

Chapter 4

Corruption and Terrorism: Will They Undermine the Arab Spring?

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Any kind of political instability has important policy implications for development in general, and for sustainable economic growth in particular. The recent turmoil in the Middle East is no exception. It is important to understand both the motives for the uprisings and the interplay of political, social, and economic factors that underpin them and will affect their likely course. This chapter focuses particularly on the relationship between corruption, terrorism, economic freedom, and growth. Three main questions are explored with a variety of econometric techniques:

1. Is terrorism more likely to appear under more corrupt regimes?
2. Is there a long-run relationship between a country's level of economic freedom and terrorism?
3. What is the impact of terrorism on foreign direct investment (FDI) and gross domestic product (GDP) per capita?

The results point to a high risk that the hopes of the revolutionary movements will founder on the rocks of terrorism and corruption.

IRAN'S GREEN MOVEMENT AND THE ARAB SPRING

For many, the trigger point of the Arab Spring was the self-immolation of a Tunisian street peddler, but the real spark for the unrest may lie further back in the Iranian pro-democracy Green Movement of June 2009. The Iranian government's violent and deadly response to protests following the re-election of President Mahmoud Ahmadenijad sparked outrage and antagonism against the regime and sowed seeds of discontent against dictatorship and repression that spilled throughout the region, inflaming aspirations for economic and political freedom.

Facebook and Twitter feeds during Iran's Green Movement include messages from young Egyptians blaming themselves for not following the Iranian lead. There can be little doubt that

Egyptians, living like Iranians under a regime that denied basic human rights and suppressed political and economic freedom, were motivated by Iranians' resistance and solidarity.

Both the Arab Spring and Iran's Green Movement were organized by groups of youngsters frustrated with their gloomy economic prospects. Importantly, they had no ties to extremist fundamentalism; they were "non-ideological," and their solidarity and integrity were unprecedented. However, a big difference between Iran's Green Movement and the Arab uprising is that Iranian protesters faced a regime with strong fundamentalist ideology, wielding a weapon—"religious authenticity"—that other authoritarian regimes in the region lacked. As Nader Hashemi, a teacher of Islamic politics at the Josef Korbel School of International Studies at the University of Denver, points out:

Religious authenticity and anti-imperialism are two pillars that shape contemporary Muslim identity. They are powerful weapons that can influence public opinion. Egyptian president Hosni Mubarak and Tunisian president Zine Al Abidine Ben Ali could not utilize these themes to retain power for obvious reasons. Both men were military leaders with weak religious credentials who justified their rule in the name of secular Arab nationalism, not Islam.¹

The lack of any particular Islamic focus in the Egyptian and Tunisian protests and the non-relevance of imperialism in the National Transition Council's mandate in Libya suggest that political dynamism in the region may have reached a level where foreign bogeymen can no longer be credibly blamed for the inefficiency and corruption of totalitarian regimes. If so, there may be an opportunity for more inward-looking analysis to identify internal factors responsible for the region's well-being or lack thereof.

If the young people who are running the pro-

1. Nader Hashemi and Danny Postel, eds., *The People Reloaded: The Green Movement and the Struggle for Iran's Future* (Brooklyn, N.Y.: Melville House, 2011).

tests are asking for economic freedom, prosperity, and political liberty, as the evidence would seem to indicate, it may be that the future of the region depends on reforms that are economic, not religious, in focus. The results of this study support that view. Of course, this does not rule out the existence or influence of pro-Islamic groups, but they are not—or at least not yet—majorities and cannot rule democratically in any country. If they do gain power, they are unlikely to satisfy the yearning for economic freedom, prosperity, and political liberty.

Currently, 25 percent of the young generation in the Arab region is jobless, and inflation is creeping up. Competition has been replaced with government monopolies, and the existence of large underground economies makes official data unreliable. Legal and constitutional barriers to economic freedom not only have limited the flow of FDI to the region, but also have adversely affected entrepreneurship at the national level due to the emergence of a new social class, the so-called one-night billionaires. This new class has emerged as a result of rent-seeking activities and profiteering by a small group of people who have close ties with top-ranking authorities; such "cronyism" inside the ruling totalitarian regimes has ruined the economic environment for achieving sustainable economic growth.

SOME ECONOMIC INDICATORS IN THE REGION

Selected economic indicators (presented in Table 1) highlight the fragile state of many economies in the region. Amazingly, Libya, one of the region's main oil producers, experienced a drop in real GDP of 2.3 percent in 2009. Iran, the fourth biggest producer of oil in the world, had GDP growth of only 0.1 percent in 2009 and 1 percent in 2010. Consumer price index (CPI) inflation there reached 13.5 percent in 2010, and the official unemployment rate exceeded 12.5 percent.

