

Who Will Strike Next And Why? An Economic Regression of Terrorism and Poverty

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Abstract

This study analyzes economic regressions between the number of organized violent, international and domestic terrorist attacks and various metrics of the economic state of the country of origin. From the literature, it was expected to find that countries with the poorest economies are more likely produce or act as a base of operations for terrorists and may be linked to their violent crimes. Similarly the statistics suggested that there is a negative correlation between these metrics, representing socioeconomic factors such as the total output of the country, the income per person, unemployment, income inequality, and access to government, and the number of organized violent attacks traceable to said country. Since only named organized attacks were evaluated, instances of anomic (spontaneous or unorganized) terrorism are not included.

Introduction

Previous studies, such as those cited in the literature review, have analyzed the impact that terrorism or terrorist attacks have had on the economies of their victims; however, these findings add new insight to this field of study by contributing information that will aid policy-making decisions in the future. If there are certain key factors of a country's economic state that significantly increase the probability of it becoming a terrorist threat, domestic (US) policymakers will be able to direct national resources more efficiently toward critical areas of interest. Each variable is tested in order to determine the statistical significance and if each variable (economic variable) has a real and predictive impact on the independent variable (number of terrorist attacks). The data is taken from several sources such as the Global Terrorism Database, the American Economic Review, the World Bank, the CIA, the UN, and the Georgia Tech Library's Databases on Economic Literature. The applicable numerical data was converted into a Stata-friendly format to facilitate the statistical analysis. The inferences drawn from the statistical data and test each variable, as described previously, is described within the conclusions and observations. However, determining whether or not there was an exogenous or endogenous relationship between poverty and terrorism was determined by outside sources of literature like the American Economic Review. Within this report, the nature of the data and the predictions of terrorism from the data are

shown and explained. The analysis of the results and the interpretations on the findings is included in order to explain the impact of the models on public and international policy. Some of the results may be skewed due to several factors such as limited availability of data (due to long periods of conflict or a lack of infrastructure), unidentified perpetrators of a significant number of attacks, and inconsistent employment statistics (Many people in developing countries may be “self-employed” as entrepreneurs while still living below the poverty line, yet they are counted as being “employed” all the same). These are all factors to consider when interpreting the data.

Literary Reviews

A great deal of research has been done on the relationship between terrorism and economics; however, much of what has been published focuses more on how terrorism effects the victims’ national economy, not how one’s economy facilitates terrorist activity. Researchers understand that many terrorist organizations seek to bend governments or societies in general to their will by bringing them to their knees through violent attacks. These attacks have several impacts; two of which are fear and economic calamity. Both can be powerful enough to cause government officials to sit up and take notice. Many economists have claimed that there is a strong, negative correlation between terrorist attacks and the victimized nation’s economy. However, in one such study Dr. Todd Sandler (2012), assisted by Khusrav Gaibulloev and Donggyu Sul, went against the grain of trending results by asserting that there is in fact no statistical significance regarding that correlation. They claim that the losses suffered from even the largest and most violent attacks are relatively small as a portion of GDP. Also, their research showed that, even when frequent terrorist attacks impact one sector of an economy, diversified countries will simply shift economic activities to non-impacted sectors. They do admit, however, that smaller, developing countries will be impacted to a greater extent. Furthermore, they point out that wealthy countries have greater monetary and fiscal policies to deal with attacks, and they bring into doubt the “crowding out” effect government defense and security spending could have on private investment, at least for limited attacks. Even developing countries are sheltered from these effects by aid given by foreign donors, especially when the interests of said donors are jeopardized by the attacks. Dr. Sandler and his team empirically prove these claims by thorough regression analysis using data related to domestic, transnational, and aggregate terrorism and economic factors (such as GDP, consumption, investment, etc). Their convincing argument is important not only from an academic standpoint but also from a policy-making perspective. Assuming their data is correct, the results of this research could help guide policy-makers in decisions regarding national defense and security spending

(where and how much to spend in response to terrorist attacks) as well as help determine what kinds of foreign assistance are appropriate in response to attacks on developing countries.

