Fall 2016

The Proximity-Based Effect of Terrorism on Countries' Economies

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Abstract
In this paper, I explore the effect that proximity to terrorist-controlled areas has on countries' economies. I posit that there exists a correlation between the aforementioned proximity and GDP growth rates, and hypothesize that the closer a country is to an area with high levels of terrorism, the more likely it is that its economy will be negatively affected. I begin by examining the nature of the correlation between terrorism and economic growth; following this, I explore the direct ways in which terrorism affects economic growth. Next, I delve into the recent economic history of countries around three areas: the Nigeria area, the Afghanistan-Pakistan area, and the Iraq-Syria area. From my examinations of the GDP growth rates of the countries around these areas, I find no uniform relationship between the countries' proximity to their respective areas and their GDP growth rates. To help explain this apparent lack of correlation, I look at other factors that influence GDP growth rates and note that these factors may be overshadowing the effects of terrorism. I conclude that there is no uniform relationship between a country's proximity to high levels of terrorism and its GDP; although terrorism can have effects on countries' economies, those effects are often negligible compared to other economic factors.

Keywords
Terrorism, economy, proximity, GDP

Disciplines
International Relations | Political Economy

Comments
Written for POL 103: Intro International Relations.

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POL 103
2 November 2016

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Terrorism is an ever-growing issue that can have serious ramifications around the world; particularly interesting is the relationship between terrorism and economic growth. Specifically, I seek to explore the effects of extremely high levels of terrorism on the economies of the countries around it. This leads me to ask: How does proximity to strongly terrorist-controlled areas affect countries' economies? I posit that there exists a correlation between the proximity to areas with very high levels of terrorism and a country's GDP growth rates. Understanding this relationship is important for better predicting what is most likely to happen to a country's economy based on its proximity to an area with high levels of terrorist activity. If we can predict what will happen, it is possible that the country could better brace itself for potential economic deterioration, thus protecting its economy. This would be extremely useful and may even have an impact on the world, which is increasingly globalized and economically interconnected; if the economy of one country fails, the economies of others are likely to be affected. It seemed that there is a strong correlation between a country's proximity to areas with high levels of terrorism and its economy, so I hypothesize that the closer a country is to an area with high levels of terrorism, the more likely the chance it is that its economy will be negatively affected.

There is a plethora of information about the relationship between terrorism and economic growth, but nothing that focuses on the effect terrorism has on countries around a single terrorist "hot spot". After exploring the different theories regarding how terrorism affects the economy, I examine whether those same effects hold true when focusing on the proximity of a country to areas with very high levels of terrorism. Later, I look specifically at the countries around Iraq and

Syria and operationalize the economic impacts by examining the GDP growth percentages of those countries over a period of time.

Before the effect of terrorism on economic growth can be examined, we must first determine whether terrorism has any correlation with economic growth. A study by Daniel Meierrieks and Thomas Gries tests for causality between terrorism and economic growth. Using a series of equations to test for Granger causality, they show that there is a causal effect between the two and found that "terrorism causally influences economic growth for the post-Cold War era" (Meierrieks and Gries 2012, 98). Now that it is evident that terrorism has some kind of correlation with economic growth, we can examine the nature of that correlation: Is it positive or negative, and is it significant or insignificant?

The Nature of the Correlation Between Terrorism and Economic Growth

Meierrieks and Gries find that the causal relationship between terrorism and growth is complex and heterogeneous over time and space. They explain that during the Cold War the economy influenced terrorism, while in the post-Cold War era terrorism influenced economic growth. What caused this change? They attribute it to ideological shifts, and explain that the relationship depends on a number of factors, including a country's political stability and geographical and cultural affiliation. These factors and more can change the relationship between terrorism and the economy (Meierrieks and Gries 2012, 91-92).

Alberto Abadie and Javier Gardeazabal say that, based on empirical evidence, they have good reason to believe that the consequences of terrorism usually have a large, negative effect on the economy (Abadie and Gardeazabal 2008). In a different article, using the Basque Country as a case study, they explain that "after the outbreak of terrorism, per capita GDP in the Basque Country declined about 10 percentage points relative to the synthetic control region" (Abadie and Gardeazabal 2003). This gives us a good idea of what went on in the Basque Country since the decline of GDP happened after the outbreak of terrorism. But this is only one case study; I find it difficult to make a generalization about most countries based on just one region. Along those lines, there are other studies that reject the idea of a significant economic impact of terrorism.

