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DETERMINANTS AND ECONOMIC IMPACTS OF TERRORISM AND CONFLICTS ON NORTH AFRICAN COUNTRIES COMPARED TO MIDDLE EAST COUNTRIES: PANEL DATA APPROACH (2011-2023)

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Abstract: This study aims to measure the causes and determinants of terrorism in North Africa, and to analyze its economic effects, especially on economic growth, foreign direct investment (FDI), and refugees, in comparison to some Middle Eastern countries that Experiencing similar struggles. to achieve this aim, the research relies on an econometric methodology, which concludes that the two most important variables that affect the terrorism index for North African countries are the real GDP growth rate and the Gini index, as there is a strong inverse relationship between the real GDP growth rate and the terrorism index and a strong positive relationship between the Gini index and the terrorism index in these countries. The research concludes also that MENA's international share of terrorist attacks has reached 36.1% between 2002 and 2018, overall, the MENA's economic cost of terrorist attacks has had a steady upward trend since 2001, recording its highest value in 2016 with more than $62 billion.

***Key words**: Terrorism, Conflicts, Refugee, Determinants of Terrorism, Economic Impact, panel Data, North Africa, MENA*

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Introduction

The phenomenon of terrorism is one of the most serious threats facing North African countries, due to the risks that terrorism poses to consumption, investment, tourism, and economic growth in general. The most harmful effects of terrorism extend to the state's ability to smoothly reallocate resources from affected sectors. It is important to measure the economic effects of terrorism, especially after the escalation in the number and degree of terrorist attacks after the events of September 11, 2001.

Since 1989, the Middle East and North Africa region has been plagued by increasing and successive terrorist attacks and conflicts, which led to an increase in military spending in the entire region, resulting in losses in foreign direct investment flows, a significant decline in oil exports, a contraction in economic growth rates, and the influx of large numbers of refugees into the country.

Given the scarcity of economic studies that determine the causes of this phenomenon and its economic repercussions in North African countries, the main goal of this study is to measure the causes and determinants of terrorism in North Africa, and to analyse its economic effects, especially on economic growth, foreign direct investment (FDI), and refugees, in comparison to some Middle Eastern countries that Experiencing similar struggles. The study relies primarily on the econometric analysis tool by presenting theoretical and empirical literature that studies the determinants of terrorism and its most important causes, using cross-sectional data for eight African countries suffering from terrorist conflicts: (Egypt - Libya - Tunisia - Algeria - Morocco - Sudan - Mali - Chad). The dependent variable is the Global Terrorism Index for the eight countries during a period (2011-2023) – during which terrorist attacks escalated in North Africa after the Arab Spring revolutions in Tunisia, Egypt and Libya - and the independent variables were the variables approved by the theory of "economic deprivation." Considered as causes of terrorism, they are (real economic growth rate, average per capita GDP, Gini index, unemployment rate, inflation rate, economic openness index, and net foreign direct investment flows) during the same period (2011-2023).

The study was divided into five main pillars:

First: Defining terrorism: a theoretical and conceptual framework
Second: Determinants of terrorism and conflict in North Africa
Third: Middle East and North Africa: terrorism and conflicts
Fourth: The Economic impact of terrorism and the refugee crisis in the Middle East and North Africa
Fifth: Restricting the instant influences of terrorist attacks and refugee influx

First: Defining terrorism: a theoretical and conceptual framework

The definition of terrorism has not been universally accepted, and this controversy is attributed in large part to the biases, mainly ideological and political, incentivizing the labelling of certain incidents and their participants based on subjective perceptions of the "enemy". The settlement of the definition of terrorism has not been any easier in Western countries, such as the United States (US), the United Kingdom (UK), and countries of the European Union (EU).

However, the Global Terrorism Database approaches the concept of terrorism from a broad direction by defining it as "The threatened or actual use of illegal force and violence by a nonstate actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation". Adding on this broad perspective in defining terrorism, the United Nations (UN) Security Council Resolution 1373 (2001) keeps the issue of defining "terrorism" to be decided by each country despite calling for all member States to pursue measures essential to impede the financing of terrorist activities, avoid the provision of any kind of assistance to these activities, and to motivate cooperation among the member States to contain and suppress the terrorists' movements. Indeed, the UN has been incapable of reaching a convention against terrorism due to the disagreement and inconsistency among the member States regarding a unified definition of terrorism. As an alternative to adopting a convention, the UN General Assembly appears to be relying on definition from the Declaration on Measures to Eliminate International Terrorism in 1994 as follows: "Criminal acts intended or calculated to provoke a state of terror in the general public, a group of persons or particular persons for political purposes are in any circumstance unjustifiable, whatever the considerations of a political, philosophical, ideological, racial, ethnic, religious or any other nature that may be invoked to justify them" *(Mansour-Ille,2021).*

Moving to individual countries' definitions of terrorism, it has been found that the US federal law tends to define terrorism as any crime that poses human life to danger and appears "to be intended to intimidate or coerce a civilian population; to influence the policy of a government by intimidation or coercion; or to affect the conduct of a government by mass destruction, assassination, or kidnapping", in addition the law treats international and domestic terrorism differently (better to add the law's definition for them). On the other hand, terrorism is defined by the UK Terrorism Act of 2000, as the act of using or threatening a certain action "designed to influence the government or to intimidate the public or a section of the public, and [which] is made to advance a political, religious or ideological cause".

Relatedly, with respect to the different countries of the MENA region, there has always been intense debates about the definition of "terrorism" which has also been the subject of criticism in literature. Although the Arab Convention for the Suppression of Terrorism in 1998 was the benchmark for drafting many of the terrorism-related laws in the region, these laws are nonetheless generic and dependent on unobvious definitions for terrorism in nearly all of the countries adopting the convention *(Baraga, 2016).*

Although there is an apparent lack in providing a common and unified definition of terrorism, there are some observed commonalities in the approaches utilized to define it; which can be stated as follows:

1) being motivated by a political, religious, or ideological incentive in general to conduct the relevant terrorist acts;
2) being motivated by the aim of influencing or pressuring governments and/or spreading a message of fear to conduct the relevant terrorist acts; and
3) resulting in critical physical and/or psychological harm to a group of people (who are usually not the primary target of the acts) by the conducted terrorist acts.

In other attempts to harmonize among the common components of the various definitions of terrorism, four core elements were emphasized by Hutchison in defining terrorist acts, which are: 1. The existence of physical or emotional "destructive harm" resulting from the acts; 2. A psychological influence is intended to be the deliberate aim of conducting the acts; 3. The acts are considered to be wicked, horrifying or unexpected; and 4. The acts are usually anonymous, and "This arbitrariness of terrorist violence makes it unacceptable and abnormal."

A broad definition of terrorism is viewed by the Human Rights Watch to be prone to abuse on the part of the states on the basis of fake charges with the aim to restrict the freedom of expression of political opponents, rebels, or even peaceful critics of the political atmosphere and statesmen. To overcome the extreme vagueness of the definitions of terrorist acts, the most agreed-upon concepts and jargon to identify the legal criteria of the existence of these acts can be summarized as follows:

1) The acts aim at destabilizing the national unity and state security;
2) The acts interrupt the public order and society's safety;
3) The acts aim at shaking the territorial integrity and ordinary operations of the state's organizations;
4) The acts hinder the execution of the law and thus negatively influence the state's global reputation; and/or

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5) The acts lead to public/private property destruction or harms the environment. (Kohnert & Dirk, 2022)

There are two categories that terrorist attacks can be segmented into; which are domestic terrorism and transnational terrorism. Domestic terrorism in concerned with violators and victims who belong to the country in which the incidents take place. In addition, the scope of the consequences of the incidents of domestic terrorism is related exclusively to the same country to which the participants belong, including its organizations, people, and properties. An example of a terrorist attack is the murder of an Iraqi minister by an Iraqi terrorist to alter the state of national politics.

Most countries are expected to have sufficient capacity of resources to deter and deal with the domestic terrorist attacks. Usually, there is no need to request the aid of foreign governments in implementing domestic antiterrorist policies except on condition that the domestic terrorist attacks have negative externalities on neighbouring regions. In addition, the role of foreign donor countries' assistance is critically needed in cases when domestic terrorism contributes to shaking the domestic government’s stability, and negatively affecting trade flows, resource supplies, and vital international interests as a consequence.

On the other side, in case of having an attack in a specific country including violators, victims, organizations, governments, or people in another country/countries, then there is a situation of transnational terrorism. This kind of terrorism could also incorporate acts that commence in a specific country and end in another one. *(Mansour-Ille,2021)*

Second: Determinants of Terrorism and Conflict in North Africa

This part of the study will present a literature review (theoretical and empirical) and methodology of the study and the North African econometric model.

Literature Review

In this section, the researcher presents the most prominent economic factors that turn out to be driving terrorist attacks, including openness to trade, inflation, foreign direct investment (FDI), economic growth, inequality, unemployment, and per capita income within the realm of the theories explaining the motives driving individuals to participate in terrorist attacks. Then, studies that estimated the effects of the previously mentioned factors on terrorism by applying their analysis to different countries, using distinct methods, and covering varying are also reviewed.

Theoretical Review

According to the rational choice theory, terrorist attacks' participants are fully aware of the actions they conduct and actually take part in these attacks to accomplish desired socioeconomic or even more relevant sociopolitical ends, which is why many of these attacks are frequently conducted in groups not individually as these groups tend to comprise individuals believing in the necessity to accomplish the same economic, political, or social goals and plan the appropriate strategies to do so. In addition, these participants choose to approach their goals using either legal or illegal means after comparing the benefits and risks associated with each option. Thus, this rationality in many times drives terrorists to negotiate their desires with official institutions if illegal use of power turns out to be of lower marginal benefit than legally approaching the state *(Becker, 1968; Victoroff, 2005).*

Several factors have been cited to be of outstanding importance in causing anger that frequently results in terrorist attacks; as these factors tend to drive individuals to participate in aggressive and radicalistic activities to express their objection to the prevailing economic, political, and social status quo *(Dollard et al., 1939)*.

The effects of openness to trade on an economy's degree of inequality, and thus the potential of increases in terrorist attacks vary by the status of the country's wealth. For low-income countries, which are developing countries by default, the openness to trade will incentivize the exports of goods and services that require unskilled labor. On the other hand, middle-income developing countries with somehow sufficient technological resources and human skills will tend to export products that require these relatively advanced factors of production. Therefore, low-income countries will experience more decline in inequality than middle-income ones; as inequality will tend to fall among unskilled labor of the low-income countries, although it can increase if there are segments of the unskilled labor producing goods that aren't exported to the international markets. Therefore, a raised sense of pressure can drive violence and terrorist attacks as a result of inequality caused in large part by the openness of a country to trade *(Ray, 2010).*

Inequality between different segments of the same population is also prevalent when there is an increase in money supply. In this case, inflation rate tends to increase which erodes the real income and purchasing power of all individuals. However, the lower-income individuals experience much more decline in their real incomes as a result of the higher inflation than the richer ones as their nominal incomes are lower in the first place *(Shabaz & Shabbir, 2011)*. Thus, higher inflation is also expected to be one of the determinants of the increase in terrorist attacks.

Foreign Direct Investments (FDI) flows into a country are cited to create higher inequality among the individuals as these investments usually target the productive sectors of an economy, and thus create more employment opportunities and result in higher wages and compensation for skilled workers and resources compared to unskilled ones *(London & Robinson, 1989)*, which provides another reason why the incentive to participate in terrorist attacks can be heightened among those unskilled workers.

Focusing on the impacts on economic growth on terrorism within a state, it is assumed that the impacts of uneven growth vary widely among peaceful, and somehow productive, influences in contrast to violent ones. Uneven growth can result in peaceful effects if tackled in any of the following three means; 1) human capital can divert its efforts from nongrowing economic sectors to those which experience significant growths so as to capture benefits of these sectors, which is explained as “occupational choice”, 2) benefits of the growing sectors can trickle down to others resulting in a holistic process of income improvement within a country, which is termed as “demand channel”, and lastly 3) the government can compensate the nongrowing sectors by various means of subsidies, financial supports, or minimum wage-law-adjustments, which is considered as falling under the realm of “political economy”. However, if uneven growth is not addressed through any of the three previously mentioned means, it is more likely to result in a general state of frustration, which leads to violent acts by segments of society who feel extra excluded *(Ray, 2010).*

Inequality within a state, which is often measured by the Gini Index, serves as another determinant of terrorism. Developing countries are assumed to be the ones that are most plagued with terrorist attacks, and this argument could be largely attributed to the fact that these countries are usually rich in natural resources that a country’s population cannot take advantage of due to the deterioration of technological status and the widespread inequality in favor of the lower in number but wealthier individuals *(Halkos & Zisiadou, 2016)*. In addition, the poorer segments of the population tend to remain in worsening circumstances as balanced growth is never achievable. However, the benefits of economic growth usually tend to be unevenly distributed, particularly in developing countries *(Ray, 2010)*.

Another reason why developing countries are more likely to experience terrorist incidents is largely understandable through the deprivation approach to terrorism, which suggests that poor social, political, and economic conditions prevalent within a country present the root causes of radical and terrorist attacks, particularly in less developed states. This is evident as worsened educational and employment statuses, lower levels of per capita income, deteriorating social circumstances, in addition to restrictions placed on political participation tend to result in a general condition of unrest within a society plagued with these issues *(Bravo & Dias, 2006)*.

In addition, the poor conditions that drive terrorist attacks needn't be apparent only in an extreme condition of deprivation, or more precisely absolute deprivation, however, terrorist attacks are likely to prevail also if there is a discrepancy between the forecasted and realized levels of prosperity, thus there is a differentiation between absolute and relative deprivation *(Richardson, 2011)*. Moreover, this prevalence appears to be more obvious when individuals consider themselves disadvantaged compared to others. For instance, the relative deprivation approach suggests that terrorist attacks in a state will be higher among sections of individuals who are suffering from high levels of unemployment despite gaining a higher educational degree than among those who didn't obtain a high educational degree in the first place *(Gurr, 1970)*. Moreover, this sense of anxiety that leads to terrorism is also clarified by the Davies J-curve theory; which states that when individuals experience an extended period of fair economic and social welfare followed by a relatively limited period of recession, frustration is more likely to be prevalent among them as their condition deviates from what they have expected for a long time *(Davies, 1962)*.