In the study conducted by Alberto Abadie (2004) of Harvard University titled "Poverty, Political Freedom, and the Roots of Terrorism", Abadie states that terrorism is not more prone to exist in poorer countries once other factors such as the level of political freedom and geography are taken into account. In this study the author measures the variation of a country's income by looking at its geographic land lock, the fraction of a country that has access to the sea. Abadie claims that a country's land lock directly affects its economic prosperity and thus may indirectly affect the likelihood of terrorist activity being present. By showing the effects of an exogenous change in income on terrorism, he is testing whether poverty does in fact affect terrorism, or whether the causal relationship is reversed. Abadie's findings conclude that above all, political freedom is the most important variable when studying the causes of a terrorist environment. However, he claims that political freedom affects terrorism in a non-monotonic way: that intermediate levels of political freedom lead to the highest level of terrorist activity while low and high levels, such as authoritarian and democratic regimes, see the lowest level of terrorism harbored within their countries. According to the author, these findings support historical instances that have found terrorist activity to increase during times when a country is transitioning from an authoritarian to a democratic regime. Although Abadie believes that economic factors are not correlated with terrorism within a country, but rather caused by other variables non-economic in nature, the study will test this hypothesis on a more in-depth level to determine whether Abadie's findings are correct.

Trujillo's (2009) article in the Web of Science acts as a reflection of the personal and social conditions which individuals are most likely to turn to terrorism, especially intentionally violent terrorism. The paper seems to be an objective look at certain cases of terrorism. Though the understanding may not reflect all situations, the areas which the psychological analyses of this paper attempts to describe match the data that the paper looks to understand economically. This paper gives a wide variety of conditions which would aid terrorist recruitment; the paper, however, wishes to describe when these conditions would arise from economic conditions of the individual or the area of the individual; as a result, readers of this analyses should be at least somewhat familiar with these overarching psychological factors in order to fully understand the significance of the selected independent variables. In an attempt to connect personal feelings and interpersonal environment to quantifiable terms, economic indicators will comprise the majority of the independent variables within

the analysis and regressions within the scope of this paper. It is assumed that the economic environment will not only be a direct impact on terrorism, but that it will also impact the mindset of recruits.

Individuals may find motivation to attack for reasons indicated by indicators which may influence people differently, including a-cyclical indicators. In attempt to find these motivations, indicators which model the standard of life for these individuals will be used, such as consumer price index, which reflects the purchasing power of the individuals. Additionally, a recreation of the Economist Intelligence Unit's Quality-of-life index is used as a quantified variable for personal political, climate, economic well-being, and healthiness of the areas in question; the index has to be recreated, as many of the countries in the scope of this project are classified as "least developed nations" by the existing study. Data which applies to a region as a unit, especially countercyclical indicators, can be used as a proxy to determine the motivations for terrorist organizations to form, and for motivation for attack. Volatility of the market can be simulated through the annual change ratios in employment, CPI, income disparity indices (weighted measure of: gini, palma, and hoover), inflation and human poverty index. To determine if the problems these countries face is long term, another regression will be run using the same metrics as an annual average, as opposed to the measures of change. The dependent variables for all tests will be the incidence of violent terrorism, measured in the sum of deaths and injuries resulting from terrorist attacks.

These studies, though beneficial in helping to determine what components of terrorism and economics to consider, differ quite significantly from this analysis. Whereas these studies demonstrate the lack of statistical significance that terrorist attacks have on harming an economy, the personal and social motives behind terrorism, and other factors that influence the roots of terrorist activity in a country, this study adds a new angle to the discussion. The results demonstrate that analyzing a country's economy first may prove to be more proactive rather than reactive in the fight to prevent terrorist attacks. Simply put, this analysis seeks to prove that there is a correlation behind what economic factors tend to spawn hyperactive terrorist activity amongst certain countries so as to combat the problem before it matures. Unlike the other literature in the area, this paper focuses upon the economic factors in both the formation of terrorist organization, and the quantity/effectiveness of the attacks launched by these organizations. Though the impacts of terrorism are understood in this context, and the psychological methods of recruitment are important in understanding the need for the indicators chosen, this paper focuses upon the formation and impact of these organizations in the economies which produce them.