Blomberg et al. find that although terrorism has a negative impact on growth, it is statistically significant but economically small (Blomberg, Hess, and Orphanides 2003, 24). José Tavares also confirms that terrorism has an immediate negative impact on growth, but says that after “controlling for the extra growth determinants, the incidence of terrorism becomes insignificant”. He agrees that terrorism has impacts, but only on weak economies (Tavares 2003). Most importantly, the Global Terrorism Index concludes that “while economic growth and output can be negatively affected by acts of terrorism, there is not a uniform relationship across all countries”, and for most countries, terrorism does not have an important impact on economic growth (The Institute for Economics and Peace 2015 62-66). This caused me to rethink my perspective. Was the whole thing too complex and influenced by too many factors to isolate the specific effect terrorism has on the economy? I resolved to dig deeper into the specifics of how the economy could be affected.

Direct Ways in which Terrorism affects Economic Growth

Karin Glaser looks at the effects of terrorism on economic growth, capital markets, foreign trade, foreign direct investment, domestic investment, and government spending, employment and wages, and industry branches, especially tourism. Glaser explains that since stock prices “reflect expectations of future market developments”, they are seen as a good way of perceiving economic damage. Terrorism, she says, lowers profit expectations due to “increased security costs and a decrease in consumer demand", especially in the tourism sector. Additionally, the uncertain environment that terrorism creates causes the risk premiums on the stocks to rise. Terrorist activity--even the expectation of an attack--has negative effects on stock prices (Glaser 2015. 77-78).

But terrorism does not only affect stocks. A study on Israel by Eckstein and Tsiddon found negative effects on the GDP, consumption, investments, and exports. (Eckstein and Tsiddon 2004, 973). A separate paper by Chen and Siems concludes that "terrorist attacks and military invasions have great potential to effect [sic] capital markets around the world in a short period of time" (Chen and Siems 2004, 350). As for foreign direct investment, Abadie and Gardeazabal suggest that terrorism has a significant impact on its allocation. Additionally, they conclude that there is a negative correlation between the incoming FDI and the terrorism risk, as well as between national income and terrorism risk (Abadie and Gardeazabal 2008, 11). But looking at this critically, I found it important to remember that correlation does not equal causation. Not only this, the Global Terrorism Index disagrees with Abadie, arguing that in except in countries with very high levels of terrorism, "terrorism does not have a meaningful impact on economic growth and foreign direct investment" (The Institute for Economics and Peace 2015, 62). This seems to be contradicted when Glaser reports on the effect of ISIL in Syria (2015, 9-10), stating:

> In 2011, the starting year of the crisis, GDP growth dropped to -3.4% and continued declining by -21.8% in 2012 and -22.5% in 2013 (World Bank 2014a). According to World Bank reports, Syria's GDP strongly depends on oil and agriculture and its main sources of foreign earnings, that are exports of oil and services, are strongly impacted by the [conflict between the government and rebel groups, including ISIL].

But this actually holds with what the GTI said; Syria is a country with very high levels of terrorism, which means that these reported impacts follow along with their theory.

Effects Based on Proximity

Now that we have explored the correlation that terrorism has with economic growth and some of the specific ways in which it can affect it, we can finally turn to the effect terrorism has on a country based on its proximity to areas with high levels of terrorism. How can we define high levels of terrorism? According to the Global Terrorism Index, the highest activity is in Iraq, Nigeria, Afghanistan, Pakistan, and Syria. Out of ten, they scored a 10, 9.213, 9.065, and 8.108 on the Index, respectively (The Institute 2015, 10). I took these five countries and sorted them into three areas: The Nigeria area, the Afghanistan-Pakistan area, and the Iraq-Syria area. Around each area, I created three approximate proximity rings. The first ring consisted of countries that border at least one of the countries in the defined area. The second ring consisted of countries that did not border the area but were still relatively close. The third ring consisted of countries that were a medium or far distance away, at least compared to the distances of the countries in the previous rings (i.e., Kazakhstan was in the third ring for the Afghanistan-Pakistan area).

