Scienza e Pace
ISSN 2039-1749 Vol. XVII, N. 1 (2026)
Rivista del Centro Interdisciplinare "Scienze per la Pace"
Università di Pisa

Economic Development amidst Conflict: Exploring Dynamics in the MEDA Region

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Abstract
This study examines the effects of past and recent conflicts on economic growth in MEDA countries. Using panel data for 2008-2024 and quantile regression methods, it analyzes how conflict intensity, gross fixed capital formation, urbanization, unemployment, governance climate, and the business environment influence GDP per-capita growth across the MEDA region. The results show that conflict intensity hinders growth but is not significant in all quantiles, and its sign can invert when controlling for Syria. This outcome may be a consequence of the specificities of MEDA countries' societal systems. While gross fixed capital formation and improvements in the quality of the institutional and business environment show positive effects. On the contrary, urbanization growth and rising unemployment are associated with lower growth. Policy recommendations include strengthening institutions and governance climate, promoting peacebuilding and regional cooperation, and adopting measures to stimulate investment and employment in MEDA countries.

Keywords: Conflict, Economic growth, MEDA region.

Abstract
Questo studio esamina gli effetti dei conflitti passati e recenti sulla crescita economica dei paesi MEDA. Utilizzando dati panel per il periodo 2008-2024 e metodi di regressione quantile, analizza come l'intensità del conflitto, la formazione del capitale fisso lordo, l'urbanizzazione, la disoccupazione, il clima di governance e l'ambiente imprenditoriale influenzano la crescita del PIL pro-capite nella regione MEDA. I risultati mostrano che l'intensità del conflitto ostacola la crescita, ma non è significativa in tutti i quantili, e il suo segno può invertirsi escludendo la Siria. Questo risultato potrebbe derivare dalle specificità

Questo articolo è stato sottoposto a un procedimento di revisione tra pari "a doppio cieco" (double-blind peer review).

dei sistemi sociali dei paesi MEDA. La formazione di capitale fisso lordo e i miglioramenti della qualità dell'ambiente istituzionale e imprenditoriale mostrano effetti positivi. Al contrario, la crescita dell'urbanizzazione e l'aumento della disoccupazione sono associati a una crescita inferiore. Le raccomandazioni politiche includono il rafforzamento delle istituzioni e del clima di governance, la promozione del consolidamento della pace, della cooperazione regionale e l'adozione di misure per stimolare gli investimenti e l'occupazione nei paesi MEDA.

Parole chiave: Conflitto, Crescita economica, Regione MEDA.

1. Introduction

The relationship between economic growth and conflict is pivotal in development economics and security studies, highlighting the importance of strategic interactions across nations (Isard, 1988; Rodrik, 1999). Recent results have robustly confirmed the negative effect of conflict on economic growth (Vesco et al., 2025). Direct and indirect spillovers varying across different regions, income levels, and estimates of conflict costs are generally large in conflictual nations – with per-capita GDP of about 35% lower than other countries – while spillovers in the long-run may be less significant (Crippa et al., 2025).

In other words, wars and conflicts between nations have always been recognized as disruptive factors undermining peace and stability. Recently, studies have provided evidence about the broader economic consequences of the war and offered an interesting point of view to assess changes in growth performance (Ahmed et al., 2023; Capoani et al., 2025). Specifically, rising global tensions have directly and indirectly undermined the world economy's stability, leading to a trade reduction, uncertainty in investment decisions, and interrupted global value chains (Capoani and Martini, 2026; Federle et al., 2026).

Recent global crises and governance challenges have highlighted the need for responsible and resilient global value chains better capable of effectively adapting to the instability of the economic cycle through coordinated actions and country system-wide responses (Valli, 2025). This means that global value chains

operate themselves as complex and adaptive socio-technical systems dominated by rapid societal, organizational, and technological transformations, and shaped by economic uncertainty and country-system interdependences (Mariotti, 2022, 2023). Nowadays, global value chain governance increasingly relies on the interaction between human expertise, advanced management, innovation-driven and technology-based methods to support planning, coordination, and control across strategic, tactical, and operational decision-making levels (Mariotti, 2024).

Conflicts pose a fundamental obstacle to development by reducing welfare and degrading the quality of the institutional and business environment (World Bank, 2011). Ray and Esteban (2017), examining links between economic development and social conflict, define economic growth as changes in per-capita income and wealth and define social conflict as within-country unrest ranging from demonstrations to civil war. Therefore, this relationship is particularly important in developing and transitional economies, where conflict simultaneously disrupts economic growth and emerges from developmental failures.

In the last forty years, conflicts around the world have affected more than one-third of the countries (Heidelberg Institute, 2024).