Data

Before gathering data there were several factors to consider in order to provide consistent quality in the regression results. Terrorism can be defined several different ways and the term is associated with multiple categories (i.e. eco-terrorism, state-sponsored terrorism, international terrorism, domestic terrorism). Because this study was more concerned with the nations that act as breeding grounds for terrorist activity, limiting the geographical scope (i.e. by region or international vs. domestic) was not a focus of the study. However, the study was concerned with the type of terrorism. In order to narrow the focus of the study even further, the definition of terrorism was limited to acts of violence (i.e. armed assault, explosives, assassination, suicide attacks, etc.) against institutions or governments with the expressed purpose of intimidating them for a political objective. Time was also a factor taken into consideration while gathering data. As a cross-sectional study it was thought best to limit the data to a very short window, 2010-2011. This removed the complications of averaging data across decades for each economic variable and for each country. As a disclaimer, this is admittedly something to consider when reviewing the results. In the future it would be interesting to expand the study to analyze trends coinciding with the findings. Unfortunately, many of the countries included in the study are developing nations, and therefore lack the resources or infrastructure to keep consistent, reliable data; so it was necessary to rely on several different data sources to fill in the gaps regarding economic variables. The sources used to build the dataset were the following: The Global Terrorism Database, the World Bank's World Development Indicators, the CIA's World Factbook, the IMF's World Economic Outlook Database, and the UN's National Accounts Main Aggregates Database.

When considering which variables to include in the study one had to balance being thorough enough to avoid any kind of omitted variable bias but specific enough so as to avoid including irrelevant variables and thus increase the variance. The following section will be an explanation of each of the main independent (explanatory) variables. First, discovering anything significant from this study would be useless if there was no way to apply it, or nowhere to apply it for that matter. Therefore, the name of each country attacked was included. Next, knowing the Perpetrators (terrorist organizations) responsible for the attacks was crucial because they lead to a variable that is most interesting to the study, the Country of Origin. Please note that there are literally hundreds of attacks that are never claimed or definitely associated with a known, responsible party. These attacks conducted by unknown groups were not included in the dataset. From there calculating the Number of Terrorist Organizations

Based in Each Country of Origin was possible. Furthermore, calculating the Number of Terrorist Attacks Originating in Each Country of Origin became possible. These last two variables were the most important for this study (Number of Attacks arguably being the most important variable) because they served as the Dependent variables. Fatalities and Injuries were taken into consideration because, as noted by other studies (Gaibulloev, Sul, and Sandler), these often determine the effectiveness of terrorist attacks. The thought for this study was that the more effective terrorism seems to be the more willing a country as a whole may be to consider using terrorism to attain their political goals. In other words, if a country perceives that it's weak or lowly standing on the world stage prevents it from imposing its will where it desires strategic uses of terrorism may be an effective alternative to conventional tactics. To clarify, "country" refers to groups, individuals, or even society, not the government itself.

The remaining independent variables were related to each Country of Origin's economic state. First, included the National GDP was key because it includes information relevant to several crucial factors related to an economy, mainly consumption, trade, and output. As its name implies this is more of a "big picture" variable. It looks at the country as a whole. However, it is not hard to argue that countries rarely, if ever, give a majority level of support for terrorism. This radical alternative to diplomacy or conventional politics is most often carried out by a very small percentage of the country, by individuals. Thus a variable that looks at the economic situation of individuals or households was needed. That variable is labeled as Per Capita GDP. Next, the Average Growth Rate of each country's economy was included. For this the thought was that as an economy grows or improves wages increase, employment levels grow, and output and consumption grow. The opportunity cost of engaging in terrorism grows when one can make more money and live longer working in the conventional employment sector. Expectations play a powerful role in economics, even on the microeconomic level. Even if a country has a poor National or Per Capita GDP, it was believed that Average Growth Rate would have a negative correlation with the Number of Terrorist Attacks and Organizations. Related, but not perfectly collinear, to Average Growth Rate is the Unemployment Rate. It was also believed, based on the same logic as the previous variable, that Unemployment would be positively correlated with Terrorist Attacks and Organizations. The Annual Change in the Volume of Exports is also related (not perfectly collinear) to GDP. These were included for two reasons. The first is that as a country has a greater value of exports than imports the country will be running a budget surplus. However, if imports are greater than exports then the opposite is true. When a country is running a budget deficit it becomes harder to engage in trade because the government will either have to borrow or use monetary or fiscal strategies to balance the budget. Monetary policies (expanding the money supply) could cause

