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Are We Unnecessarily Serving Up Civil Liberties on a PATRIOT Platter? Current Trends for Measuring the Social and Economic Effects of Terrorism

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I. INTRODUCTION

Terrorism and the lingering fear of attacks led the United States Congress to enact innovative legislation, such as the USA PATRIOT Act,¹ expanding the investigative powers of the federal government in an attempt to reduce the risk of future terror attacks. These regulations have significantly impacted civil liberties and personal privacy by effectively rewriting previous legislation concerning, *inter alia*, surveillance techniques, detainment procedures and statutes of limitation for certain offenses.² In addition, the PATRIOT Act created a new federal offense termed “domestic terrorism” and a counterterrorism fund to compensate the families of terror victims and fund research into future technological tools aimed at combating terrorism.³ Although there have been recent attacks waged against certain provisions of the PATRIOT Act, it remains largely intact.⁴

This systematic reduction in civil liberties led many law and economic theorists to study the effects of terrorism on different aspects of our society. Some have attempted to measure the economic effects while others have attempted to measure the degree of civil liberties our society

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¹ The Uniting and Strengthening America By Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001, Pub.L.No. 107-56, 115 Stat. 272. [hereinafter PATRIOT Act]

² *See id.* at Titles I, II, VI, VII, VIII and X.

³ Title II of the PATRIOT Act works to enhance surveillance techniques and procedures. Title VI amends the Victims of Crime Act to include additional sources of funding and additional payment procedures. Finally, § 802 sets forth the definition of ‘domestic terrorism.’ *See id.* at Titles II, VI and VIII.

⁴ *See Doe v. Ashcroft*, 334 F. Supp. 2d. 471, 475 (S.D.N.Y. 2004) (finding a portion of the PATRIOT Act that amended 18 U.S.C. § 2709 unconstitutional under both the First and Fourth Amendments); Daniel M. Filler, *Terrorism, Panic and Pedophilia*, 10 VA. J. SOC. POL’Y & L. 345, 347 (2003) (asserting that “[a]s September 11th recedes into history, and domestic terrorism does not recur, public support for legal policies targeting Muslims dissipates.”).

is willing to surrender to combat terrorism.⁵ Other researchers and theorists have proposed solutions to the perceived escalating risks of terrorism based on collected data and empirical studies, such as invoking a version of the ‘Hand-Reasonableness Formula’ or requiring the government to act as an insurer against future terror attacks.⁶

These recent studies of terrorism generally rely on three types of measurements: the ‘statistical time series’ approach, ‘contingent valuation surveys’ and the ‘predictive theory’ approach. Researchers relying on the ‘statistical time series’ approach attempt to measure the future economic and social effects of terrorism by studying prior terror attacks, both in the United States and abroad. These researchers compare the pre-attack and post-attack economic indicators, analyze the impact of post-attack policies on civil liberties and attempt to relate these findings to the current economic and social climate. The ‘cognitive valuation survey’ approach poses a series of terrorism-related questions to respondents in an attempt to estimate the effects of terrorism and the willingness of individuals to surrender civil liberties to combat terrorism. Finally, the ‘predictive theory’ approach relies on sociological and psychological theories of human behavior to estimate the economic and social effect of terrorism on society. Researchers

⁵ See Brock S. Blomberg et al., *The Macroeconomic Consequences of Terrorism*, CESifo Working Paper No. 1151, at <http://www.ssrn.com/abstract=525982> (finding a strong positive correlation between terrorism and a decrease in a country’s income, or gross domestic product); W. Kip Viscusi & Richard J. Zechhauser, *Sacrificing Civil Liberties to Reduce Terrorism Risks*, 26 J. RISK & UNCERTAINTY 99 (2003) (explaining that surveyed individuals supported additional airport security measures that would rely upon, *inter alia*, racial profiling).

⁶ See Paul H. O’Neill, *Terrorism Risk Insurance*, Testimony before Committee on Banking, Housing and Urban Affairs United States Senate. Speech delivered on October 24, 2001 (transcript available at <http://www.treas.gov/press/releases/po718.htm>) (last visited Jan. 22, 2006) (setting forth the problems with insurance post-9/11 and laying the foundation for a “shared-loss compensation program” sponsored by the Federal Government); Anne Gron & Alan O. Sykes, *Terrorism and Insurance Markets: The Role of the Government as Insurer?*, 36 IND. L. REV. 447 (2003) (explaining that many interest groups have called upon the Federal Government to provide insurance coverage for terrorism losses); Andrew Song, *Technology, Terrorism, and the Fishbowl Effect: An Economic Analysis of Surveillance and Searches*, at <http://www.ssrn.com/abstract=422220> (Berkman Center Research Publication No. 2003-04, Harvard Law School, Public Law Working Paper No. 73, 2003) (proposing a version of the ‘Hand-Reasonableness’ Formula for determining the proper balance between privacy interests and anti-terror policies that reduce such privacy); Jonathan Klick & Alexander Tabarrok, *Using Terror Alert Levels to Estimate Effects of Police on Crime*, 48 J.L. & ECON. 267 (2005) (applying the ‘Gazelle-Lion Theory’, that the frequency and magnitude of crime depends on the number of criminals not the number of potential victims, to the newly created terror alert levels).

relying on this approach then suggest varying magnitudes of economic and social policies based on the perceived impact of terrorism on society.