Egypt, under the Mubarak regime, was in similar straits, with an unemployment rate of 9.4 percent and an inflation rate of 11.7 percent. Noticeably, Egypt has also experienced the highest levels of corruption in the region after Iran, Yemen, and Syria. Tunisia also suffers from an

Economic Indicators in Middle East/North Africa Countries

Country	GDP growth	Unemployment	CPI inflation	2011 Economic Freedom Score	2011 Freedom From Corruption Score
Algeria	3.3	11.3	5.7	52.4	28
Bahrain	4.1	n/a	2.8	77.7	51
Egypt	5.1	9.4	11.7	59.1	28
Iran	1.0	12.5	13.5	42.1	18
Jordan	3.1	12.8	-0.6	68.9	50
Lebanon	6.98	n/a	1.1	60.1	25
Libya	4.2	n/a	2.4	38.6	25
Morocco	3.29	10.0	0.9	59.6	33
Qatar	16.3	n/a	-4.8	70.5	70
Saudi Arabia	3.70	5.4	5.0	66.2	43
Syria	3.23	n/a	2.9	51.3	26
Tunisia	3.69	14.2	3.8	58.5	42
Yemen	8.0	15.00	3.7	54.2	21

Sources: International Monetary Fund, "Regional Economic Outlook : Middle East and Central Asia," "Oct. 10," at <http://www.imf.org/external/pubs/ft/reo/2010/mcd/eng/10/mreo1024.pdf> (November 15, 2011), Table 1, p. 56; World Bank, "World Development Indicators (WDI) & Global Development Finance (GDF)," at <http://databank.worldbank.org/ddp/home.do> (November 15, 2011); and Terry Miller, Kim R. Holmes, and Edwin J. Feulner, 2012 *Index of Economic Freedom* (Washington, D.C.: The Heritage Foundation and Dow Jones & Company, Inc., 2012), at www.heritage.org/index.

Table 1  heritage.org

unemployment rate of 14.2 percent. Data on Syrian unemployment are unavailable, but it is very likely a two-digit figure as well.

With such an economic landscape, it is understandable that citizens of each of these countries are tired of their gloomy economic prospects and agitating for change. People in the region are frustrated by failed economic reforms and the inability of their corrupt regimes to foster growth and prosperity.

The basic economic data strongly suggest that the recent movements could be economically motivated. Countries with the lowest economic freedom scores like Libya, Iran, Syria, and Yemen, which also have the worst corruption scores, have tended to experience the most severe political unrest in the region, whereas countries like Qatar, Oman, Bahrain, and the United Arab Emirates, with higher levels of economic freedom and better corruption scores, have been able to survive the current upheaval.

Data also suggest that more than 85 percent

of the population in Middle East and North Africa (MENA) countries live on less than \$2 per day. Gini coefficients, though not available for the whole region, suggest that the distribution of income has deteriorated over time.

Unfortunately, since we do not have access to historical data on income distribution for each country, we are unable to analyze the evolution of income distribution in each country separately. However, as the data in column 3 of Table 2 suggest, almost 30 percent of income is held by the highest 10 percent of the population in most countries in the region. Interestingly enough, the worst distributions of income based on the inequality-adjusted income index are observed in Tunisia and Egypt, which have the highest levels of corruption. The gender inequality index suggests that Yemen and Egypt had the highest gender inequality in the region. Such inequality undoubtedly played a part in motivating the protesters against the dictatorial regimes in the region.

Inequality Adjusted Income Index and Gender Inequality Index in Some Middle East/North Africa Countries

Country	Gini Index 2005	Income Held by Highest 10% 2005	Gender Inequality Index 2008	Inequality Adjusted Income Index 2010
Algeria	-	-	0.57	-
Bahrain	-	-	0.47	-
Egypt	32.1	27.6	0.69	0.46
Iran	38.3	29.6	0.59	-
Jordan	37.7*	30.8*	0.61	0.45
Libya	-	-	0.47	-
Morocco	40.9**	33.2**	0.65	0.40
Syria	35.8***	28.9***	0.63	0.42
Tunisia	-	-	0.48	0.46
Yemen	37.7	30.8	0.83	-

* 2006 data ** 2007 data *** 2004 data

Sources: World Bank, "World Development Indicators (WDI) & Global Development Finance (GDF)," at <http://databank.worldbank.org/ddp/home.do> (November 15, 2011), and United Nations Development Programme, "Human Development Report 2011", at <http://hdr.undp.org> (November 15, 2011).