Conflicts affect growth, production levels, and mortality rates and can quickly collapse governance (Novta and Pugacheva, 2021; Fang and Shao, 2022; Le et al., 2022; Giammetti and Palley, 2025). Political instability and the fall of institutions are consequences of conflicts, as is the destruction of physical and human capital and wealth. Furthermore, the adverse effects extend to diminished gains from both domestic and foreign trade (Thies and Baum, 2020). It is well known that reconstruction after conflicts always takes a long time to be implemented and impose psychological costs related to the education and especially health of people (Crippa et al., 2026). Educational and healthcare systems suffer as funding is diverted to military projects, triggering long cycles of instability and poverty (Ndoricimpa and Ndayikeza, 2023).

Especially, economic development in emerging and transitional economies is significantly damaged by conflicts, which destroy infrastructure and force population displacement (Kollias and Tzeremes, 2022). The economic consequences caused by war are devastating. Civil unrest and political instability include the destruction of strategic assets and supply chains and constitute a barrier to both domestic and foreign capital (Abbas et al., 2025). Important sectors

of an economy are swept away in a few instants. Despite these challenges, countries may find opportunities for advancement through resilience and recovery mechanisms (De Groot et al., 2022; Alhammadi, 2026).

The paper aims to investigate the following research question (RQ): how conflict variable affects economic growth in the less investigated MEDA region[1] over the period 2008-2024?

Several studies have focused on this specific area of the world (Scalamonti, 2024a, 2025a,b, 2026a,b). The selected period is then particularly interesting because it includes the "Arab Spring" riots and the "Syrian crisis" from 2011 to 2024, and the escalation in Israeli-Palestinian war in 2023, providing new insights compared to existing literature (Capasso and Canitano, 2024, 2026). In other words, the empirical investigation is relevant for both development studies and conflict ones, as well as for the geopolitical implications of the MEDA region.

Table 1 below provides a brief overview of the main conflict waves in the MEDA region.

Dates	Notes
Dec-2010	The "Arab Springs" upheavals started in Tunisia, triggered by requests for democratization of the country and protests against the regime of President Ben Ali, in power since 1987. The rapid spread of the protests led to the fall or revision of the regimes in all the neighboring North African and Middle Eastern countries, even reaching Yemen and Bahrain.
Gen-2011	The protest movements triggered by unemployed and educated young people, who asked for more political participation, named "youth bulges", led to the fall of the Mubarak regime, in power for thirty years, thanks to the widespread diffusion of information and new media technologies.
Feb-2011	Starting a civil conflict in Morocco and Libya, with consequent NATO interventionism. Intervening are also Russia and other actors with several economic interests in the North African region. Military defeat of Gaddafi, his assassination, power fragmentation, and consequent political instability in the country and the whole region.
Mar-2011	Starting a civil conflict in Jordan and Syria against President Assad. Large areas of Syria and later also of Libya suffered an occupation by the armed militias of ISIS, declaring in 2014 the establishment of an Islamic state in Syrian territory. Defeated in 2019 by a coalition of allies including the US, Russia, Turkey, and several Arab countries, ISIS nevertheless maintained intense terrorist activity in several areas. President Assad remained in power but in a devastated and divided country. In December 2024, much of

[1] MEDA transitional economies are: Morocco, Algeria, Tunisia, Libya, Egypt, Israel, Jordan, Lebanon, Syria, and Turkey. These are the most important South-Eastern Mediterranean countries for territorial extension and economic size, as well as the main signatory partner countries – Libya as permanent observer – of the Euro-Mediterranean Agreements signed in Barcelona in the mid-nineties (European Union, 1995; Tino, 2012; Kim, 2022).

	Syria was conquered by rebel militias, and Assad was forced to flee to Russia.
Oct-2023	Starting the Israeli-Palestinian conflict due to Hamas' attack, followed by an Israeli counterattack and invasion of the Palestinian territories. In 2024, the conflict spread to Lebanon against Hezbollah. In 2025-2026, the conflict also extended to Iran with the US involvement.

Source: Scalamonti (2026b).

Table 1 – Brief overview of the conflicts in the MEDA region.

As a novelty, a quantile regression to capture heterogeneity across the GDP per-capita growth distributions of countries and a sensitivity analysis as a robustness check were implemented. The study continues with Section 2 exploring the related literature; Section 3 introduces the dataset, model specification, and estimation technique; Section 4 focuses on the empirical analysis discussing the results; finally, Section 5 provides conclusions.

2. Related literature

Wars between nations have always caused profound societal, political, and economic upheavals globally, alongside heavy humanitarian crises (Liu et al., 2024; Davies et al., 2025). Consequently, armed conflicts constitute extreme shocks not only for the affected populations – highly exposed to shelling, displacement, and destruction (UNHCR, 2024; WEF, 2025) – but also put serious constraints on organizations trying to survive in an extremely risky context, overcome supply chain interruptions, and adapt to adversity under high uncertainty (Lumineau and Keller, 2025; Marzi et al., 2025). This means that several areas of the ease of doing business can be affected, such as supply chain management (e.g., Krykavskyy et al., 2023; Bednarski et al., 2025), international business management (e.g., Reade and Lee, 2012; Meyer et al., 2023), turnaround strategies, leadership, and organizational behavior (e.g., Barnes and Newton, 2018; Opatska et al., 2024).