This paper seeks to identify the general cognitive biases and overall measurement errors inherent in these recent studies of terrorism. Such biases lead to unprincipled conclusions founded upon incomplete information. These problems are exacerbated by inaccurate measures of the true impact of terrorism on the economy, the human psyche, policy-making and the world community. Such measurement errors severely diminish the probative value of the studies and lead to merely speculative conclusions.

The paper will proceed as follows. Section II will focus on the first approach, statistical time series, by providing a brief summary of this type of measurement tool, identifying the inherent biases and measurements errors and summarizing the effects of such biases. Finally, it will provide specific recommendations for reducing the effects of the detailed biases and measurement errors. Section III provides a similar analysis of the second type of measurement tool, 'contingent valuation surveys.' Section IV provides a brief summary, discussion of errors and recommended improvements for the third type of measurement tool, the 'predictive theory' approach.

Based on the enumerated biases and seeming inability to cure them given the current framework of societal reactions to terrorism, Section V asserts that the 'statistical time series' and 'contingent valuation survey' approaches do not provide accurate measures of the effects of terrorism and should not be used to measure the economic impact of terrorism or the degree of civil liberties our society appears willing to surrender to combat terrorism. These approaches can continue as anecdotal measures of terrorism without significant restructuring. However, they should not be relied upon to support anti-terror policies as they are largely erroneous. Section V

concludes that the ‘predictive theory’ approach is the most appropriate form of measurement for terrorism and should be utilized more frequently to measure the economic and social impact of terrorism.

II. STATISTICAL TIME SERIES APPROACH

A. Introduction to Approach

Numerous studies rely on statistical time series data to predict the future effects of terrorist attacks on the United States, both from an economic and social perspective. These empirical studies seek to measure the effects of previous terrorist attacks on multiple facets, ranging from overall economic growth to safety and the surrender of civil liberties.⁷ Some of these studies draw general conclusions regarding terrorism and the effect it has on an economy, while others attempt to relate those results to the present economic and political climate in the United States.⁸

These studies frequently utilize data from other countries that have suffered significant terrorist attacks in the past, due to the lack of data regarding terrorist attacks within the United States. In one such study, the authors analyzed data from the Basque Autonomous Region (“Basque Country”) in Spain.⁹ The Basque Country was chosen because of its economic vitality and strength, as compared to other regions in Spain, prior to the devastating terror attacks led by

⁷ See *infra* note 8.

⁸ See generally Alberto Abadie & Javier Gardeazabal, *The Economic Costs of Conflict: A Case-Control Study for the Basque Country*, 93 AM. ECON. REV. 113 (2003) (concluding that terrorism has measurable negative effects on an economic system based on a study of the effect of terror attacks on a small region in Spain); JEFFREY ROSEN, *THE NAKED CROWD: RECLAIMING SECURITY AND FREEDOM IN AN ANXIOUS AGE* 32-61 (2004) (drawing comparisons between the current situation in the United States and that faced by the United Kingdom during the 90s when terrorist attacks led to the installation of a comprehensive closed circuit television monitoring system); Blomberg, *supra* note 5 (comparing the impact of terrorism on the overall economic growth by focusing on France, the Middle East and the United States during the 1980s and 1990s).

⁹ See Abadie, *supra* note 8, at 3.

the Basque Homeland and Liberty group (ETA).¹⁰ The authors explain that the ETA targeted economic entities, such as corporations and entrepreneurs, and that these attacks led to over eight hundred deaths between 1968 and 2000.¹¹

The authors utilized per capita gross domestic product (GDP) as a measure of economic growth and vitality, and compared the GDP for the Basque Country region to a synthetic control region created using other regions in Spain to control for any national economic contractions that may have occurred during the same period.¹² The authors developed this synthetic control region to track the “economic evolution of th[e] ‘counterfactual’ Basque Country without terrorism.”¹³ The authors observed that each economic downturn in the real Basque Country was nearly perfectly correlated to the timing of each terror attack in the region.¹⁴ Based on these findings, the authors determined that the ETA terror attacks negatively impacted the Basque Country GDP by approximately ten percent between 1980 and 2000, the same period of time in which the remainder of Spain experienced strong economic growth.¹⁵

Each of these studies focused on previously collected time series data relating specific terrorist attacks to economic downturns, GDP contractions and reductions in civil liberties. In each study, the researchers based their conclusions on the temporal comparison between the terror attack and identifiable economic contractions. Each concluded that terrorism negatively impacts an economy, both from a present output and a future growth standpoint.¹⁶

¹⁰ *Id.* ETA stands for *Euskadi Ta Askatasuna*, which translates to the Basque Homeland and Liberty Group. “International Terrorist Organization Profiles”, International Policy Institute for Counter-Terrorism, at <http://www.ict.org.il/> (last visited Jan. 22, 2006).

¹¹ Abadie, *supra* note 8, at 1.

¹² *Id.* at 7.

¹³ *Id.* at 2.

¹⁴ *Id.* at 1.

¹⁵ Abadie, *supra* note 8, at 8.

¹⁶ *Id.* at 8; *see also* Blomberg, *supra* note 5, at 2 (explaining that terrorist attacks negatively impact future growth by redirecting spending from investment in the private sector to the government sector for the purpose of combating terrorism).