Empirical Review

A study by *Bravo & Dias (2005)* examined the association between the number of terrorist attacks and the level of development, in addition to the association between literacy level and ethnic fractionalization with mineral reserves, non-democratic political systems, and political participation in international institutions in two large regions of Eurasia using the Ordinary Least Squares (OLS) cross-country regression testing from 1997 to 2004 concluded that terrorism is largely the result of deprivation particularly when taking into account the changes in the geopolitical context of study. However, this study found a non-significant relationship between the degree of openness to trade and the number of terrorist attacks, although the relationship is negative.

Relatedly, a study by *Li & Schaub (2004)* examined the effect of economic globalization on the number of terrorist incidents considered as transnational within states in 112 countries during the period from 1975 to 1997 using a pooled time-series cross-sectional (TSCS) design. The researchers reached the result that a country's openness to trade and FDI, which are considered as indicators of economic globalization as they reflect the cross-border movements of products in addition to the capital production, had only indirect negative effects on the terrorist incidents in the examined countries through their promotion of economic development that in turn decreases the number of the incidents.

On the other hand, a study by *Cantens & Raballand (2017)* that examined the relationship between cross-border trade and insecurity in Libya, Tunisia, Chad, Mali, Sudan, and the Central African Republic clarified that the shared borders between Libya and Tunisia incentivized bilateral trades between both countries in addition to facilitating international trades from one country through the other. In fact, these much more facilitated trade practices have opened the door for illegal trade activities on the borders; including smuggling of products and conducting unofficial currency exchange transactions which were highly dependent on cross-border trades. Thus, any attempt to stop these prohibited trade activities were faced by unrest and violence by Tunisian terrorists and Libyan Katibas. Therefore, there was an indirect positive relationship between openness to trade and terrorism according to that study as the traded goods and services were mainly illegal and promoted by terrorist agents. This result could be related to the rational-choice theory in the sense that the openness to the global economy reduces the costs of illegal activities relative to the legal ones from the point of view of terrorists; as in this case, terrorists have the ability to conduct illegal activities on a wider scope than before.

In addition, regarding the impact of FDI on terrorism, a study by *Biglaiser et al. (2023)* resulted in different directions of the impact depending on the degree of a country's development. Specifically, after examining cross-national time-series data for 114 countries between 1991 and 2017, the researchers concluded that FDI bears a negative relationship to terrorism for high-income countries, in contrast to the low-income countries which tend to suffer from higher terrorism when they experience higher FDI levels. This discrepancy could be explained by the frequent inability of the low-income countries to distribute the benefits of foreign investment flows fairly among the different population segments.

Moreover, inflation appears to have an impact on terrorism as confirmed by the study of *Shahbaz & Shabbir (2011)* which used ARDL bounds testing approach to cointegration to test this impact in Pakistan between 1971 and 2010. The study concluded having a cointegration between inflation and terrorism, in addition to bearing a positive relationship to each other. This is relevant in Pakistan as during the study period, there has been sharp increases in the inflation rate, which is largely the result of lack of national and foreign investments and subsequent population pressures resulting in expectations of higher future inflation. Furthermore, this study also resulted in a bidirectional causality between inflation and terrorism, with both variables influencing each other rather than having a unidirectional causal effect of inflation on terrorist incidents. In addition, a study conducted by *Dardouri et al. (2024)* that analyzed the effects of macroeconomic stability on the Terrorism Index of Tunisia between 1987 and 2018 using the ARDL model also concluded that inflation impacts terrorism in a significantly positive manner, so that an increase in inflation rate leads to higher numbers of terrorist attacks.

For the impact of economic growth on terrorism, the study of *Shahbaz & Shabbir (2011)* reached a significant and positive relationship between economic growth and terrorist incidents in Pakistan between 1971 and 2010. This result of increasing the number of terrorist incidents due to increasing economic growth can be attributed in large part to the significant unequal distribution of income among the Pakistani citizens, so an increase in economic resources is concentrated within the hands of the already privileged segments of the population, raising the stress and anger among others in the society. Moreover, the effect of economic growth on terrorism is found to apply unidirectional causality, confirming a one-way influence of economic growth on terrorist incidents but not the other way round. In the same vein, a study by *Tavares (2004)* that examined the determinants of terrorism incidents by applying both the OLS regression and the truncated regression analysis on cross-country dataset between 1987 and 2001 also reached a positive, but weak significant association between real GDP growth and a country's number of terrorist incidents.

Regarding the effect of the levels of Gini Index, reflecting the degree of national income inequality, on terrorism, the study of *Li & Schaub (2004)* resulted in a significant and positive relationship between Gini Index and the number of transnational terrorist incidents, signifying that a higher level of national income inequality, reflected by a higher value of the Gini Index, the higher the number of transnational terrorist incidents occurring within a country. In addition, this result is also supported by a study conducted by *Krieger & Meierrieks (2016),* as they reached a positive relationship between income inequality, measured by the Gini coefficient, and number of terrorist activities after examining a sample of 114 countries (including: Algeria, Egypt, and Morocco) between 1985 and 2012. In the same vein, *Ghafar (2021)* argues that the continuing and growing state of inequality in Egypt with its different forms is more likely to drive demographic pressures which in turn lead to a general state of instability and unrest which are considered the main drivers for terrorism. Moreover, he states that the socioeconomic inequalities in Morocco and Libya are also considered main issues that drive radicalism and extremism if not properly addressed by the relevant states.

Moving to the relationship between unemployment levels and terrorist attacks, *Richardson (2011)* carried out an analysis of the effect of unemployment (conditional on high tertiary educational level) on terrorism levels by examining terrorist attacks from 1980 to 2008 throughout 56 countries through utilizing multivariate OLS regression. The results of the study indicated that the effect was significant and positive particularly in countries with previous experience with terrorist attacks. Supporting these results, *Kouaouci (2004)* by examining the demographic transitions in Alegria, reached the result that higher population growth in the country along with lower employment opportunities for youth created a higher pressure on Algerian young people that in turn motivated them to participate in extremist and radical terrorist activities. In addition, the study of *Dardouri et al. (2024*) also reached a significant positive relationship between job demand among Tunisian men and terrorism in contrast to a significant negative relationship between job demand among women and terrorism.

With respect to the effect of GDP per capita on the terrorist attacks, a study by *Corbin & Billet (2011)* analyzing the effects of the political rights index, human development index, and policy score on the number of terrorist attacks conducted in 66 countries in the Middle East and Africa (including: Algeria, Egypt, Libya, Morocco, and Tunisia) between 2000 and 2005 concluded that GDP per capita, as one of the dimensions of the human development index, didn’t have a significant effect on the number of terrorist attacks. In addition, *Li & Schaub (2004)* reached a significant negative relationship between a country’s GDP per capita and its number of

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transnational terrorist incidents, meaning that the as the country becomes richer it tends to experience lower number of transnational terrorist incidents within its borders, which signifies the indirect negative effect of globalization on terrorism. In addition, these results were significant for Asia, America, and Africa but nonsignificant for Europe. In contrast, the study of *Tavares (2004)* reached a significant positive association between the per capita income level of a country and the number of terrorist attacks that it witnesses. Thus, the higher the level of per capita income the more likely that terrorist attacks will take place within a country.

To sum up, as per the previous review and researcher’s best knowledge, there have not yet been studies estimating the effect of the entire set of variables of: openness to trade, inflation, FDI, economic growth, Gini Index, per capita income, and unemployment on the Global Terrorism Index (GTI) of: Egypt, Libya, Tunisia, Algeria, Morocco, Sudan, Chad, and Mali by using the Vector Autoregression Model (VAR) while covering the time period of 2011-2023, and thus this presents the gap in the literature that the research aims to address through the following sections.

Methodology and North African Econometric Model

Table 1. Variables Used

Dependent variable		Independent variables	
Indication	variable	Indication	variable
GTI	Global Terrorism Index	GDP	Real GDP growth (%)
		GDPPC	Real GDP per capita (US$)
		GINI	Gini index (%)
		UNR	Unemployment rate (%)
		TOI	Trade openness index (%)
		FDI	Foreign direct investment (US dollars)

Sources of Data:
-Global Terrorism Index Report (Various Issues)
-African Statistical Year Book (2022)
-The Global Economy.com

The study sample consists of eight countries: (Egypt, Libya, Tunisia, Algeria Morocco, Sudan, Mali Chad) during the period from (2011 to 2023) Although Mali and Chad are not of the North African countries, the model requires that the number of countries should be equal to the number of variables. So, the researcher chose Mali and Chad as they are the nearest to the North African countries in terms of geography and have similar trends regarding Global Terrorism Index (GTI) and their economic drivers.

The study aims to show the quantitative relationship between terrorism and its determinants in a number of countries. The focus in this study was on the economic aspect of the determinants of terrorism. Therefore, the study used cross-sectional time series models (Panel Data) because it takes into account the effect of changing time and the effect of changing the difference between cross-sectional units. These are countries, and what is meant by panel data is cross-sectional observations such as countries, individuals, or companies over a specific period of time, that is, merging cross-sectional data with temporal data.

(The inflation rate variable was excluded because there is a multiple correlation between it and the unemployment rate variable).

The following basic regression model is specified to find out how the selected independent variables affect the dependent variable.

$$GTI_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 GDPPC_{it} + \beta_3 GINI_{it} + \beta_4 UNR_{it} + \beta_5 TOI_{it} + \beta_6 FDI_{it} + u_{it}$$

Where: (i) represents countries, (t) represents (years).

The estimates of the model are as follows:

GTI= -12.64249-0.112275 (GDP)+0.000912 (GDPPC)+0.267690 (GINI)+0.084220 (UNR)+0.078937 (TOI)+0.000283 (FDI)

Statistical Analysis of Studied Data

Displays the most important descriptive statistics for the dependent variable and theTable2. Independent variables used in this study, which are the arithmetic, mean standard deviation, and the largest and lowest value.

Table 2. Descriptive for study variables

Variable	FDI	TOI	UNR	GINI	GDPPC	GDP	GTI
Views	91	91	91	91	91	91	91
Mean	1903.121	9.758132	58.79923	34.21429	2564.253	2.799011	4.541615
Standard Deviation	2471.845	25.34772	6.059100	4.419114	1527.543	3.009437	2.143417
Highest Value	12000.00	110.7000	20.81000	45.70000	5567.000	8.800000	9.931000
Lowest Value	-676.0000	3.000000	0.850000	27.60000	660.0000	-9.200000	0.038000

Source: Prepared by the Researcher based on E-Views 12 output.

From the descriptives of the study variables it is obvious that the difference between the mean value of FDI and the highest value that is observed in Egypt in 2023 is larger than the difference between the mean value and the least value recorded by Chad in 2014. In addition, the mean value of the TOI for all countries is nearest to the lowest value which is observed in Sudan in 2022 than it is to the highest value in Tunisia in 2022. Moreover, as for the mean value of GINI it is also nearer to the lowest value which is recorded by Algeria in 2011 than it is to the highest value in Chad in 2016. On the other hand, with respect to the GDPPC, the mean value is nearer to the highest value which is recorded in Algeria in 2012 than it is to the least value observed in Chad in 2020. In the same vein, the mean value of GDP is nearer to the highest value that is observed in Chad in 2012 than it is to the least value of Tunisia in 2020. Lastly, for the mean value of GTI, it is closer to the lowest value that is observed in Morocco in 2018 than to the highest value of Egypt in 2022.

Shows the matrix of simple correlation coefficients between each pair of study table 10: Variables, which were as follows:

There is a statistically significant direct correlation between the variable (Global Terrorism- Index) and the (Foreign Direct Investment) variable, and a statistically significant inverse correlation with the (Gini Index) and the (Trade Openness Index) variables.

There is a non-significant inverse correlation between (global terrorism index) (real GDP), (per- capita GDP), and (unemployment rate).

As shown in Table 3, there is no complete correlation or above 90% between the independent variables, and this is evidence of the independence of the variables and their lack of very strong correlation with each other.

Table 3. *Correlation matrix between the study variables*

Variable	GTI	GDP	GDPPC	GINI	UNR	TOI	FDI
GTI	1						
GDP	0.031338 0.7522	1					
GDPPC	- 0.100526 0.3099	0.227655 0.0201	1				
GINI	- 0.254444 0.0149	- 0.013850 0.8963	- 0.434202 0.0000	1			
UNR	0.037630 0.7045	- 0.044263 0.6555	0.528441 0.0000	- 0.644877 0.0000	1		
TOI	- 0.337537 0.0005	- 0.050588 06101	0.338667 0.0004	0.495003 0.0000	- 0.167047 0.0901	1	
FDI	0.234457 0.0166	0.013947 0.8882	0.051134 0.6062	- 0.263528 0.0116	- 0.068490 0.4897	- 0.342397 0.0004	1

Source: Prepared by the Researcher based on E-Views 12 output

Table 4. also shows a decrease in the values of the variance inflation factors (VIF) for all the independent variables; as none of the VIF values exceeded 10 which confirms the nonexistence of the multicollinearity problem.

Table 4. Values of the variance inflation factor (VIF)

Variable	GDP	GDPPC	GINI	UNR	TOI	FDI
	1.089242	2.390958	2.519603	2.082033	2.386678	1.513291

Source: Prepared by the Researcher based on E-Views 12 output.

Testing the Stability of Time Series

The stability of the time series is an important matter. If the time series is unstable, its use will lead to misleading results. For this purpose, we will use three tests and apply them to all the study variables: the LLC test proposed by Levin, Lin, and Chu (2002) and IPS test proposed by Pesaran and Chin (2003), and Fisher-ADF test. The null hypothesis in the three tests is the presence of a unit root, meaning that the time series is non stationary if the P-Value is greater than 0.05, and the absence of a unit root, meaning that the series is stationary if the P-Value is less than 0.05.

