (2016) and Jima and Makoni (2023) confirmed both hypotheses. Consistent with the McKinnon-Shaw hypothesis, Ang and McKibbin (2007), Singh et al. (2010) and Salifu et al. (2024) confirmed the positive role of financial liberalisation.

In the case of the war-finance nexus, most of the reviewed studies confirm the negative effects of conflict, with some conditioning factors. Hasan and Murshed (2015) found that armed conflicts of various intensities have adverse effects on the depth of the financial sector in 72 developing countries. Fang et al. (2020) found that Sub-Saharan economies experiencing high-intensity conflict had, on average, 2.5 percentage points lower economic growth. The IMF (2019) study on SSA confirmed that higher intensity of armed conflict hurts GDP growth, private sector credit, productivity and fiscal position. The study also

revealed that more urbanised conflicts amplify the adverse effect on economic growth.

Similarly, Minhas and Radford (2017), across 68 countries, found that the adverse effect to the economy increases with spatial proximity to cities or major urban centres. Likewise, Korn (2023), observed the adverse effects of wars depend on the share of economic activities in proximity to conflict areas in 70 countries. However, Alfano and Cornelissen (2022) and Couttenier et al. (2024), based on Somalia and Eastern India, respectively, argue that an economically wide adverse effect can be felt through supply chain disruptions even if the civil conflict is highly localised, consistent with Imai and Weinstein (2000) results. Compaoré et al. (2020) found that conflicts intensity and political instability are associated with a higher probability of systemic banking crises in developing countries. Voors et al. (2010), based on sampled Burundi communities, found that those exposed to conflict violence tend to exhibit altruistic behaviour, are risk takers and less patient, characteristics that can positively influence the financial sector development and growth. In contrast, Seelanatha and Ihalanayake (2019) found that the civil war in Sri Lanka adversely affected the financial sector, including widening the interest rate spread.

Unfortunately, most of the reviewed works on the determinants of financial sector development either ignored the role of armed conflicts despite its theoretical appeal [Djankov et al (2007)] or gave it minor attention. Even post-crisis financial sector development models are largely grounded in peacetime dynamics with limited coverage on conflict-era dynamics (Everaert & Pozzi, 2025). Some studies assumed that the GDP per capita also proxies armed conflicts, thus hindering detailed discussions on the conflict-finance nexus. Further, some of the reviewed studies only focused on the general economic effects without special emphasis on the financial sector [Imai and Weinstein (2000), Fang et al. (2020), Minhas and Radford (2017), Alfano and Cornelissen (2022), Korn (2023) and Cottenier et al. (2024)]. Furthermore, some of the reviewed works on the subject have focused less on Africa a case study (Hasan & Murshed, 2015; Compaore et al., 2020) or limited to a specific country study (Voors et al., 2010; Seelanatha & Ihalanayake, 2019). Instead of being treated as a distinct category, African countries have often been grouped with other developing economies. Moreover, some studies in Africa have given little attention to some important aspects of conflicts, such as geographical locations within countries or the link between location and intensity (IMF 2019)

This study addresses these gaps by simultaneously examining the persistence, intensity, and intra-country location of armed conflict in relation to the financial sector. The following hypotheses are tested:

- a) Armed conflict persistence/prevalence is associated with financial sector underdevelopment in Africa.
- b) The prevalence of high-intensity conflict/war is associated more with financial sector underdevelopment in Africa than with low-intensity conflict.
- c) Armed conflicts fought in periphery areas have less effect on the financial sector than when fighting is based in commercial hubs/capital cities.
- d) Low-intensity armed conflicts have more adverse effects when they occur in commercial hubs or capital cities than when they occur in peripherals.

Methodology

Theoretical Framework and Specification of the Analytical Model

To estimate the effects of armed conflicts on financial sector development, a Semi-log pooled model is specified, extending Singh et al. (2010). The model expresses the financial sector development (Fd_t) as a function of: macroeconomic conditions—GDP per capita and inflation (Mc_t)—given that macro-stability is a pre-requisite for a robust financial sector; financial/economic reforms (Ec_t); legal framework quality—proxied by a dummy variable for the French legal origin (Le_t), which is argued to be less friendly to property rights and therefore a barrier to the financial sector development (Porta et al., 1998); and Conflict variables (Ac_t)—expressed as the proportion of years a particular country experienced various forms of armed conflicts.

