Political Stability, Corruption, Democracy and Terrorism In the Middle East and North Africa

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Abstract:

  Terrorism has been considered as a challenge with serious effect in the world as a result of instability, corruption and lack of democracy in most countries. Confronting this phenomenon requires recognizing its roots to find possible solutions. This study aims to examine the effect of some actual factors which causes the terrorism in short and long run. To this end, investigation has been conducted using statistical and regression methods using the data obtained from the 17 MENA countries. Findings indicate that in the long run, political stability and corruption controlling have a negative effect on the number of terrorist attacks, but democracy has no significant effect on terrorism. Morover, in the short term, there is also an inverse relationship between the number of terrorist attacks with political stability and corruption controlling, but unfortunately, democracy has a positive and significant effect on the number of terrorist attacks in the selected countries.

1. Introduction

Struggling and fighting with terrorism has been become one of challenges for global community in recent years by increasing terrorist attacks and the number of victims. Following the events of September 11th, 2001, and events after that, West Asia has been become a center for terrorism (Norman Paol, 2004). Some countries distinguish between good and bad terrorism, however, there is no good and bad terrorism. This phenomenon threatens the human life, governments, regional security and, consequently, the global security. Now a days, national terrorizations can not be considered more serious than regional threats, because security is interconnected and the situation of neighbor countries can affect on the national situation in terms of security.

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According to some studies, terrorism, beyond direct damage, causes fear, insecurity and reduces support for democratic institutions (Rahman, 2017).

Evidence indicates that terrorist incidents have been reduced in Western Europe and the United States, but have been increased in the Asia-Pacific and Eastern Middle East and North Africa. Also, terrorism with religious objectives have increased dramatically (Anderton and Carter, 2009). The importance of terrorism issue in terms of economic perspective is that this phenomenon has an important effect on the whole economy (Takay, 2009). Terrorism reduces economic growth (Blombeg, 2004, & Sandler, 2002), makes the transaction costly (Anderton & Carter, 2009). This reduces business (Nitche & Schumacher, 2004), and also has a negative effect on tourism and absorption of foreign direct investment (Enders 2007 & Blombeg, 2004). It also affects the capital market by increasing the systemic risk (Drakos, 2004). It is worth mentioning that terrorism affects migration, human capital and labor market (Murdoch and Sandler, 2002).

These ffects are not solely for the host country, but also affect the neighboring countries and will remain for years (Nitche and Schumacher, 2004). This study aims to investigates some factors cause terrorist attacks.
Studies indicate that there is a negative relationship between political stability and terrorism in the long term (Salman mehmood and bilil mehmood, 2016).

Corruption is another effective factor in the terrorism, which, Boussiga, believes that terrorism and corruption are convergent (Nahil boussiga and malek ghdamsi, 2016). Democracy is third factor influences terrorism. They have a non-linear relationship with each other, as in countries with low-level democracy, a slight increase in democracy causes to increase terrorism, and in countries with high democratic levels, democracy can reduce terrorism (Andrew jensen, 2017 and Peter kurrild-klitgaard, 2006) and even with the worthiness of a democracy strategy, democracy can not be considered as a solution for international terrorism (Peter kurrild-klitgaard and Mogensk.Justesen and Robert, 2017).

Therefore, considering the dimensions of terrorism, the rooting and identification of its constituent elements is indisputable necessity , and the need for in-depth exploration, studying multiple dimensions and searching from different perspectives. Tthe objectives of this study are to mine the concept of terrorism and to examine the effect of variables such as political stability, corruption and democracy on the number of terrorist attacks.

2. Theory and Literature
2.1 Definition of Terrorism

The word "Terror" in English means "anxiety agent". Terror in the word means "scare", terrorism has been meant to "create fear and panic in the people," and terrorist has been meant to "advocate creating fear and terror". In Dehkhoda's dictionary, terrorism means the principles of government of pressure and panic.

Therefore, terrorism is the title for violence of individuals, groups and governments that have not strong enough supporting and tends to change situation to a situation that to be desirable for its followers (Charles H. Anderton & john R.Carter, 2009).

There is no clear and specific consensus among experts in the context of terrorism. In this study, terrorism means the use of illegal violence by individual or local groups in order to create an atmosphere of terror and panic, to affect or dominate an individual or a group of individuals on the whole of community.

This matter is done to achieve specific political or social objectives. Also, a number of terrorist attacks have been selected based on the above definition as the main variable of the study to conduct the study.

2.2 Types of Terrorism

In general, terrorism is divided into two categories of international and national terrorism:

(A) International Terrorism: This type of terrorism is done with aim at achieving political and economic objectives internationally. In international terrorism, members of the group and those who are being subjected to terror from different countries. In this sense, a terrorist group selects its members from among the citizens of several countries, and at the same time, victims are from several countries.

(B) National Terrorism: This terrorism is formed when the perpetrators of the crime, victims and supporters are all from one country.

2.3 The Risks and Consequences of Terrorism

Terrorism has two consequences:

1. Use of mass destruction weapons.

2.Suicide attacks[1]. Evidence suggests that suicide attacks have been increased in recent years (Charles H. Anderton & John R.Carter, 2009: 148-149).

Terrorism has its own costs everywhere in the world. One of the costs of anticipating terrorism can be to disrupt economic activities and reduce countries' economic growth to the extent that they divert or eliminate the direction of foreign resources. According to Nitche & Schumacher (2004), a terrorist attack reduces the economic growth by about 5%. On the other hand, terrorist attacks affect the financial and capital market by increasing systemic risk, which causes to reduce investment rates by 4% and increase costs of government as same (Blombeg Hess & Orphanides, 2004). Terrorist attacks also raise transaction costs and reduce the volume of beneficial trade between countries (Charles H.

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[1] Suicide attacks are a type of ideological suicide aimed at harming others (enemy). Suicide attacks are divided in to 2 categories of with and without objective. Both forms of suicide attack occur in an urban setting. The type of with objective is intended to harm to special individual or individuals, and may also other individuals in that place to be killed or injured. The type of without objective is designed to insecure the socio-political environment and to stimulate public fear and panic.

