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The economic impact of terrorism: A new model and its application to Pakistan

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Abstract

This paper introduces a new economic model to analyze the effects of a possible terrorist attack, namely the *terrorist attack vulnerability evaluation model (TAVE-Model)*. The model analyzes three different phases of terrorism: (i) origins of a terrorist attack; (ii) terrorist attack itself; and (iii) post-attack effects. In addition, the *TAVE-Model* identifies economic desgrowth ($-\delta$), intensity of terrorist activities (α_i), terrorist attack losses ($-\pi$), economic wear (Π), level of terrorist attack tension (ζ), level of terrorist attacks monitoring (η), and total economic leaking (Ω_t) under a terrorist attack. Finally, we apply the *TAVE-Model* to Pakistan, a country where terrorism poses a significant socio-economic risk. More specifically, we use the model to assess the relationship between terrorism and the economic performance of Pakistan.

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1. Introduction

Terrorism is often viewed in historical, sociological, psychological, political, or geopolitical terms, but it can have substantial economic repercussions. Catastrophic terrorist attacks such as 9/11 can dent business and consumer confidence, which harms investment and consumption and hence macroeconomic performance. Terrorist attacks that target vital infrastructure such as oil pipelines or railroads can seriously disrupt transportation, communication, and the entire economy. Indeed some terrorist attacks are designed to inflict economic damage in the target country. In addition, the war on terrorism can have a substantial economic effect on both the country waging the war – such as the US – and the home country—such as Afghanistan. For the US, the massive military spending incurred during the war has significant implications for fiscal health. For Afghanistan, a low income country with limited resources, the military spending of the US and its coalition partners was, in effect, a huge boost in foreign aid, with a correspondingly outsized impact on economic growth. Terrorism not only has economic consequences, but also economic causes.

While the root causes of terrorism are multidimensional – ranging from religious extremism to a sense of alienation from society to anger at perceived geopolitical injustice – economic factors can help explain the rise of terrorism. Economic stagnation can limit employment and other economic opportunities for the youth. Lack of economic opportunities can be a powerful driver of terrorism, especially in conjunction with other social and political factors. This problem is especially pronounced in countries with relatively young populations and large numbers of young people. A large and growing army of young people mired in hopelessness and despair about the future provide fertile recruiting grounds for terrorist organizations. Despite the sizable economic causes and consequences of terrorism, there have been very little, if any, formal modeling of the economics of terrorism. Yet formal models could help us to better understand the economic dimensions of terrorism.

The main objective of this paper is to set forth a model – the terrorist attack vulnerability evaluation model (*TAVE-Model*) – to evaluate the economic consequence to the countries in case of terrorist attack. Furthermore, the methodology of the *TAVE-Model* draws on an alternative mathematical and graphical approach analysis framework. To illustrate and illuminate the *TAVE-Model*, we apply it to a terrorist attack by player 2 (P_2) on player 1 (P_1). We hope that the *TAVE-Model* will enable us to evaluate terrorists attack in a more systematic and accurate way. More specifically, the model can help improve the measurement of the economic impact of a terrorist attack. An important value-added of the *TAVE-Model* is to account for this uncertainty and behavioral change from a new perspective within the framework of a dynamic imbalanced state (DIS) (Ruiz Estrada & Yap, 2013) and the Omnia Mobilis assumption (Ruiz Estrada, 2011).

The idea is to move on from classical economic models such as the linear and non-linear models to a new economic mathematical modeling and mapping of terrorist attacks by using high-resolution of multidimensional graphs and a new mathematical framework. Another innovation of the model is that it explicitly distinguishes between the pre-attack phase and post-attack phase. We believe that our alternative analytical framework can yield new interesting and relevant insights about how to assess more accurately the economic consequences of a terrorist attack.

2. Theoretical framework of terrorism

Historical studies such as Keynes (1919), Pigou (1940) and Robbins (1942) have discussed the role of war, peace, and disputes in the economy. After the 9/11 incident, terrorism has received

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