B. Inherent Biases and Measurement Errors

There are several types of errors that are common in the ‘statistical time series’ approach. Following are the four main errors embedded in this approach for measuring the economic and social costs of a terror attack. The four errors are the inherently small size of the data pool, the lack of a widely accepted definition of terrorism, the lagging effects of redirecting capital and the poor correlation between the United States and other countries that have suffered measurable terror attacks.

i. Small Sample Size

There may be an insufficient number of identifiable terror attacks in the United States from which to construct an adequate data set. Without a sufficient number of data points to compare, any conclusion becomes merely speculative. This problem arises in many forms throughout economic analysis. For example, it is mathematically possible to derive a representative equation of ‘best fit’ from two data points. However, the resulting equation will likely not be indicative of any true co-dependency between the two points. To conclude that the derived equation was indicative of any relationship would be improper and potentially misleading. Similarly, one can presumably measure the economic and social effects of a terror attack on the United States using two identifiable terror events. However, the results may be equally as improper and misleading as the equation derived from the ‘best fit’ line between two points.¹⁷

ii. No Widely Accepted Definition of Terrorism

¹⁷ Any reported economic impact of terrorism may be a result of a combination of other factors that must be controlled for, such as a natural economic contraction or period of stagnation resulting from widespread worker retraining. Also, any identified reduction in civil liberties may be as much a result of terrorism as an ideological shift in national policies or the different agendas of political administrations.

The small sample size problem may be a product of the difficulty associated with distinguishing between a criminal event and a terrorist attack. Complex questions abound, such as whether the 1995 Oklahoma City bombing or the 1996 Athens Olympics bombing should be characterized as terror attacks or large-scale criminal events.¹⁸ One could argue that the term terrorism should be confined to attacks promulgated by international criminals.¹⁹ Others could assert that any ‘mass target’ attack should be characterized as a terrorist attack. If the studies are focused on measuring the economic and social effects of terrorism, analyzing data and policies that were influenced by other large-scale criminal events would distort any true effect. However, if events are omitted because they are not perceived as a terror attack, the true effects of terrorism may be underrepresented.

iii. The Lagging Effects of Redirecting Capital

Also, many potential economic effects do not immediately manifest themselves. As one study relying on this approach suggested, there are lagging effects that are not properly captured by economic data immediately following a terror attack.²⁰ These lagging effects are difficult to measure because economic climates change dramatically over time, which complicates efforts to distinguish the effects of any terror attack from the effects of other economic variables.

One significant source of these lagging effects results from the redirection of capital from investment activities to governmental programs aimed at combating terrorism. Specifically, terrorism has led to an increase in government programs such as the Homeland Security

¹⁸ Similarly, should attacks perpetrated by American citizens be included in terror attacks if particularly egregious, such as ‘Unabomber’ Ted Kaczynski and his crusade against progress involving eighteen years of mailbox bombs?

¹⁹ *But see* USA PATRIOT Act, *supra* note 1, § 802 (creating a new crime termed ‘domestic terrorism’).

²⁰ *See* Blomberg, *supra* note 5, at 26 (finding that economic spending shifts from investment activities to government spending following a terrorist attack based on regressions comparing the effects of conflict and terrorism on the ratio of investment to GDP and of government expenditures to GDP).

Department, the Transportation Security Administration (TSA) and the ‘War on Terror.’²¹ These funds are no longer available to develop the nation’s infrastructure and promote long-term growth of the economy. Rather, these funds are expended on more sophisticated luggage x-ray machines for airports, additional training for airport screeners and the countless expenses associated with the ‘War on Terror.’ Although remaining in the economic pool of resources, this shift in spending from investment to government programs has a negative impact on the economic growth of a country.²² Expansionary economic actions that provide the foundation for future growth are effectively being replaced by defense spending.

The effects associated with a lack of investment spending are not ascertainable using current economic figures. The loss of expansionary investment spending decreases the movement towards long-term economic growth. Such an effect may not be observable for several years following a substantial redirection of income.

iv. Poor Correlation Between the United States and Other Countries

Finally, several studies evaluate the economic and social effect of terrorism on countries or segments thereof that have experienced a significant number of attacks over a prolonged period of time.²³ Many researchers analyze data from other countries and project those results on the United States in an attempt to correct for such deficiencies in the availability of data from terror attacks.²⁴ This last type of error may stem from an attempt to compensate for the effects of the first. In this sense, the insufficiency of data problem is solved by the creation of another conflict point.

²¹ For example, the 2006 budget request for the Department of Homeland Security, a newly created agency in the wake of 9/11, was \$41.1 billion. See United States Department of Homeland Security, *Budget in Brief Fiscal Year 2006*, at http://www.dhs.gov/interweb/assetlibrary/Budget_BIB-FY2006.pdf (last visited Jan. 22, 2006).

²² See Blomberg, *supra* note 5, at 26 (finding a significant reduction in economic activity following a terror attack).

²³ *Id.*; see also ROSEN, *supra* note 8. (analyzing the terrorist attacks during the 1990s in Great Britain and comparing the British reaction to that of the United States following September 11, 2001).

²⁴ See generally ROSEN, *supra* note 8.

For example, one study measured the effect of prolonged terrorism on the GDP of an economically rich region in Spain.²⁵ It would be misleading to translate the presumed effect of terrorism on a small region in Spain to the United States, as there are significant differences between the two countries. The United States is a highly unique country, both economically and socially. The United States population was seven times larger and the GDP was twelve times greater than that of Spain in 2005.²⁶ As such, attempting to draw comparisons between the two countries cannot be supported with confidence, as one cannot assert that the United States economy would react similarly to the economy of a small region in a country, the whole of which has one-twelfth of the GDP of the United States.