Anderton & john R.Carter, 2009: 152). So that if the number of attacks in one year increases by 10%, the trade will decrease by 4%, and these effects will remain for next years (Nitche & Schumacher, 2004).

2.4 Effective Factors on the Terrorism

A brief explanation of some of the factors considered in order to examine their effect on the terrorism are discussed in this section. Also, the indexes used for these factors are expressed.

2.4.1 Political Stability and Terrorism

Each community has a degree of political stability, but the state of the societies may differ in terms of political stability at different times, that in this regard the appropriate economic and social conditions help to provide a stable political environment. Terrorism can play an important role in disrupting political stability of these countries, especially developing countries, terrorist attacks strongly affect the political stability of these countries, and the people of these countries may provoke mass killings, unwanted damages, and high-risk social scenarios (Salman Mehmood and Bilil Mehmood, 2016).

That its consequences include increasing political risk and outflow of foreign investment, because investment companies usually direct their capital towards countries with high political security and stability (James c.Murdoch and Todd Sandler, 2002). Therefore, in high-terrorism countries, the volume of trade is significantly reduced due to negative effect on the political stability (Nitche & Schumacher, 2004). On the other hand, given the relationship between terrorism and political stability, political stability can cause to reduce terrorism.

The political stability no violence index has been used in this study. This index is a combination of several other indexes from various sources, including the Economic Information Unit of the World Economic Forum, and the risk of political services, and this basic index reflects the probability of uncontrolled government power, armed conflict, violent protests, social unrest, international tensions terrorism, as well as ethnic, religious or regional conflicts. This index is in the range of +2.5 (very good) to -2.5 (very bad) and has been extracted from wgi site.

2.4.2 Terrorism and Corruption

Corruption is the pestilence of any governmental and economy system that, destroys the structure of a community from within and flows in the veins of community by speeds up the moral, political, social and cultural collapse of the system. Corruption in general and economic corruption in particular, can be developed in any government system, but the extent and severity of corruption, or, in other words, the penetration rate coefficient of corruption in community, depends on the structures, processes and executive layers of that community and governmental system.

Corruption has long been known to be a major threat to economic development, political stability and peace. Evidence suggests that corruption and

terrorism are converging (Nahil Boussiga & Malek Ghdamsi, 2016). Combating corruption can thus reduce terrorism. It should be noted that corruption has indirect effects on government expenditures, including military expenditures, on investment expenditures, and this has a mutually exclusive effect on economic growth. Fighting corruption, in addition to have a positive direct effect, has indirect repercussions through reducing the negative military burden, for example, the agreement regional security that has a significant effect on economic growth (Giorgio d. Agostino, I. Paol Dunne & Luca Pieroni, 20 16).

In this study, a corruption controlling index is used which determines the understanding of how much public power is used for personal interests at both the small and large levels also how much government is also used for personal interests and the interests of the elite and in different countries is given a number between +2.5 (very good) and -2.5 (very bad) to it. Among the strengths of the macro indexes are the comparative nature of them, which can be used to compare the level of corruption in different countries. Macroeconomic indexes can create a social stimulus for the elaboration of anti-corruption programs, raising awareness of the public and increase their support for anti-corruption programs.

Also, studies have been conducted based on these indexes that indicate which variables are correlated with the level of corruption. This index has been extracted from the wgi site.

2.4.3 Democracy and Terrorism

The term democracy has been driven from Greek Demokratia. This term has been consisted of two words, Demos meaning people and Kratein means governance. In this way, democracy means, in terms of words, the rule of the people over people. Democracy is a government that belongs to a collective decision-making process. In this government, representatives are elected by the majority of the people to rule them. The elected representatives of the people after long consultation and examination have approved the laws passed to the people's awareness, so that they are not covered by anyone, in order to implement freedom and equality in community.
(Andrew Jensen, 2017)

There are two perspectives about the relationship between terrorism and democracy:

(A) Democracy can restrain terrorism (Krueger & Malekova, 2003); if we want to see democracy in this dimension that it causes to reduced terrorism, then it can be said that political stability is directly related to democracy, in this sense that, democratic countries have a higher political stability, and in this way chance of insurrection and terrorist activity in democratic countries is reduced (Salman Mehmood & Bilil Mehmood, 2016, James A. Piazza, 2008, & Peter kurrild-klitgaard, 2006). Since Choi, S. W., & James, P considers the reason for engaging in US military operations due to humanitarianism and protection from

human rights and not for their own security interests - promoting democracy or reducing terrorism (Choi, S. W., & James, P, 2014). It can also be noted that ethnic deprivations and limited political access can motivate the use of violence in ethnic groups, although this point can be expressed for tribal conflicts.

However, it is believed that the same logic applies to ethnic terrorism, and it is possible to reduce the amount of terrorist violence by implementing reforms and changes towards democracy, reducing discrimination and increasing the number of ethnic communities (Kristian skerde gleditsch & Sara M.T.Polo, 2016). The price system and economic freedoms allow a country by reallocating resources; can absorb the shocks resulting from terrorist attacks. It is necessary to say that large and diverse economies are more able to absorb shocks (Sandler, 2007: 852).

(B) Terrorism can also encourage terrorist measures and political violence; evidence suggests that terrorist groups are often found in democratic settings (William Embank & Leonand Weinberg, 2006). In fact, individual perception of politic and political systems is the decisive factor in supporting terrorism.

Considering that the perception of the attractiveness of democratic political strategies has inverse correlation to the level of support for terrorism. But in fact, it is decisive in terms of how much support for terrorism costs and what advantages have in the various periods, and this is contradictory. According to this fact that terrorism can be a possible choice for disappointed individuals to pursue political objectives (Mark litter, 2016).

Democracy and tyranny have different degrees, so that not all tyrannical countries are equally repressive, and not all democracies are equally stable and free (Oeobank, 2001), on the other hand,countries with a market economy and states than non-market economies and non-state democratic governments have a different response to terrorism (Anders, 2007: 852). As the emergence of a new democracy and weak democracy than tyranny often lead to more terrorist violence (Jensen, 2017). Kirild believes that in countries with a very low level of democracy or zero (tyranny) if democracy increases, terrorism increases. This issue can be seen in countries in the transition from tyranny to democracy.