Table 5. Results of LLC, IPS, and ADF tests to test the stationarity of the study variables

Variable		Test type			The Decision
		LLC	IPS	ADF	
GTI	At the level	-0.314593 0.0008	-1.85861 0.0315	27.7065 0.0212	Stay at the first difference
	The first difference	-4.83761 0.0000	-3.84155 0.0001	41.4836 0.0005	
GDP	At the level	-6.64562 0.0000	-4.27416 0.0000	46.0540 0.0000	Stay at the first difference
	The first difference	-12.7581 0.0000	-8.87752 0.0000	84.5938 0.0000	
GDPPC	At the level	-1.62940 0.0516	-0.62905 0.2647	17.8074 0.3353	Stay at the first difference
	The first difference	-7.40561 0.0000	-5.99475 0.0000	60.3007 0.0000	
GINI	At the level	-0.70610 0.2401	-0.58136 0.2805	16.4445 0.2744	Stay at the first difference
	The first difference	-9.63277 0.0000	-6.67267 0.0000	61.3273 0.0000	
UNR	At the level	-0.75419 0.2254	0.25911 0.6022	14.2025 0.5836	Stay at the first difference
	The first difference	-7.74988 0.0000	-6.49965 0.0000	64.0748 0.0000	
TOI	At the level	-1.79600 0.0362	-0.06183 0.4753	15.1956 0.4356	Stay at the first difference
	The first difference	-6.88810 0.0000	-4.13225 0.0000	43.7240 0.0002	
FDI	At the level	-4.94527 0.0000	-2.68999 0.0036	32.8301 0.0078	Stay at the first difference
	The first difference	-12.7484 0.0000	-9.01765 0.0000	85.7096 0.0000	

Source: Prepared by the Researcher based on E-Views 12 output

It is clear from Table 5. that all series of study variables are unstable at the level and continuity is achieved at the difference 1 (1), as the P-Value is less than 0.05, and therefore all of these variables are integrated of the first order.

Estimating Cross-Sectional Time-Series Models

After taking the first differences for the study variables, cross-sectional time series models will be estimated, and divided into three models:

Pooled regression model(PRM)
Fixed effects model(FEM)
Random effects model(REM)

The three models will be estimated and the best model will be selected.

Estimating a pooled regression model (PRM)

Table 6. Results of the aggregate regression model report

Variable	Coefficient	Std.Error	t-Statistic	Prob.
GDP	-0.013287	0.066586	-0.199555	0.8423
GDPPC	-0.000522	0.000194	-2.684298	0.0088
GINI	-0.231617	0.068966	-3.358421	0.0012
UNR	-0.094583	0.045723	-2.068585	0.0417
TOI	-0.004477	0.011702	-0.382605	0.7030
FDI	0.000279	9.56E-05	2.921054	0.0045
C	14.49601	2.522554	5.746558	0.0000
R2	0.277853			
F-statistic	6.770873			
Prob(F-statistic)	0.000007			

Source: Prepared by the Researcher based on E-Views 12 output

Estimating a fixed effects model (FEM)

Table 7. Results of the fixed effects model report (FEM)

Variable	Coefficient	Std.Error	t-Statistic	Prob.
GDP	-0.112275	0.047868	-2.345491	0.0215
GDPPC	0.000912	0.000354	2.576433	0.0119
GINI	0.267690	0.078166	3.424625	0.0010
UNR	0.084220	0.115493	0.729222	0.4681
TOI	0.078937	0.015086	5.232625	0.0000
FDI	0.000283	0.000117	2.417408	0.0180
C	-12.64249	3.683983	-3.431744	0.0010
R2	0.698862			
F-statistic	18.40549			
Prob(F-statistic)	0.000000			

Source: *Prepared by the Researcher based on E-Views 12 output*

Estimating a random effects model (REM)

Table 8. Results of the random effect model report

Variable	Coefficient	Std.Error	t-Statistic	Prob.
GDP	-0.013287	0.042998	-0.309027	0.7581
GDPPC	-0.000522	0.000126	-4.156864	0.0001
GINI	-0.231617	0.044535	-5.200801	0.0000
UNR	-0.094583	0.029526	-3.203379	0.0019
TOI	-0.004477	0.007557	-0.592497	0.5551
FDI	0.000279	6.17E-05	4.523501	0.0000
C	14.49601	1.628941	8.899036	0.0000
R2	0.277835			
F-statistic	6.770873			
Prob(F-statistic)	0.000007			

Source: Prepared by the Researcher based on E-Views 12 output

Choice of the Appropriate Model

<u>Comparison between the pooled regression model and the fixed effects model</u>

To compare between the two models, the Likelihood Ratio test is used, where the null hypothesis (H0) states that the aggregate regression model is the appropriate model. While the alternative hypothesis (H1) states that the fixed effects model is the appropriate model.

Table 9. Results of the likelihood

Test type	Statistical value	Degree of freedom	Probability value
Cross-Section F	20.573629	(6.78)	0.0000
Cross-Section Chi-square	86.340031	6	0.0000

Source: Prepared by the Researcher based on E-Views 12 output

It is clear from the table above that the probability value for each test, which was estimated at (0.0000), is less than the level of significance (0.5). This means rejecting the null hypothesis and accepting the alternative hypothesis, which states that the fixed effects model (FEM) is the appropriate model.

<u>Comparison between the fixed effects model and the random effects model</u>

After the Likelihood Ratio test showed that the fixed effects model is more appropriate than the cluster regression model, we must differentiate between the fixed effects model and the random effects model. In order to make the comparison, the Hausman test must be performed, where the null hypothesis (H0) states that the random effects model is the appropriate model. While the alternative hypothesis (H1) states that the fixed effects model is the appropriate model.

Table 10. Results of Hausman test

Test type	Statistical value	Probability value
Cross-Section random	123.441774	0.0000

Source: Prepared by the Researcher based on E-Views 12 output

It is clear from Table 10. that the probability value (0.0000) is less than the level of significance (0.5), and thus the null hypothesis is rejected and the alternative hypothesis is accepted, which states that the fixed effects model is the appropriate model. This means that the source of the difference between the countries in the study sample is due to the fixed term and not the random variable.

<u>Analysis of The Model's Results</u>

The results of the Hausman test showed that the appropriate model for estimation is the fixed effects model, and analyzing the model revealed the following:

- The Fisher probability (0.0000) indicates that it is significant at 5% and the high F value reached 18.4, which indicates the significance of the fixed effects model. - The value of the adjusted coefficient of determination, R2, was 69.8%. This means that the study variables explain 69.8% of the changes in the global terrorism index in the countries of the study sample.
- The table below shows the fixed effects for each country, and we notice that the fixed effect changes from one country to another although they are time invariant, as its value reached (-4.6) in Tunisia (-0.5) in Algeria (-5.9) in Morocco (-1.4) in Chad, which are negative values that indicate the presence of a constant negative effect for these countries on the total estimated effect in the sample as a whole. On the other hand, the value of the fixed effect for Egypt (3.02), Sudan (5.9), and Mali (3.6) was positive and indicates the presence of a constant positive effect for these countries on the estimated effect in the sample as a whole.

Table 11. Individual country fixed effects

	Country	Effect
1	Egypt	3.021935
2	Tunisia	-4.651029
3	Algeria	-0.560996
4	Morocco	-5.961235
5	Sudan	5.925320
6	Mali	3.688115
7	Chad	-1.462109

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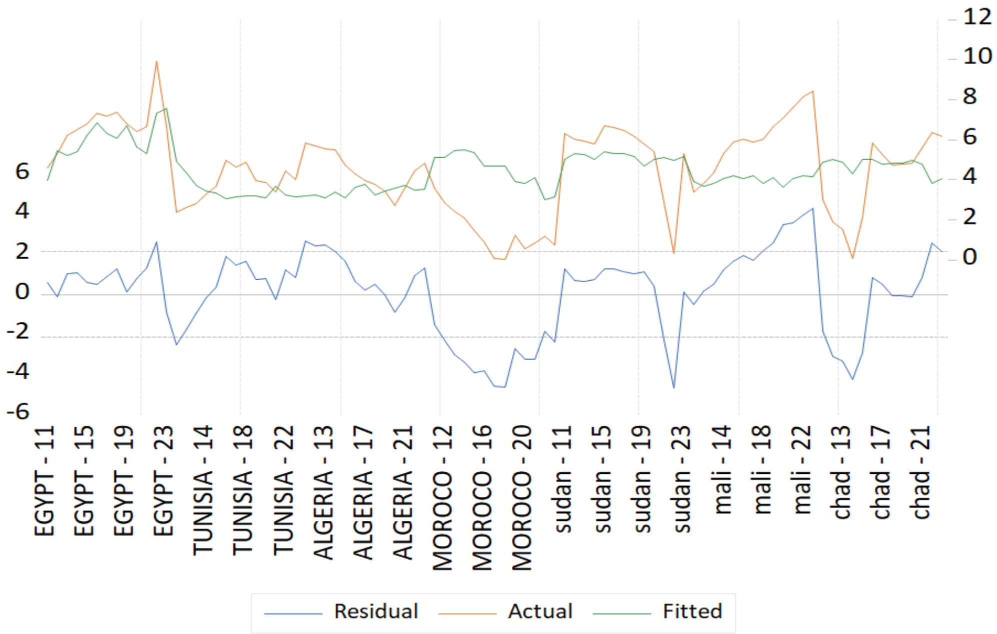
Source: Prepared by the Researcher based on E-Views 12 output.

-The figure below indicates the validity and stability of the estimated model due to the matching of the current values and the estimated values, meaning that there is a small scope for random errors.

Figure (1). Current values and estimated values



Source: Prepared by the Researcher based on E Views 12 output.

<u>*Results with Qualitative Implications*</u>

- All independent variables were significant, with different signs, whether positive or negative, except for the unemployment rate variable, whose sign was positive, which is in line with the economic deprivation theory, but not significant (0.481) because it is greater than (0.05). The resulted sign of the unemployment rate is in line with the findings of the previous studies examining the impact of unemployment rate on terrorism or conflicts (*Richardson, 2011; Kouaouci, 2004; Dardouri et al., 2024).*

- There is a significant inverse relationship at 5% between real GDP growth and the global terrorism index, which is also supported by the economic deprivation theory. Increasing real GDP growth by one unit leads to a decrease in the global terrorism index by 0.11 units. This result contradicts the findings of *Shabbir (2011)* and *Tavares (2004).*

- There is a positive relationship with a significant significance at 5% between the per capita GDP and the global terrorism index, but it is ineffective because increasing (GDPPC) by one unit leads to increasing (GTI) (0.00091) units. This result can be explained by the fact that increases in per capita GDP are not indicative of the improvement in economic welfare of all citizens as these increases in average values hide the income disparities among different sectors of the population. This is also supported by *Tavares (2004)* but is not in line with the findings of other studies (*Corbin & Billet, 2011; Li & Schaub, 2004*).

-There is a positive relationship with a significant significance at 5% between the Gini Index and the Global Terrorism Index. Increasing (GINI) by one unit leads to increasing (GTI) (0.267) units, indicating that higher levels of income inequality are more likely to result in violence and terrorist attacks. This result is also in line with what previous studies have reached with respect to the effect on inequality represented by Gini Index on terrorism (*Li & Schaub, 2004; Krieger & Meierrieks, 2016; Ghafar, 2021*).

-There is a positive relationship with a significant significance at 5% between the Trade Openness Index and the Global Terrorism Index, but it is relatively weak because increasing (TOI) by one unit leads to increasing (GTI) (0.078) units, which may be explained by the fact that openness to trade specially among less developed countries can open the door for the increase in trade of illegal or legal yet lethal goods, such as weapons, which can serve as a driver for the increase in terrorist attacks. This result is not in line with *Bravo & Dias (2005)* who reached an insignificant and negative relationship between trade openness and number of terrorist attacks, however, the results are consistent with the findings of *Cantens & Raballand (2017).*

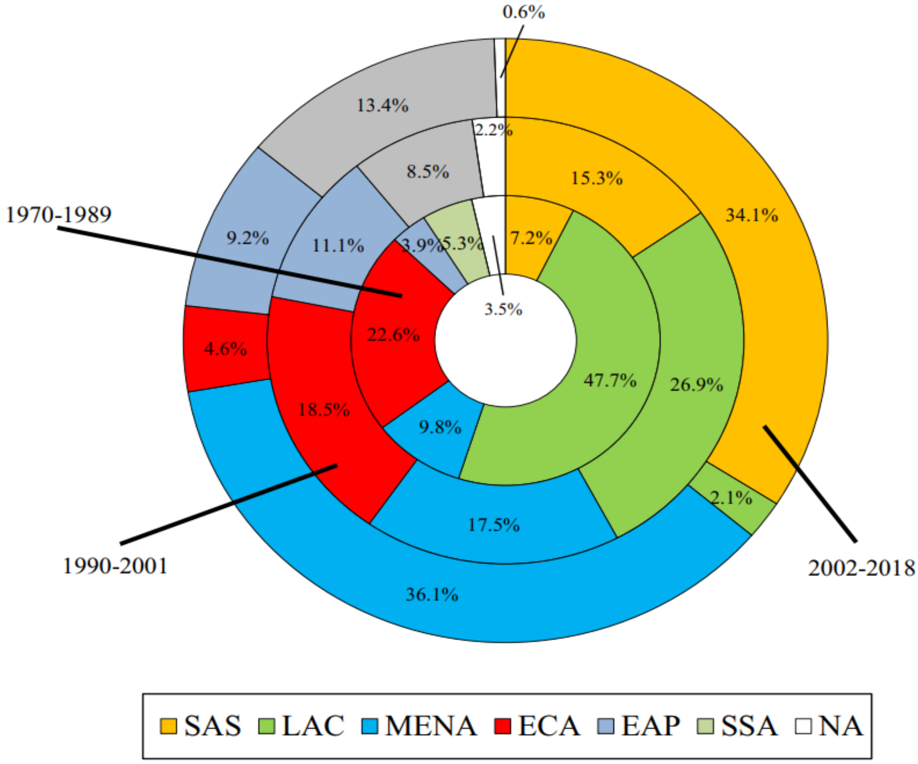
-There is a positive, significant relationship at 5% between foreign direct investment and the global terrorism index, but it is ineffective because increasing (FDI) by one unit leads to increasing (GTI) (0.000283) units, which is in line with the findings of *Biglaiser et al. (2023)* with respect to low-income countries, as the proceeds from higher levels of foreign direct investment are unlikely to be fairly distributed among all segments of the population.

Third: Middle East and North Africa: terrorism and conflicts

Changing terrorism threat in MENA relative to other regions

The significant growth in terrorist attacks and conflicts has been highly observed in the Middle East and North Africa (MENA) since 1989, an issue that triggered extremely high raises in the regions military expenditure (ME). Evidence of this issue is that the region's international share of terrorist attacks has reached 36.1% between 2002 and 2018 up from 9.8% between 1970 and 1989.