Ge_{it} and U_t capture population density and the error term, respectively. Since concentrated population facilitates frequent interactions among economic agents, which promote business transactions and financial sector development (Allen et al., 2014; Aluko & Ajayi, 2018). Given the dominance of banks in Africa's financial sector, the financial depth (Fd_t) is measured as the average value of the ratio of private credit by deposit money banks to GDP for the period 2011-2020 (Mlachila et al., 2016). This gives the following pooled model:

$$\overline{Fd}_{it} = \beta_0 + \beta_1 \overline{Ac}_{it} + \beta_2 \overline{Mc}_{it} + \beta_3 \overline{Ec}_{it} + \beta_4 \overline{Le}_t + \beta_5 \overline{Ge}_{it} + U_t, \dots \dots \dots (1)$$

Data Sources and Definitions

All time-varying control variables are constructed as lagged averages from 2001–2010 to mitigate the endogeneity problem from reverse causality (Clemens et al., 2012; Chadeaux & Schincariol, 2025). Further, averaging the variables over years helps strengthen causal interpretation and reduce noise. The study adopts multiple specifications of armed conflicts (Ac_t) to capture their diverse characteristics and potential impacts on financial sector development (Table 2). The datasets on armed conflicts are sourced

from the Uppsala Conflict Data Programme (UCDP)¹.

Based on Elgin et al. (2021), the informal sector, as a percentage of official GDP, averaged at least 35% for the period 2011-2020 in Africa. This represents a substantial share that may lead to adverse outcomes in financial sector development due to information asymmetries. Specifically, economic agents in the informal sector often lack property rights, asset documentation, and reliable financial records, which constrains their ability to access formal financial services (Ohnsorge & Yu, 2022). To capture this relationship, an interaction term is constructed between GDP per capita and a dummy variable indicating economies with a relatively higher share of formal economic activity. The main assumption is that higher income levels are associated with stronger financial sector development in relatively formal economies.

Motivated by the McKinnon-Shaw hypothesis, the study proxies the role of financial and economic reforms by the interaction variable of trade openness and financial freedom. The datasets for private sector credit, consumer price indices, GDP per capita, informal GDP, inflation, and population density are obtained from the World Bank database. However, due to missing data on informal GDP, some countries are excluded from the final regression. Data on financial freedom are sourced from the Heritage Foundation. Missing values for certain years are imputed using the mean of available observations for the respective variable. Lastly, the datasets on the legal origin are extracted from Porta et al. (2008).

Estimation Strategy

The specified model in equation 1 is estimated by Ordinary Least Squares (OLS)/Pooled OLS. However, for the OLS estimator to be best, linear and unbiased, several steps are undertaken. Firstly, the dataset is pooled across 51 countries for at least ten years, implying a high risk of heteroskedasticity. For this reason, a robust option is employed to provide efficient estimates. While the dependent variable represents the average value for 2011-2020, all independent variables that vary over time, except conflict-related variables, are based on average values for 2001-2010. To accommodate the financial reform era and the potential long-term consequences of armed conflicts, the proportion of conflict years is based on an average for the 1991-2010 period. This approach intends to minimise bias from alternative measurements of conflicts, such as battle-related deaths (Vesco et al., 2024). Further, the time averaging of the variables for at least ten years filters short-run fluctuations and focuses on low-frequency variation, which captures long-run relationships, especially on the finance-conflict nexus (Kumar & Woo, 2010). Based on Boef et al. (2014), in small samples, OLS can outperform instrumental variable-based estimations (IV and GMM). Hence, OLS is the preferred choice given the sample of 46-51 observations. Further, diagnostic tests such as sensitivity analysis, the Shapiro-Wilk normality test, the Ramsey Reset Test (RESET), the multicollinearity test, the bootstrap test of coefficient significance, and contamination rate (outliers' fraction) are also undertaken to examine the reliability of the OLS estimates.