Evidence also suggests that, for example, in Iraq and Afghanistan, which have moved from tyranny to democracy, have suffered at least in the short term, and domestic political violence has been increased in these countries (Peter kurrild-klitgaard, 2006)

The index of right to voice and accountability has been used in this study, which measures the degree of participation of citizens of a country in the government's election. This index indicates issues such as political freedom rights of the press and social and political gatherings, which is remembered as Democracy Index, that is taken from wgi site and is classified in the range of +2.5 (very good) to - 2.5 (very bad).

2.5 Reviewing the Backgrounds

Mark litter (2017), concluded that how the attitude and understanding of politics of political systems will regulate the level of supporting for terrorism in a study entitled "Reforming Democracy and Terrorism: A Quantitative Analysis of Attitude toward Democratic Politics and Suporting of Terrorism in the UK," in response to the reason of controversial relationship of democracy with terrorism on British data.

Andrew jensen, 2017, concluded, despite the fact that the democracy is valuable strategy, democracy can not be considered as a solution to transnational terrorism in a paper entitled "Terrorism through Democracy? - Reviewing the Promotion of Democracy as a Security Basis," in a study to examine whether democracy through the means of combating terrorism on the two countries of authoritarian China and democratic India.

Faiz ur Rahman & Paolo Vanin (2017) concluded in a study entitled "The Risk of Terrorism and Democratic Preferences in Pakistan". There is an inverse relationship between the frequent presence of terrorist activities (mostly in the form of breath violence) and the level of support for democracy. Therefore, terrorism not only threatens individuals but also democratic institutions.

Salman Mehmood & Bilil Mehmood (2016) found in a study entitled "Terrorism as a deterrent to political stability in South Asia" in order to examine the relationship between terrorism and political stability over the period 1990-2013. There is a negative relationship between political stability and terrorism in the long term. They, also, concluded that social, economic and democratic conditions have a positive effect on political stability.

Boussiga (2016) examines the relationship between corruption and terrorism in the long term in a study titled "Corruption-Tterrorism Relationship Using Panel Data", using two different criteria of corruption (corruption observation index and corruption controlling index) of 123 developed and developing countries in the period 2003-2014. He concluded that corruption and terrorism are converging with each other.

Bahar Araz- takay.k. Peren Arin & tologa Omay, (2009) examined the linear and nonlinear relationship between political conflicts and economic activities in a study entitled "Linear and Nonlinear Relationship between Terrorism and Economic Performance". The empirical evidence of both linear and nonlinear models emphasizes that terrorism has a significant negative effect on the entire economy and economic activity, especially during the recession.

James A. Piazza, (2008) in a study entitled "The Growth of Terrorism, Do Inefficient and Helpless States Promote Transnational Terrorism?". The study used time series data from 197 countries in the period 1973-2003. He found that inefficient countries will be more likely to host terrorist groups and their citizens are committing transnational attacks.

Also, these countries are likely to be targeted by their multinational terrorists.

Peter kurrild-klitgaard & et al (2006), concluded that there is an inverse relationship between political rights and civil freedom and terrorism in a paper entitled International Political, Economic, Freedom , Democracy and International Political. They used a logistic model from 1996 to 2000.

Also, in examining the relationship between economic growth, education, income inequality and poverty, using a nonlinear model, found that income inequality in the community has a direct relationship with the absorption and production of terrorism. Researchers from the study also concluded that citizens of commercial-oriented countries are less attracted to terrorism.

James c.murdoch & Todd Sandler (2002), have examined the effects of the civil war on per capita income of a country and neighboring countries using the neoclassical growth model in a study entitled "Economic Growth and Civil War".

They conclude that the civil war has had a negative effect on the growth of per capita income in the country involved in the civil war and in neighboring countries. In addition, they found that civil war has a significant effect on short-term growth.

3 Data set and Method

According to the above mentioned and the studies which have done so far, dependent variable of this study (number of terrorist attacks) is a kind of discrete and a numerical variable. Therefore, the assumption of the normalization of the function of the truth of this variable will result in incompatibility estimates of model coefficients. Therefore, the Poisson model, which will be described below, has been selected among different regression methods for these kinds of data, i.e.

the discrete data. The data of the research cover of countries; Iran, Iraq, Saudi Arabia, Syria, Oman, Qatar, Kuwait, Lebanon, Afghanistan, Egypt, Algeria, Libya, Tunes, Morocco, Turkey, United Arab Emirate and Yemen.

3.1 Poisson Distribution

The random numerical variable such as y that its consequences are nonnegative integers is $j = 0, 1, 2, \cdots$ has Poisson distribution with Probability Mass Function is as follows

$$\Pr(y = j \mid \mu) = \frac{\mu^j}{j!} e^{-\mu}, \qquad j = 0, 1, 2 \qquad (1)$$

This function was introduced by S-D-Poisson (1837). The mathematical expected value of the above function is $E(y) = \sum_{j=0}^{\infty} j \Pr(y = j) = \mu$. Therefore, the parameter μ can be considered as the mean of the above distribution. Similarly, it can be shown that $Var(y) = \mu$. (Cameron, A. C., & P. K. Trivedi, 2005)

3.2 The Concept of Poisson Regression

In the Poisson regression, the objective is to explain the distribution of y_j or expected value of y_j for the specified attributes in the set of explanatory variables X. Assuming that the expected value y_j for X_j is as follows:

$$E\left(y_j \mid X_j\right) = e^{X'_j\beta} \tag{2}$$

In which β to be the set of model's unknown parameters. The above assumption is positive only for generation of positive predictable values. More assumptions are needed to determine the probability of a consequence as $\Pr\left(y_j = j \mid X_j\right)$.