Therefore, from strategic decision-making under duress to the transformation of organizational structures and cultures in response to critical contexts, the challenges remain as diverse as they are crucial (Scalamonti, 2022). While the existing literature has emphasized the rule of organizational resilience – as the

ability to adapt to shocks and restore business (e.g., Boin and Van Eeten, 2013; Linnenluecke, 2017; Conz and Magnani, 2020; Ferrucci, 2020) – wartime conditions, however, require adopting a more demanding perspective (e.g., Obrenovic et al., 2024; Marelli and Signorelli, 2025).

In addition, a vast literature in development and political economy has examined the relationship between conflict and economic performance. While the destructive consequences of war on capital stock, human lives, and institutions are intuitively negative, the empirical quantification of this relationship, its transmission, and potential heterogeneous effects on country growth remains a critical area of interest. For instance, Blattman and Miguel (2010) provided comprehensive evidence that low per-capita incomes and slow economic growth are robustly linked to civil war, highlighting that most countries have experienced internal wars since 1960. Their findings reveal that the relationship between poverty, development-path, and conflict operates through various channels, such as grievances and bulges, the role of law and institutional quality, and the opportunity-cost mechanism. Some studies focused on income inequality and disparities between politically salient ethnic, religious, or regional groups (e.g., Cederman et al., 2011; Buhaug et al., 2013; Hendrix and Brinkman, 2013; Von Uexkull et al., 2016; Cohen and Karim, 2021; Menton et al., 2020; Syaban and Appiah-Opoku, 2024). Other studies have focused on the impacts on the labor market (e.g., Campante and Chor, 2012; Assaad, 2014).

More recently, Jung (2024) establishes that conflict systematically slows economic growth, using a multi-country panel. Le et al. (2022) find that conflict negatively impacts GDP growth and other human development indicators, such as life expectancy and education. Similarly, De Groot et al. (2022) and Novta and Pugacheva (2021) report a strong negative correlation between both international and civil conflict onset and growth.

Country-specific studies reinforce these overall findings. Studies on Sub-Saharan Africa (e.g., Edokat et al., 2023; Harry, 2021), East Asia (e.g., Petrova et al., 2023), and at the national level (e.g., Diakonova et al., 2023; Ndoricimpa and Ndayikeza, 2023) conclude that conflicts hindered economic growth. The mechanisms are multifaceted, including destruction of physical capital, disruption of trade and investment, diversion of public expenditure to military ends, and erosion of human capital.

Beyond this, the type of conflict also matters (Poierier et al., 2012). De Waal (2014) examined civil war in South Sudan and its unsound governance, noting that when independence was achieved, elites consumed all revenue with nothing for public services or institution building. The patronage system and élite cohesion fractured, and civil war burst. This case-study suggests that resource-dependent countries can prove vulnerable to sudden external shocks with severe conflict bursts. However, Eklund et al. (2015) documented that a post-conflict recovery is also possible. For instance, the finding by Véganzonès-Varoudakis and Rizvi (2019) of a positive association between GDP growth and conflict intensity in Pakistan is an exception that underscores the context-dependent nature of the relationship, potentially explained by conflict being concentrated in less economically integrated regions or by specific geopolitical economy factors. De Groot et al. (2022) interestingly and counterintuitively suggest that non-territorial internal conflicts may, under certain conditions, exhibit a positive association with domestic economic activities, like mobilizing investments and consolidating élite power (e.g., Morrison, 2010; Bank et al., 2013; Hvidt, 2014; Venables, 2016; Knysh and Ponomarenko, 2021).

Studies suggest that the growth impact also depends on the other variables serving as a potential recovery mechanism (e.g., De Groot et al., 2022; Petrova et al., 2023; Ndoricimpa and Ndayikeza, 2023). Conversely, factors like corruption, inequality, and high military expenditure often compound conflict's negative effects (Edokat et al., 2023). Wizarat (2014) found that conflict and openness show a positive impact on GDP in developed economies, but conflict and openness have a negative impact on developing economies.

Kollias and Tzeremes (2022), using panel causality tests, find evidence of a bidirectional relationship in the Middle Eastern and Central Asian economies. Economic downturns fuel social dissatisfaction and unrest, which in turn further harm economic performance, creating a vicious cycle. Finally, Buhaug et al. (2024) and Ko et al. (2024) have recently related the conflicts to climate change.

The relationship between conflict and economic growth has received widespread attention in economics. Empirical works have studied this relationship from various viewpoints. Some have shown direct negative economic impacts on infrastructural capital, productivity, and security. Others, instead, have

investigated the extensive effects of conflict on the business environment, resulting in decreased investment and reduced income levels.