Within these rings, I separated them by their score on the GTI; though the level of terrorist activity in the receiving country is not a part of my hypothesis, I was interested to see if there was a correlation. After obtaining each country's GDP over a period of roughly sixteen years (2000- 2015 or 2016), and focusing on their 2016 rating as it compared to their 2000 and 2010 GDP percentage, as well as any peaks or valleys they had experienced, I tried to establish a general trend. What I found was baffling. There was no uniform relationship. Some countries had a generally upward trend, while many had a generally downward trend. The intensity of these trends also had no uniform relationship. For example, Kazakhstan had a heavily downward trend, despite being in the third ring from the Afghanistan-Pakistan area, and in the second ring, Uzbekistan strongly increased from 2000 and decreased only slightly from 2010. In order to better illustrate this, I will focus on the Iraq-Syria area and explain the countries' GDP trends as they do or do not correlate to their rings (recall; rings here are the informal measure of proximity).

Specific GDP Research and Conclusions*

Ring (indicates relative proximity to Iraq-Syria area)	Country	GDP growth percentage 2000	GDP growth percentage 2010	Peak/Valley	GDP growth percentage 2015 or most recent
Ring 1	Turkey	5.18%	7.573%	'09, -6.051%	2.475%
Ring 1	Lebanon	-1.122%	4.126%	'11, -3.65%	-2.632%
Ring 1	Jordan	2.576%	-1.605%	'04, 5.853%	-0.023%
Ring 2	Saudi Arabia	2.088%	2.222%	'11, 7.294%	1.34%
Ring 2	Armenia	6.51%	2.29%	'09, -13.892%	2.606%
Ring 3	Yemen	3.253%	0.525%	'11, -17.341%	'13 1.502%
Ring 3	Oman	4.746%	-1.665%	'11, -9.295%	-2.365%

* GDP percentages from The World Bank

The above table describes the GDP growth percentage rates of the countries around the Iraq-Syria area as reported by The World Bank. These numbers seem to suggest some sort of generally downward pattern; 7/7 of the countries' GDP percentages went down from 2000, 4/7 went down from 2010, and of those that did not, the margin of increase was small. Additionally, 3/7 experienced a notable valley in 2011, while two others experienced one in 2009. Only 2/7 had peaks more worth noting than their valleys. Though this shows some sort of negative trend, it is unclear what role terrorism plays in it. Naturally, there are many factors that go into calculating a country's GDP growth rate. It seems to me that it is difficult to attribute the increase or decrease of GDP rates to one specific cause. Even if we assume, just for the sake of argument, that there is a direct, significant correlation between these GDP growth rates and terrorism, the results are still unclear. Recall the main question we are trying to answer: How does *proximity* to strongly terrorist-controlled areas affect a country's economy?

If we look at each ring, there is no uniform behavior among them. Each ring contains one country whose GDP went down from 2010. 2/3 of the countries in the first ring experienced strong valleys, 1/2 in the second ring did, and 2/2 in the third ring did. If we attribute this to terrorism (which may or may not have been the factor causing the decrease), it does not support my hypothesis. Taking only this into account, it seems that the countries farther away were more affected; in fact, it was in the third ring that a country experienced the most drastic drop in GDP growth percentages (Yemen experienced a -17.341% valley in 2011). But if we look at the other two areas, Afghanistan-Pakistan and Nigeria, we will see that the rings behave differently yet again, and the results seem to have no pattern.

The Afghanistan-Pakistan area and the Nigeria area both contained countries whose percentages had generally gone up, strongly up, down, or strongly down, with no distinction between the rings. Chad, which I put in the second ring of the Nigeria area, went from 13.55% in 2010 to 1.8% in 2015, with an extreme peak in 2004 of 33.629%. In contrast, Cameroon (in the first ring), had a steady increase of 4.307% from 2009 to 2015 (The Institute 2015), with no valleys along the way. The erratic behavior of second-ring Chad and the surprisingly positive and steady behavior of first-ring Cameroon calls into question the importance of proximity. The results in the Afghanistan-Pakistan area do this as well. For example, third-ring Kazakhstan has a downward trend and first-ring Turkmenistan went slightly upward from 2000 but down from 2010. The results in the three areas seem to disagree within themselves and among each other.

When we combine this with the already complex relationship between terrorism and the economy (complex because of the many different factors such as political stability that can also affect the economy), everything seems very unclear. What exactly affects what? Perhaps it is the level of terrorism in the ring countries that makes the difference. That is not it, either. As I previously mentioned, I separated the countries in each ring by their score on the GTI. That also yielded no correlation; some went up, and some went down; some had notable valleys, and some had notable peaks. Here I felt compelled to draw on the work of scholars who examined the GDP trends without respect to terrorism, as I thought it might help shed some light on why a country's GDP increased or decreased when I hypothesized they would do the opposite.