The common assumption in the models containing the numerical data, according to the X_j explanatory variables, is that y_j variable has a Poisson distribution with Expected value $\lambda_j = e^{X'_j\beta}$. Therefore, the probability mass function will be as follows:

$$\Pr\left(y_j = y \mid X_j\right) = \frac{\exp\left(-\lambda_j\right)\lambda_j^y}{y!}, \qquad y = 0,1,2,... \tag{3}$$

Assuming the independence of the observations, the estimation of the coefficients β by using the Maximum-Likelihood method will be relatively straightforward:

The logarithm of likelihood function will be a proper sum of the probabilities logarithm and is interpreted as a function of β. If the Poisson distribution function to be correctly specified, and assuming that a random sample of x_j and y_j, the estimator of the coefficients β will be consistent and asymptotically efficient. It can also be proved that this estimator will be asymptotically normal.

The important problem of Poisson distribution is that the conditional variance y_j is equal to λ_j like its mean. This matter indicates that:

$$Var\left(y_j \mid x_j\right) = \exp\left(x'_j\beta\right)$$

The above condition is known as Equi dispersion and essentially indicates an intrinsic limitation of Poisson distribution. This restriction and limitation is not established in many applications. However, in such situations, the consistent estimation of the conditional mean of the equation (1) is also possible. In fact, even when the distribution of the dependent variable is not Poisson, the Poisson regression model can also be used. This matter is due to the fact that the validity of the first-order conditions of the Maximum Likelihood problem is more general

than existence of dependent Poisson distribution. In these situations, we can estimate the compatibility of the parameters using the Quasi-Maximum Likelihood Estimation (QMLE) method. In this method, the parameters are estimated using usual Maximum Likelihood Estimation method, but the standard deviation of this method is calculated in modified manner. By assuming a random sample in the size of a function of Likelihood Estimation logarithm, Poisson regression model will be as follows:

$$\log L\left(\beta\right) = \sum_{j=1}^{N}\left[-\lambda_j + y_j \log \lambda_j - \log y_j!\right] \tag{4}$$

$$= \sum_{j=1}^{N}\left[-\exp\left(x_j'\beta\right) + y_j\left(x_j'\beta\right) - \log y_j!\right]$$

The first-order conditions that are obtained using the derivation of the above equation will be as follows:

$$\sum_{j=1}^{N}\left(y_j - \exp\left(x_j'\beta\right)\right)x_j = \sum_{j=1}^{N}\varepsilon_j x_j = 0 \tag{5}$$

The maximizing estimator of the equation (4) that is obtained from the first-order conditions (Equation (5)). In general, equation (1) will be consistent even with the non-compliance y_j of the Poisson distribution. The variance covariance matrix obtained from the Maximum Likelihood method is generally as follows:

$$Var_{MLE} = I\left(\beta\right)^{-1} = \left(E\left(\exp\left(x_j'\beta\right)x_j x_j'\right)\right)^{-1} \tag{6}$$

But the Matrix of the asymptotic covariance variance of the QMLE method will be as follows:

$$Var_{QMLE} = I\left(\beta\right)^{-1} J\left(\beta\right) I\left(\beta\right)^{-1} \tag{7}$$

That in it $J\left(\beta\right)$ will be as follows:

$$J\left(\beta\right) = E\left(\left[y_j - \exp\left(x_j'\beta\right)\right]^2 x_j x_j'\right) = E\left(\varepsilon_j^2 x_j x_j'\right) \tag{8}$$

If the following equation is established, then in this case, the dispersion will be more than the mean, which is known as the excessive diffraction of the dispersion.

$$Var\left(y_j \mid x_j\right) = E\left(\varepsilon_j^2 \mid x_j\right) > \exp\left(x_j'\beta\right) \tag{9}$$

In these situations, estimating the model by the QMLE method causes that the equations (7) and (8) to be more than the result obtained in equation(6).

Nevertheless, the weakness of the QMLE method is that it cannot obtain conditional probabilities such as equation (2). However, such an analysis could be made possible by imposing more assumptions on the model.

4. Finding
4.1 Descriptive Study of Research Data

The dependent variable in this study is the number of terrorist attacks carried out in the Middle East. This is an numberial variable, so applying it to a normal regression model will result in inconsistent estimates. Based on this, statistical inference and generalization of the results will be associated with the problem.

According to the results of Table 1, the mean number of terrorist attacks taking place in the 17 Muslim countries of the Middle East and North Africa each year is equal to 94 terrorist attacks with a standard deviation of 376. In other words, it seems that the distribution of the number of terrorist attacks as a Poisson process (the process of data generating of terrorist attacks) is more than dispresion limit.

Table 1: Descriptive Study of Dependent Variable

Variable		Mean	Std. Dev.	Min	Max	Observations
Terror	overall	94.32773	376.0893	0	3925	N= 238
	between		103.1993	9.411765	376.2353	n=14
	within		362.6459	-281.9076	3643.092	T=17

The issue of excessive dispersion reflects the heterogeneity and disproportionate among countries. In other words, the rate of terrorist attacks is a function of the special structures of these countries.

Table 2 indicates the probability of transmitting the number of terrorist attacks. Based on descriptive findings, as terrorist attack is not taken place in any country from the sample countries (Muslim countries of the Middle East) for one certain year, likely to 51.5% when the next year there will not be terrorist attack .

Therefore, the probability of at least one terrorist attack for the next year will be more than 48% (the sum of 7.07+9.09+3.03+29.29). Also, if in a certain year in a country , 4 or more than four terrorist attacks takes place, the probability of at least one terrorist attack for the next year will be about 67% (sum of 12.82+11.54+2.56+39.74). If terrorist attack is not taken place in a country in the certain year less than 30%, is likely to occur more than four terrorist attacks next year (first row and last column). Therefore, the results indicate a serious threat of terrorist attacks in this set of countries, so that if the number of these attacks increases to four or more than four terrorist attacks, the probability of controlling these attacks are greatly reduced.