Mostly studies have used time-series analysis and fixed-effect models, but no work has investigated the impacts of conflict on growth in MEDA transition economies. This study aims to fill this research gap by implementing a second-generation econometric model, differing from the majority of the previous studies implementing first-generation models (Véganzonès-Varoudakis and Rizvi, 2019; Harry, 2021; Diakonova et al., 2023; Diop et al., 2022; Ndoricimpa and Ndayikeza, 2023). Additionally, most of these have used only a few governance and business environment quality indicators (Al-Khouri, 2015; Pinto and Zhu, 2018; Hanson and Sigman, 2021). As a result, there is a scarcity of analyses using all six of the World Bank's Worldwide Governance Indicators (WGI) in an effective overall composite index of governance climate (Scalamonti, 2025c) and using the Ease of Doing Business index (EoDB), both summarizing countries' institutional and business environments

3. Dataset, model specification, and estimation technique

The dataset used in the study is available and downloadable on the following public repository: https://osf.io/pf74m (Economic Development amidst Conflict: Exploring Dynamics in the MEDA region_DATABASE_). For missing data, linear interpolation techniques and mean values were used for only 5% of the whole sample, thereby ensuring a panel reliability at 95%.

The collected variables, their descriptions, main statistics, and correlations are reported in Tables 2 and 3, respectively. Especially, conflict is measured by the intensity of ongoing domestic and international conflicts. It is one of the three components of the Global Peace Index (GPI) developed by Teorell et al. (2025) to investigate the extent to which a country is involved in internal and external conflicts, as well as its role and duration of involvement in conflicts (Institute for Economics and Peace, 2022). The correlations between the variables are not excessively high, hence multicollinearity should not be an issue in the regressions.

Variables	Main statistics			Descriptions
	μ	σ_w	σ_b	
ΔGDP	0.308	7.255	2.248	GDP per-capita, annual growth % (WDI)
ΔGFC	3.175	20.17	5.485	Gross fixed capital formation, annual growth %, (WDI)
ΔURB	2.172	2.078	0.913	Urban population, annual growth % (WDI)
UNEM	11.96	1.850	3.910	Total unemployment, total labor force % (WDI)
CONF	2.261	0.393	0.497	Conflict intensity, from 1.0 to 5.0 (QoG)
GI	41.13	2.968	9.937	Overall composite governance index, from 0 to 100 (WGI)
EoDB[(a)]	57.72	3.014	12.02	Ease of doing business index, from 0 to 100 (DBD)

Note: (a) data are available over the period 2008-2019.

Table 2 – Main statistics and description of the variables.

	ΔGDP	**ΔGFC**	**ΔURB**	**UNEM**	**CONF**	**GI**	**EoDB**
ΔGDP	1.000						
ΔGFC	0.391***	1.000					
ΔURB	-0.151*	-0.035	1.000				
UNEM	-0.215***	-0.048	-0.116	1.000			
CONF	-0.107	0.053	-0.201***	0.050	1.000		
GI	0.219***	0.001	0.140*	-0.497***	-0.613***	1.000	
EoDB	0.217**	-0.042	0.128	-0.574***	-0.334***	0.847***	1.000

Note: (***) significance at α=0.01; (**) significance at α=0.05; (*) significance at α=0.10.

Table 3 – The correlation matrix.

The non-stationary variables used in the study were differentiated before entering the regressions, thus showing stationarity in their first difference. This approach is particularly suitable with the regressors used, as several are selected in their first difference. The Augmented Dickey-Fuller test was implemented to check for stationarity in the time-series. The results for this test are shown in Table 4 below. Particularly, ΔGDP and ΔGFC show stationarity; ΔURB shows stationarity with one order of lags and enter the model with one order of lags to better captures the lagged effects of urban development policies across the MEDA region; while UNEM, CONF, GI, and EoDB show stationarity only after the first difference transformation.

	Lag	Choi meta-test						Int. order
		Reverse-χ^2	p-value	Reverse-Normal	p-value	Logit	p-value	
ΔGDP	0	87.180	0.000	-6.561	0.000	-7.619	0.000	I(0)
ΔGFC	0	109.74	0.000	-7.635	0.000	-9.591	0.000	I(0)
ΔURB	1	51.174	0.000	-2.318	0.010	-2.446	0.009	I(0)
UNEM	0	86.489	0.000	-6.811	0.000	-7.628	0.000	I(1)
CONF	0	94.862	0.000	-7.265	0.000	-8.382	0.000	I(1)
GI	0	62.929	0.000	-5.084	0.000	-5.404	0.000	I(1)
EoDB	0	62.221	0.000	-4.530	0.000	-4.991	0.000	I(1)

Table 4 – Unit root tests for stationarity, with constant.