In addition, the economic data from the Basque Country was compared with a synthetic control region developed from the remaining regions in Spain in an attempt to reduce the effects of natural economic downturns.²⁷ The same opportunity is not available when analyzing the United States economy, as there are no similarly defined regions from which to develop a synthetic control group. The closest corollary to such a study would be to compare the GDP of a particular state with the GDP of the United States. The only states to suffer an attack on 9/11 were New York, Virginia and Pennsylvania.²⁸ It would be difficult to measure the effect of such attacks using an individual state, as interstate commerce undoubtedly spread the effects across the country, particularly with respect to the losses sustained from the collapse of the World Trade

²⁵ See generally Abadie, *supra* note 8 (focusing on the effects of terrorist attacks over a thirty year period on the economic welfare of the Basque Country, one of the seventeen autonomous regions in Spain).

²⁶ Compare <http://www.cia.gov/cia/publications/factbook/geos/sp.html> (last visited Jan. 22, 2006) (Spain's population in 2005 was 40.3 million and official exchange rate GDP was \$1.046 trillion); with <http://www.cia.gov/cia/publications/factbook/geos/us.html#Econ> (last visited Jan. 22, 2006) (estimating the United States population in 2005 was 295.7 million and reporting that the official exchange rate GDP in 2005 was \$12.77 trillion).

²⁷ Abadie, *supra* note 8, at 16.

²⁸ The World Trade Center was located in the lower-Manhattan business district in New York, New York. American Airlines Flight 77 crashed into the southwest side of the Pentagon in Arlington, Virginia. United Airlines Flight 93 crashed in a rural field near Johnstown, Pennsylvania.

Center. As such, the data would undoubtedly be clouded by the effects of natural economic downturns, among other factors.²⁹

C. Specific Recommendations for Reducing Errors

These inherent biases and measurement errors are not unique to studies that analyze post-attack economic data. However, these errors are sufficiently problematic to warrant careful analysis of any studies that rely upon such an approach. Measuring the economic impact of terrorism using an insufficient number of data points, while not being able to correct for lagging effects engenders significant doubt in any results obtained. Enumerating these errors and developing strategies for avoiding these pitfalls is necessary for these studies to be indicative of any true impact terrorist attacks exert on the United States economy.

That is not to say that these studies are void of significance or value. It is valuable from a theoretical perspective to have research suggesting that the prolonged terrorism in the Basque Country in Spain may have led to a ten percent decline in the region's GDP.³⁰ However, one would be remiss to rely upon this data for policy-making and spending initiatives regarding terrorism in the United States.

To minimize the effects of such problems, researchers analyzing time series data should, at a minimum, provide the definition of terrorism under which the study is operating to establish the proper parameters of the study. The definition being utilized should be included at the beginning of any research findings or studies as a way to set the stage for the findings. Such a definition should adequately convey the type of terror attacks being analyzed and include any common terminology that may be attributable to that type of terrorism.³¹

²⁹ See the discussion of the six different types of terrorism in Section IV.B.

³⁰ Abadie, *supra* note 8, at 16.

³¹ For example, studies should attempt to characterize the type of terrorism being studied into a recognized category, such as politically or religiously motivated. See *infra* note 76.

Similarly, examining the few strands of economic data surrounding the few terror attacks on United States soil provides a wholly incomplete picture of any true effects of terrorism on the economy. This problem cannot be solved by the traditional means of collecting additional data because it simply does not exist. Nor can it be corrected for by expanding the definition of terrorism to include events not previously characterized as terrorism, as this data would not include important factors such as the public reaction to an announced terror attack.

Rather, researchers should rely on newly developed tools and statistical strategies for collecting and analyzing information from small data pools in an attempt to reduce the general errors associated with small sample sizes.³² The data collected and utilized must have the sophistication and flexibility of a large sample for such strategies and tools to be effective, which can be achieved through the use of particular statistical strategies.³³ Once the data is sufficiently sophisticated and flexible, researchers can rely on multiple tools, such as hypothesis testing using the bootstrap or the use of partial least squares, to combat the problems associated with small sample sizes.³⁴

Also, there may be significant lagging effects caused by the redirection of capital from investment to government spending that are not immediately discernable following a terror attack. Even if the other problems with this approach could be controlled, it would be difficult to correct for these lagging effects. As such, studies of the economic effects of terrorism should rely on economic evidence gathered over an adequate period of time to appropriately capture the effects of terrorism on the economic welfare of the United States.³⁵ However, waiting infuses additional problems into the data, such as removing the effects of a crude oil shortage, recession,

³² See generally RICK H. HOYLE, STATISTICAL STRATEGIES FOR SMALL SAMPLE RESEARCH (1999).

³³ See *id.*

³⁴ See *id.*

³⁵ This approach has been taken in other studies regarding the economic effects of terrorism. See generally Abadie, *supra* note 8.

series of natural disasters or the ripple effects of a corporate collapse similar in scope to Enron and WorldCom. It would be difficult to control for such additional factors because the United States has no control group, unlike the study of the Basque Country in Spain.³⁶

Based on these identified errors in measurement and inherent biases, researchers should be cautious of studying the effects of terrorism on an economy using the ‘statistical time series’ approach. Historically, terror attacks have been an anomaly, particularly in the United States. The effects of such attacks likely cannot be measured from a retrospective view of the economy or social policy decisions following an identified attack. The inherent problems with this approach cannot be corrected without a significant increase in available data regarding terror attacks in the United States. These studies do not adequately account for significant economic factors, such as the lagging effects associated with a reduction in investment spending. Nor do these studies control for other factors, such as paradigmatic or administrative shifts in national policies, when attributing any reduction in civil liberties to terrorist attacks. As such, future economic and social policy decisions should not be based on the results of such studies unless the identified problems can be more effectively minimized.