the country's currency to depreciate, fiscal policies (increasing taxes/decreasing government spending) could put a strain on consumers, and borrowing from other countries puts one in debt which may make it harder to trade in the future. All that being said, it was believed that countries with a budget deficit should have a positive correlation with terrorism. Also, the Interest Rate is important because it is a commonly accepted belief that in this study (and elsewhere) a significantly higher interest rate is a good indicator of developing or impoverished countries. This seems to be counter-intuitive at first because with a higher interest rate one should see higher investment. However, in developing countries there is a much greater risk associated with lending money and thus the interest rate rises significantly. Following with the rest of the initial predictions, it was expected that a positive correlation with the interest rate and terrorist activities would be observed. Finally, perhaps the best indicator of a third-world, impoverished nation is the Percent of Its Population Living below the Poverty Line (Households earning less than \$2 per day). Poverty leads individuals and groups to search for more desperate and radical means to make a living. Simply put, if given a choice between starving to death and joining a terrorist organization, the logical choice would be to engage in terrorism. Therefore, there should be a positive correlation between poverty and terrorism.

Note that in the following table that summarizes each variable the National GDP and Per Capita GDP were not simply used on their own. Rather the log of each was taken so as to simplify the display of the results and allow for easier reading and interpretation. The following steps were used to do this:

"gen log_nat_GDP = log(NationalGDP2011)"

"gen log_percap_GDP = log(PercapitaGDP2011)"

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|--------------|-----|-----------|-----------|----------|----------|
| Numterrorg | 439 | 3.810934 | 4.108491 | 0 | 13 |
| atksorig | 439 | 49.3918 | 22.63189 | 1 | 72 |
| hum_dev_ind | 439 | .4969909 | .1159214 | .299 | .953 |
| adultlit | 439 | 58.0205 | 19.71553 | 18.6 | 100 |
| GiniCountr~n | 439 | 35.0426 | 7.733349 | 25.8 | 55.9 |
| AverageGro~t | 439 | 4.89385 | 4.841193 | -61.3 | 9.2 |
| Unemploye~e | 439 | 17.40328 | 15.11167 | .2 | 54 |
| Volumeofex~s | 439 | 5.124303 | 23.20378 | -74.305 | 50.463 |
| Volumeofim~s | 439 | -.5196128 | 19.53282 | -57.141 | 23.408 |
| Intrate | 439 | 8.50246 | 4.740634 | 0 | 15 |
| FATALITIES | 439 | 3.104784 | 7.229313 | 0 | 71 |
| INJURED | 439 | 4.769932 | 12.72682 | 0 | 123 |
| log_nat_gdp | 439 | 25.25719 | 2.20083 | 20.78839 | 29.60563 |
| log_percap~p | 439 | 7.064778 | 1.115051 | 4.718499 | 11.49847 |

It is important to establish before going any further that that data used for regression was legitimate. That is to say it fulfilled the Gauss-Markov Assumptions. The Assumptions are the following: (1) Linearity in Parameters (2) Random Sampling (3) Sample Variation/No Perfect Colinearity in the Explanatory Variables (4) Zero Conditional Mean of the Error (5) Homoskedasticity (constant variance for the error). The results of each regression demonstrate that each of these assumptions was upheld for each variable and parameter.

Results

Table 1

Results: Simple regression using Attackorig as the Dependent Variable (439 observations)