The variables enter the models in their original form and based on the following model specification [1]:

$$\Delta GDP = f(\Delta GFC, \Delta URB_{t-1}, \Delta UNEM, \Delta CONF, \Delta GI, \Delta EoDB). \quad [1]$$

Quantile regression is a suitable statistical technique used to estimate the relationship between one or more predictor variables and a response variable at different quantiles of the conditional distribution of the response variable (Koenker and Zhao, 1994; Koenker and Hallock, 2001), especially when suspecting cross-sectional heterogeneity, thereby producing more reliable estimates than OLS regressions.

The quantile regression is conducted at various levels, ranging from the 10th to the 90th quantiles. Unlike OLS regression – which focuses on estimating the conditional mean of the response variable – quantile approach allows for the examination of how the relationship between variables varies across different points of the distribution, providing insights into heterogeneity and tail behavior.

It is particularly useful when the relationship between variables may not be constant across the distribution. However, robust standard errors (sandwich) were implemented to prevent an inconsistent inference on coefficients. Models are estimated with the last version of the open-source statistical software gretl.

Finally, the estimation strategy involved estimating a separate model for EoDB, as the period covered by the surveys ends in 2019. Firstly, the models were implemented on the entire sample, and then a sensitivity analysis was performed, excluding Syria, as its average conflict level after 2010 is approximately 3.5, making it the MEDA country with the highest conflict level since 2011, compared to a period average for the region of approximately 2.0.

4. Empirical analysis

Table 5 below shows the results of the quantile regressions for first-difference variables (Models 1-4). This implies that estimates capture short-term effects, and the following comments on results are referred to these and contextualized in the short run. Ultimately, the sensitivity analysis excluding Syria confirms these results.

ΔGFC exhibits a positive relationship. Gross fixed capital formation has a positive impact on GDP growth. Investment in machinery, infrastructure, and equipment enhances productive capacity, leading to increased efficiency and productivity. Industries can increase their production of goods while reducing prices. Consequently, to meet the increasing domestic demand, industries can employ a greater number of workers.

Higher levels of economic activity, production, and employment have a positive effect on GDP growth (Lach, 2010; Stupnikova and Sukhadolets, 2019). An increase in overall efficiency and production leads to economic expansion (Aghion et al., 2021), encouraging firms to invest more in innovation and R&D to improve their manufacturing processes and products. These improvements promote the business environment, increase competitiveness and employment, and attract new investment (Kumar and Ahmed, 2014; Omodero et al., 2019; Scalamonti, 2021, 2024b).

Demographic shifts across the MEDA region (UNHSP, 2020), captured by ΔURB_{t-1}, can change consumption habits, change labor market dynamics, and increase healthcare expenditures, which in turn can negatively impact the economy and GDP growth rate (Tektas, 2016; Crippa et al., 2026). In other words, demographic growth shows a prevalent negative impact on all quantiles, except in higher ones. The reason behind these signs is that as the population grows, the labor force also increases (Acemoglu et al., 2019). Effective utilization

of the labor force also enhances the production level, which impacts positively on economic output, but this is only possible under specific conditions of economic stability, which have not always been the case in the MEDA countries (Peter and Bakari, 2018; Bala, 2020; Morwat, 2021; De Groot et al. 2022; Alhammadi, 2026). This finding is consistent with Malthusian theory, which posits that rapid population growth can strain resources and diminish returns to economic activity. As population growth exceeds the rate at which resources are available, it results in decreasing returns and scarcity of funds, which eventually affects the growth rate. As the population expands, there is greater demand for food and other goods and services, leading to a decline in industry efficiency, a rise in costs, and a decrease in living standards. Additionally, the rapid increase of urbanization can cause environmental deterioration, worsening the use of limited resources and hindering the achievement of sustainable development (Spaiser et al., 2016; Leitão Di Pasquale, 2023; Boussi, 2025).

ΔUNEM negatively impacts GDP growth. When unemployment increases, it results in the entry of fewer individuals into the workforce, which in turn leads to lower levels of employment and income. Therefore, this reduces the consumption of goods and services. Moreover, firms struggle to satisfy their labor demand (Young, 2018; Rahman, 2018; Soava, 2020). A lower level of employed workforce hampers productive investments and does not contribute to increasing the stock of knowledge available to firms. In fact, when more or better-trained workers join the workforce, this results in a wider or more skilled human capital. This, in turn, can lead to higher levels of economic growth through efficiency gains and technological improvements (Hussain et al., 2019; Sun, 2020).

ΔCONF is expected to be negatively related to GDP growth rate. While coefficients are negative across many quantiles, their impacts are not statistically significant for the MEDA sample. This result may be due to peculiarities of the MEDA context, where the conflict has become so deeply rooted in the cultural substrata of societies that it is not a determining driver in the outcomes, and even shows positive impacts when excluding Syria.