In addition, robust regression using Huber and Tukey's biweight estimators (Huber-Tukey robust regression) is estimated to downweigh the influence of outliers which are likely to affect the OLS estimates. Some recent studies suggest that the Huber-based method can outperform those alternatives such as MM and S estimators where the contamination rate is at least 7% (Sadeq & Mohamed, 2025; Tirink & Onder, 2022).

Results

Descriptive Statistics, Preliminary and Diagnostic Tests

The summary statistics reveal that the dependent variable exhibits low skewness and kurtosis, implying normal distribution of the error term (Table 1). Except for the conflict-related variables and population density, all other variables have either low or moderate skewness. However, most of the explanatory variables exhibit significant kurtosis, suggesting the likelihood of outliers that may influence OLS estimates.

Table 1: The Summary Distribution of the Main Variables for the Study

Variables	Obs	Mean	Std. Dev.	Min	Max	Ske w.	Kurt.
Private credit by deposit money banks to GDP (Fd) (%) (log)	51	2.94	.661	1.723	4.553	.513	2.754
Interaction of GDP per capita and percentage of the formal economy (PerGDP)	46	3.403	3.811	0	9.321	.264	1.183
Consumer price index, CPI (log)	51	4.401	.703	2.646	6.964	.689	5.786
Interaction of trade openness and financial freedom (ToFFr)	51	1.713	1.86	0	4.248	.19	1.116
French legal origin (Le)	51	.667	.476	0	1	-	1.5
Population density (Ge)	51	82.301	110.474	2.4	604.9	2.801	12.038
The proportion of years with armed conflict (YrAmc)	51	.21	.314	0	1	1.473	3.835
The proportion of years with high-intensity armed conflict (war) (YrWar)	51	.053	.121	0	.6	2.753	10.821
The proportion of years with low-intensity armed conflict (YrLAmc)	51	.157	.225	0	.85	1.487	4.363
The proportion of years with armed conflict based on government contest (YrAmcGovCn)	51	.182	.301	0	1.05	1.743	4.898
The proportion of years with armed conflict based on territorial contest (YrAmcTerCn)	51	.032	.112	0	.6	3.97	18.261
The proportion of years with low-intensity conflict based on government contest (YrLintGovCn)	51	.125	.206	0	.8	1.966	6.135

Source: Author's Estimates from the Study Data Set

Classification of intra-state conflict incidences in Africa 1991-2010

To guide the interpretation of the estimated results, armed conflicts incidences are classified by intensity and sources of incompatibility. This classification indicates that most incidents are low-intensity and centred on government contest. High intensity conflicts are mainly based on government contest, while territorial conflicts are largely low intensity ([Table 2](#)).

Table 2: Classification of intra-state conflict incidences in Africa 1991-2010

SOURCE OF INCOMPATIBILITY	LEVEL OF INTENSITY		
	High Intensity	Low Intensity	
Government Contest	60	136	
Territorial Contest	1	67	

Source: Author's Estimates from the Study Data Set

The Diagnostics Tests

As reported in [Table 3](#) (in the appendix) six post-estimation tests are employed. The Shapiro-Wilk normality test indicates that residuals are normally distributed. The Ramsey Specification test (RESET) revealed that the model is correctly specified, thus capturing underlying data relationship in the sample. The Variance Inflation Factor (VIF) suggests the existence of a low multicollinearity problem, given that it is far below five. Further, the bootstrap test of coefficient significance suggests that the influence of our variable of interest (armed conflict) on financial sector development is robust to small sample distortions. In addition, the contamination rate of at least 15 percent justifies the use of Huber-Tukey robust regression.

Discussion of the Main Findings

Consistent with the hypotheses, the estimated results indicate that armed conflicts are significant barriers to financial sector development across Africa ([Table 3](#) and [Table 4](#)). The estimated results exhibit stability and reliability when exposed to alternative specification. The negative and statistically significant coefficients of armed conflict in baseline and robust check regression are consistent with the war-destruction hypothesis. This means conflicts are destructive in nature and continue to undermine the economy and the financial sector for a long time. Therefore, these findings contradict the war renewal hypothesis, which suggests that the legacy of armed conflict can reshape institutions and preferences in favour of strong economic rebound. What is clear is that conflict related destruction varies with the level

of intensity and geographical location. These findings align with those in Imai and Weinstein (2000), IMF (2019), and Compaoré et al. (2020) and Fang et al. (2020) but differ from Voors et al. (2010) and Hasan and Murshed (2015).