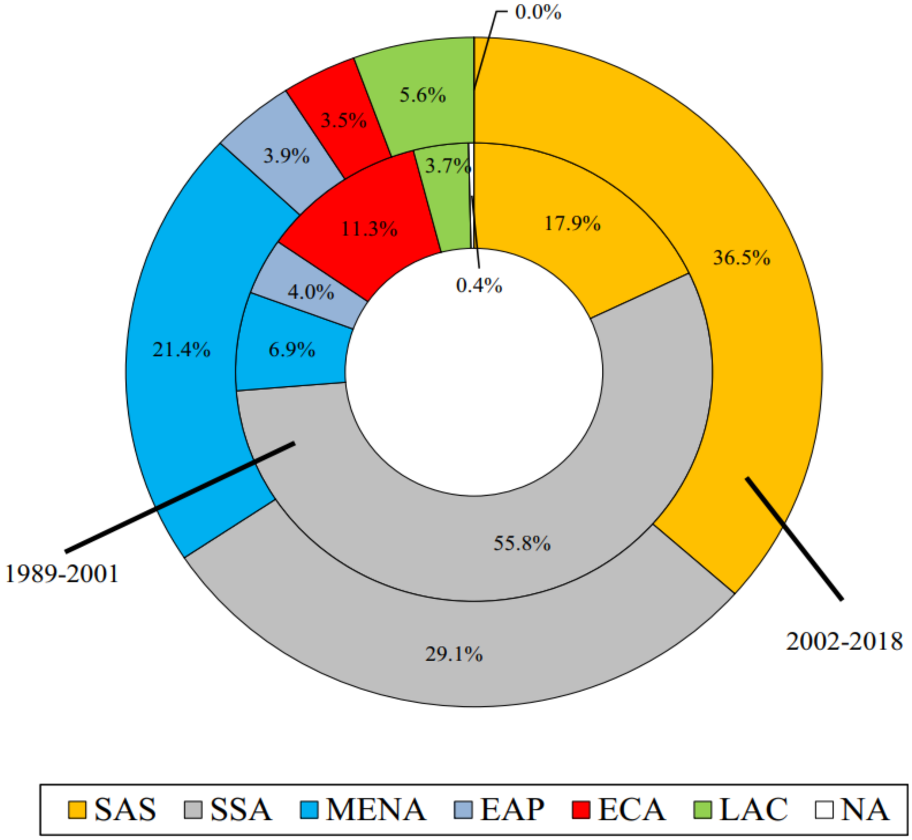
Figure (2). Regional Distribution of Terrorist Incidents for Three Time Periods



Source: Kim & Sandler (2020), Middle East and North Africa: Terrorism and Conflicts, Global Policy, vol.11, Issue.4,p.428

In addition, between 2022 and 2018, the region's share of international fatalities resulting from conflicts has been 21.4%. This political unrest, instability, and violence in MENA had placed negative spillovers on other regions resulting in large part from terrorism abroad, foreign direct investment (FDI), losses, disrupted oil exports, declined economic growth, and huge refugee flows. *(Kim & Sandler, 2020).*

Figure (3). Distribution of Deaths by Conflicts for Two Time Periods



Source: Kim & Sandler, (2020), Middle East and North Africa: Terrorism and Conflicts, Global Policy, vol.11, Issue.4,p.430

Moreover, countries of the MENA region deal with the US, Russia, France, Germany, the UK, and China as major suppliers and exporters of the region's defence systems particularly between 2014 and 2018. On the arms importing side, the major MENA participants are Saudi Arabia, Egypt, Algeria, UAE, and Iraq in the order of the highest to the lowest importer. Relatedly, the countries of the MENA region are vital players in the prospects for world terrorism, global tranquillity, and economic prosperity due to the region's increasing conflicts, political violence, and huge oil wealth.

Due to the fact that terrorism and civil conflict frequently occur together, the regional shifts in terrorism can imitate the regional shifts in conflicts. Although civil conflicts can cause terror attacks, terror attacks rarely induce civil conflicts. In addition, terror attacks are related to a limited number of causalities compared to domestic conflicts *(Kim & Sandler, 2020).*

Terrorism and peace in MENA:(2012-2022)

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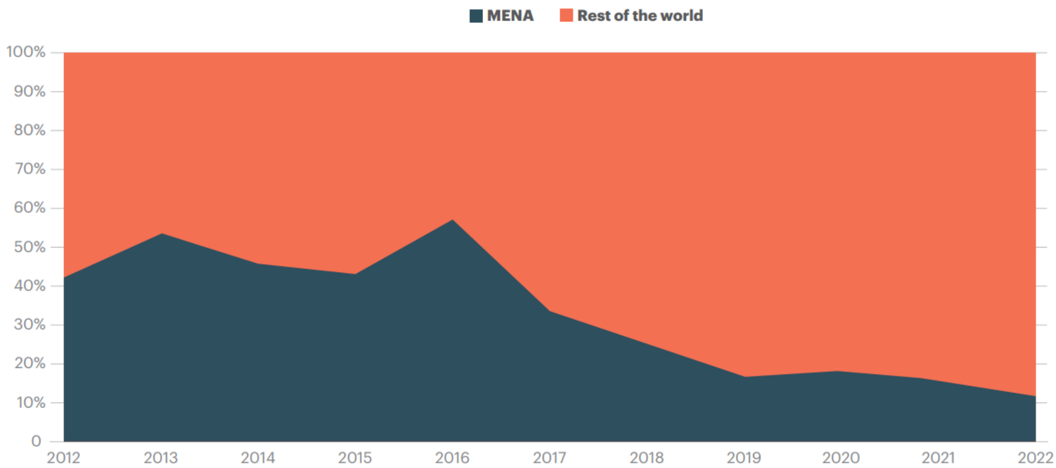
Throughout the past decade, the previously observed influence of terrorism on the MENA region has significantly plummeted. As obvious in figure (4), MENA contributed to a peak of 57% of all global terrorism-caused fatalities in 2016. However, this high number has dropped to 12% by 2022 in tandem with the collapse of the Islamic State (IS). With the decline in terrorist attacks, the utilized tactics and targets have changed. This is apparent by the extreme drop in suicide attacks with the rise in the use of firearms and attacks on military and police personnel at the same time. However, this drops in terrorism in the region since 2017 has not coincided an equal enhancement in peacefulness, as the region stayed the least peaceful in the world as reported by the GPI. In the same vein, the MENA's level of peace dropped by 5% in 2022 compared to a decade earlier, with a minor improvement in this level since 2017 *(IEP,2023).*

Figure (4). Deaths from Terrorism in MENA vs Rest of the World, 2012-2022



Source: the Institute for Economics & Peace (IEP), (2023), Global Terrorism Index 2023, 10 years of Global Terrorism Index Terrorism and Peace in MENA (2012–2022), Sydney,p50

The ability of a number of MENA countries to set the foundations of peace and promote sustainable improvements has been hindered by prolonged conflicts in these countries. In fact, every indicator of the Ongoing Conflict domain of the GPI in MENA collapsed over the past decade. In addition, several indirect losses varying from restricted government effectiveness to suffering economic resilience and limited access to public services have been witnessed by countries encountering prolonged conflicts, with these losses directly and indirectly influencing future peacefulness *(IEP,2023).*

On the other hand, since 2019, peace has been enhanced in MENA region, with only six countries having their GPI scores falling in contrast to fourteen countries having their scores improving. The highest scores enhancements

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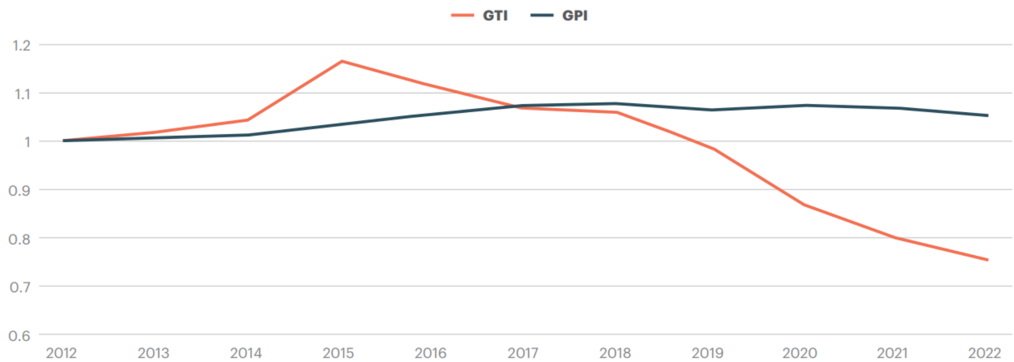
were recorded by Libya, Israel, Lebanon and Saudi Arabia in the period 2019-2022.

The MENA region's Global Terrorism Index (GTI) score has been enhanced by 24% over the past decade. At the same time, the decade witnessed huge fluctuations, with IS's raise marking the peak of terrorism and it collapse marking the terrorism's fall. In addition, in this period, terrorism in the MENA region has been largely focused in many countries as shown in figure 5. Specifically, Iraq and Syria were the most affected countries by terrorism in the region in 2012 and 2022. In spite of that, Syria raised its global GTI ranking by one place and Iraq by six *(IEP,2023)*.

Figure (5). Indexed Trend in MENA in Peacefulness (GPI score) and Terrorism (GTI Score), 2012-2022



Source: the Institute for Economics & Peace (IEP), (2023), Global Terrorism Index 2023, 10 years of Global Terrorism Index Terrorism and Peace in MENA (2012–2022), Sydney,p51

IS, Islamic State Sinai Province (IS-SP), and al-Qaeda in the Arabian Peninsula have been the most life-threatening terrorist groups over the past decade. IS, which was the source of continuous and growing instability in Iraq and Syria, came out from al-Qaeda in the first place. The announcement of the creation of a caliphate by IS was in 2013. In 2014, IS started to face airstrikes by a coalition led by the US in Iraq and Syria. More attacks and terrorist activities were conducted by IS affiliates and supporters in 2015 beyond Iraq and Syria to include Türkiye, France, Egypt, and the US. However, IS had been deprived of control over 95% of its previously claimed territory by the end of 2017, and by 2019 it lost the whole territory. Nonetheless, the danger that IS poses to the region's security is still observed despite the extreme drop in its activities over the past years *(IEP,2023)*.

Figure (6). Change in GTI score, 2012-2022

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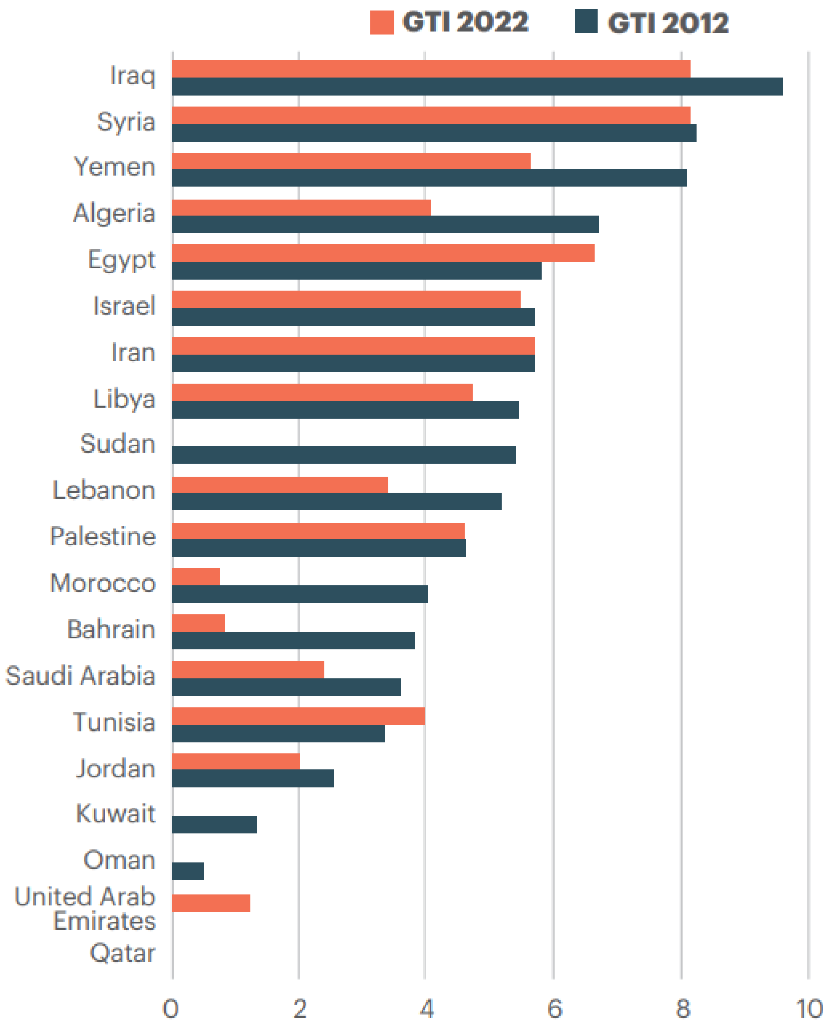
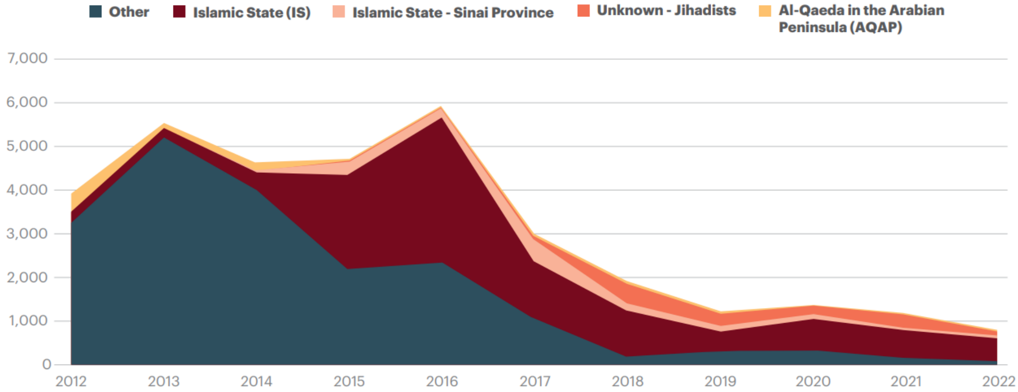