Conflict disrupts the economy, damages infrastructure, increases insecurity and population displacement, and ultimately reduces output and wealth (Nganou and Kebede, 2012; Novta and Pugacheva, 2021; Harry, 2021; Véganzonès-Varoudakis and Rizvi, 2019). Destroyed supply chains, decreased investments,

and increased production costs hinder economic growth (Vothknecht and Sumarto, 2011). In addition, conflict creates a state of uncertainty and volatility, discouraging investors and further diminishing opportunities for growth (Harry, 2021). When conflict escalates, there is a forced people migration, thus putting a burden on social and infrastructural services. Consequently, countries affected by conflicts can experience a continuous damage in their GDP growth over time (Brück and De Groot, 2013; Petrova et al. 2023; Ndoricimpa and Ndayikeza 2023; Edokat et al. 2023; Crippa et al., 2024).

Interestingly, the effect of ΔGI is not uniform. Improvements in governance climate have a strong, positive, and significant impact on GDP growth for countries in the lower quantiles (from 0.10 to 0.40) of the growth distribution. This suggests that strengthening institutional environment is a crucial first step for the MEDA regions lowest outcomes. Improvements in governance quality is pivotal for lifting the lowest-performing MEDA economies. In contrast, for MEDA countries with higher GDP growth – median quantiles from 0.20 to 0.70 – EoDB becomes a more significant driver, highlighting the role of a streamlined business environment in enhancing growth. A sounder business environment matters more in MEDA countries already on a stable development-path.

According to institutional theory, contexts become more suitable for business when governance is sounder (Acemoglu, 2025). A quality institutional and business environment can attract more capital and investors, and a sound governance creates political stability and effectiveness reducing the country risk perceived by investors (Zubair and Khan, 2014; Scalamonti, 2025d,e). Higher institutional and business development contributes to reducing social inequalities and improves social cohesion (Scalamonti, 2025f), thus resulting in more substantial political stability and an increased investor climate (Scalamonti, 2025g,h). These combined variables establish a favorable institutional and business environment for long-term economic growth, pointing out the crucial role of development in promoting growth (Muckley, 2020; Sihombing et al., 2023).

In addition, the modernization theory suggests that as a country develops and invests in human capital, infrastructure improvements, and social stability, it experiences more technological advancement and creates a more educated and healthier workforce in a stable society. This stability leads to higher productivity,

efficiency, and innovation, which in turn underpin ongoing economic growth (Rehman et al., 2019; Rigal, 2022).

Ultimately, a further robustness check, implementing standard fixed-effect models with clustered robust standard errors and specification tests (Table A1 in Appendix A), confirms the pivotal role in promoting growth across the MEDA region, at least in the short run, of improving the countries' institutional and business environments, as well as infrastructural capital, while confirming the negative impact on the GDP growth rate of the unemployment rate. Moreover, these results confirm that conflict hinders growth but is not significant.

		ΔGDP			
				Excluding Syria	
	Quantile	**1**	**2**	**3**	**4**
ΔGFC	0.10	0.090	0.114	0.156	0.171***
		(0.068)	(0.083)	(0.107)	(0.058)
	0.20	0.060	0.063*	0.141***	0.152***
		(0.037)	(0.036)	(0.034)	(0.058)
	0.30	0.079***	0.100***	0.111***	0.141***
		(0.020)	(0.031)	(0.037)	(0.023)
	0.40	0.071***	0.088***	0.11***	0.112***
		(0.014)	(0.021)	(0.014)	(0.022)
	0.50	0.082***	0.102***	0.119***	0.155***
		(0.007)	(0.021)	(0.013)	(0.028)
	0.60	0.090***	0.120***	0.137***	0.181***
		(0.012)	(0.022)	(0.022)	(0.023)
	0.70	0.111***	0.137***	0.143***	0.203***
		(0.008)	(0.029)	(0.020)	(0.027)
	0.80	0.082***	0.156***	0.127***	0.188***
		(0.010)	(0.040)	(0.029)	(0.053)
	0.90	0.082	0.190***	0.114**	0.237***
		(0.065)	(0.070)	(0.046)	(0.062)
ΔURB_{t-1}	0.10	0.096	-0.025	-0.005	-0.058
		(0.770)	(0.439)	(0.863)	(0.588)
	0.20	-0.269	-0.189	-0.394*	-0.502
		(0.365)	(0.421)	(0.220)	(0.597)
	0.30	0.007	-0.178	-0.322	-0.551**
		(0.240)	(0.266)	(0.284)	(0.235)
	0.40	-0.095	-0.153	-0.167	-0.307
		(0.149)	(0.182)	(0.192)	(0.208)
	0.50	-0.159**	-0.008	-0.231	-0.242**
		(0.062)	(0.174)	(0.145)	(0.119)
	0.60	-0.255*	0.006	-0.274***	-0.279**
		(0.138)	(0.139)	(0.104)	(0.126)
	0.70	-0.229*	0.040	-0.152	-0.135
		(0.125)	(0.110)	(0.149)	(0.120)
	0.80	0.042	-0.002	-0.155	-0.366**
		(0.120)	(0.158)	(0.201)	(0.150)
	0.90	-0.029	-0.206	-0.172	-0.392
		(0.537)	(0.269)	(0.522)	(0.240)