In Table 3 (Model 4), the baseline estimates show that the persistence of armed conflict is associated with lower financial depth, consistent with the first hypothesis. These results remain statistically significant under Huber-Tukey robust regression (appendix -Table 4), with minimal change in the size of the coefficients. Moreover, rising GDP per capita and a larger share of the formal economy are associated with greater financial depth consistent with the demand-following hypothesis. Furthermore, financial and economic reforms and increased population density are positively associated with financial depth, in line with the Mc Kinnon-Shaw hypothesis. Similar results are obtained from Huber-Tukey robust regression. In contrast, price stability and the dummy variable for French Legal origin are statistically insignificant in both regression specifications.

In Model 5 and 6 (Table 3), the effects of high-intensity armed conflict (wars) and low-intensity are estimated, respectively. In both the baseline and Huber-Tukey robust regression, high-intensity conflicts have a negative and significant effect on financial sector development, with coefficient size approximately three times larger than in Model 4. In Model 6 the coefficient of low-intensity conflict is significant in the baseline but becomes insignificant under robust regression. This is consistent with the second hypothesis, indicating that the adverse effects of armed conflict are more pronounced in high-intensity levels. In the case of other control variables, only the interaction of GDP per capita and the percentage of the formal economy, and the financial reform indicator exhibits statistical significance in both regression specifications.

To examine the significance of armed conflict location, the data is split between conflicts based on government contest (Model 7) and those based on territorial contest (Model 8). The assumption is that battles related to territorial contests are likely to be more concentrated in peripheries than financial hubs/capital cities or exhibit limited scope across the country. As a result, their impact on the national financial sector is limited, as investors, markets and institutions may discount them unless they escalate. Instead, such conflicts are more likely to exacerbate regional inequality than disrupt the overall economy. Contrarily, conflicts based on government contests are expected to be more destabilising and likely to occur in financial hubs/capital cities than in peripheries.

Consistent with these arguments and the third hypothesis, the results indicate that separatists or territorial conflict exerts less influence on the financial sector compared to conflicts over government control. The coefficients of conflicts over government controls are negative and statistically significant in the baseline and robust regression. This result remains robust when both variables are included in the same specifications (Model 10, Table 3). In contrast, the coefficient of territorial contest conflict is only significant in the baseline and becomes insignificant in robust regression. Lastly, Model 9 (Table 3 and 4) confirms that low intensity conflict can adversely affect the financial sector when driven by government contest, particularly proximate to financial centres or capital cities. These findings are consistent with Minhas and Radford (2017)², which reported that the exclusion of major cities from Nigeria and Cameroon civil conflicts allowed them to continue driving economic growth through knowledge spillovers, agglomeration effects, and trade links with rural areas.

Furthermore, the economic and financial reforms confirm the positive effects of privatisation, liberalising the current account and prices, consistent with McKinnon-Shaw hypothesis and Ang and McKibbin (2007), Singh et al. (2010), and Salifu et al. (2024) studies. Moreover, the positive and statistically significant coefficient of the interaction of GDP per capita and a dummy for countries with a high share of the formal sector has several manifestations. Firstly, a rising GDP per capita exert larger effect on financial sector developments in countries with a predominantly formal economy. Secondly, it suggests that informality exacerbates information asymmetries, thereby limiting the ability of the financial sector to intermediate, consistent with Simwaka et al. (2012), Adenkunle et al. (2021), and Damasa (2025) findings.

Conclusion and Implications

The study found that the persistence, intensity, and locations of armed conflicts significantly shape the financial sector across Africa. These results have various implications. Firstly, economic and financial reforms implemented since the late 1980s have supported financial sector development. However, persistent conflicts of varying intensities remain a major counter-veiling force. Secondly, conflicts impose huge damage when located near the capital cities/financial hubs, particularly at high intensity levels.