Table 2: Examining Transmission Probability (Markov Matrix)

Numbur of Terrorism Attack in t	Numbur of Terrorism Attack in $t+1$					Total
T	0	1	2	3	4	
0	51.52	7.07	9.09	3.03	29.29	100.00
1	50.00	9.09	4.55	0.00	36.36	100.00
2	45.00	10.00	5.00	0.00	40.00	100.00
3	60.00	20.00	0.00	0.00	20.00	100.00
4	33.33	12.82	11.54	2.56	39.74	100.00
Total	44.64	9.82	8.93	2.23	34.38	100.00

Diagram 1 indicates that the number of terrorist attacks will be increased from 2011 onwards (the Arab Spring). So that, the number of these attacks will be increased dramaticly in 2013 and 2014. In Iraq (code 5), the starting point for the terrorist attacks rate in 2003 is the same time as the United States-led coalition countires (it has been identified in black in the diagram). According to the diagram, it is obvious that the highest number of terrorist attacks have been taken place in Iraq, so that almost the number of terrorist attacks in Iraq in 2006 is more than the number of terrorist attacks in Libya (code 9) since the start of the Arab Spring and the Civil War in this country until 2014.
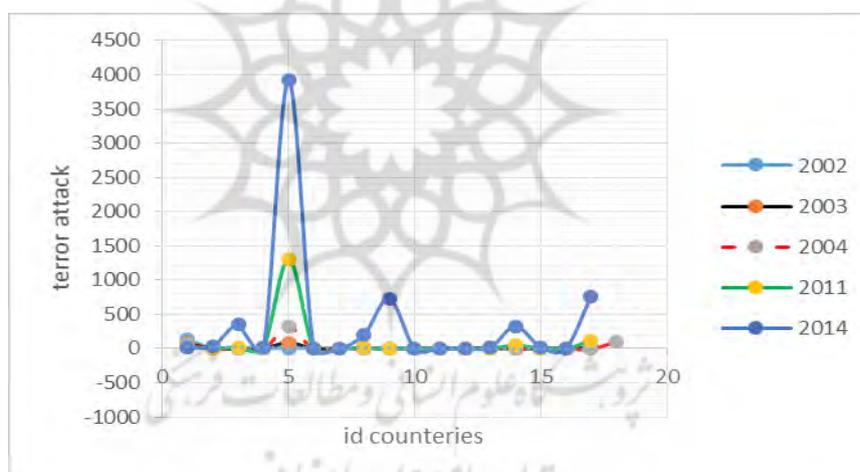
Graph 1: The Volume of Terrorist Operations in Five Time Periods for Different Countries

As it is expected, Libya, Yemen and Syria (the countries involved in the Civil War) have the largest number of terrorist attacks after the Iraqi state. Table 3 indicates the general mean (global mean) political stability, corruption, and Democracy Index. As the results show, the general level of these three indexes is

highly inappropriate for surveyed countries. According to the results of this table, the mean of standard deviation of the Democracy Index among the member states (std. Between) is about 8%, which indicates the similarity of these countries in this index. However, the standard deviation of this index changes over the years 2001-2014 (std.Within) is 43.7%, that indicates relatively large changes of this index for each country.

Table 3: Descriptive Statistics of Research Explanatory Data

Varaiable		Mean	Std. dev.	Min	Max	Observations	
Demo	overall	-1.032562	0.4438655	-2.04012	0.028048	238 =	N
	between		0.0780013	-1.114912	-0.8722727	14=	n
	within		0.4374278	-2.18337	0.0478389	17=	T
Politi~y	overall	-.05100998	1.030136	-3.18471	1.21054	238 =	N
	between		0.2651184	-9.449789	-.1602186	14=	n
	within		0.9978167	-3.342215	1.606554	17=	T
correp~n	overall	-.0231362	0.7838718	-1.6099	1.72286	238 =	N
	between		0.1011116	-.3751224	-.0093649	14=	n
	within		0.7374556	-1.653991	1.722309	17=	T

Diagram 2 indicates these results in graphical and diagram form. In addition, diagram 2 shows that how the status of this index has changed over time in each mentioned country. For example, in the case of Iraq, the status of this index in 2014 has been much better than in 2002 (the last year of Saddam Hossein's rule).

But in a country like Syria in 2014, it is much worse than in 2002 and slightly better than in 2011.
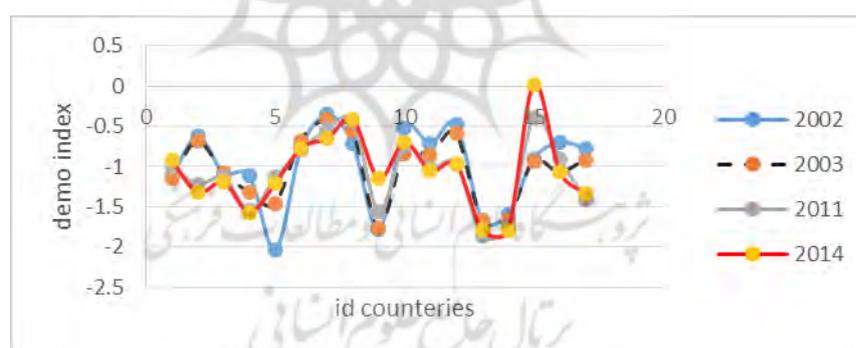
Graph 2: Democracy Index for Selected Countries 2000-2014

In the case of two indexes of political stability and corruption controlling, on average, the selected countries do not have a appropriate status based on existing data. As the results of Table 3 indicate, the global mean of these two indexes is