| Variable Name | Coefficient | Std Error | T-stat | P-value | R-squared | Constant |
|---------------------|-------------|-----------|--------|---------|-----------|----------|
| log_nat_GDP | .67722 | .4908511 | 1.38 | 0.168 | 0.0043 | 32.28712 |
| log_percap_GDP | -7.207492 | .9076449 | -7.94 | 0.000 | 0.1261 | 100.3111 |
| Avg_grow_rate | 1.752521 | .20732 | 8.45 | 0.000 | 0.1386 | 40.81523 |
| Unemp_rate | .0351439 | .0716222 | 0.49 | 0.624 | 0.0006 | 48.78018 |
| Change_exp_vol | .1056866 | .0463828 | 2.28 | 0.023 | 0.0117 | 48.85023 |
| Change_imp_vol | -.0803383 | .0552928 | -1.45 | 0.147 | 0.0048 | 49.35005 |
| Intrate | 1.861052 | .2103052 | 8.85 | 0.000 | 0.1520 | 33.56828 |
| Percentpovline | .3176312 | .0615378 | 5.16 | 0.000 | 0.0575 | 37.68905 |
| FATALITIES | -.0250865 | .1499532 | -0.17 | 0.867 | 0.0001 | 49.47033 |
| INJURED | .0162061 | .0852851 | 0.19 | 0.849 | 0.0001 | 49.31558 |
| GiniCountryOfOrigin | -.7803158 | .1464439 | -5.33 | 0.000 | 0.0688 | 76.11828 |
| Hum_dev_ind | -101.0197 | 7.991931 | -12.64 | 0.000 | 0.2677 | 99.59766 |
| Adultlit | -.7300643 | .0423759 | -17.23 | 0.000 | 0.4045 | 91.7505 |

Looking at Table 1 where Attacksorig is regressed with most of the independent variables in a simple regression model, a few findings stand out. Contrary to this paper's hypothesis, the logarithm of national GDP (log_nat_GDP) showed a positive correlation with attacks originating from a sample country, although the P and R² values for the regression indicated statistical insignificance and difficulty being able to predict future outcomes. The logarithm of per capita GDP (log_percap_GDP), however, produced the anticipated result of a statistically significant negative correlation with terrorist attacks originating from the country. Rather intuitively, the number of terrorist organizations (Numterrororg) proved to be positively correlated with high terrorist activity. With the t-statistic being greater than 7, Numterrororg is significantly related to the dependent variable. On the other hand, the average growth rate of the country (Avg_grow_rate) was positively correlated and had a high t-statistic thus going against the hypothesis that there would be a negative correlation with the terrorist attacks originating from the country. Interest rate (Intrate) stayed in line with the hypothesis of having positive correlation and being statistically significant. However, all R² values are low for these simple regressions, meaning there are more variables involved in this model that must be observed in a multiple regression model.

Table 2

| Independent Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|----------------------|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
| log_nat_GDP | | 2.36641 (20.64)*** | 1.365599 (20.24)*** | | 2.377357 (24.23)*** |
| log_percap_GDP | | -2.254591 (-9.60)*** | | | -2.080125 (-9.76)*** |
| Avg_grow_rate | .1559728 (4.51)*** | .014954 (0.60) | | | |
| Unemp_rate | -.1214914 (-8.05)*** | .0687516 (3.75)*** | | -.159593 (-10.01)*** | .0444331 (2.72)*** |
| Change_exp_vol | | | .0238073 (1.60) | | |
| Change_imp_vol | | | .0325171 (2.01)** | | |
| Intrate | | | -.1083459 (-3.19)*** | | |
| Percentpovline | -.0411486 (-3.26)*** | -.1166676 (-10.64)*** | | .1259381 (4.47)*** | .03367 (1.85)* |
| FATALITIES | | | | | -.0172278 (-0.84) |
| INJURED | | | | | -.0060852 (-0.53) |
| GiniCoeff | | | | -.3305482 | -.3238904 |

| | | | | | |
|-----------------|------------------------|--------------------------|--------------------------|-----------------------|--------------------------|
| | | | | (-6.27)*** | (-9.90)*** |
| Hum_dev_ind | -3.625751 (-2.10)** | -9.569024 (-3.24)*** | | 12.63168 (2.83)*** | 3.196066 (1.07) |
| Adultlit | | .0215537 (1.57) | | .0030614 (0.16) | .033471 (2.70)*** |
| Constant | 8.625751 (7.16)*** | -33.36971 (-11.55)*** | -29.86415 (-16.91)*** | 6.940032 (4.70)*** | -35.69274 (-14.46)*** |
| R-Squared Value | 0.3012 | 0.6946 | 0.5057 | 0.3301 | 0.7512 |
| Adj R-Squared | 0.2948 | 0.6896 | 0.5012 | 0.3224 | 0.7460 |

Dependent Variable: "Numterrorg" (439 observations)