The findings have various policy implications for enhancing financial sector resilience in conflict-prone economies. Firstly, curbing both the outbreak and persistence of armed conflicts can enable African states to realize the cumulative gains of financial reforms. However, given the role of geography in shaping the severity of these effects, governments must enhance state capacity, particularly the ability to contain the diffusion of conflict into critical economic sectors, including financial hubs.

Secondly, African countries, in cooperation with the regional and international community, may pursue road-based initiatives that promote peace. Such interventions, alongside country-level measures like strengthening good governance and formalising the economy are fundamental for a financial sector development, poverty alleviation, and breaking down the conflict trap. Lastly, the financial sector in Africa could benefit from pre-emptive institutional and technological designs that reduce excessive spatial concentration, particularly in capital cities, without significant efficiency losses. These include digital platforms that enhance operational continuity during conflict-related disruptions.

While most prior studies focused on one or two dimensions of armed conflicts' effect on the economy and financial sector, this study contributes by simultaneously analysing persistence, intensity, intra-country locations and their interactions. Building on traditional theories, the study argues that armed conflicts play a significant role in shaping the state of Africa's financial sector. Although, armed conflict is associated with weaker financial sector performance, this relationship depends on the persistence and intensity of conflict as well as its proximity to capital cities or financial hubs. Despite these achievements, the current study encountered several limitations, such as missing data values for some countries or years which required imputation or exclusion of certain countries from the final regression

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APPENDIX

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Appendix A: List of countries used in the study

- | | | |
|--------------------------------------|-------------------|-----------------------|
| 1. Algeria | 18. Gabon | 35. Rwanda |
| 2. Angola | 19. Gambia | 36. Senegal |
| 3. Benin | 20. Guinea | 37. Seychelles |
| 4. Botswana | 21. Ghana | 38. Sierra Leone |
| 5. Burkina Faso | 22. Guinea-Bissau | 39. South Africa |
| 6. Burundi | 23. Kenya | 40. Sudan |
| 7. Cabo Verde | 24. Lesotho | 41. Tanzania |
| 8. Cameroon | 25. Liberia | 42. Togo |
| 9. Central African Republic | 26. Libya | 43. Tunisia |
| 10. Chad | 27. Madagascar | 44. Uganda |
| 11. Comoros | 28. Mali | 45. Equatorial Guinea |
| 12. Democratic Republic of the Congo | 29. Mauritius | 46. Sao Thome |
| 13. The Republic of Congo | 30. Morocco | 47. Mauritania |
| 14. Cote d'Ivoire | 31. Mozambique | 48. Malawi |
| 15. Djibouti | 32. Namibia | 49. Eritrea |
| 16. Egypt | 33. Niger | 50. Zambia |
| 17. Eswatini | 34. Nigeria | 51. Zimbabwe |

