

Journal of Homeland Security and Emergency Management

Volume 3, Issue 3

2006

Article 8

Review of The Economic Impacts of Terrorist Attacks

Anthony M. Yezer*

*GWU Economics Dept., yezer@gwu.edu

Copyright ©2006 The Berkeley Electronic Press. All rights reserved.

Review of *The Economic Impacts of Terrorist Attacks*

Anthony M. Yezer

Abstract

As suggested by the title, this is a collection of essays on the economic effects of successful terrorist attacks focusing on the electrical transmission, and transportation infrastructure of the United States. Those familiar with the literature on the economic effects of natural disasters will find the arguments and economic models quite familiar. The individual essays are by leading experts who do not necessarily agree on the most appropriate methods or policy conclusions. This provides a refreshing measure of potential controversy.

KEYWORDS: economic impacts, terrorism

Review of

The Economic Impacts of Terrorist Attacks

By Harry W. Richardson, Peter Gordon, and James E. Moore II.

Edward Elgar Publishing, Inc., 2006

328 pp.

ISBN#1845423011

\$99. hardcover

Reviewed by

Anthony M. Yezer

Professor of Economics

George Washington University

Washington, D.C.

This collection of 14 essays, averaging 20 pages each, generally focuses on measurement of the economic effects of an attack and the manner in which those effects might be mitigated by government policy. Most of the papers review previous literature, particularly techniques found in the literature on the economic effects of natural disasters. Indeed, many of the essays would also fit nicely in a volume on the economics of natural disasters. This is not necessarily inappropriate because many would argue that, as is often the case in economic systems, models used for one purpose, disaster effects, are perfectly appropriate for another purpose, terrorism effects. For those familiar with the literature on the effects of natural disasters, there is not much new material here.

There is one curious omission that may surprise readers. The increase in expenditures in response to terrorist actions, particularly after the 9/11 attack, is not discussed as an economic impact of terrorism. Presumably the formation of the Department of Homeland Security and expansion of spending at national, state, and local levels was a direct response to terrorist threats. Various chapters mention individual aspects of homeland security programs, usually with very large benefit/cost ratios, and yet there is no overall analysis of the costs and economic effects of the response to terrorism in the U.S. or other countries.

It is important to contrast this work with a book of essays on the economics of terrorism, i.e. one that considers the technology, financing, motivation, output and reactions of terrorist organizations. Other than the first discussion of strategic interaction between government and terrorists by Sandler and Enders, this book, generally assumes that terrorists have successfully attacked something. It then asks what effect such a successful attack would have on society, with an emphasis on the economic measures and/or how mitigation efforts would reduce those economic effects. In many cases, rather than provide estimates of likely effects, the essay considers how to construct such measures.

Nevertheless, the essays show a remarkable degree of independence. Authors often provide contrasting views on similar topics. This is not surprising in a field as new and unsettled as the economics of terrorism.

Modeling regional economic effects of terrorist actions is one area where essays by advocates of two of the three competing approaches found in the disaster literature provide examples of the capabilities of models implemented at substantial expense. Rose discusses a computable general equilibrium (CGE) model, which has been adapted to consider disaster events in Los Angeles, Memphis, and Portland. Among the advantages of the CGE approach is the ability to consider the effects of events occurring over different time periods. Particularly for relatively short periods, Rose notes considerable resilience in economic systems due to the ability to substitute across time and space, producing loss estimates significantly smaller than expected with simple models. Gordon, Moore, Richardson, and Pan show how an input-output model can be married to a spatial trip distribution model to produce impact estimates for spatial disruptions within a city. The authors claim the ability to trace output implications of a spatially distinct interruption within a city. The final essay by Bae, Blain, and Bassok illustrates how the transportation interruption component of such a model works in the context of Seattle's highway network. Presumably such a spatial model is particularly valuable when urban areas are linked by a few critical bridges or highways which may then form inviting targets for terrorists. Advocates of using regional econometric models to estimate effects of terrorist events will have to look elsewhere for support of their position.

Another area where diverging views are presented is the relation between terrorism and the U.S. electricity system. Chang, McDaniels, and Reed argue that there may be substantial interactions between power failures and other systems that can multiply the economic effects of a power interruption. However, Lave, Apt, Farrell and Morgan contend that current efforts to insure robustness and resilience of the power system in the face of natural hazards have gone 90 percent of the way toward providing security against terrorist efforts. Schuler contends that "the power system(s) in the US is a hodge-podge –institutionally, economically, physically, and in terms of regulatory oversight," but that this may provide a measure of reliability and resilience in the system that makes it a difficult target for terrorists.

While interdependence of independent and uncoordinated entities in the electric power system may provide a degree of reliability and resilience there, Heal and Kunreuther argue that networks in which security is interdependent in general result in underinvestment in security compared to a social optimum. For example, in airline baggage inspection and computer systems, the security of one agent is dependent on the security of a network. If terrorists can enter the network at its most vulnerable point, then there is little incentive for any firm to invest

more in detection than the firm exercising the least precaution. As a result, there is an expectation of underinvestment in precaution. Of course, one could argue that, in the case of terrorism, there is a countervailing externality producing overinvestment as each industry has an incentive to invest in deterrence and mitigation primarily to shift the focus of terrorists to other industries. Efforts to secure airlines may have diverted terrorists to commuter rail. While interdependent security issues may reduce private efforts of individual firms, the net social benefit of collective action that merely diverts an externality may be smaller than the private benefits from collective action.