ΔUNEM	0.10	-1.665	-0.389	-1.553	-0.245
		(1.210)	(1.068)	(1.044)	(0.606)
	0.20	-0.986	-0.501	-0.831*	-0.231
		(0.641)	(0.537)	(0.444)	(0.393)
	0.30	-0.793***	-0.432***	-0.604*	-0.259
		(0.287)	(0.161)	(0.349)	(0.382)
	0.40	-0.758***	-0.600***	-0.635***	-0.495
		(0.206)	(0.223)	(0.122)	(0.332)
	0.50	-0.818***	-0.569***	-0.629***	-0.393
		(0.168)	(0.087)	(0.229)	(0.262)
	0.60	-0.748***	-0.518***	-0.649***	-0.443***
		(0.072)	(0.194)	(0.114)	(0.111)
	0.70	-0.758***	-0.385*	-0.645***	-0.470**
		(0.170)	(0.223)	(0.166)	(0.235)
	0.80	-0.979***	-0.386	-0.815**	-0.562
		(0.228)	(0.304)	(0.314)	(0.493)
	0.90	-1.110***	-0.548*	-0.964***	-0.443
		(0.419)	(0.334)	(0.295)	(0.475)
ΔCONF	0.10	5.488	2.961	2.127	3.974
		(5.553)	(7.689)	(5.434)	(5.644)
	0.20	0.717	-2.795	0.041	0.508
		(3.026)	(3.263)	(2.016)	(1.841)
	0.30	-1.347	-1.991***	0.619	0.258
		(1.771)	(0.650)	(1.484)	(1.776)
	0.40	0.020	-1.626*	0.317	-0.908
		(0.897)	(0.862)	(1.247)	(1.113)
	0.50	-0.378	-1.792*	0.135	-1.263
		(1.218)	(0.906)	(0.846)	(1.052)
	0.60	-0.397	-2.888**	0.020	-0.804
		(0.687)	(1.421)	(0.984)	(1.078)
	0.70	-0.834	-3.891***	-0.935	1.248
		(0.581)	(1.131)	(0.958)	(1.379)
	0.80	-2.354**	-1.635	-1.538	0.068
		(1.017)	(1.500)	(1.432)	(2.564)
	0.90	-2.923	1.237	-2.483	1.663
		(2.749)	(3.061)	(2.537)	(2.769)
ΔGI	0.10	3.505***	4.170***	2.870**	4.155***
		(1.331)	(1.309)	(1.444)	(1.402)
	0.20	2.572***	2.408**	1.746***	2.172**
		(0.946)	(0.930)	(0.667)	(1.080)
	0.30	1.821***	2.081***	1.195**	1.656***
		(0.578)	(0.595)	(0.536)	(0.617)
	0.40	1.197***	1.118**	1.018***	0.862**
		(0.367)	(0.443)	(0.306)	(0.431)
	0.50	0.840***	0.543*	0.366	0.210
		(0.295)	(0.317)	(0.276)	(0.370)
	0.60	0.387	0.383*	0.253	0.149
		(0.277)	(0.230)	(0.251)	(0.296)
	0.70	0.364	0.372*	0.137	0.091
		(0.264)	(0.221)	(0.270)	(0.253)
	0.80	0.490**	0.307*	0.218	-0.013
		(0.243)	(0.178)	(0.368)	(0.565)
	0.90	0.642	0.390	0.256	-0.440
		(0.756)	(0.362)	(0.672)	(0.542)
ΔEoDB	0.10		0.778		0.813
			(0.677)		(0.899)

0.20		0.841**		0.294
		(0.370)		(0.379)
0.30		0.586***		0.151
		(0.206)		(0.151)
0.40		0.401***		0.233
		(0.093)		(0.164)
0.50		0.317**		0.269*
		(0.137)		(0.162)
0.60		0.425**		0.188
		(0.170)		(0.208)
0.70		0.375*		0.240**
		(0.219)		(0.116)
0.80		0.363		0.031
		(0.310)		(0.432)
0.90		-0.210		-0.392
		(0.482)		(0.525)
Constant	yes	yes	yes	yes
$VIF_i < 10.0$	yes	yes	yes	yes
Time-frame	2008-2024	2008-2019	2008-2024	2008-2019
Countries	10.0	10.0	9.0	9.0
No. of Observations	170.0	120.0	153.0	108.0

Note: (***) significance at α=0.01; (**) significance at α=0.05; (*) significance at α=0.10.

Table 5 – Quantile regressions, robust standard errors in brackets.