III. CONTINGENT VALUATION SURVEY APPROACH

A. Introduction to Approach

Other studies avoid relying on post-attack trend information by gathering current data using surveys. These surveys are designed to gather information about the perceived economic and psychological effects of terrorism, posing questions to respondents ranging from the risks of future attacks to the degree of civil liberties one would sacrifice to reduce specific terror risks.³⁷

³⁶ See Abadie, *supra* note 8, at 4.

³⁷ See generally Bruno S. Frey & Simon Luechinger, *Measuring Terrorism*, at <http://ssrn.com/abstract=468140> (Zurich IEER Working Paper No. 171, 2003) (last visited Jan. 22, 2006) (questioning a respondent’s willingness to pay an additional fee for an airline ticket to reduce the risk of airline-related terror attacks); Viscusi, *supra* note 5, at

Many of these surveys pose hypothetical situations within which respondents are to frame their responses.³⁸ Others focus on the current terror situation in an attempt to measure the specific amount of money or enumerated civil liberties an individual would be willing to surrender to reduce the risk of a terror attack by a given percentage or probability.³⁹

Regardless of the specific aim of the questions, these survey questions can be characterized as either ‘willingness to pay’ or ‘willingness to accept’ questions.⁴⁰ Willingness to pay survey questions in the terrorism context seek to determine the maximum amount of a valued good, typically money or enumerated civil liberties, an individual would be willing to sacrifice in return for the promise of enhanced safety and security.⁴¹ Willingness to accept questions focus on the level of additional safety required for a person to give up some amount of money or civil liberties.⁴²

B. Inherent Biases and Measurement Errors

Surveys can be a valuable tool for gauging societal reaction to particular events and public sentiment towards proposed solutions. However, they can also provide misleading information depending on the nature of the situation being examined. Surveys attempting to measure the economic and liberty effects of terrorism have such problems. The following

11 (posing questions regarding an individual’s willingness to accept certain intrusive searching in the context of airport security to reduce the risks of an airline-related terror attack).

³⁸ Viscusi, *supra* note 5, at 25 (asking “[w]hat price increase in ticket price would you be willing to pay for screening measures that would decrease the risk of a terrorism attack on an airplane by 50%?”).

³⁹ ROSEN, *supra* note 8, at 5 (asking respondents to choose between a machine that will detect prohibited items at an airport security checkpoint by displaying a nude image of the person on a screen to an airport screening employee with a similar machine that will be equally as effective without displaying a cognizable nude image of the person); *See generally* Frey, *supra* note 37 (enumerating several types of surveys aimed at measuring public reaction to particular legislation reducing civil liberties or society’s willingness to pay for certain security measures).

⁴⁰ For a detailed analysis of the willingness to pay (WTP) and willingness to accept (WTA) theories, see Kathryn Zeiler & Charles R. Plott, *The Willingness to Pay/Willingness to Accept Gap, the Endowment Effect, Subject Misconceptions and Experimental Procedures for Eliciting Valuations*, 95 AM. ECON. REV. 3 (June 2005).

⁴¹ *See id.*; Viscusi, *supra* note 5, at 25.

⁴² *Id.*

analysis is divided into two main categories; inherent problems with risk quantification and general errors with surveys in the terrorism context.

i. Inherent Problems with Risk Quantification

Surveys attempting to measure either an individual's willingness to pay for added security or to accept a reduction in income or civil liberties in return for safety require an understanding of the risks being measured. The problem with such surveys is that respondents may have difficulties quantifying the risks associated with terrorism, particularly following an identified attack. Given this lack of information regarding the actual risks, both pre-attack and post-attack, the responses received in these surveys are based on mere conjectures.

At the very least, a respondent must know the current risk of occurrence of a particular terror attack before balancing any monetary expenditure or surrendering any civil liberties against a proposed increase in safety. Many survey questions reach beyond this required base of knowledge and pose questions directed at the change in terror risks following the attacks on the United States on September 11, 2001. In the case of terrorism, a respondent would have to understand the risk of a terrorist attack on United States soil before analyzing the effect, if any, of the attacks on September 11, 2001 on those risks.⁴³

ii. General Survey Errors in the Terrorism Context

Some researchers argue that society need not understand the actual risks associated with a terrorist attack to establish effective prevention policies.⁴⁴ These researchers assert that governmental entities should pass referenda based on popular demand aimed at making

⁴³ However, the statistical probability of certain terror activities is so small that that the respondents may not fully appreciate the gravity of the risk. For example, the risk of a hijacking-related death aboard a United States aircraft prior to September 11, 2001 was approximately 1 in 100 million flights. *See* Viscusi, *supra* note 5, at 17.

⁴⁴ *See* Frey, *supra* note 37, at 22.

individuals feel safer, regardless of the actual effect.⁴⁵ Assuming, *arguendo*, that this is the aim of these types of ‘contingent valuation’ surveys, there are still significant measurement errors and inherent biases in these surveys.

To begin, law students are used in many of these surveys as the representative sample of society with which to measure public opinion regarding the risks of future terror attacks.⁴⁶ This sample is neither random nor representative of the population. For example, law students are not educationally representative of the general United States population. Law students generally must have completed a minimum of sixteen years of formal education, including a four year undergraduate degree, before attending law school.⁴⁷ Comparatively speaking, only twenty-seven percent of United States citizens have completed a bachelor’s degree.⁴⁸

In addition, researchers have identified an ‘embedding effect’ in these types of surveys.⁴⁹ This theory suggests that a question regarding a specific type of terrorism will receive the same risk assessment as a question regarding terrorism in general, as individuals express their perception of all terror risks in the former question.⁵⁰ As suggested by this theory, surveys attempting to identify the risk of a specific type of terrorism tend to overstate the actual risk of such an attack due to the embedding effect. As such, relying on such surveys to support

⁴⁵ See Frey, *supra* note 37, at 22

⁴⁶ See Viscusi, *supra* note 5, at 4 (surveying Harvard Law School students enrolled in an analytic methods course along with fifteen students from a treatment of scientific evidence seminar).