Source: the Institute for Economics & Peace (IEP), (2023), Global Terrorism Index 2023, 10 years of Global Terrorism Index Terrorism and Peace in MENA (2012–2022), Sydney,p51

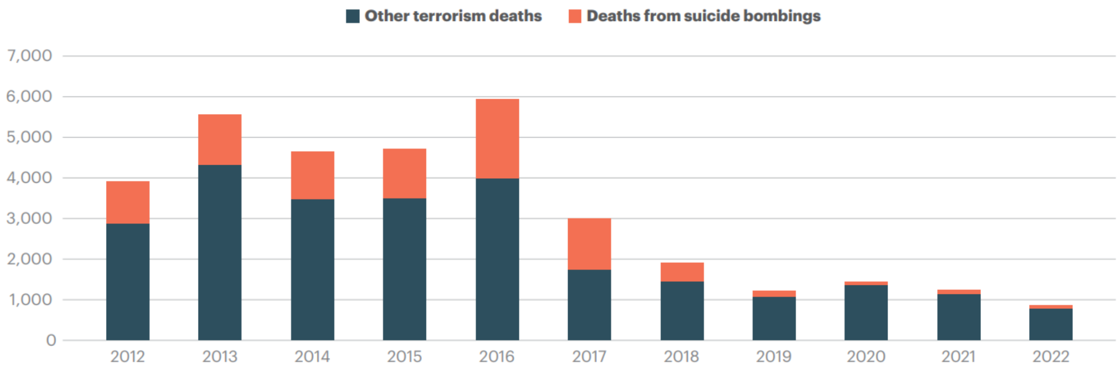
Of all of the terrorist incidents conducted in MENA in 2022, 42% were conducted by IS, 21% by Jihadists, 17% by Shia militia, and 20% by others. Largely because of losing its control over territories in Iraq and Syria, IS has converted its activities towards secret plans, has been hidden under other networks, and continued to have a rebellion attitude in rural areas. In addition, IS's aiding groups have stayed active in conducting their terrorist attacks in 2022 not only in Iraq and Syria but also in other countries in the MENA region, including Egypt and Libya *(IEP,2023).*

Figure (7). Deaths by Major Terrorist Groups, 2012-2022



Source: the Institute for Economics & Peace (IEP), (2023), Global Terrorism Index 2023, 10 years of Global Terrorism Index Terrorism and Peace in MENA (2012–2022), Sydney,p52

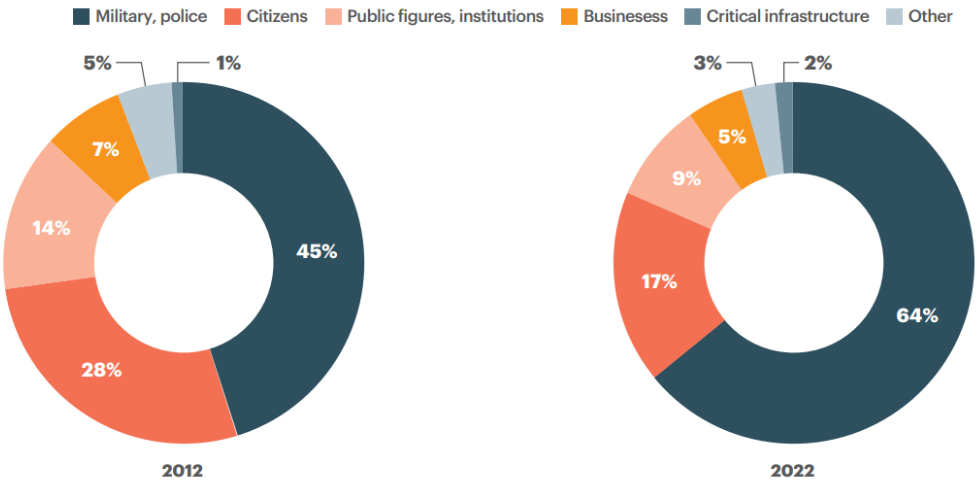
Figure (8). Deaths from Suicide Attacks, 2012-2022



Source: the Institute for Economics & Peace (IEP), (2023), Global Terrorism Index 2023, 10 years of Global Terrorism Index Terrorism and Peace in MENA (2012–2022), Sydney,p52

Besides the targeted countries, terrorist attacks appear to have altered their targeted groups in the MENA region in the ten years from 2012 to 2022 as demonstrated by figure 9. This is shown by the fact that 30% of all the terrorist attacks in the region were aimed towards civilians in 2012 in contrast to a drop to 17% in 2022. While the figure for terrorist attacks targeting civilians has decreased, the figure for terrorist attacks targeting military and police has raised from 45% to 64% in the same previously mentioned ten-year span. This could be explained by the fact that the terrorist groups have witnessed a decline in their strength as they are staying and living with other groups of people and have strategic aims to keep their people of interest aside from the effects of their terrorist attacks. In addition, when the terrorist attacks are focused towards governmental or military figures, the terrorist groups resort to using scarce resources in a more strategic manner, and thus the civilian population within a particular community can potentially grant legitimacy for the terrorist group. Moreover, regarding the targets of the terrorist attacks and the used methods, the previously common explosive attacks in MENA region have declined in contrast to armed attacks which witnessed rises *(IEP,2023).*

Figure (9). Targets of Terrorist Attacks, 2012 and 2022



Source: the Institute for Economics & Peace (IEP), (2023), Global Terrorism Index 2023, 10 years of Global Terrorism Index Terrorism and Peace in MENA (2012–2022), Sydney,p53

A significant fact that needs to be emphasized is that even though the impact of terrorist attacks has decline in the MENA region over the past decade, particularly starting from 2017, this decline has not been accompanied with larger peace. As per evidence, there are two widely spread definitions of peace in the region; which are Negative Peace (actual peace), and Positive Peace (the conditions need to be put in place to make peace permanent). Relatedly, Negative Peace is defined by the IEP as the situation of non-existence of violence or fear of violence, and this is a simple definition to be able to take account of peace in a measurable manner. The Global Peace Index (GPI), considered as the IEP's main product, has the measures of Negative Peace to form the index's foundation. A significant drawback of the GPI is that it does not clarify what or where countries should focus their funds and resources so as to improve or even stabilize the levels of peace although it gives an indication of the level of peace present in a country. This drawback gives rise to Positive Peace which is empirically emerged from data included in the GPI. In fact, Positive Peace introduces a holistic view to digest and confront the sprawling complexities that the world encounters *(IEP,2023).*

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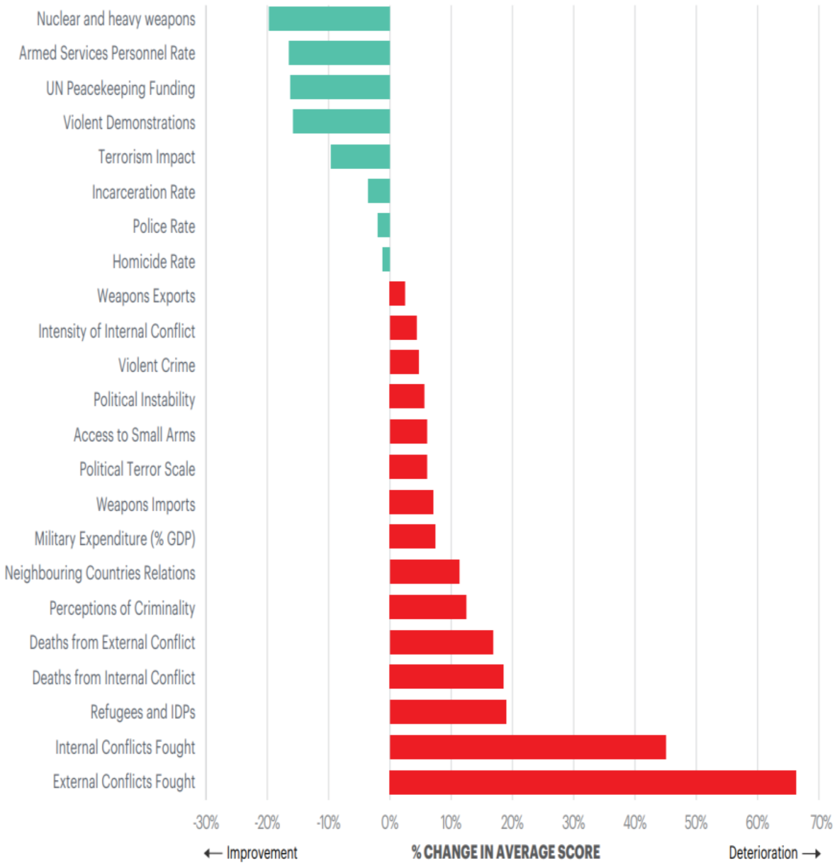
The percentage change in the average score of the GPI's 23 indicators for the MENA countries between 2012 and 2022 is demonstrated in figure (10). The data show that 14 indicators got worse while only nine got better. In addition, the indicators with the highest enhancements regarding peace in the region were those more related to militarization, including nuclear and heavy weapons, importation of weapons, UN peacekeeping funding, and impacts of terrorism and violent demonstrations. An obvious pattern in the countries of the region is that the increase in violent conflict came after the violent demonstrations in the 2010s, with the Arab Spring revolutions in 2011 being the most significant of them. Although a decline in violent demonstrations scores was faced by eights of the MENA countries with the outbreak of the Arab Spring, these countries' scores went back to their average figures by 2013 and 2014 *(IEP,2023).*

Figure (10). MENA, Change in GPI Indicators, 2012 to 2022



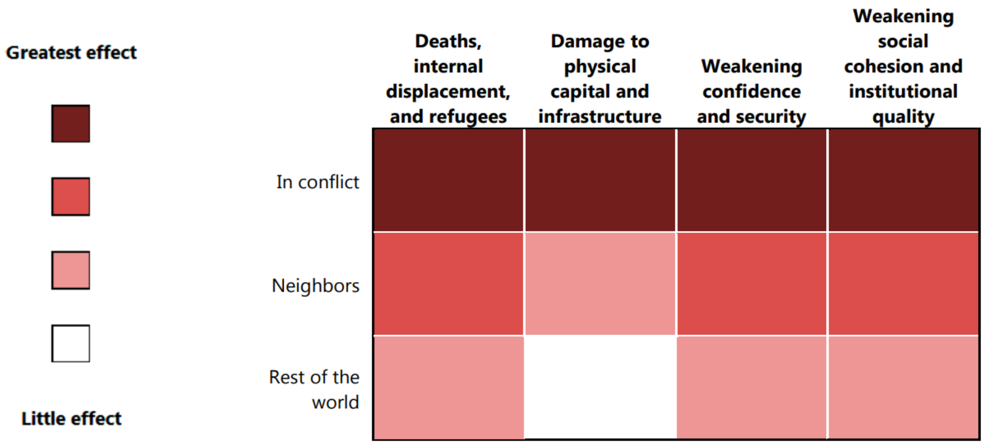
Source: the Institute for Economics & Peace (IEP), (2023), Global Terrorism Index 2023, 10 years of Global Terrorism Index Terrorism and Peace in MENA (2012–2022), Sydney, p56.

Fourth: The Economic impact of terrorism and the refugee crisis in the Middle East and North Africa

Key channels of economic influence

The influences of terrorism and far-fledged refugee crises on the economies are observed through various channels, terrorism and the human displacement implied by its effects play a detrimental role to actual and potential future growth as stated by the neoclassical growth model. This relation could be explained by their negative effect on a country's stock of human as well as physical capital, in addition to its total factor productivity defined as the capacity of a country's economy to use stated amounts of labour and capital inputs so as to produce output (figure11).

Figure (11). MENA Conflicts: Economic Transmission Channels



Source: Björn Rother, et.al, (2016), The Economic Impact of Conflicts and the Refugee Crisis in the Middle East and North Africa, IMF Staff Discussion Note, Washington D.C,p.12

Although several factors have been cited to be influencing total factor productivity, there are two important factors specifically important as per facts from MENA conflicts that took place recently. These factors are: **first,** deteriorated confidence resulting from lower security levels, assessed on the basis of objective situations as well as subjective people's perceptions, and **second**, worsened social unity and lower institutional quality that add a higher level of complexity to the process of policymaking in the realm of economics. By nature, zones that are directly exposed to the escalated conflict are more prone to the negative influence of the previously mentioned factors and their four associated channels. However, these factors impact not only the directly affected zones but also the neighbouring countries, particularly through the loss of confidence and social unity, even for states that have been revived away from the centre of violence *(Rother, et.al, 2016)*.

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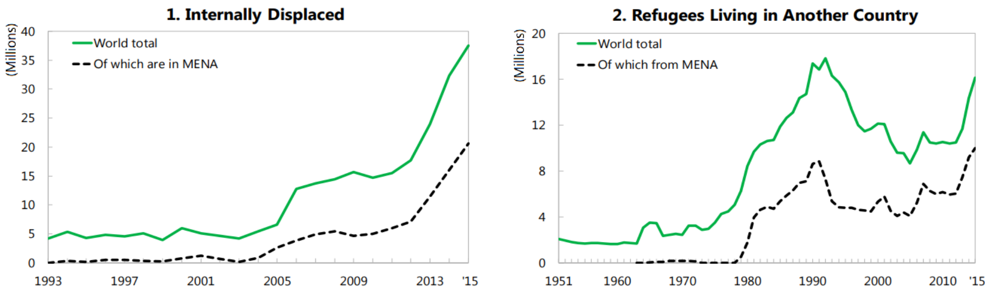
The stock of human capital in countries plagued with conflicts is deteriorating as a result of the population reduction and displacement

Labour force of any home countries encounter declines largely due to huge number of conflicts' victims, forced movement of people from one place to another within the borders of the home country (internal displacement), and refugees going out of the home country. In fact, the related figures are shocking; for instance, it was reported that about 470,000 Syrians had been murdered since the commencement of the war in 2010 till 2016, in addition to the internal displacement of 6.6 million people, and the flee of over 5 million people to other countries, which are neighbouring countries in large part. Overall, the previously mentioned numbers total about 55% of the country's population as of 2010. However, in Iraq and Yemen the view is moderately less extreme; as 4.4 million people have encountered internal displacement in Iraq, as well as 2.5 million people in Yemen as obvious in figure12. Adding to this gloomy picture, a huge percentage of refugees have been skilled workers, depriving their home countries of conflict from their productive services *(Rother et al., 2016).*

Figure (12). Displaced Persons (millions)



Source: Rother et al., (2016), The Economic Impact of Conflicts and the Refugee Crisis in the Middle East and North Africa, IMF Staff Discussion Note, Washington D.C, p.13

Widespread poverty caused by terrorism is another factor contributing to the decline in human capital

As long as job opportunities decline in conflict countries, even if these countries are outside the areas directly impacted by violence, poverty among the populations of these conflict countries tends to increase. In addition, there is also a degradation in educational and health services as a result. As the time span that each conflict takes increases, the strength of the previously mentioned conflicts' effects increases. Once more, an extreme example can also be found in Syria. This is clarified as unemployment in Syria increased from 8.4% to over 50% between 2010 and 2013, school dropout rates jumped to 52% and life expectancy which is an indicator of the quality of health services plummeted from 76 years before the conflict to 56 years in 2014.