both negative. In addition, the difference between the countries relative to the global mean (std.Between) is relatively low for both indexes. This matter indicates the similarity of these countries with these indexes. Also, over time, these indexes are relatively high in countries (std.Within). Diagrams 3 and 4 indicate the changes in these indexes for selected countries over the four periods (that has been shown on the diagram). According to diagram 3, the level of corruption index for the Iraqi government from 2002 to 2014 has not changed significantly, but the level of corruption in this period had been steadily worsening. In the case of Iran, there is a significant difference between 2002 and 2011 in this index, but in 2014, an improvement of nearly 50% is observed in this index in 2011. Information from other countries can be also seen on the diagram.
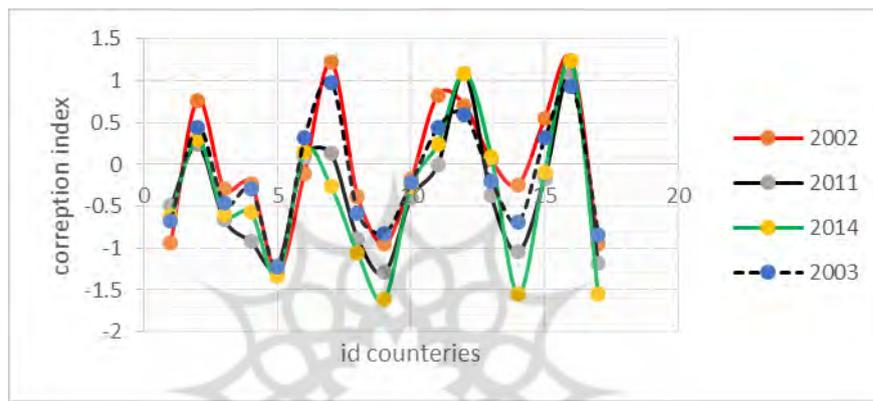
Graph 3: The Correction Index of Selected Countries for 4 Time Periods

Diagram 4 indicates the political stability index of the selected countries over the four periods identified on the diagram. According to the results, the Iraqi political stability reached its lowest level after the occupation of the country by the United States. Also, in 2014, at the same time as the terrorist attacks of the Islamic State of Levant and Iraq (ISIL; DAESH), the level of this index again reached its lowest level. Based on the data available in 2002 and 2003, the Libyan state was in a good position for political stability, but in 2011, at the same time as the Arab Spring, the level of this index has decreased and reached its lowest level in 2014.

Iran had seen a drop in the level of political stability since 2002 and in 2003, but in 2014 the rate of this index had been accompanied by a significant increase. According to the information of this diagram, Syria has the lowest political stability since 2011, due to the civil war.
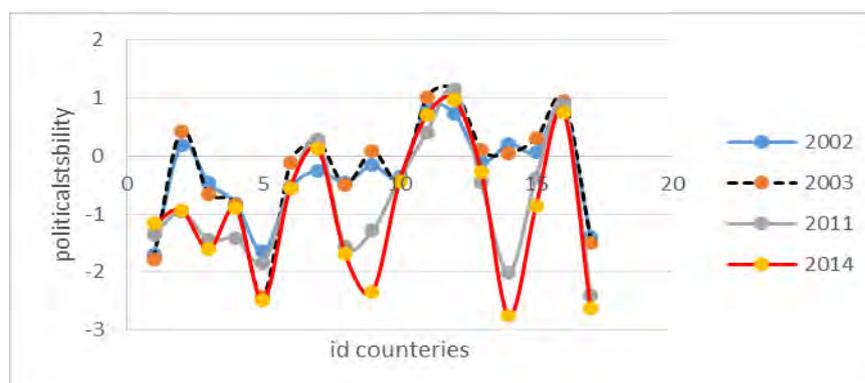
Graph 4: Political Stability Index for Selected Countries for 4 Periods

Ultimately, as it was said in the analysis the excessive dispersion distribution of terrorist attack numbers, the reason for this matter is the heterogeneity of countries. Therfore, using panel data in inferential analyzes has the advantage that these heterogeneous effects can be entered in the form of static or random effects in the model and, accordingly, presented more precise generalization of the results.

4.2 Introducing an Inferential Model:Excessive Dispersion Test

This assumption that the rate of terrorist operations in the set of selected countries is the same is unrealistic. For this reason, we use an Excessive Dispersion Test to examine in inferential manner the equation $Var(terror|\mathrm{X}) > E\left(terror|\mathrm{X}\right)$. For this purpose, the zero hypothesis is considered as follows:

$$H_0 : Var(terror|\mathrm{X}) = E\left(terror|\mathrm{X}\right)$$

The results of this test (Table 4) indicate that the rate of terrorist operations in the selected countries is not the same and inconsistent and un-uniform.

Table 4: Excessive Dispersion Test

Variable	Coef	Std. Err.	T	$p > |t|$	[95% $Conf. Interval$]	
Mean Estimation	1.296645	0.2443492/	5.31	0,000	0.8151165	1.778174

One of the features of Excessive Dispersion is that the frequency of small values and large values which are relatively high. The distribution of terrorist attacks (Diagram 4) indicates that less than 14 attacks per year had been taken place for these countries, which is close to 76%. Also, diagram indicates that the happening of 182 and more terrorist attacks is about 1% for a year. Thus,

Excessive Dispersion property is a major feature of the distribution of terrorist attacks in these countries. This means that the specific structures of each country (such as ethnicity, religion, general culture, etc.) are also effective on the distribution of the terrorist attacks number.
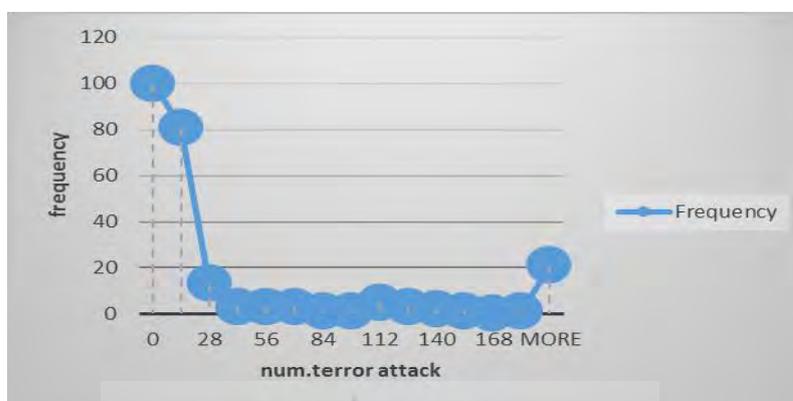
Graph 5: **Frequency of Terrorist Attacks Per Year**

In general, the Excessive Dispersion, as was shown by Greenwood and Yoll (1920), can be due to the concept of contagion. The contagion happens at the time that units (in this study, countries) with certain sets of explanatory variables first to have the same occurrence rate, but this rate also changes when the event occurs. Therefore, it can be said that the Excessive Dispersion of terrorist activities in selected countries of this study is due to the success of the initial terrorist operations in a certain country, which will change the rate of future operations.