Table 2  heritage.org

It is too early to predict the outcome of the Arab uprising in the region, as some fundamental questions remain unanswered:

- Will Islamic totalitarianism be replaced by secular totalitarianism?
- Will it lead to a civil war?
- Or will it lead to more democratic regimes?

Though some scholars have argued that the region's autocratic regimes will be replaced by other "newborn autocratic regimes," there are many reasons for this not to happen. The leaderless characteristic of the movements and the contribution of the younger generation to the protests create hope for the establishment of new democratic regimes.

CORRUPTION, POLITICAL VIOLENCE, ECONOMIC FREEDOM, AND GROWTH

Regardless of the political outcome, there are too many economic issues involved in recent events that have not been carefully addressed. This chapter will analyze three of them.

- First, the hypothesis that political unrest appears more frequently under more corrupt regimes will be put to the test.
- Second, the long-run relationship between economic freedom and political unrest will be tested.
- Finally, the effects of political unrest on net FDI and GDP per capita will be explored within the framework of an econometric model.

The use of statistical and econometric techniques for this analysis requires identification of a non-subjective database reflecting the level of political instability and violence in the countries under review. For this study, the RAND Database of Worldwide Terrorism Incidents has been selected both as a proxy for overall political violence and instability in the region and because of the likely importance of terrorism in shaping GDP per capita and FDI flow to the region. The database includes acts that, among other criteria, must include violence or the threat of violence and be motivated, at least in part, by a political objective. It is quite broad

Johansen Cointegration Test Between Corruption and Number of Terrorist Attacks

Country	Number of Cointegration With One Lag at 0.05 Level			Number of Cointegration With Two Lags at 0.05 Level		
	Trace Statistics*	Probability		Trace Statistics*	Probability	
Algeria	0	8.47	0.41	0	9.72	0.30
Bahrain	1	50.95	0.00	2	60.81	0.00
Egypt	2	23.32	0.00	2	32.42	0.00
Iran	1	17.26	0.02	0	10.78	0.22
Jordan	2	17.06	0.02	2	34.84	0.00
Kuwait	0	4.66	0.84	1	29.30	0.00
Lebanon	1	21.31	0.00	2	27.61	0.00
Libya	0	8.77	0.38	0	-	-
Morocco	1	17.23	0.02	1	18.82	0.01
Saudi Arabia	1	19.35	0.01	1	20.45	0.00
Syria	1	26.52	0.00	1	1.73	0.18
Tunisia	0	8.25	0.43	2	28.8	0.00
Yemen	0	10.65	0.23	0	9.78	0.30

* Critical value is 15.49 at P=0.05 level.

Source: Author's calculations based on data retrieved from RAND, "RAND Database of Worldwide Terrorism Incidents," February 27, 2011, at <http://www.rand.org/nsrd/projects/terrorism-incidents.html> (April 18, 2011).

Table 3  heritage.org

in its inclusiveness and covers more than 3,000 incidents in the region since 1970.²

Up until now, most analysis has treated terrorism as an Islamic phenomenon against Western values. It may well be, however, that terrorism as it manifests in the Arab region is more typically motivated as "revenge against corruption," with foreigners targeted as convenient symbols of a regime's decadence that from the perspective of national citizens may be linked to cultural and economic pressures fostered by globalization.

Though much attention has been paid to the effects of terrorism on macroeconomic variables in the Western world, less has been said about its occurrences in and effects on countries in the Middle East, though both the magnitude of ter-

rorist attacks and their impacts can be significant. Indeed, countries like Algeria, Syria, and Lebanon have experienced more than 80 terrorist attacks each in one single year. In some cases, the targets may have been Western citizens, but the outcome has been negative not just for the specific targets, but for the countries in which the attacks occurred.

POLITICAL VIOLENCE AND CORRUPTION

In this section, two questions will be addressed:

1. Are countries with more corrupted governments more likely to experience political violence (e.g., terrorism)? The Johansen cointegration technique is used to see whether there is any long-term relationship between terrorism and the level of corruption as measured in the *Index of Economic Freedom* across the countries in the region.

2. See RAND Corporation, National Security Research Division, RAND Database of Worldwide Terrorism Incidents, Web site, at <http://www.rand.org/nsrd/projects/terrorism-incidents.html> (November 14, 2011).