⁴⁷ See American Bar Association Standards for Approval of Law Schools and Interpretations 2004-2005, *Chapter Five: Educational Requirements*, at <http://www.abanet.org/legaled/standards/chapter5.html> (last visited Jan. 22, 2006).

⁴⁸ Nicole Stoops, *Educational Attainment in the United States: 2003*, U.S. Census Bureau, at <http://www.census.gov/prod/2004pubs/p20-550.pdf> (last visited Jan. 22, 2006).

⁴⁹ See Viscusi, *supra* note 5, at 22.

⁵⁰ *Id.* at 23 (finding no statistical difference between responses regarding the risk of a narrowly defined category of terrorism, such as the hijacking of an aircraft, and responses regarding the measure of terrorism risk from all sources).

spending and policy initiatives aimed at combating one specific method of terrorism may be inappropriate given this overstatement of risk.⁵¹

Also, many contingent valuation surveys measuring terrorism place respondents in a hypothetical situation, or attempt to convey hypothetical economic or social harms.⁵² There are several risks inherent in such hypothetical questions, particularly in the case of a subject such as terrorism, which is wrought with strong emotions and a general lack of information.⁵³ These problems are difficult to remedy without a detailed restructuring of the types of questions posed and the manner in which they are presented.

One such problem is the difficult nature of conveying a hypothetical injury. For example, a survey may inform respondents that additional policies, if enacted, would require them to spend an additional fifteen minutes at the airport or be subjected to random searches notwithstanding the provisions of the Fourth Amendment. However, it is difficult for a respondent to understand such harms unless he or she had been subjected to similar actions in the past.⁵⁴ As such, one cannot discern whether the broad support for provisions that reduce civil liberties in return for potential security are genuine, or result from the lack of understanding of the gravity of the harm being proposed.

C. Specific Recommendations for Reducing Errors

Minimizing the measurement errors and inherent biases enumerated above requires a structured methodological plan and cautious analysis of any results obtained. Many of these

⁵¹ The enhanced scrutiny of a one-way ticket airline passenger, or the imposition of special provisions for passengers aboard aircraft within 30 minutes of Washington, DC's Reagan-National Airport, are examples of policies designed to combat a specific risk.

⁵² See Viscusi, *supra* note 5, at 11 (asking respondents whether they would support additional airport security measures that would infringe upon their civil liberties if they were told in advance that they would not be a target of such measures, and, later, if they would likely be a target of such measures).

⁵³ See discussion in Section III.B.i.

⁵⁴ This problem was alluded to by researchers when they discovered that certain individuals, most notably racial minorities, known targets for discrimination in certain areas of the country, did not support hypothetical provisions that would target certain individuals. See Viscusi, *supra* note 5, at 11-12.

errors can be significantly reduced or eliminated with proper planning and supervision. Even with such discipline, however, certain errors are unavoidable. As such, it is important to identify the types of questions that would introduce such errors into the results and eliminate them or discount the results accordingly.

i. Avoidable Errors

The general sources of error stem primarily from the design and implementation of such surveys. In some cases these errors and inherent biases can be substantially reduced or eliminated through detailed planning, additional controls and careful supervision. For example, surveying only law students does not provide a representative sample of the population. However, this problem can be easily remedied by simply expanding the scope of such studies to include other respondents, such as undergraduates, students from different institutions, or targeted surveys of a representative sample of the population at issue. For example, a more representative population for gauging public opinion regarding various aspects of terrorism may be registered voters, as these are the only individuals with the political power to express their concerns and preferences for policies aimed at reducing terrorism. Alternatively, a random sample of the population of United States citizens would also be a more appropriate gauge of actual public sentiment than law students.

Similarly, general survey issues such as leading questions and insufficient information can be remedied by scrutinizing the questions being presented and ensuring that those persons administering the surveys do not influence the process by developing an approved script. In addition, some researchers have found it beneficial to include the questions posed when discussing the results in any paper or presentation.⁵⁵ This permits the reader to decide whether

⁵⁵ See generally Viscusi, *supra* note 5.

the questions were overly leading or inappropriately posed and discount the result of the study accordingly.

Finally, researchers can combat the risk overstatement error associated with focusing on a specific source of terrorism by expanding the scope of the survey to include the risk of all terrorist attacks or by discounting the results to counteract the embedding effect. Alternatively, if researchers believe that targeted questioning regarding a particular risk is most appropriate, the results should be presented as an index of public support for anti-terror policies in general, not for specific policies.

ii. Unavoidable Errors

Some problems cannot be easily remedied. In the case of these unavoidable errors, researchers must balance the magnitude of error against alternative sources of data collection. In situations where the potential for error is significant and there are no alternative means of data collection, the most prudent solution may be to abandon the study to avoid presenting results and suggesting policies based on clearly erroneous and potentially misleading data.