Table 2 shows a series of five multiple regressions that were taken with Numterrorg as the dependent variable. In Model 1, Avg_grow_rate, Uemp_rate, Percentpovline, and Hum_dev_ind were regressed resulting in an adjusted R² value of 0.29 and constant of 8.63. While the R² value is low, the two most significant variables in this model were Avg_grow_rate and Unemp_rate, both having correlation to the dependent variable that go against this paper's hypothesis. In Model 2, log_nat_GDP, log_percap_GDP, and Percentpovline showed most significance. As the log of national GDP increases and log of per capita GDP decreases, an increase in the number of terrorist organizations seems to increase within a country. The population percentage under the poverty line appears to have negative correlation in this model, though the reason for that is ambiguous. Model 3 introduces changes in export and import volume as well as interest rate. While the coefficients of each are relatively low numbers, results show that as Change_exp_vol and Change_imp_vol increase, so too does Numterrorg; there is the opposite effect with interest rate. Model 4 examines equality factors and quality of life by regressing variables such as unemployment rate, percent under the poverty line, gini coefficient of the country of origin, human development index, and adult literacy rate. Hum_dev_ind seems to have a large correlation to Numterrorg, meaning that the human development of a country, the more terrorist organizations it possesses. The significance of this variable was relatively low, however, compared to the economic variables in the model. Lastly, Model 5 introduces FATALITIES and INJURED as well as GDP variables to Model 4, but provides little insight. Fatalities and number of people injured in the terrorist attack data seem to be of little significance and correlation to the number of terrorist organizations of the country of origin. Using the F-Statistic test as the robustness test it was determined that the Adultlit, log_nat_gdp, and log_percap_gdp were jointly significant at the 5% level. Also, it was determined using the same test that Fatalities and Injuries were also jointly significant at the 5% level.

Table 3

| Independent Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| log_nat_GDP | | 8.523937 (15.66)*** | 1.859705 (5.33)*** | | 10.10915 (20.47)*** |
| log_percap_GDP | | 1.298197 (1.16) | | | 3.302005 (3.08)*** |
| Avg_grow_rate | 1.846255 (12.19)*** | 1.083157 (9.22)*** | | | |
| Unemp_rate | -.667273 (-10.11)*** | .4505472 (5.18)*** | | -.7784981 (-11.12)*** | .4740749 (5.76)*** |
| Change_exp_vol | | | 1.557595 (20.28)*** | | |
| Change_imp_vol | | | -1.508814 (-18.06)*** | | |
| Intrate | | | 3.542311 (20.14)*** | | |
| Percentpovline | .1212258 (2.19)** | -.0691334 (-1.33) | | 1.281639 (10.35)*** | .7496347 (8.18)*** |
| FATALITIES | | | | | -.2482307 (-2.41)** |
| INJURED | | | | | .1746961 (3.02)*** |
| GiniCoeff | | | | -1.790795 (-7.74)*** | -1.797745 (-10.92)*** |
| Hum_dev_ind | -151.0772 (-18.89)*** | -70.34789 (-5.02)*** | | 87.99271 (4.50)*** | -9.227083 (-0.06) |
| Adultlit | | -.8530901 (-13.12)*** | | -.793972 (-9.32)*** | -.8751606 (-13.98)*** |
| Constant | 122.4558 (23.23)*** | -101.1314 (-7.37)*** | -36.46308 (-3.99)*** | 79.42373 (12.26)*** | -151.7741 (-12.22)*** |
| R-Squared Value | 0.5589 | 0.7730 | 0.5645 | 0.5745 | 0.7923 |
| Adj R-Squared | 0.5548 | 0.7693 | 0.5605 | 0.5696 | 0.7880 |

Dependent Variable: "Attksortig" (439 observations)

Table 3 shows multiple regression models using Attksortig, rather than Numterrorg, as the dependent variable. Overall, the results remain relatively similar with Table 2, however there are a few differences. First, the adjusted R^2 values for each model are significantly higher compared to those found in the models using Numterrorg as the dependent variable. This may mean that using attacks originating from a country as the dependent variable is more effective and relevant when measuring the relationship between terrorism and economic factors than using number of terrorist organizations as the dependent variable. Another difference in this table is the statistical significance of Change_exp_vol, Change_imp_vol, and Intrate found in Model 3. The positive correlation between interest rate and terrorist attacks particularly aligns with the hypothesis that economically failing countries have higher

interest rates, thus leading to less effective terrorist prevention within the region. As with Table 2, an F-Statistic test was used to measure the robustness of the models. It was determined that Adultlit, log_nat_gdp, and log_percap_gdp as well as Fatalities and Injuries were jointly significant at the 5% level.