2. Is there a long-run relationship between economic freedom and political violence/terrorism? Again, the Johansen co-integration technique is used. The data are annual and cover the period 1997–2009.³

Restating the questions as hypotheses to be tested, the first is that there is a long-run relationship between the freedom from corruption index and the number of terrorism attacks in the region.

H_0 = There is no long-run relationship between terrorism and the freedom from corruption index.

H_a = There is a long-run relationship between terrorism and the freedom from corruption index.

The results presented in Table 3 reject the null hypothesis, indicating that there is a long-run relationship between terrorism and corruption in most Middle East countries (except Algeria, Libya, and Yemen, as outliers). Interestingly enough, in the most corrupted countries in the region, like Egypt and Tunisia, there are at least two co-integration vectors at the $P = 0.05$ level of significance between terrorism and corruption. Put differently, the more corrupted the governments are, the more likely the extremist groups in those countries are to get involved in terrorist activities. Therefore, the proposed motivation for terrorism as “revenge against corruption” fits the data appropriately.

The second hypothesis is that there is a long-run relationship between economic freedom and terrorism measured by the number of casualties inside a country’s borders, and also by the number of casualties in the region.

H_0 = There is no long-run relationship between terrorism and economic freedom.

H_a = There is a long-run relationship between terrorism and economic freedom.

3. We could not go back further because data on economic freedom and corruption before 1997 are not available.

Table 4 summarizes the number of co-integration vectors between economic freedom and the number of casualties inside a country’s borders (column 2) or the number of casualties in the region (column 5). The results suggest that, for most countries in the region at least, one co-integration exists between the two variables; however, countries like Bahrain, Iran, Libya, Tunisia, and Yemen are outliers, suggesting that further study may be required.

TERRORISM, FDI, AND GDP PER CAPITA IN MENA COUNTRIES

The final section of this chapter examines the effects of terrorism on FDI and GDP per capita. There is a considerable amount of previous academic work on which to build:

- Walter Enders (University of Alabama), Adolfo Sachsida (Catholic University of Brasilia), and Todd Sandler (University of Southern California) investigated the extent to which transnational terrorist attacks altered U.S. foreign direct investment in a group of Organisation for Economic Co-operation and Development (OECD) countries and non-OECD countries. They found that terrorist attacks had a small but significant impact on U.S. FDI stock to OECD countries but no significant impact on the stock of FDI to non-OECD countries. Interestingly, terrorist incidents with no casualties had a smaller effect on FDI than incidents with casualties.⁴
- Alberto Abadie (Harvard University and National Bureau of Economic Research) and Javier Gardeazabal (University of the Basque Country) used a simple econometric model to show that terrorism has a large impact on the allocation of productive capital across countries. The model indicates that in addition to increasing uncertainty, terrorism reduces the expected return on investment. As a result,

4. Walter Enders, Adolfo Sachsida, and Todd Sandler, “The Impact of Transnational Terrorism on US Foreign Direct Investment,” November 2005, at http://www.cba.ua.edu/~wenders2/wp-content/uploads/2009/12/us_fdi_ms_complete.pdf (November 13, 2011).

Johansen Cointegration Test Between Economic Freedom Index and Casualties of Terrorist Activities, With One Lag

Country	Number of Cointegration With Number of Casualties Inside the Border at P=0.05 Level			Number of Cointegration With Total Number of Casualties in the Region at P=0.05 Level		
	Trace Statistics*	Probability		Trace Statistics*	Probability	
Algeria	1	18.63	0.016	0	8.55	0.408
Bahrain	0	11.19	0.200	0	12.85	0.120
Egypt	0	12.97	0.115	1	21.35	0.005
Iran	0	13.05	0.112	0	13.27	0.105
Jordan	2	21.22	0.006	1	17.30	0.026
Kuwait	2	21.96	0.004	0	11.51	0.181
Lebanon	2	20.43	0.008	2	17.96	0.020
Libya	0	10.43	0.249	0	7.61	0.506
Morocco	0	14.08	0.080	1	15.97	0.042
Saudi Arabia	2	16.17	0.039	0	9.66	0.307
Syria	0	8.76	0.387	1	22.23	0.004
Tunisia	0	9.44	0.325	0	10.94	0.214
Yemen	0	10.24	0.262	0	10.56	0.239

* Critical value is 15.49 at P=0.05 level.