The identified risk quantification errors likely cannot be avoided. Respondents are unable to understand or quantify statistically minor risks. Respondents lack the appropriate information concerning the actual risks of terrorism to respond to such questions.⁵⁶ Arguably, this error can be reduced by informing respondents of the statistical risks associated with the particular attack at issue. However, even if individuals were apprised of the actual risk figures, they may not be able to understand them. The actual risk for some terrorist attacks approaches minute probabilities that are not easily understood, such as 1 in 100 million flights. As such, this

⁵⁶ In cases where this was the design of the questions, this problem was likely foreseen and does not impact the outcome of the study. However, in studies seeking to actually identify the amount of money or the degree of civil liberties an individual is willing to surrender for improved security, such an error could significantly impact the results and any related policy suggestions.

problem likely reduces a respondent's basis for answering such survey questions to mere conjecture, worthy of only anecdotal treatment. These survey questions can lead to particularly significant problems in the case of terrorism if this lack of understanding cannot be remedied, as the occurrence risks tend to be statistically minute.

Some researchers assert that it is merely the perception of risk that drives policy despite the fact that people often misperceive probabilities.⁵⁷ It may be that these risk quantification questions are appropriate if the perception of risk truly creates measurable support for anti-terror policies. One theorist attempting to explain this risk perception problem stated, “[a] hundred petty crimes or petty accidents will not strike the imagination of crowds in the least, whereas a single great crime or a single great accident will profoundly impress them, even though the results be infinitely less disastrous than those of the hundred small accidents put together.”⁵⁸ As such, there is support for the theory that large casualties inflate the public perception of risk.⁵⁹

However, researchers argue that it remains the overall perception of risk that drives safety expenditures and public policy.⁶⁰ As one researcher explained, respondents in a survey supported an airport security measure expected to save 98% of 150 lives at risk over a measure

⁵⁷ Bill Durodié, *The Demoralization of Science*, Centre for Risk Management, King's College, at 8, at <http://www.durodie.net/pdf/TheDemoralizationofScience.pdf> (last visited Jan. 22, 2006) (explaining that the worldwide panic and United States ban on overseas beef did not occur until 1996 despite the fact that the incidence of mad cow disease went from 37,000 cases in 1987 to 1 case in 1996); CHOICES, VALUES AND FRAMES 7-10 (Daniel Kahneman & Amos Tversky eds., 2000) (explaining the phenomenon of *pseudo-certainty* effect, where an event that is actually not certain is perceived by individuals to be certain).

⁵⁸ GUSTAVE LE BON, *THE CROWD: A STUDY OF THE POPULAR MIND* 62 (1969).

⁵⁹ Recall the public outcry and widespread fear in the wake of the attacks on 9/11 that led to the passage of the PATRIOT Act despite the fact that the near 3,000 casualties accounted for only 0.12% of the 2,416,425 total reported deaths in the United States in 2001 and increased homicide from the 14th to the 13th leading cause of death in the United States behind Alzheimer's, heart disease, influenza and cirrhosis. See National Vital Statistics Report, *Deaths: Final Data for 2001*, at http://www.cdc.gov/nchs/data/nvsr/nvsr52/nvsr52_03.pdf (last visited Jan. 22, 2006).

⁶⁰ For example, there were five deaths attributed to envelopes containing anthrax in the months following September 11, 2001, however, in response to public outcry, the United States Postal Service developed an emergency preparedness plan to combat future bio-terror threats and implemented additional scanning policies estimated to cost \$2.4 billion by 2006. See *U.S. Postal Service Emergency Preparedness Plan for Protecting Postal Employees and Postal Customers from Exposure to Biohazardous Material and for Ensuring Mail Security Against Bioterror Attacks*, March 6, 2002, p. 14, at <http://www.usps.com/news/2002/epp/welcome.htm> (last visited Jan. 22, 2006).

that was expected to save 150 lives.⁶¹ If these researchers are correct, survey questions focusing on risk quantification may provide relevant, albeit flawed, information that will aid policy makers in the development of anti-terror policies. This does not ensure that these policies will be effective or appropriate for combating terrorism; rather, they may simply be popular at their inception.

Finally, the difficulty associated with conveying a hypothetical harm to an individual, such as the discomfort and delay associated with anti-terror policies that emphasize profiling, likely cannot be remedied. Studies that seek to identify a respondent's willingness to support such policies likely do not convey the gravity of the harm being considered. This is true regardless of whether the respondent is a member of the profiled group. Hypothetical questions that are not grounded in actual experience cannot capture the true harm of such policies. Some error in translation may be avoided if the respondent has previously experienced profiling.⁶² However, in the absence of such previous experience, any attempt to hypothetically harm a respondent in order to determine his or her willingness to support certain policies may result in substantial error.

It is important to determine which types of errors are caused by a survey. If the errors are avoidable, careful planning and supervision can retain the credibility of the results. In these cases, surveys should continue as moderately effective measures of public sentiment. However, surveys that foster unavoidable errors must be weighed against alternative sources of data collection. In the absence of such actions, the results of these surveys will continue to be

⁶¹ Paul Slovic, *Rational Actors and Rational Fools: The Influence of Affect on Judgment and Decision-Making*, 6 ROGER WILLIAMS U.L. REV. 163, 179 (2000).

⁶² This idea was implicitly recognized by at least one researcher, who noted that 'non-white' respondents favored profiling policies less than 'white' respondents. See Viscusi, *supra* note 5, at 11-12. The researcher explained that this was "not surprising given that nonwhites are more likely to have been targets of racial profiling in other contexts." *Id.* at 11.

unreliable, as these errors will relegate respondents to mere speculation for the purpose of answering the questions rather than thoughtful and principled responses.