4.2.1 The Estimating the Model and Interpreting the Results:

A Model for Reviewing General Equations is as Follows: It is expected that in the long term the following equations will exist between the explanatory variables and the dependent variable. The following model is used in order to examine the long-term relationships between terrorism and the above explanatory variables:

$$terror_{it} = g\ (polaticalstability\ ,corruption\ controling, democracy)$$

$$g'_X = \frac{\partial terror_{it}}{\partial X} < 0; \qquad X = \{corruption\ con., politicalstsbility, democracy\}$$

$$\Pr(terror_i | X_i) = \frac{\exp(\lambda)\lambda^{terror_i}}{terror_i !} \tag{10}$$

$$\lambda = E\left(terror_i | X_i\right) = \exp(X_i \beta)$$

Equation 1 states that the mean number of terrorist operations occurred in an assumed country i (λ) is a function of the explanatory variables of the vector X (distribution of terrorist attacks is a function of the vector of variables X). The results of the estimation of this equation, which is obtained using the Conventional Maximum-likelihood method, have been shown in Table 5:

Table 5: Long-term Relationship

terror	Coef.	Robust Std. Err.	z	$p > |z|$
Political Stability	-1. 73013	0.4958052	-2.16	0.030
Corruption Con.	-2.308883	.08788505	-2.63	0.009
Democracy	1.182423	0.7108699	1.66	0..096
cons.	2.197922	1.125436	1.95	0.051

Based on the above results, the 95% confidence level of political stability and corruption controlling in the long term have a negative effect on terrorism, but democracy does not have a significant effect on terrorism. The sign of democracy variable is opposite to expected number of terrorist attacks. Since in some selected countries (Iraq and Libya) the promotion of democracy index had been accompanied by the political in-stability of these countries due to the civil war and military invasion from the outside. However, while the stablity of the government is not exist, the democracy has not benefited for the population.

Results also indicate that political instability and corruption are factors that affect the size of terrorist operations in the long term, so that, affecting the decreasing effect on democracy. In order to interpret the effect of an increase in political stability and corruption controlling, this study used the percentage analysis method which its results have been shown in Table 6.

it appears that an increase in the political stability index decreases the number of terrorist attacks with a factor of 1.07. Also, an increase in the corruption control will reduce the number of terrorist attacks in the long term with a factor of 2.3.

Table 6: Analysis of the Change of Effective Factors on the Terrorism

terror	B	Z	$p > |z|$	$e^{\wedge}b$	$e^{\wedge}bStdx$	SDofX
Poltitical St.	-1.07301	-2.164	0.030	0.3420	0.3311	1.0301
Correption Con.	-2.30888	-2.627	0.009	0.0994	0.1795	0.7439

4.2.2 Fixed Effects Test (Short-term Compatibility Estimate) and Random Effects (Short- and Long-term Combined and Efficient Effects)

Based on the results of the above table, the zero hypothesis (lack of systematic difference) is not rejected in the coefficients, and therefore, the use of the REP

(Random Effect Poison) method will provide compatibility estimations but efficient performance compared to FEP (Fixed Effect Poison) model.

Table 7: Short and Long-term Combined Effect

Statistic Value $\chi^2(4)$	p-value	Test Hypothesis Result
2.21	.053	Lack of Reject the Hypothesis

The fixed effects method is used to estimate short-run effects of above explanatory variables for terrorist operations, because in this method, the only estimation method is used in the within time series of the data (Peter Kennedy (2008),). However, since the Hausman test does not reject the suitability of the method of random effects versus fixed effects, we use a Hybrid Model to estimate the efficiency of the model (10), which combines short-term and long-term effects. In this method, it is assumed that the parameter α_i is the random parameter in which the disproportionate between the countries that have been gathered in the parameter. In this case, equation (10) is written as follows:

$$E\left(terror_{it} \mid \alpha_i, X_{it}\right) = \exp(\gamma_i + X'_{it}\beta) = \alpha_i \exp(X'_{it}\beta) \qquad (11)$$

The Poisson standard estimator assumes with random effects that the distribution α_i of a Gamma Distribution which is as follows:

$$f\left(\alpha_i; \xi\right) = \begin{cases} \dfrac{\xi e^{-\xi\alpha_i}\left(\xi\alpha_i\right)^{\xi-1}}{\Gamma(\xi)} & \alpha_i \geq 0 \\ 0 & \alpha_i < 0 \end{cases}$$

This method simplifies the assumption of calculations of the model (11), as it has been proposed in Alison (2009). The main differcet between the model RE and the Pooled method is assumed that there is no serial corrlation. The results of the estimation of equation (11) by the random effects method have been shown in Table (8):

Table 8:The Combained (Long-term and Short Term Combination) Relationship

terror	Observed Coef.	Bootstrip Std. err.	Z	p>|z|
Corruption Con.	-1.818077	0.588649	-2.10	0.036
Politicial St.	-1.447321	0.2284517	-3.20	0.001
Demo.	-1.142704	0.5321686	6.12	0.000
Cons.	1.78659	0.4313944	4.54	0.000
lnalpha	-1.048096	0.4593968		
Alpha	0.3506046	0.9371145		
LR test of alpha=·	$\chi^2(1)$	0.506543		

There is also an inverse relationship between the number of terrorist attacks with corruption control and political stability based on the above results. In the case of long-term combined aggregate proportions effects aginst short-term, democracy has a positive and significant effect on the number of terrorist attacks in selected countries in this study.