Although reliable statistics and figures are limited in their availability, the conditions have certainly got worse since then. Adding to this deteriorating situation, although Yemen had poverty rates over 50% before the aggravation of its conflict in 2014, 80% of Yemen's people is in critical need of humanitarian aid as reported by the UN. In the same vein, poverty rates increased from 19.8% in Iraq in 2012 to 23% in 2014 *(Bardwell & Iqbal,2021).*

The huge refugee populations tend to have significant economic effects on the MENA countries plagued with terrorism

Effect on refugees

It is apparent that as refugees have had the opportunity to only bring few items of their possessions and end up in a dramatic state of dependency, their situations deteriorate after escaping violence compared to their situation before displacement. This can be explained largely by the limitations imposed on their movements, restrictions on permissions to work and to social infrastructure, and the declined levels of schooling they have access to which particularly have devastating influences on their job opportunities in the long run. Evidence of this, although 160,000 Syria refugees were working in the informal economy in Jordan in 2014, only 6,000 were working with legal work permits. Moreover, the educational levels of Syrian refugees worsened; as out of the Syrian refugees in Jordan over the age of 15 60% had not finalized basic schooling, and just around 15% had ended their secondary education in contrast to 42% of Jordanians. Overall, although the Syrian refugee children in Jordan are granted access to free education only around 50% of them actually attend school (*NEAGU, 2017).*

Effect on host countries

In contrast to the experience of the European countries, the huge refugee inflows in MENA countries have remarkable economic impacts. For instance, in Lebanon, the spread of informal employment among refugees along with deterioration in economic activity has resulted in a decline in the labour force participation of the country's people as well as their wage rates, with the effect being especially harmful for women and youth. In addition, the conflict in Syria thew an extra 170,000 people into poverty, with those already in the poverty situation being in a more alarming condition as per the World Bank figures. Adding to this, the larger the refugee population, the larger the stress placed on public services required to develop domestic human capital. Evidence suggests that Lebanon's efforts to include around 50% of the Syrian refugee children in the realm of Lebanon's public education system have in fact lowered the educational quality due to the stretching of the classroom sizes in addition to the insufficient training of teachers. This deterioration in quality has also expanded to Lebanon's health care sector *(Çinar, 2017).*

Destruction of physical capital and infrastructure

Production and trade are negatively influenced by terrorism as it contributes to destroying physical capital and infrastructure. The most obvious channels of the negative influences of conflicts on economic activity tend to be through the damage caused to productive plants, public infrastructure and commercial buildings. More specifically, as the conflicts become fiercer, the harms to economic activity are significant. For instance, Syria lost $137.8 billion in physical capital (230% of GDP prior to war equivalent) because of huge damage of current capital, capital stock out of service, and vanished investments. Furthermore, concerning Yemen, the International Monetary Fund (IMF) reported that the country lost over $20 billion in infrastructure (50% of GDP before the war equivalent) since the escalation of the conflict. This high value of damage certainly has an outstanding influence on productive capacity and trade activities. A significant effect is observed in Libya; as the production of oil plummeted to around 25% of the country's capacity due to the cessation of the country's oil facilities and pipelines, in addition to the shutdown of the oil ports, which resulted in a 44% of GDP deficit in the external current account in 2015 from a 13.5% surplus as of 2013. In addition, the oil output activity in Yemen had been fully terminated after March 2015 *(Boukhars, 2011)*.

The destructive economic damages have also extended to neighbouring countries

Neighbouring countries are not isolated from the negative effects on production and trade caused by the damage in physical capital and infrastructure in conflict countries. Evidence shows that as a result of the commencement of the Syrian conflict and the deteriorating situation of Iraq's crisis (Jordan's main export market), Jordanian trade has been negatively impacted by the disturbance in transportation corridors that delayed not only its economic activities with the conflict countries but also the country's exports to Turkey and the European countries. The same trend has been observed in Lebanon, however, trade in goods has not been impacted on the country's overall level. In addition, the already deteriorating infrastructure has been weakened by the growing displacement of the Syrian refugees particularly as a wide range of them are living within local communities.
Moreover, as a result of the huge refugees influx, the rise in population was equivalent to the growth in population previously projected over 20 years. *(Bester, P. C. 2005).*

Worsening confidence and security

Confidence tends to be reduced rapidly as a result of rising insecurity, growing insecurity has become increasingly widely common even beyond areas of conflict largely as a result of the violent non-state actors such as the

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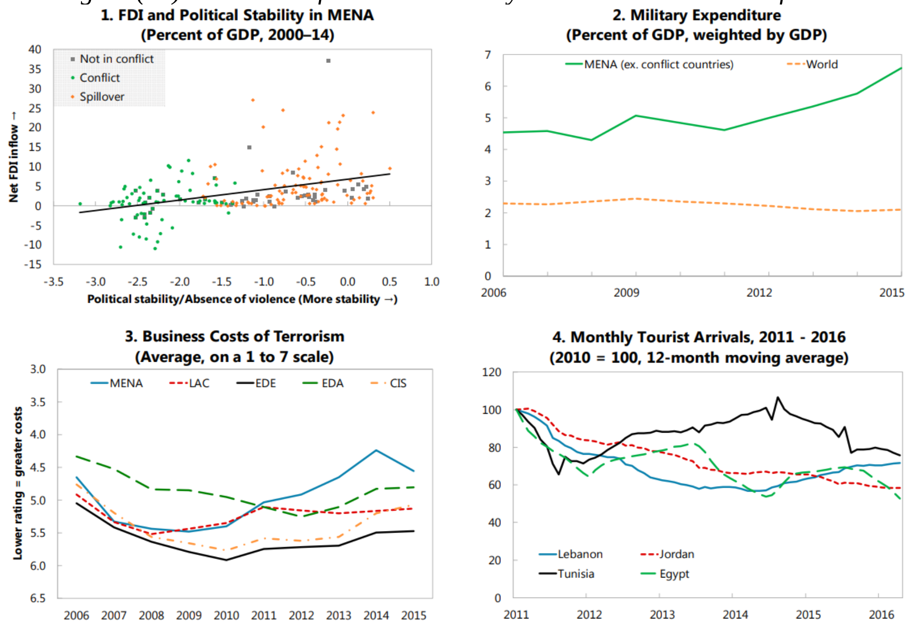
Islamic State of Iraq and the Levant (ISIL) having the geographical capacity to force their control as an established political and military power caused by the countries of MENA conflicts.

These actors' attacks aimed at destabilizing economically vital targets in the region have not only impacted Iraq and Syria, but also Egypt and Tunisia, which are far from the centre of conflicts and attacks. As many of the regions' governments have found difficulty to force their legitimacy over areas of their territories and borders, frequent crimes have also been significantly increasing. For instance, far fledging violations to human rights in Libya have been detected by the UN. The country's deteriorating security condition has been exploited by actors participating in human trafficking as they contributed in secretly moving migrants from Africa to southern Europe, which usually resulted in fatal effects. Economic impacts of the state of declining confidence are often observed through four channels:

Deteriorating investment. A strong positive correlation between political stability and foreign investment is found from cross-sectional data of the countries of the MENA region as obvious in figure13 *(Rother et al., 2016).*

Figure (13). Measures of Political Stability and Private-Sector Confidence



Source: Rother, et al., (2016), The Economic Impact of Conflicts and the Refugee Crisis in the Middle East and North Africa, IMF Staff Discussion Note, Washington D.C, p.17

Supporting evidence would be that Syria experienced a full termination of foreign direct investment (FDI) into the country after the commencement of the war. In addition, except for Egypt and Morocco, the recent wide spread of conflicts all over the countries of the MENA region has worsened the condition of returning the FDI inflows to the rates that were in place before the revolutions of 2011.

Worsening performance of the financial sector

Conflicts usually increase risks faced by investors through incentivizing deposit flees, asset market drops, and capital flight. In addition, deteriorating states of financing, decreasing rates of economic activity, declining values of collaterals, and worsening security threaten the capability of the banks to maintain their financial intermediation activities and payment systems. Evidence of this is the rapid and sharp decline in bank assets and deposits in Syria after the outbreak of the crisis, in addition to the increase in the share of nonperforming loans from less than 5% in 2010 to approximately 35% by the end of 2013. Relatedly, large part of the transmission of political instability effects on economic growth of the MENA countries is conducted through financial systems. In addition, instability causes devastating impacts to the availability of credit and thus investment. Furthermore, the funds that remain available after these instable conditions expectedly tend to be directed to companies with strong political relations.

Increased expenditure on security

Over the time 2011-2014, military expenditure tended to increase in the MENA region causing raised pressure on fiscal accounts. This increase came in huge opposition to the global decline in military expenditure throughout the same period. In addition, the effects have also extended to the private sector; as companies tend to declare growing spending on security-related activities, and these spendings entail opportunity costs in terms of foregone alternative productive activities of which research and development represent an example (figure13).

Contracting terrorism

Due to conflicts and growing attacks, the tourism sector in Syria and other conflict countries has largely deteriorated. In addition, the fierce and growing violence has directly impacted tourism receipts of the countries of the MENA region, influencing countries that have historically been highly dependent on tourism as a significant source of foreign currency, such as Egypt, Jordan, Lebanon, and Tunisia (Figure 13). Tunisia represents the most critical country in terms of the effects on tourism, evident by the decline in tourism receipts by 3.5% if GDP between 2014 and 2015 after the attacks on the Bardo Museum and in Sousse and the stress on the tourism sector stayed also in 2016 *(Rother, et.al, 2016).*

Deteriorating social unity and institutional quality

The state of social unity has deteriorated all over the region**,** terrorist attacks contribute to elevating social and economic secessions, which are capitalized through income, ethnicity, political orientation, or language divisions. These divisions are significant in countries like Iraq, Syria, and Yemen, which were divided into zones controlled by rebellion groups that further complicate the process of creating largely agreed-upon governments. This influence also affected political systems in countries other than the ones plagues with conflicts. This is evident in Jordan; as opinion surveys revealed political opposition to the government in areas where the refugees are concentrated in contrast to the overall high supporting opinions for the government in other areas of the country. A similar trend is observed in Egypt, Lebanon, and Tunisia. In general, trust which is considered as a main indicator for social unity and cohesion has deteriorated in many MENA countries as per the results of surveys including the World Values Survey, and this fact contributes to impeding economic relations and complicating political operations. For instance, the percentage of surveyed people who responded by “agree” to “most people can be trusted” plummeted in Iraq from 46% to 30%, and in Jordan from 27% to 13% between 1999 and 2004 and 2009 and 2014. These previously mentioned facts can largely clarify why the governments in the region, particularly in the Arab Countries in Transition, have followed a slow approach in executing politically complex yet economically crucial projects for structural reform.

Pressure on social unity has been amplified by huge refugee inflows the open-door policies adopted at the beginning of conflicts in countries such as Jordan and Lebanon were fine-tuned later with the growing number of refugees. Although the domestic communities initially hosted refugees with a high sense of inclusion, particularly in Lebanon and Jordan, the huge influx of Syrian refugees served to endanger the societal and intercommunal balance. A poll conducted in Jordan in 2014 revealed that around 80% of Jordan’s people were against hosting more refugees. In addition, the security condition deteriorated at the same time, as reported by growing violence against females, girls and women.

Deteriorating cohesion has in turn decreased institutional quality, the effects of declining cohesion have deteriorated institutional governance and quality, in addition to declined growth. This can be explained by the fact that elevated societal conflicts contribute to weakening main institutional functions that are crucial for stable economic performance, including fair checks and balances on the policymaking process in addition to the strong implementation of the rule of law. These relationships have been emphasized in recent years; as data on institutional quality for the MENA region demonstrate that competitiveness and governance indicators have largely plummeted in many of the conflict countries such as Libya, Syria, and Yemen as per the World Economic Forum and World Bank data from 2010 to 2014 *(Niyitunga, 2018)*.

Macroeconomic influences of terrorist attacks and the refugee influx

Concerning the costs associated with terrorist attacks, the MENA region is significant because of its prolonged history of unrest and violence. The MENA countries have been enduring the situation of severe violence which exaggerated the spread of conflicts in the region specifically for a period of over three decades. Wars, the interference of international powers, impoverished populations, significant economic inequalities, tribalism, ideological segmentation, and illiteracy proceed in their way to hinder economic growth and thus elevate the incentive to engage in terrorist activities in the region. A fact that needs to be mentioned is that the MENA countries have contributed to about half of the global fatalities caused by terrorism in the period from 2002 to 2018, with the share of the region's terrorist incidents out of the global terrorist attacks increasing from 9.8% from 1970 to 1989 to 36.1% from 2002 to 2018. In addition, it is recorded by the 2020 Global Terrorism Index that the MENA countries accounted for the highest number of deaths in the world in the period from 2002 to 2019 resulting from terrorist attacks and reaching over 96,000 causalities. Accordingly, the total cost of terrorism from the social and economic perspective has been significant throughout the past 20 years. Particularly, the economic cost comprises the costs of damaged materials due to physical losses in buildings, machinery, and infrastructure, which in turn lead to discourage foreign investments, productive activities, and incomes in the services sectors, and consequently deter economic growth as a result. These costs are highly observed in the MENA countries as a large portion of them are heavily reliant on tourism and services proceeds, as well as foreign direct investments. Economic cost includes other costs, indirect costs, which are considered harder to be estimated. These indirect costs account for losses due to deaths, social fragmentation and psychological drawbacks resulting from the violent attacks, as well as the opportunity costs of the lost resources. In addition, the costs of the procedures conducted to resist, avoid, and solve the problems contributing to terrorist attacks are named counterterrorism costs *(Mansour-Ille, 2021).*

The severity of the effect of terrorist attacks on economies differ from one country to another depending on the nature and scope of the attack, the degree of sustainability of the attack, the economic stance of a country, and the established economic, social, and security bodies of a country. Overall, the MENA's economic cost of terrorist attacks has had a steady upward trend since 2001, recording its highest value in 2016 with more than $62 billion, however, it witnessed a significant decline in 2019 to reach $4.7 billion (see figure 14).