Source: Author's calculations based on data retrieved from RAND, "RAND Database of Worldwide Terrorism Incidents," February 27, 2011, at <http://www.rand.org/nsrd/projects/terrorism-incidents.html> (April 18, 2011).

Table 4  heritage.org

changes in the intensity of terrorism may cause large movements of capital across the countries in an open economy.⁵

- Hamid Shahrestani (Ohio University) and Nahid Anaraki (Islamic Azad University, Iran) captured the effects of terrorism on some macroeconomic variables at the international level. They used the generalized method of moment (GMM) technique to investigate the effects of terrorism on such variables as GDP growth, FDI, and total factor productivity with cross-section data for 2005 for a sample of both developed and developing coun-

tries. Their results suggest that terrorism has adversely and significantly affected economic growth and FDI.⁶

- Peter Kurrild-Klitgaard (University of Copenhagen) and Mogens K. Justesen and Robert Klemmensen (University of Southern Denmark) conducted an empirical analysis with data from 1996 to 2002 on measures of economic and political freedom as well as the occurrence of transnational terrorism. They used binary logistic regression models to

5. Alberto Abadie and Javier Gardeazabal, "Terrorism and the World Economy," August 2007, at http://www.spearheadresearch.org/pages/documents/Terrorism_And_The_World_Economy.pdf (November 13, 2011).

6. Hamid Shahrestani and Nahid Kalbasi Anaraki, "Protectivity Versus Productivity and Economic Growth: Empirical Evidence from Selected Countries," *International Business & Economics Research Journal*, Vol. 7, No.10 (October 2008), pp. 43-52, at <http://journals.cluteonline.com/index.php/IBER/article/view/3299/3347> (November 13, 2011).

predict whether or not a country would experience transnational terrorist attacks and whether or not terrorism originated in a particular country. They found that the extent of political rights and civil liberties is negatively correlated with the generation of transnational terrorism from a country.⁷

- Nicole V. Crain (National Defense University) and W. Mark Crain (Lafayette College) estimated the macroeconomic consequences of terrorism. They used panel data for 147 countries for 1968–2002 and found that potential gains to a country from reducing terrorism threats are quite large, although the specific estimates depend on a country’s population, base level of output, and investment. They found significant negative impact on GDP per capita and FDI from terrorist incidents.⁸
- Subhayu Bandyopadhyay (Federal Reserve Bank of St. Louis), Todd Sandler (University of Texas at Dallas), and Javed Younas (American University of Sharjah, United Arab Emirates) used panel data to investigate the relationship between terrorism and FDI. Their analysis focused on 78 developing countries for 1984–2008 and found that all types of terrorism depress FDI to different extents.⁹
- M. Alomar and M. I. T. El-Sakka (University of Kuwait) used panel data for a group of 136

countries to investigate the effects of a set of government barriers on FDI compared to terrorism. They found that terrorism has negatively and significantly affected the level of FDI to less-developed countries.¹⁰

DATA AND METHODOLOGY

This analysis implements panel data for a group of 12 developing countries in the Middle East and North Africa (Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Libya, Morocco, Syria, Saudi Arabia, and Tunisia¹¹) for the period 1970–2009, which covers more than 3,000 terrorism incidents in the region. The hypothesis tested is that terrorism adversely affects FDI and GDP per capita.

H_0 = Terrorism does not affect FDI and GDP per capita in these countries.

H_a = Terrorism adversely affects FDI and GDP per capita in these countries.

A regression model is implemented where FDI or GDP per capita is used as a dependent variable and terrorism (measured by the number of casualties) is used among independent variables.

EFFECTS OF TERRORISM ON FDI

Extending the Crain and Crain model, the following econometric model is used to capture the effects of terrorism on FDI in the region:

$$FDI_i = \partial_0 + \partial_1 \overset{+}{GDPG} + \partial_2 \overset{+}{Openness} + \partial_3 \overset{+}{pop} + \partial_4 \overset{-}{EXCV} + \partial_5 \overset{-}{Casualties}$$

$$\frac{\partial FDI}{\partial GDPG} > 0 \quad \frac{\partial FDI}{\partial Openness} > 0 \quad \frac{\partial FDI}{\partial pop} > 0 \quad \frac{\partial FDI}{\partial EXCV} < 0$$

$$\frac{\partial FDI}{\partial Casualties} < 0$$

7. Peter Kurrild-Klitgaard, Mogens K. Justesen, and Robert Klemmensen, “The Political Economy of Freedom, Democracy and Transnational Terrorism,” *Public Choice*, Vol. 128, Nos. 1/2 (July 2006), pp. 289–315, at <https://woc.uc.pt/feuc/course/MRI/2007-2008/Kurrild-Klitgaard%20et%20al%20-%20The%20political%20economy%20of%20freedom,%20democracy%20and%20transnational%20terrorism.pdf> (November 14, 2011).