4.2.3 The Short-term Effect of Political Stability, Corruption and Democracy on Terrorist Attacks

The fixed effects method is used to estimate the short-term effects of the above explanatory variables and terrorist operations. This method, the best estimation which can be used in the time series of the data (Kennedy, 2008). The fixed effects model assumes that the disjunctions and disproportionate between countries that have been collected in the α_i parameter which is correlated with the vector of explanatory variables.

$$X = \left(political stability \ , correption \ , democracy \right)^{'}$$

In this case, equation (11) is written as follows:

$$E \left(terror_{it} | \alpha_i \, , X_{it} \right) = \exp(\gamma_i + X_{it}' \beta) = \alpha_i \exp(X_{it}' \beta) \qquad (12)$$

The conditional maximum likelihood is used to estimate the equation (12), that the first parameter α_i will be deleted in equation (12) and will be estimated using the data within for obtaining the short-term effects of the model. The results of the estimation of equation (12) have been shown in the fixed effect method in Table (7):

Table 9: Short-term Relationship

Terror	Observed. Coef.	Bootstrap Std.err.	Z	$p > |z|$
Political St.	-1.447454	0.4518489	-3.20	0.001
Corruption Co.	-1.817611	0.8651558	-2.10	0.036
Demo.	1.142266	0.7267433	6.12	0.000

There is an inverse relationship between the number of terrorist attacks with political stability and the control of corruption in the short term, but democracy in the short term has a positive and significant effect on the number of terrorist attacks in the selected countries.

5. Conclusion

Terrorism means "the use or threat of using violence or force by local individuals or groups against civilians to achieve a political or social objective by scaring the large number of people who are involved in this flow." Today, many academic researches have been conducted on the issue of terrorism considering the importance of violence. This study seeks to identify the factors that affect

terrorism in the short and long term. An analysis has been conducted on data from 17 Muslim countries in Middle East and North Africa region. The research uses the modified Poisson method and the dependent variable is the number of terrorist attacks, and independent variables include political stability, corruption and democracy. The short-term results indicate that there is an inverse relationship between the number of terrorist attacks with political stability and corruption, but democracy has a positive and significant effect on the number of it in the selected countries. Results also indicate the political stability and corruption controlling reduceses terrorism attacks in the long term, however the effect of democracy is meaningless and in-significant.

Previous studies emphasize on the negative relationship between political stability and terrorism in the long term, and the results of this study confirm the negative relationship both in the short and long term. Boussiga (2016) also believes that corruption and terrorism are convergence. The results of this study also confirm the hypothesis by expressing a negative relationship between corruption controlling and terrorism in the long term. Another important factor is democracy. In this regard, there are two perspectives: either democracy can reduce terrorism or can contribute to the spread of terrorism. The results of this study indicate that in the long term, democracy has no significant effect on the increase of terrorist attacks, but has a positive effect in the short term. Indeed, this study confirms Andrew Jensen's findings that democracy can not be a way to struggle with terrorism. This is because of the fact that in the studied countries with the increase of the index of democracy that formerly governed by a dictatorial structure who were the minority groups that they owned of prior resources are not willing to accept the domination of the majority, like the case of Iraq. Because of this fact that they will be disappeared in the new system and do not have the force to be seen, so, they begin to resistors agianst the new open system.

5.1 Suggestions to Combat and Struggle with the Phenomenon of Terrorism

The fight and struggle against terrorism is urgent and timely. To this purpose, there are two general policy categories to struggle with terrorism that are:

A) Income and Revenue Policies

Terrorists need financial resources to perform their activities. They are always struggling to attract or retain their financial resources. One of the policies of combating terrorism is income policies. Governments are struggling to reduce terrorist activities by reducing access to resources, freezing financial assets and disrupting the flow of funds. The funds and resources needed to increase terrorist activities will be made at a lower cost. Corruption control will also greatly block the financing of the terrorists' resources. In addition, when a sovereign state is suffering from high and unpredictable corruption, the training of terrorists is also a prerequisite for groups of people who may not even think like them.

Therefore, the importance of the concept of controlling corruption, especially for countries that are at least slightly involved with the activities of terrorists, is very important to prevent the occurrence of terrorist activities.

B) Pricing Policy

Pricing policies will reduce the level of these activities by increasing the cost of terrorist activities. An important issue here is the replacement of activities and means that uses by terrorism with a higher cost for the people who intented to such actions. In the other worst, the cost of such activities must be increased.

In this direction, increasing political stability of countries through extensive trade and economic relationships, increasing economic growth and effective measures to reduce poverty and inequality in societies, and improving the quality and quantity of the educational system, especially in the productive areas of terrorism can increase costs of terrorism.

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تاثیر ثبات سیاسی، فساد و دموکراسی بر تعداد حملات تروریستی صورت گرفته در کشورهای خاورمیانه و شمال آفریقا (رویکرد پواسون اصلاح شده)

چکیده

تروریسم به علت عدم ثبات سیاسی، فساد و نبود دموکراسی تهدیدی جهانی محسوب و صلح و امنیت را با چالش جدی مواجه کرده است. مقابله با این پدیده مستلزم شناخت ابعاد آن برای یافتن راه حل‌های ممکن می‌باشد. این پژوهش به بررسی تاثیر برخی عوامل موثر بر تروریسم درکوتاه‌مدت و بلندمدت پرداخته است. مطالعه حاضر با استفاده از روش‌های استنباطی و رگرسیونی مبتنی بر مطالعات کتابخانه‌ای ا نجام شده است. تحلیل و بررسی بر روی داده‌های بدست آمده از ۱۷ کشور مسلمان با روش پواسن اصلاح شده در حالت ترکیب اثرات کوتاه‌مدت با بلندمدت (به جهت افزایش کارایی ضرایب مدل رگرسیونی) صورت گرفته است. یافته‌های پژوهش حاکی از آن است که در بلندمدت ثبات سیاسی و کنترل فساد بر تعداد حملات تروریستی تاثیر منفی دارد. اما، دموکراسی اثر معنی‌داری برحملات تروریستی ندارد. همچنین، در کوتاه مدت میان تعداد حملات تروریستی با ثبات سیاسی و کنترل فساد رابطه عکس وجود دارد. اما بر خلاف نتیجه بلند مدت، دموکراسی تاثیر مثبت و معنی‌داری بر تعداد حملات تروریستی در کوتاه مدت در کشورهای منتخب این مطالعه دارد.

کلمات کلیدی: تروریسم، فساد، دموکراسی، ثبات سیاسی، رگرسیون پواسون اصلاح شده.

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