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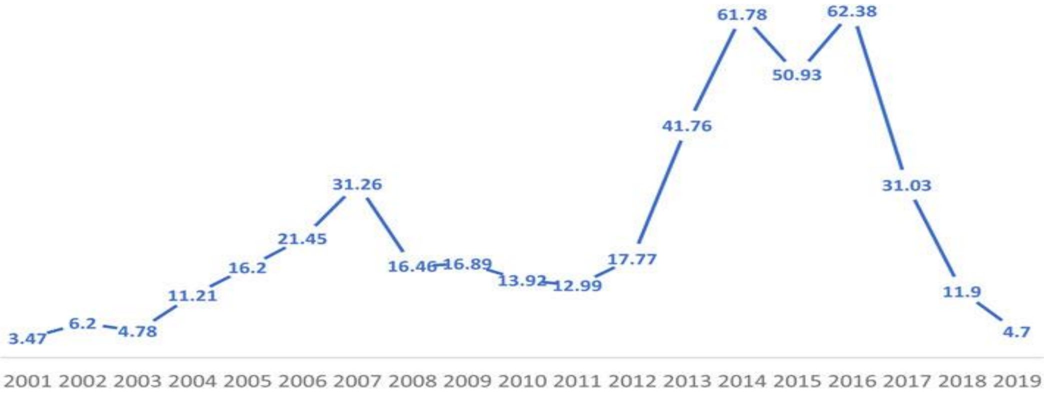
Figure (14). The economic cost of terrorism in the MENA region, 2001–2019 (Billion US dollars)



Source: Mansour-Ille,(2021), Counterterrorism Policies in the Middle East and North Africa: A Regional Perspective, International Review of the Red Cross, Issue No.103, p.657

As of 2019, 86% of the international economic impact of terrorist attacks was concentrated in three regions, which are: Sub-Saharan Africa, South Asia, and MENA, with economic impacts of $12.5 billion, $5.6 billion, and $4.7 billion respectively. Focusing on the MENA countries, Iraq witnessed the highest reduction in the economic costs of terrorism from 2018, with 71% decline valued at $6.7 billion, while Syria on the other hand encountered the region's second-largest economic costs of terrorism in 2019, with the costs accounting for 3.4% of the country's GDP. The economic impact with the most significant prevalence is the losses resulting from heightened defense and security expenditures in addition to the measures taken to apply the law more forcefully. In addition, recent trends reveal that cyberterrorism has begun to have considerable economic effects besides ordinary terrorist attacks, thus contributing to the public and private sectors bearing of the extra costs of applying robust security procedures to secure their critical and confidential information systems. Only after the United States, the Middle East got the global top second rank in 2019 in terms of the costs of data breaches worth $5.97 million per breach, and the global top first rank in terms of the average number of breached records with 38,000 per incident. However, it is still vague to identify cyber terrorism incidents out of all of these cybercrimes *(Mansour-Ille, 2021)*.

<u>Economic growth has suffered due to the MENA countries' recent conflicts</u>

Data from conflict countries reveal that Syria witnessed a GDP in 2015 that is less than 50% of its pre-war GDP in 2010. In addition, Yemen's GDP lost from 25% to 35% of its value only in 2015, and the Libyan GDP dropped by 24% in 2014 after the escalation of conflict, which is largely attributed to

Libya's significantly high reliance on oil. A longer-run view of the effects on economic growth in a highly volatile condition can be provided by West Bank and Gaza. In contrast to an approximate average growth of 250% in the MENA countries throughout the past 20 years, the economy of West Bank and Gaza have witnessed little to no growth over the same period as per the World Bank estimates. It is important to highlight that both literature and evidence appear to reveal that the influence of conflicts differs depending in the form, strength, time span, and geographical space in which the conflicts take place.

Moreover, significant inflation and exchange rate pressures have resulted from these conflicts**,** for inflation, it reached its highest figures at over 30% in Afghanistan and Iraq in the mid-2000s, in addition to over 15% in Libya and Yemen in 2011, which is largely attributed to a deterioration in the production of essential products, along with a heightened resorting to monetary financing of the budget. Once more, the more extreme case can be observed in Syria; with the consumer prices increasing between 2011 and 2015 by over 300%. These inflationary trends are mostly combined with significant depreciation of local currencies, which the relevant institutions can combat through strong intervention and control over cross-border flows. An extreme example once more comes from Syria as its pound which was floated in 2013, is worth about 10% of its value against the U.S. dollar prior to the conflicts.

The time of the conflict and its strengths are crucial indicators of its economic impact when considering the duration that each conflict takes, it is apparent that the conflict's negative influences bear a positive relationship to the duration of continuing conflict. The countries of the MENA region have encountered declines in their GDP ranging from 6 to 15 percentage points after the commencement of conflict by 3 years in contrast to a global average loss between 4 and 9 percentage points, in addition to an increase in inflation between 4 and 6 percentage points in contrast to a global average between 5 and 8 percentage points. Furthermore, the influences of stronger conflicts on GDP and inflation figures are much more extensive than the normal effects of all other forms of conflict. The effects of conflicts extend to neighbouring countries, neighbouring countries are not any far from experiencing the negative effects of conflicts; as the average annual GDP for states that are sharing borders with conflict areas with huge strength encountered a drop of 1.4 percentage points. This influence is especially apparent within the countries of the MENA region, as the drop in annual GDP averaged 1.9 percentage points. Furthermore, the effects of conflicts on the neighbouring countries' inflation is to increase it by 2.8 percentage points in the countries of the MENA region in contrast to a global average of 1.7 percentage points (*Zoubir & Abderrahmane, 2022).*

Fifth: Restricting the Instant Influences of Terrorist Attacks and Refugee Influx

The influence of terrorism can be controlled through policies as Follows:
The stability of the government and policymaking activity is required to be maintained even at the peak of terrorist attacks and violence, to mitigate and avoid the collapse of public and economic activities. In this context, three particular priorities are relevant:

1) Securing the country's institutions from shutting down or serving inappropriate interests which affect the reconstruction efforts in the conflict's periods;
2) Directing public expenditure to mainly serve the protection of humans, restricting the increase in fiscal deficits, trying to stabilize the country's economic growth rate; and
3) Applying sound monetary and exchange rate policies aimed at preserving financial and economic developments *(Fang et al., 2020).*

Securing institutions is complicated when political systems break apart

It has been found crucial to work on continuing the functionality of a country's main governmental organizations, such as the central banks, as well as promoting their independence of any intervention as per evidence from the MENA countries' conflicts. However, this proves to be a far-reaching prospect at the time of the conflicts, particularly as policymakers tend to take over the economically vital institutions to establish stronger power over a country's overall economic and political operations.

Furthermore, policies made to respond to conflicts can have unexpected influences

The termination of correspondent banking collaborations when international banks cease to offer the other party's services to financial institutions provides a significant example of unexpected influences. This has become increasingly apparent in the MENA countries, such as Somalia and Iraq, largely due to trials to react to ISIL and other actions to control payment systems. As a result of termination, cross-border transactions, particularly remittance flows and trade, have severely plummeted in many countries. The drawbacks of such effects appear to be particularly significant for countries that are highly reliant on remittances, such as Jordan and Lebanon, as remittances contribute to their GDP by over 10%. In addition, the reactions of economic participants to policies are increasingly becoming much more unexpected at times of conflict largely due to varying expectations; as risk disinclination tends to rise, motivating private investment to be more sluggish in response to policy alterations, and tax evasion tends to sharply increase, deteriorating the state of government revenues *(World Economic Forum, 2019).*

Monetary and exchange rate policies to support preserving stability levels

Central banks have been forced by conflicts to have a more crucial role in fiscal issues**,** evidence suggests that two main elements have resulted in the central banks in many MENA countries plagued with conflict having a more vital role in smoothing the way for economic activity in conflict time than in times of peace. These two elements can be summarized as follows:

<u>Elevated government financing</u>**.** Central banks usually face stressful conditions when external financing in addition to financing from domestic financial markets stops, as the banks resort to loosen monetary policy in favour of fiscal and economic policies. For instance, the combined effect of declining revenues because of the decrease in oil prices in addition to conflicts has resulted in a sharp fiscal crisis in Yemen in 2015 that pushed the government to cover a portion of its budget from the central bank directly.

*<u>An elevated role in revenue and spending administration</u>***.** Central banks have been pushed toward making significantly general decrees as the atmosphere becomes increasingly stratified and unstable. For instance, The Central Bank of Libya has taken over the role of being the main fiscal entity entitled to managing the government's budget amid the conflict and has actually taken responsibility for the negotiations of the oil and other products export contracts (*Wezeman, 2017).*

Higher dependency on nontraditional tools has resulted from financial stressful conditions, the growing role of central banks in financing issues has often led to greater intervention with the stability of monetary and exchange rate positions. This is particularly evident at times of executing monetary policies with accommodating goals during the periods of supply disturbances resulting in increasing the inflation rates of products. In these instances, the global reserves of the central banks usually decreased severely. For example, the global reserves of Libya shrank to 26 months of imports as of 2016 compared to 41 months in 2011. Yemen has also witnessed similar trends as the country is now almost run out of global reserves compared to having 6 months of imports as of 2014; which could be explained by the action of the central bank at the beginning of 2016 to allow foreign-exchange reserves to be used only to finance the imports of rice and wheat, and proceeding to cover the foreign debt obligations of the government throughout March 2016. Facing these stressful conditions, policymakers usually raised the effectiveness of their monetary policy instruments by resorting to administrative procedures to aid greater authority over the allocation of local credit and the movement of foreign exchange. An example of such measures can be found in Libya and

Iraq; as the two countries severely contracted their frameworks to leverage greater authority over foreign exchange markets (*Novta & Pugacheva, 2020).*

Supporting Inclusive Growth

Avoiding terrorist attacks in the future crucially requires rapid inclusive growth amendments, several economic factors that have been the main reasons for the social unrest that resulted in the Arab Spring uprisings beginning in late 2010 and 2011 are still not tackled in the majority of the MENA countries all over the region. This is evident despite the initial motivating actions; particularly those related to phasing out subsidies on energy-related products to enable governments to have the capacity to raise expenditure on education and health services in addition to public infrastructure. In addition, an alarming problem that remains relevant is exclusion from the labour market, especially as females and youth maintain unemployment figures that are among the highest globally, as well as the significant income gaps that also remain critical between central and peripheral areas. Thus, strategies aimed at enhancing the standards of living so as to decrease the risks of the existence of conflicts throughout the MENA region in the future should focus on making job and political participation opportunities much more available among the wider groups of the population (*Bourekba, 2021).*

Incentivizing the private sector capabilities will largely support success, particularly concerning growing job opportunities, as the far-fledging inefficient operations of the public sector and restricted fiscal capabilities for the elevation of public employment opportunities are apparent, the private sector can encourage the solution through the provision of vacancies to bypass the employment crisis across the MENA region. Relatedly, a group of 30 policymakers and civil society institutions across the MENA region reached a consensus about four critical issues for development during a 2014 conference in Amman. These four issues can be summarized as follows:

*Transparency and Governance***.** To motivate equity and accountability across the region in addition to reassuring the unconfident populations of the government's responsibility for a much more inclusive growth, effort must be exerted to impede corruptive activities and promote equal access to economic and political rights.

*Fiscal policies aimed at promoting jobs, growth, and fairness***.** Efforts must also be exerted to direct the fiscal expenditure coverage towards growth-promoting activities. In addition, amendments are needed to the civil service structure to decrease the cost of public employment. Moving to the revenue streams, reforms are needed to ensure the fairness of revenue collection processes, which can involve expanding the base of tax collection, implementing progressive tax structures, and raising the efficiency of the collection processes, particularly regarding taxes and customs.

***Reforms to the business and financial environment*.** Amendments are required to decrease the costs of conducting business, eliminate restrictions of legally obtaining permits, and improve the functioning of real markets. In addition, expanding access to financial resources, particularly for Small and Medium Enterprises (SMEs), needs enhancement of local financial markets as well as stabilizing the position of banking systems (*Marshall*, 2005).

Employment-related policies. Amendments are also needed to be directed towards ceasing the inefficiencies disincentivizing employment and skills-acquisition activities, in addition to maintaining sufficient guarantees in the face of unemployment and motivating companies to comply to regulations. Furthermore, fairness in the hiring and compensation policies needs to be ensured between public and private employment in coincidence with encouraging much more active labour market policies to promote the matching process between potential workers and opportunities as well as enhance the targeted population's employability. Lastly, efforts should be exerted to concentrate educational curricula on the skills and traits required by private-sector employers *(Tichý, 2019).*

Conclusion

This research has addressed determinants of terrorism and conflict in North Africa, and the economic impact of terrorism and the refugee crisis in the Middle East and North Africa, it concludes that the two most important variables that affect the terrorism index for North African countries are the real GDP growth rate and the Gini index, as there is a strong inverse relationship between the real GDP growth rate and the terrorism index, and a strong positive relationship between the Gini index and the terrorism index in these countries. The research concludes also that MENA's international share of terrorist attacks has reached 36.1% between 2002 and 2018, overall, the MENA's economic cost of terrorist attacks has had a steady upward trend since 2001, recording its highest value in 2016 with more than $62 billion.

The research presented a set of recommendations related to restricting the instant influences of terrorist attacks and refugee influx and focus on: Securing institutions, directing fiscal expenditure towards preserving human life and restricting growing deficits preserving stability levels by monetary and exchange rate policies, and Supporting Inclusive Growth.