8. Nicole V. Crain and W. Mark Crain, “Terrorized Economies,” draft, May 2005, at <http://www.cadep.ufm.edu/Seminarios/SeminarioEconomia4/lecturas/Terrorized-Economies-Crain-and-Crain.pdf> (November 14, 2011).

9. Subhayu Bandyopadhyay, Todd Sandler, and Javed Younas, “Foreign Direct Investment, Aid, and Terrorism: An Analysis of Developing Countries,” Federal Reserve Bank of St. Louis, Research Division, Working Paper No. 2011-004A, January 2011, at <http://research.stlouisfed.org/wp/2011/2011-004.pdf> (November 14, 2011).

10. M. Alomar and M. I. T. El-Sakka, “The Impact of Terrorism on the FDI Inflows to Less Developed Countries: A Panel Study,” *European Journal of Economics, Finance, and Administrative Sciences*, Issue 28 (2011), at http://www.eurojournals.com/EJEFAS_28_09.pdf (November 13, 2011).

11. We could not include Yemen because data for most variables are not continuously available, and models therefore could not be estimated.

Effects of Terrorism on Foreign Direct Investment to Middle East Countries

Country	GDPG	POP	Openness	EXCV	CPI	Casualties	R-Squared	DW
Algeria	1.30 (1.15)	11.4*** (3.74)	6.99*** (2.53)	0.75 (0.61)	-	-1.43** (0.75)	0.58	1.7
Bahrain	-0.19 (0.49)	4.25*** (1.47)	-0.33 (1.98)		-0.52** (0.26)	0.27 (0.26)	0.86	2.2
Egypt	2.56 (2.55)	2.47 (3.76)	-3.95** (1.75)	-0.41** (0.19)	-	-0.36 (0.39)	0.76	2.3
Iran	0.44 (0.31)	1.96** (1.02)	2.79* (0.80)	-	-0.01 (0.53)	-0.27* (0.18)	0.88	2.4
Jordan	1.05* (0.57)	3.87** (1.60)	1.70 (2.54)	-	-0.11 (0.38)	-0.13 (0.16)	0.83	2.4
Kuwait	-0.44 (0.64)	12.61** (4.16)	5.71 (7.12)	-	-0.99* (0.60)	-0.88 (0.68)	0.74	2.3
Lebanon	-0.27 (0.30)	16.23*** (3.65)	-1.41 (1.01)	-	-1.00*** (0.27)	-0.21 (0.32)	0.83	1.8
Libya	5.34*** (0.97)	16.94*** (1.86)	-4.13*** (0.90)	-	1.46*** (0.28)	-1.34*** (0.26)	0.98	2.3
Morocco	0.88** (0.50)	7.99** (3.82)	3.51 (2.45)	-	-0.09 (0.52)	-0.58** (0.27)	0.59	1.7
Saudi Arabia	0.28 (0.37)	-2.51 (3.05)	2.00 (2.79)	-1.65 (1.25)	-	0.74 (0.58)	0.51	1.7
Syria	0.27 (0.29)	11.9*** (0.83)	1.21* (0.65)	-	0.81*** (0.23)	-0.50** (0.20)	0.94	1.8
Tunisia	1.27* (0.68)	-3.07 (2.15)	-1.49 (1.15)	-	-1.81*** (0.24)	-0.16* (0.07)	0.99	2.4

() Standard errors * Significant at P=0.10 ** Significant at P=0.5 *** Significant at P=0.01

Notes: The model for Yemen could not be estimated since data on these variables for most years do not exist. Models are estimated in log-log form, therefore coefficients are elasticities.

Source: Author's calculations.

Table 5  heritage.org

GDPG is the GDP growth rate, and Openness stands for the degree of openness in a country and is measured by the ratio of imports plus exports over GDP. The size of the economy is measured by population (POP), and exchange rate volatility (EXCV) is deployed as a measure of macroeconomic instability. In some cases where data on the exchange rate are not continuously available, we measure macroeconomic instability with the consumer price index (CPI). Finally, Casualties represents the number killed and injured in a terrorist attack in the region in a specific year.