Table 4

Results: Simple Regressions (439 observations)

| Dep. Var. | Indep. Var. | Coeff. | Std. Error | T-stat | P-value | R-squared | Constant |
|----------------|---------------------|-----------|------------|--------|---------|-----------|----------|
| Log_nat_GDP | log_percap_GDP | 1.456816 | .0637028 | 22.87 | 0.000 | .5448 | 14.96511 |
| Log_percap_GDP | Percentpovline | -.0230045 | .0029227 | -7.87 | 0.000 | .1242 | 7.93049 |
| Log_percap_GDP | GiniCountryOfOrigin | .032284 | .0046122 | 7.00 | 0.000 | .1132 | 5.06532 |
| Attacksorig | Numterrorg | 1.901384 | .2473152 | 7.69 | 0.000 | .1191 | 42.1458 |

To determine the significance of each model, the ratio of explained variance or inter-group variability and unexplained variance or within-group variability is calculated and compared to a critical value. In the case of these models, the critical f values were always significantly less than the f-statistic for the model, suggesting that the variables in each model were jointly significant. These tests reflect both the predictive capability of the models, as well as an alternative measure to the R squared value to determine if the models are a good fit to the population in question.

Conclusions

There are several conclusions to take away from this study. Not all support the initial hypothesis, but, at the risk of trying to force data to say what one desires it to say, there may be several reasons for why this is so. For the most part, using Attacksorig as the Dependent variable yielded models with much higher R-squared values across the board. One may conclude that overall the data was more suited for explaining the number of attacks originating from certain countries using economic variables over explaining why certain countries produce more terrorist organizations. This makes sense considering that some terrorist organizations are much more active than others. For example, Somalia was home to only one Terrorist organization listed in the data; however, that group (Al-Shabaab) was responsible for forty-nine attacks. Surprisingly, though Numterrorg and Attacksorig have a positive correlation, many of the

variables had opposite correlations when used to regress one to the other. This could lead one to conclude the following. The Average Growth Rate of an economy is positively correlated with the Number of Terrorist Organizations based out of a country but more significantly correlated with the Number of Attacks originating in said country. The Unemployment rate was positively correlated with Attacksorig and Numterrorg (using the stronger models). Perhaps this is because a lack of jobs in the legitimate sector is ample motivation for an individual to join or become active within an organization. Overall, a change in imports and exports toward running more of a trade deficit was positively correlated with Numterrorg and Attacksorig. It was concluded that this is because running a trade deficit may lower a country's standing on the international stage, thus forcing organizations to use more radical methods in order to gain respect from the global community. Surprisingly, the interest rate was positively related with Attacksorig but not with Numterrorg. Perhaps this was because having such high interest rates was a cause for frustration with and later attacks against the government (many of the Terrorist Organizations included in the data were based out of the same countries in which the recorded attacks were found). The percentage of the population living below the Poverty Line was negatively correlated with Numterrorg but positively correlated with Attacksorig. One may conclude that this is evidence of the desperation that often spawns the radical ideology that committing acts of terror is the best way to achieve one's goals or simply survive. The Gini Coefficient (measure of inequality within a country with 0 being perfectly equal and 100 being the most unequal) was positively correlated with Attacksorig and Numterrorg. This was to be expected because typically inequality between social classes or demographics is a leading cause of internal conflict (riots, civil war, domestic terrorism, etc.). Whether or not the Gini Coefficient and the Interest Rate are positively correlated with International acts of terror is a question to be answered by another study. When using both Attacksorig and Numterrorg as dependent variables (for both multiple regressions) National GDP had the exact effect that was predicted and was statistically significant. This may lead one to believe that the root of terrorism indeed starts with the motives of individuals and groups rather as well as the aggregate greed or grievance of a country. However, Per Capita GDP had a negative correlation on the Number of Terrorist Organizations. It was initially assumed that all economic variables would have the same effect on each terror-related Dependent variable; however, the results clearly demonstrated that in reality different economic characteristics of a country have different effects from one terrorist trait to another.

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