5. Conclusions

5.1 Contribution and concluding remarks

This study has investigated the impact of conflicts on GDP per-capita growth rate in MEDA countries over the period 2008-2024, encompassing three major upheavals related to the “Arab Springs” and the “Syrian crisis” – covering the 2011-2024 – and the escalation in Israeli-Palestinian hostilities in 2023. The study has employed a quantile regression, never used before to analyze the relationship between growth and conflict in the MEDA region, and a stability analysis to detect the presence of unit roots in the series.

The results show that conflict intensity hinders growth but is not significant in all quantiles, and its sign can invert when controlling for Syria. This may result from specificities of MEDA countries’ societal systems. While domestic investment and the quality of the institutional and business environment support growth, urbanization dynamics and elevated unemployment are associated with weaker growth outcomes.

Conflict is nowadays exacerbated by an increasing geopolitical polarization and remains an extremely serious issue (Ferrucci, 2023) – even in developing and

transitional economies – hindering economic growth and social stability (Acemoglu and Wolitzky, 2024).

5.2 Policy implications

Conflicts are often defined as political or territorial in nature, but they cannot be understood without considering the religious dimension permeating the Near Middle East, which thus acts as an additional strategic variable in defining affiliations, legitimacies, and horizons (Ferrara, 2025). In light of this, policymakers should strengthen peace and cooperation efforts to increase sustainable development promotion and stability across all Middle East. Furthermore, a recent study also reveals that, among the possible global shared pathways, the one characterized by high emissions and socioeconomic fragmentation forecasts a significant increase in exposure to conflict and natural disasters (Marzi et al., 2025).

Therefore, MEDA policymakers should promote infrastructural investment, technology, and productive assets to lead to increasing productivity and countries' competitiveness (Obrenovic et al., 2024; Marelli and Signorelli, 2025). Policymakers should mitigate conflicts by strengthening institutions and governance, promoting peacebuilding and cooperation, and implementing policies that foster economic growth across the region. These efforts may create more conducive institutional and business environments to foster economic growth and development across the MEDA region (Saccone et al., 2022).

War conditions create situations in which the concept of resilience is particularly relevant (Munoz et al., 2025). Rather than merely returning to a prior equilibrium, some organizations could develop new routines, capabilities, and strategic orientations precisely because they are continuously exposed to stress and uncertainty (Dai et al., 2023), and there are studies in management pointing in this direction (Srai et al., 2023; Obłój and Voronovska, 2024; Carnovale et al., 2025). Since the organizational resilience to overcome crises depends on the internal level of capabilities, the literature highlighted the importance of proactive planning and early risk assessments (Amodio and Di Maio, 2017; Duchek, 2020; Browning et al., 2023).

5.3 Limitations and suggestions

Despite the robustness of the quantile regression approach, this study is not without limitations. A first econometric concern is the potential for endogeneity, particularly reverse causality between economic growth and conflict. A second econometric concern regards formal tests for coefficient differences across quantiles to better support the existence of cross-sectional heterogeneity.

While low growth can be a consequence of conflict, it may also serve as a trigger for civil unrest, creating a feedback loop that is difficult to detect. Future research should aim to establish a causal relationship by employing instrumental variables, which are plausibly exogenous to GDP growth. Suitable instruments for conflict could include geographically derived variables, the lagged conflict intensity, or other external shocks. Employing a GMM estimator in a dynamic panel model would help control for unobserved heterogeneity and account for the persistence effect of GDP growth over time, thereby providing more robust causal inferences on the cost of conflict in the MEDA region.

Appendix A

		ΔGDP	
		1	**2**
ΔGFC		0.100**	0.134
		(0.041)	(0.088)
ΔURB_{t-1}		-0.082	-0.043
		(0.135)	(0.24)
ΔUNEM		-0.684***	-0.510
		(0.225)	(0.365)
ΔCONF		-2.862	-2.564
		(2.061)	(3.263)
ΔGI		1.753*	1.856*
		(0.961)	(0.889)
ΔEoDB			0.866*
			(0.463)
Constant		yes	yes
Time-dummies		yes	yes
	Standard error	5.892	5.684
	Log-likelihood	-525.6	-363.5
	F-test	65.94	258.3
	(p-value)	(0.000)	(0.000)
	Welch F-test	4.214	2.255
	(p-value)	(0.000)	(0.035)
	Heteroskedasticity test	1051	862.4
	(p-value)	(0.000)	(0.000)
	Autocorrelation test	12.04	4.998
	(p-value)	(0.007)	(0.052)
	Cross-sectional dependence test	0.477	-0.168
	(p-value)	(0.633)	(0.867)
	No. Observations	170.0	120.0
	Time-frame	2008-2024	2008-2019
	LSDV-R^2	0.475	0.519

Note: (***) significance at α=0.01; (**) significance at α=0.05; (*) significance at α=0.10.

Table A1 – Fixed-effects models, robust standard errors in brackets.

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