The results in Table 5 suggest that the number of casualties has a statistically significant negative impact on FDI in Algeria, Iran, Libya, Morocco, Syria, and Tunisia. For instance, one standard deviation in the number of those killed and injured in the region by a terrorist attack reduces FDI to Egypt, Iran, Lebanon, Morocco, and Syria by 0.36 percent, 0.27 percent, 0.21 percent, 0.58 percent, and 0.50 percent, respectively. Indeed, since the casualty number is the total number of killed and injured in the region, one may conclude that a terrorist attack in one coun-

Effects of Terrorism on GDP per Capita in Middle East Countries

Country	K	Sec	M2/GDP	Open-ness	GE	CPI	INT	Casual- ties	R- Squared	DW
Algeria	0.20** (0.08)	0.22*** (0.05)	-0.11** (0.05)	-0.02 (0.03)	-	-	-0.09*** (0.01)	-0.007** (0.003)	0.97	2.2
Bahrain	0.03** (0.017)	0.40*** (0.031)	0.24*** (0.06)	-	-0.67*** (0.03)	-	-	-0.017*** (0.005)	0.98	2.0
Egypt	-0.017 (0.06)	0.46*** (0.03)	0.27*** (0.07)	0.03 (0.04)	-	-	-0.09*** (0.03)	-0.012** (0.005)	0.99	1.9
Iran	0.01* (0.09)	-0.04 (0.06)	-0.40** (0.08)	0.11 (0.10)	0.36** (0.14)	-0.06* (0.04)	-	0.04** (0.01)	0.69	1.4
Jordan	-0.17 (0.12)	0.28 (0.18)	-0.15 (0.27)	0.94*** (0.22)	-	-	0.05 (0.04)	-0.02* (0.01)	0.96	2.2
Kuwait	0.06 (0.06)	-0.32** (0.12)	-0.37*** (0.10)	0.33*** (0.03)	0.49*** (0.07)	-0.03 (0.01)	-	-0.007* (0.004)	0.88	1.8
Lebanon	0.04 (0.09)	1.64*** (0.27)	-	0.07 (0.04)	-0.38** (0.16)	0.02* (0.01)	-	-0.03* (0.02)	0.91	2.0
Libya	0.29* (0.16)	4.79** (2.06)	1.07** (0.47)	1.13 (1.39)	1.63** (0.76)	0.15 (0.11)	-	-0.09** (0.04)	0.99	2.6
Morocco	0.10 (0.09)	0.26*** (0.04)	0.05 (0.08)	0.13 (0.08)	0.30** (0.11)	-0.05*** (0.009) ¹	-	-0.009* (0.006)	0.98	1.4
Saudi Arabia	0.31*** (0.09)	0.46*** (0.16)	-0.68*** (0.14)	0.26 (0.17)	0.54*** (0.14)	0.02 (0.02)	-	-0.008 (0.01)	0.86	1.5
Syria	0.33*** (0.05)	0.27*** (0.06)	-0.12 (0.10)	-0.02 (0.04)	-0.07 (0.08)	-0.01 (0.01)	-	0.02** (0.01)	0.87	1.40
Tunisia	0.27*** (0.07)	0.27*** (0.04)	0.63*** (0.11)	-0.05 (0.07)	-1.00*** (0.12)	0.02 (0.03)	-	0.01* (0.006)	0.98	1.10

() T-standard errors * Significant at P=0.10 ** Significant at P=0.5 *** Significant at P=0.01
1 - For Morocco, exchange-rate volatility is used instead of CPI.

Notes: The model for Yemen could not be estimated since data on these variables for most years do not exist. Models are estimated in log-log form, therefore coefficients are elasticities.

Source: Author's calculations.

Table 6  heritage.org

try not only affects the origin country, but also has a statistically significant impact on the flow of FDI to other countries in the region.

Moreover, the results suggest that the sensitivity of FDI to terrorism is not symmetric among the countries in the region; for instance the elasticity of FDI to terrorism, measured by casualties, is higher in Algeria and Libya than in other countries. In other words, one standard deviation in the number of casualties reduces FDI to these countries by 1.43 percent and 1.34 percent, respectively. Saudi Arabia and Bahrain

are outliers since the coefficient on the casualties variable does not have the expected negative sign. The reason may be that they are allies of the U.S. and receive capital flows regardless of the level of the terrorism threat.