Other Economic Factors that Influence GDP

Using the general economic trends of sub-Saharan Africa, I will examine the Nigeria area and the countries in its rings: Ring 1: Cameroon, Benin, and Togo, Ring 2: Ghana and Chad, and Ring 3: Mali, Gabon, and Côte d'Ivoire. In an article on the economic trends of Africa South of the Sahara, Donald Sparks notes that in 2015, growth in about half of the countries dropped significantly: This was seen in most petroleum exporters and others that exported non-fuel minerals, like Ghana. Additionally, countries recovering from the Ebola Virus and those suffering from drought took an economic hit. For those who do not rely as much on commodity exports and who import oil, growth changed very little. A small group of countries that saw a "decrease in conflict … improved business environments (Côte d'Ivoire and Senegal), decent agricultural output or lower oil and energy prices" saw their economies strengthen (Sparks 2016). Things like public investment programs, industry, agriculture, oil prices/production, and political turmoil all play a role in the strength of a country's economy.

The impact of these factors could potentially suppress any small impact terrorism has on the economy. Cameroon, for example, has seen a consistent increase in its GDP percentage rates since 2009. This is despite the fact that it borders Nigeria, which holds the third highest score on the GTI. So why does terrorism not seem to affect its economy? Perhaps it does, but the effects of other factors are stronger. Sparks notes that "Cameroon continued its trajectory of solid growth driven by agriculture and forestry, construction, industry and oil production, despite security problems in parts of its northern border region" (Sparks 2016), which may suggest suppression of negative, terrorist-induced effects.

On the other hand, if we look at Lebanon and Jordan, which are both in the first ring of the Iraq-Syria area, we *do* see effects. As Karin Glaser notes: "Besides the direct economic effects of the crisis on the Syrian economy, spillover effects have severe impacts on the economies of neighboring countries, especially Lebanon, Jordan, and Iraq" (Glaser 2015, 10). She explains that this can be largely attributed to the influx of refugees fleeing the violence in Syria. She goes on to say that analysts expected the GDP in Lebanon to decline as a result of this; they also expected to see a loss in "wages, profits, business activities, consumption, exports, and investment" (Glaser 2015, 11). This is an example of countries that *were* affected by close proximity to the center of a major terrorist area.

Analysis

It is perplexing that we see an impact in some cases and not in others. After reviewing the information from other sources and my own research, as well as seeing how unpredictable the GDP growth rates can be and how often their proximity seems to have no effect on their economy, I decided to form a new hypothesis. Looking back at the opposing points of view on the relationship between terrorism and the economy, I agree with Meierrieks and Gries, who posited that the relationship is complex and the economic consequences have the potential to be significant but are influenced by other factors (Meierrieks and Gries 2012). I also have great respect for Tavares, who, after taking into account additional factors that affect GDP, found no significant effect of terrorism on economic growth (Tavares 2003). But I agree most fully with the Global Terrorism Index, which declares that “while economic growth and output can be negatively affected by acts of terrorism, there is not a uniform relationship across all countries” (The Institute for Economics and Peace 2015 62-66).

More specific to my research question, I believe that there is no uniform relationship between a country’s proximity to high levels of terrorism and its GDP; although terrorism can certainly have direct and indirect effects on the economy, those effects are often negligible compared to other economic factors. This can sometimes cause the effects to overridden by stronger factors. I cannot conclude that countries closer to the five countries with the highest scores on the GTI have a higher chance of a decline in GDP or economic growth because the relationship is simply too complex and unpredictable. I also cannot isolate the specific effect that proximity to terrorism has on those countries’ economies.

Conclusion

The relationship between terrorism, proximity to terrorism, and the economy is extremely complex; in fact, international relations itself is more interconnected that I had previously understood. I went in thinking that there was often a clear, logical sequence of cause and effect in international issues, but instead I found that the chain of cause and effect can be extremely ambiguous. The number of important factors interconnecting issues is enormous, which makes it very difficult to pinpoint correlation and causation. I learned to appreciate that intricacy, which must be handled carefully, and discovered that it is important to not make generalized assumptions based on a single case study or a lone point of view. Translating this to my particular research topic, I realized that given the global increase in terrorism, it is important to try to understand the effect proximity to terrorism has on a country's economy, but it is also important to not misinterpret activity that goes on in different countries. After all, the implementation of a policy based on an incorrect conclusion can be just as disastrous as sitting back and allowing terrorism to systematically destroy the economy of a region of the Earth.

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