While economic impact analysis dominates the essays, Smith and Hallstrom consider the problem of using information on economic effects to conduct benefit-cost analysis of policies and programs to deal with terrorism. They provide a thoughtful discussion of the extra complexity associated with terrorism compared to natural disasters. For the most part, natural disasters are exogenous to efforts at mitigation and prevention. In contrast, terrorist events are endogenous to the state of preparation, as noted above in the case of airline protection. The problem of doing benefit cost analysis when efforts to deter or mitigate terrorist attacks tend to shift the focus of these attacks is considered thoughtfully. The approach in this essay measures benefits in terms of changing utility of households. Given that a major objective of terrorists is to create disutility, this seems most appropriate. The authors advocate use of revealed preference methods, in which changes in welfare are inferred based on changes in actual behavior observed or estimated using hedonic, demand, or random utility models or by identifying “natural experiments.” These approaches contrast with stated preference methods, such as contingent valuation. The use of experimental economics is not discussed although the essay by Ganderton, Brookshire, and Bernknopf demonstrates the potential utility of experimental results in evaluating the effectiveness of the homeland security advisory system. They demonstrate that experimental subjects respond to the much maligned color-based threat level information system in a very reasonable fashion. Critics of the current homeland security advisory system may reconsider their position in light of these results.

Perhaps the most interesting essay is the report of new research results by Redfean, who demonstrates the power of the revealed preference approach by examining the reaction of house prices in Los Angeles before and after the 9/11 attacks. He begins by identifying three high probability terrorist attack locations, the airport, downtown, and port areas. Hedonic housing price models should reveal any household response to the differential threat level associated with proximity to greater hazard. Put another way, if terrorists succeeded in making households fear attacks aimed at critical locations, then there should be a compensating fall in house prices associate with proximity to the priority attack areas.

Redfearn notes that survey evidence after 9/11 indicated public perception of large spatial differentials in the probability of attack. In contrast, his revealed preference results show no hedonic house price reaction, i.e. the relation between house prices at the critical attack areas and more distant areas is the same before and after the 9/11 attacks. Given the longstanding evidence (see Brookshire, Thayer, Tschirhart, and Schulze (1985), and Rubin and Yezer (1987)) that predictions of the expected utility model hold for the effects of natural hazard risks on house prices, failure to observe an effect on house prices is a powerful demonstration of the difference between revealed and stated preference approaches to valuation of the effects of terrorism. For those who believe that housing market reactions to terror threats may not be as reliable as those to natural hazards, there is a significant literature that shows the implicit markets approach to valuation works well for crime. For example, Linden and Rockoff (2006) demonstrate a substantial house price reaction to the provision public information on the residential location of sexual offenders. Given the similarity of crime and terrorism outcomes, we would expect Redfearn's test to reveal any disutility experienced by households proximate to high threat areas.

Other essays in the book document the potentially large effects of bio-terrorism as well as the costs and benefits of port security programs. In the case of biodefense estimates, Abt argues that the potential losses are at least two orders of magnitude larger than the costs of defense efforts, so that, unless the probability of terrorist's using biological agents is very small, the benefit-cost ratio must be quite high. This contrasts nicely with the essay by Martonosi, Ortiz, and Willis, who determine that the facility requirements to accomplish very high levels of container inspection in U.S. ports are prohibitively large, so that only the expectation of large losses could justify proposals for 100 percent inspections. These essays demonstrate that, in some cases, the benefit-cost computation results in ratios so far from unity that, even in the presence of substantial measurement error, a conclusion is obvious.

For those who believe that the economic effects of terrorist attacks are analogous to the economic effects of natural disasters, this volume provides, for a variety of possible terrorist threats, a discussion of the relevant literature and some new research results. Alternative research methods and models are presented and advocated by leading authorities on their construction and use. For those who believe, as I do, that the economics of crime is at least as important to the evaluation of the economic effects of terrorist attacks, there is some disappointment that the lessons from that literature for the study of the effects of terrorism have been ignored.

References

David S. Brookshire, Mark A. Thayer, John Tschirhart, and William D. Schulze, "A Test of the Expected Utility Model: Evidence from Earthquake Risks," *The Journal of Political Economy*. Vol. 93, No. 2. (April 1985), pp. 369-389.

Leigh Linden and Jonah Rockoff, "There Goes the Neighborhood? Estimates of the Impact of Crime Risk on Property Values from Megan's Laws," NBER Working Paper No. 12253, (June 2006).

Claire B. Rubin and Anthony M. Yezer, *The Local Economic Effects of Natural Disasters*, Working Paper #61, Institute of Behavioral Science, University of Colorado, (December 1987).