EFFECTS OF TERRORISM ON GDP PER CAPITA

To capture the effects of terrorism on GDP per capita, we use the following model as used by Crain and Crain among others.

$$GDPPC_i = \partial_0 + \partial_1^+ K + \partial_2^+ Sec + \partial_3^+ M2/GDP + \partial_4^+ Openness + \partial_5^- GE + \partial_6^- CPI + \partial_7^- Int + \partial_8^- Casualties$$

$$\frac{\partial GDPPC}{\partial K} > 0 \quad \frac{\partial GDPPC}{\partial Sec} > 0 \quad \frac{\partial GDPPC}{\partial \frac{M2}{GDP}} > 0$$

$$\frac{\partial GDPPC}{\partial Openness} > 0 \quad \frac{\partial GDPPC}{\partial GE} < 0 \quad \frac{\partial GDPPC}{\partial CPI} < 0$$

$$\frac{\partial GDPPC}{\partial Int} < 0 \quad \frac{\partial GDPPC}{\partial Casualties} < 0$$

GDPPC is real GDP per capita at 2000 constant prices, K represents the level of fixed capital investment, Sec represents secondary school enrollment as a share of population, M2/GDP is a financial deepening index, and GE is government spending as a share of GDP. Macroeconomic instability is measured by CPI or interest rate volatility. Finally, Casualties represents the number killed and injured by a terrorist attack in the region in each year.

The results in Table 6 reject the null hypothesis that there is a lack of relationship between terrorism and GDP per capita in the region. The coefficient on the casualty variable is negative and statistically significant in most cases, except Iran, Syria, and Tunisia as outliers, where the coefficient on casualties is statistically significant at the 99 percent level but of the opposite-to-expected sign. This again suggests that some other explanatory factors may be missing from the equation.

An explanation for the negative impact of terrorism on GDP per capita is that governments respond to terrorism by reallocating resources from productive sectors to security, which reduces investment and overall productivity and retards growth in GDP per capita. Another explanation for the outlier countries is that they may not have responded to terrorism by reallocating resources or may have observed only a few terrorism incidents inside their borders. For instance, Iran is among a few countries in the Middle East that have had very few terrorist incidents inside their borders.

The results suggest that one standard deviation in the number of casualties leads to 0.02 percent, 0.03 percent, and 0.09 percent lower GDP per capita in Jordan, Lebanon, and Libya, respectively. However, the results for countries like Algeria, Bahrain, Egypt, Kuwait, and Morocco suggest that one standard deviation in the number of casualties from terrorist activities in the region has a much lower impact on GDP per capita. Syria and Tunisia have high elasticity to terrorism, though the coefficient on the casualty variable is of the opposite-to-expected sign.

In sum, the elasticity of GDP per capita to terrorism differs substantially among different countries. Our results indicate that countries facing higher levels of terrorism threat are likely to have higher elasticity of GDP per capita to terrorism, whereas countries with lower levels of terrorism threat experience lower elasticity of GDP per capita to terrorism. For instance, the elasticity of GDP per capita to terrorism is much higher in Libya, Lebanon, Jordan, and Syria than it is in such countries as Kuwait, Algeria, Bahrain, and Morocco.

FIGHTING FOR ECONOMIC FREEDOM

This chapter has tested three hypotheses. The first hypothesis was that countries with higher levels of corruption are more likely to be confronted with terrorism. Using the Johansen co-integration technique to test this hypothesis, a long-term relationship between the freedom from corruption index and terrorism was found in most countries in the region. The second hypothesis was that there is a long-run negative relationship between economic freedom and terrorism. Again, the Johansen co-integration test rejected the null hypothesis, finding co-integration between the two variables.

This analysis suggested a new motivation for terrorism, one that is less about Islam against Western values and more about revenge against corrupt regimes in the Middle East. Policymakers interested in fighting terrorism may find it useful to pay more attention to the struggle against corruption, since the two are co-integrated.

Finally, the chapter tested the hypothesis that terrorism adversely affects flows of FDI and the levels of GDP per capita in the Middle East and North Africa. Consistent with previous studies, it was found that terrorism has statistically negative impacts on the flow of FDI and GDP per capita in most countries in the region, except in a few outliers like Iran and Syria.

The results of the analysis in this chapter indicate that gloomy economic prospects, income inequality, and corrupted regimes in

the Middle East were important motivators in the Arab uprising. As many scholars have argued, Iran's Green movement played an important role in inspiring Arab youngsters. Unfortunately, though the Green Movement did not have a short-term positive outcome for Iranians, it propelled waves of change over the shores of the Middle East and North Africa. It may well be that the Arab uprising will have a domino effect on Iran's Green Movement as well.