The research recommended that future research be on one of the following topics: Climate change and terrorism; Terrorism and organized crime & Terrorism and cyber security

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Appendix of Data &Econometric Model Tests

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Table 12. Dependent and Independent Variables Data for Egypt

Variables / Years	(Y)GTI Global Terrorism Index (Out of 10)	(X1) Real GDP Growth (%)	(X2) Real Per Capita GDP (US Dollars)	(X3) Gini Index (%)	(X4) Unemployment Rate (%)	(X5) Inflation Rate (%)	(X6) Trade Openness Index (%)	(X7) FDI net inflow (Million US Dollars)
2011	4.58	1.8	2794	29.4	11.85	10.5	25.67	376
2012	5.32	2.2	3342	28.3	12.60	7.1	30.70	6031
2013	6.24	3.3	3374	30.1	13.15	6.9	32.20	4256
2014	6.5	2.9	3520	31.3	13.11	10.1	33.25	4612
2015	6.813	4.4	3731	31.8	13.05	11.0	34.85	6925
2016	7.328	4.3	3654	31.6	12.45	10.6	20.25	8107
2017	7.17	4.3	2485	31.5	11.77	23.3	42.83	7409
2018	7.345	5.3	2577	29.0	9.86	21.6	45.91	8141
2019	6.794	5.6	3057	31.9	7.85	13.9	41.12	9010
2020	6.419	3.6	3587	31.5	7.94	5.7	32.13	5852
2021	6.65	3.29	3896	31.2	7.40	5.2	29.86	5120
2022	9.931	6.59	4088	31.6	6.96	13.9	36.98	11400
2023	6.632	4.2	3200	31.9	7.30	34.2	39.27	12000

Source: Prepared by Researcher Based on: Global Terrorism Index Report (various Issues), African Statistical Year Book (2022), The Global Economy.com

Table 13. Dependent and Independent Variables Data for Libya

Variables / Years	(Y)GTI Global Terrorism Index (Out of 10)	(X1) Real GDP Growth (%)	(x2) Real Per Capita GDP (US Dollars)	(X3) Gini Index (%)	(X4) Unemployment Rate (%)	(X5) Inflation Rate (%)	(X6) Trade Openness Index (%)	(X7) FDI Net inflow (Million US Dollars)
2011	0.35	-59.7	5562	….	19.45	15.5	1o5.7	-158.4
2012	3.30	124.7	12694	….	19.03	6.1	98.22	-1591
2013	5.70	-36.8	8282	….	19.46	2.6	106.3	-759.7
2014	6.25	-53.0	3876	….	19.61	2.4	76.52	74.7
2015	7.29	-13.0	2723	….	19.52	9.9	56.9	-358
2016	7.283	-7.4	2907	….	19.52	25.9	41.11	-415.2
2017	7.256	64.0	4685	….	19.29	25.8	47.55	209.4
2018	6.987	17.9	4623	….	19.45	13.6	63.78	-143.4
2019	6.766	9.9	6226	….	19.61	-2.2	78.21	216.9
2020	6.25	-60.0	4970	….	20.34	1.4	79.35	-222.2
2021	6.67	31.8	5267	….	20.61	2.9	80.52	155.2
2022	5.10	-1.24	5227	….	20.68	4.5	81.70	166.3
2023	4.73	-3.7	6764	….	20.56	3.8	82.52	172.4

Source: Prepared by Researcher Based on: Global Terrorism Index Report (various Issues), African Statistical Year Book (2022), The Global Economy.com

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Table 14. Dependent and Independent Variables Data for Tunisia

Variables / Years	(Y)GTI Global Terrorism Index (Out of 10)	(X1) Real GDP Growth (%)	(X2) Real Per Capita GDP (US Dollars)	(X3) Gini Index (%)	(X4) Unemployment Rate (%)	(X5) Inflation Rate (%)	(X6) Trade Openness Index (%)	(X7) FDI net inflow (Million US Dollars)
2011	2.36	5.9	4346	35.8	18.33	3.5	58.79	1824
2012	2.63	3.9	4346	34.7	17.63	4.6	68.24	1603
2013	2.82	2.1	4420	33.2	15.93	5.8	72.27	1117
2014	3.29	2.7	4511	32.5	14.26	4.9	78.46	1064
2015	3.696	1.0	4061	32.8	15.16	4.4	87.25	1003
2016	4.963	1.1	3890	30.9	15.56	3.6	87.09	885
2017	4.619	2.2	3657	32.1	15.33	5.3	95.81	881
2018	4.880	2.5	3651	33.3	15.46	7.3	103.90	1036
2019	3.938	1.4	3548	33.5	15.13	6.7	100.9	845
2020	3.858	-9.2	3497	33.7	16.37	5.6	82.82	652
2021	3.386	4.41	3830	35.3	16.26	5.7	92.94	530
2022	4.447	2.44	3894	35.1	16.12	8.3	110.7	710
2023	3.989	0.60	4071	34.7	16.40	9.3	108.2	813

Source: Prepared by Researcher Based on: Global Terrorism Index Report (various Issues) ,African Statistical Year Book (2022),The Global Economy.com

Table 15. Dependent and Independent Variables Data for Algeria

Variables / Years	(Y)GTI Global Terrorism Index (Out of 10)	(X1) Real GDP Growth (%)	(X2) Real Per Capita GDP (US Dollars)	(X3) Gini Index (%)	(X4) Unemployment Rate (%)	(X5) Inflation Rate (%)	(X6) Trade Openness Index (%)	(X7) FDI net inflow (Millio US Dollars)
2011	5.830	2.6	5368	27.6	9.96	4.5	58.20	2264
2012	5.675	3.4	5567	29.3	10.97	8.9	57.70	1499
2013	5.563	2.8	5477	28.7	9.82	3.3	59.60	1697
2014	5.520	3.8	5466	30.7	10.21	2.9	59.76	1507
2015	4.750	3.7	4153	31.2	11.21	4.8	59.70	-585
2016	4.282	3.2	4919	30.9	10.2	6.4	55.93	1636
2017	3.970	1.3	4080	32.3	10.33	5.6	55.32	1232
2018	3.763	1.4	4107	28.6	10.42	4.3	58.07	1466
2019	3.409	0.8	3954	29.3	10.50	2.0	51.81	1382
2020	2.696	-4.9	3277	30.5	12.25	2.4	45.33	1125
2021	3.564	3.4	3939	31.2	11.75	7.2	53.20	870
2022	4.432	3.2	3999	32.4	11.55	9.3	59.04	80
2023	4.83	4.2	4480	32.5	11.60	9.1	59.20	220

Source: Prepared by Researcher Based on: Global Terrorism Index Report (various Issues), African Statistical Year Book (2022), The Global Economy.com

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Table 16. Dependent and Independent Variables Data for Morocco

Variables / Years	(Y)GTI Global Terrorism Index (Out of 10)	(X1) Real GDP Growth (%)	(x2) Real Per Capita GDP (US Dollars)	(X3) Gini Index (%)	(X4) Unemployment Rate (%)	(X5) Inflation Rate (%)	(X6) Trade Openness Index (%)	(X7) FDI net inflow (Million US Dollars)
2011	**3.600**	**5.00**	**3070**	**39.7**	**8.91**	**1.3**	**75.16**	**2520**
2012	**2.855**	**3.00**	**2950**	**39.2**	**8.99**	**1.3**	**70.11**	**2728**
2013	**2.432**	**4.70**	**3200**	**39.5**	**9.32**	**1.6**	**67.32**	**3298**
2014	**2.110**	**2.60**	**3260**	**39.5**	**9.70**	**0.4**	**65.23**	**3561**
2015	**1.446**	**4.50**	**3965**	**39.9**	**9.46**	**1.4**	**67.25**	**3255**
2016	**0.892**	**1.10**	**2996**	**38.2**	**9.30**	**1.5**	**71.12**	**2157**
2017	**0.077**	**4.20**	**3147**	**36.5**	**9.23**	**0.7**	**74.17**	**2686**
2018	**0.038**	**3.10**	**3353**	**35.7**	**9.24**	**1.6**	**77.25**	**3559**
2019	**1.215**	**2.60**	**3368**	**34.4**	**9.24**	**0.2**	**76.00**	**1720**
2020	**0.565**	**-6.30**	**3188**	**34.7**	**11.11**	**0.6**	**68.84**	**1763**
2021	**0.860**	**8.02**	**3767**	**32.7**	**10.54**	**1.4**	**75.63**	**2260**
2022	**1.156**	**4.10**	**3573**	**31.9**	**13.00**	**6.1**	**98.30**	**650**
2023	**0.757**	**1.26**	**3442**	**31.5**	**10.49**	**6.7**	**101.10**	**2180**

Source: Prepared by Researcher Based on: Global Terrorism Index Report (various Issues), African Statistical Year Book (2022), The Global Economy.com

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Table 17. Dependent and Independent Variables Data for Sudan

Variables / Years	(Y) GTI Global Terrorism Index (Out of 10)	(X1) Real GDP Growth (%)	(x2) Real Per Capita GDP (US Dollars)	(X3) Gini Index (%)	(X4) Unemployment Rate (%)	(X5) Inflation Rate (%)	(X6) Trade Openness Index (%)	(X7) FDI net inflow (Million US Dollars)
2011	6.3	3.2	1223	30.1	17.44	18.1	28	1686
2012	6.035	2.4	1376	30.3	17.97	35.6	22	2311
2013	5.93	6.8	1416	30.6	18.04	36.5	27	1688
2014	5.77	7	1655	29.2	17.75	36.9	21	1251
2015	6.686	4	1677	31.5	17.6	16.9	18	1728
2016	6.6	3.6	1333	31.9	17.00	17.8	15	1064
2017	6.453	4.7	1104	31.7	17.14	32.4	18	1065
2018	6.178	2.8	771	31.2	17.31	63.3	22	1136
2019	5.807	-1.4	746	30.5	17.51	51.00	26	825
2020	5.401	-3.6	745	30.8	19.21	163.3	10	717
2021	2.846	1.9	782	29.9	19.19	359.0	4	270
2022	0.291	1	812	29.8	17.59	138.8	3	120
2023	5.283	1.2	836	30.2	20.81	256.2	5	195

Source: Prepared by Researcher Based on: Global Terrorism Index Report (various Issues) ,African Statistical Year Book (2022),The Global Economy.com

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Table 18. Dependent and Independent Variables Data for Mali

Variables / Years	(Y) GTI Global Terrorism Index (Out of 10)	(X1) Real GDP Growth (%)	(x2) Real Per Capita GDP (US Dollars)	(X3) Gini Index (%)	(X4) Unemployment Rate (%)	(X5) Inflation Rate (%)	(X6) Trade Openness Index (%)	(X7) FDI net inflow (Million US Dollars)
2011	**3.39**	**3.2**	**810**	**33.6**	**1.44**	**2.96**	**54**	**370**
2012	**3.82**	**-0.8**	**802**	**33.8**	**1.55**	**5.3**	**59**	**398**
2013	**4.34**	**2.3**	**829**	**34.9**	**1.62**	**-2.4**	**65**	**308**
2014	**5.29**	**7.1**	**873**	**34.8**	**1.55**	**2.7**	**61**	**144**
2015	**5.871**	**6.2**	**774**	**36.3**	**1.43**	**1.4**	**64**	**276**
2016	**6.03**	**5.9**	**804**	**35.1**	**1.37**	**-1.8**	**63**	**356**
2017	**5.88**	**5.3**	**855**	**34.9**	**1.50**	**1.8**	**58**	**563**
2018	**6.015**	**4.7**	**923**	**33.2**	**1.62**	**1.7**	**60**	**467**
2019	**6.653**	**4.8**	**906**	**35.7**	**2.35**	**-2.9**	**64**	**271**
2020	**7.099**	**-1.2**	**890**	**34.3**	**3.53**	**0.5**	**67**	**308**
2021	**7.625**	**3.1**	**902**	**35.7**	**2.44**	**3.81**	**67**	**640**
2022	**8.152**	**3.7**	**847**	**36.6**	**3.14**	**9.73**	**69**	**540**
2023	**8.412**	**3.9**	**912**	**36.7**	**3.25**	**5.00**	**68**	**253**

Source: Prepared by Researcher Based on: Global Terrorism Index Report (various Issues), African Statistical Year Book (2022), The Global Economy.com

Table 19. Dependent and Independent Variables Data for Chad

Variables / Years	(Y)GTI Global Terrorism Index (Out of 10)	(X1) Real GDP Growth (%)	(X2) Real Per Capita GDP (US Dollars)	(X3) Gini Index (%)	(X4) Unemployment Rate (%)	(X5) Inflation Rate (%)	(X6) Trade Openness Index (%)	(X7) FDI net inflow (Million US Dollars)
2011	**3.01**	**7.2**	**985**	**43.3**	**.0.86**	**2.03**	**81**	**280**
2012	**1.92**	**8.8**	**1111**	**43.2**	**0.85**	**7.5**	**81**	**580**
2013	**1.53**	**5.8**	**1045**	**42.3**	**0.91**	**0.2**	**73**	**520**
2014	**0.05**	**6.9**	**1063**	**40.9**	**0.88**	**1.7**	**77**	**-676**
2015	**2.142**	**1.8**	**828**	**43.5**	**0.93**	**4.8**	**67**	**560**
2016	**5.83**	**-5.6**	**753**	**45.7**	**1.02**	**-1.6**	**63**	**245**
2017	**5.269**	**-2.4**	**715**	**44.2**	**1.11**	**0.9**	**74**	**363**
2018	**4.752**	**2.3**	**713**	**42.9**	**1.13**	**4.0**	**74**	**461**
2019	**4.762**	**3.00**	**686**	**42.5**	**1.06**	**-1.0**	**75**	**567**
2020	**4.829**	**-0.8**	**660**	**43.6**	**1.68**	**4.5**	**69**	**558**
2021	**5.604**	**-1.19**	**697**	**44.5**	**1.59**	**-.77**	**83**	**560**
2022	**6.379**	**3.39**	**694**	**37.4**	**1.1**	**5.8**	**91**	**614**
2023	**6.168**	**4.10**	**702**	**38.9**	**0.99**	**7.04**	**92**	**670**

Source: Prepared by Researcher Based on: Global Terrorism Index Report (various Issues), African Statistical Year Book (2022), The Global Economy.com