Table 3: The Effect of Armed Conflicts on Financial Sector Development in Africa

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Δmc_{t-j}	-0.7173*** (0.2462)	-0.4992** (0.2282)	-0.4837** (0.2067)	-0.4777** (0.1895)						
PerGDP		0.0994*** (0.0233)	0.0888*** (0.0223)	0.0861*** (0.0219)	0.0934*** (0.0229)	0.0849*** (0.0222)	0.0869*** (0.0218)	0.0994*** (0.0236)	0.0849*** (0.0223)	0.0946*** (0.0215)
CPI (log)		-0.0873 (0.1092)	-0.1284 (0.0871)	-0.0914 (0.0891)	-0.0659 (0.0838)	-0.0951 (0.0939)	-0.0922 (0.0872)	-0.0540 (0.0976)	-0.1074 (0.0916)	-0.0772 (0.0875)
ToFfr			0.0883** (0.0402)	0.0969** (0.0390)	0.0983** (0.0403)	0.0987** (0.0393)	0.0992** (0.0375)	0.1064** (0.0409)	0.1006** (0.0380)	0.0995*** (0.0361)
Le			0.2201 (0.1502)	0.1707 (0.1530)	0.1417 (0.1482)	0.1720 (0.1566)	0.1408 (0.1481)	0.0696 (0.1606)	0.1634 (0.1549)	0.0736 (0.1521)
Ge				0.0012*** (0.0004)	0.0012*** (0.0004)	0.0012*** (0.0005)	0.0012*** (0.0004)	0.0014*** (0.0005)	0.0013*** (0.0004)	0.0014*** (0.0004)
YrWar					-1.3936*** (0.4391)					
YrLitAmc						-0.5330* (0.2980)				
YrAmcGovCn							-0.6090*** (0.1945)			-0.6181*** (0.1946)
YrAmcTerCn								1.0185 (0.6738)		1.0614** (0.4595)
YrLintGoven									-0.8040** (0.3132)	
Constant	3.0900*** (0.1132)	3.0664*** (0.5298)	3.0002*** (0.4408)	2.7628*** (0.4555)	2.6160*** (0.4195)	2.7603*** (0.4759)	2.7896*** (0.4502)	2.4430*** (0.4654)	2.8282*** (0.4674)	2.6891*** (0.4443)
Observations	51	46	46	46	46	46	46	46	46	46
R-squared	0.1165	0.4247	0.5058	0.5431	0.5595	0.5237	0.5697	0.5203	0.5533	0.5981
RESET (p-values)				0.7896	0.6764	0.7066	0.9294	0.9209	0.8783	0.9241
Shapiro-Wilk (p-values)				0.52015	0.64535	0.57746	0.33107	0.84489	0.43039	0.37323
Multicollinearity test (mean VIF)				1.10	1.08	1.11	1.08	1.13	1.10	1.12
Contamination rate (%)				15.21	15.21	17.39	15.21	15.21	15.21	15.21
Bootstrap test of coefficient significance (p-values)				0.025	0.019	0.109	0.008	0.518	0.033	0.004, 0.423

Table 4: The Effect of Armed Conflicts on Financial Sector Development in Africa (Huber-Tukey Robust Regression)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
VARIABLES										
YrAmc	-0.6368** (0.3043)	-0.5025* (0.2676)	-0.5178** (0.2477)	-0.5062** (0.2434)						
PerGDPF)		0.1027*** (0.0231)	0.0957*** (0.0218)	0.0928*** (0.0214)	0.1023*** (0.0208)	0.0906*** (0.0224)	0.0970*** (0.0211)	0.1022*** (0.0229)	0.0928*** (0.0217)	0.1040*** (0.0209)
CPI(log)		-0.0910 (0.1205)	-0.1282 (0.1132)	-0.0935 (0.1132)	-0.0663 (0.1105)	-0.0965 (0.1176)	-0.0948 (0.1117)	-0.0503 (0.1183)	-0.1080 (0.1153)	-0.0772 (0.1083)
ToFfr			0.0950** (0.0438)	0.1071** (0.0433)	0.1079** (0.0424)	0.1089** (0.0447)	0.1106** (0.0426)	0.1118** (0.0450)	0.1101** (0.0436)	0.1079** (0.0412)
Le			0.2490 (0.1662)	0.1987 (0.1658)	0.1822 (0.1617)	0.1925 (0.1720)	0.1898 (0.1628)	0.0869 (0.1786)	0.2003 (0.1671)	0.1240 (0.1629)
Ge				0.0011 (0.0007)	0.0011 (0.0007)	0.0012 (0.0007)	0.0011 (0.0007)	0.0013* (0.0007)	0.0012 (0.0007)	0.0012* (0.0007)
YrWar					-1.4597** (0.6024)					
YrLitAmc						-0.5713 (0.3605)				
YrAmcGovCn							-0.6480** (0.2466)			-0.6701*** (0.2382)
YrAmcTerCn								0.9980 (0.7415)		1.0344 (0.6765)
YrLintGovCn									-0.8362** (0.3764)	
Constant	3.0489*** (0.1142)	3.0800*** (0.5659)	2.9681*** (0.5198)	2.7348*** (0.5291)	2.5753*** (0.5082)	2.7318*** (0.5535)	2.7563*** (0.5204)	2.4083*** (0.5456)	2.7912*** (0.5394)	2.6563*** (0.5066)
Observations	51	46	46	46	46	46	46	46	46	46
R-squared	0.0820	0.4054	0.5258	0.5569	0.5767	0.5302	0.5838	0.5037	0.5565	0.6133