IV. PREDICTIVE THEORY APPROACH

A. Introduction to Approach

The final approach used in measuring the effects of terrorism from a monetary and civil liberties perspective avoids gathering data from previous attacks or relying on valuation surveys. Rather, this method, which will be termed the ‘predictive theory’ approach, is a heuristic approach relying heavily on sociological and psychological theory. Researchers relying on this approach typically focus on the underlying reasons for implementing anti-terror policies and attempt to identify the effects of such policy-making, both on future terrorism and on the public perception of safety from future attacks.⁶³

One study focused on the development of social panic in the aftermath of a serious crime against society, such as a terror attack.⁶⁴ This study identified two types of panic, moral panic and risk society panic.⁶⁵ The researchers explained that society needs to identify a cogent group as the source of the crime perpetrated, a so-called “folk devil.”⁶⁶ This identified group becomes a proverbial lightning rod for all public fear and anger, and public sentiment rapidly develops in

⁶³ See generally Frey, *supra* note 37 (explaining that the government makes decisions to appease public fears whether those decisions and policies are reasonable or not, many of which involve the reduction of civil liberties via curfews, national identification cards and more extensive airport searching); Filler, *supra* note 4 (analyzing how social panic develops in the aftermath of a serious crime, both individually and governmentally, and how this panic may drive certain reactions such as the 9/11 Commission, the Homeland Security Department and the criticisms of the FBI and CIA intelligence gathering).

⁶⁴ Filler, *supra* note 4, at 358 (explaining that certain incidents leads to an increase in social panic as the general public to conclude that there is a “broader crisis.”).

⁶⁵ See *id.*

⁶⁶ See *id.* at 359 (drawing analogies between the heinous crime of pedophilia and the stigma that attaches to convicted sex offenders with terrorism and the public focus on the Muslim and Middle Eastern populations).

support of proactive policies aimed at reducing the perceived risks associated with the identified group.⁶⁷

The other identified type of panic, termed risk society panic, is more institutionally based and focuses the majority of the criticisms and scrutiny on the current political administration or controlling government.⁶⁸ Within this framework, society assigns significant fault to the current governmental system, whether it falls on the political administration or certain intelligence agencies.⁶⁹ In addition, society identifies segments of industry that are perceived as unsafe and criticizes perceived ineffective solutions or failures to appropriately protect against such perceived risks.⁷⁰

Researchers relying on these studies collect this sociologic information regarding public perception of risk and general reaction in the wake of certain crimes or attacks. These studies then attempt to compare public reaction to one crime or event to the post-9/11 reaction. Based on such comparisons, these researchers propose policies or methods of action that are either aimed at reducing the public perception of risk or the actual risk.⁷¹

B. Inherent Biases and Measurement Errors

The studies that utilize the predictive theory approach rely heavily on sociological and psychological evidence of human behavior.⁷² Much of this evidence is obtained from previous

⁶⁷ See *id.* at 362.

⁶⁸ *Id.* at 364.

⁶⁹ See Filler, *supra* note 4, at 365.

⁷⁰ *Id.* at 366. Recent examples of this problem include public scrutiny of nuclear power plants, the cargo shipping crate industry and airline cargo holds.

⁷¹ See Filler, *supra* note 4, at 382 (urging civil liberty advocates to develop strategies for combating restrictive policies in the event that a new terrorist attack creates another epidemic of moral or risk society panic); Frey, *supra* note 37, at 25-26 (asserting that the ‘popular referenda’ solution to terrorism, where the general public determines which anti-terror policies will be enacted, is the most appropriate solution).

⁷² See generally ROSEN, *supra* note 8; Filler, *supra* note 4; Frey, *supra* note 37.

studies of individual and public reactions to catastrophic or shocking events.⁷³ There are several specific errors in the application of these theories in addition to the inherent skepticism and standard problems that result from any study not predicated on concrete data and numeric observations that are independently verifiable.

Many recent ‘predictive theory’ studies fail to take unique characteristics of terrorism into account. This failure is likely a product of two factors. First, there is a general inability to determine what the term ‘terrorism’ actually encompasses. Second, society may not possess a sufficient amount of information regarding terrorist patterns and operations to appropriately design anti-terror policies and techniques despite recent studies and theories that have greatly expanded the pool of information and have proven useful for reducing such insufficiency of information problems. The following is an analysis of these application errors.

i. Terrorism is not Sufficiently Defined

First, terrorism does not have a widely accepted definition, unlike many other types of crime. In an attempt to alleviate this problem, the U.S. State Department developed the following definition of terrorism; “premeditated, *politically motivated violence* perpetrated against noncombatant targets by subnational groups or clandestine agents, usually intended to influence an audience.”⁷⁴ Comparing this definition to known categories of crime, such as first-degree murder, the distinguishing element of a terror attack appears to be the political, as opposed to criminal, aim.⁷⁵ However, the State Department definition is far from the end of the analysis regarding terrorism. The difficulty with defining terrorism may be the result of the

⁷³ See Filler, *supra* note 4, at 359 (tracing the wave of “Megan’s Laws”, state-based initiatives aimed at reducing future incidents of sexual offender recidivism, and comparing that public response to that of terrorism).

⁷⁴ PAUL R. PILLAR, TERRORISM AND U.S. FOREIGN POLICY 13 (2001) (emphasis added).

⁷⁵ See *id.*

different sub-categories of terrorism that have been recently identified and analyzed by researchers.⁷⁶

At present, researchers have identified six types of terrorism; left-wing, right-wing, anarchist, state-sponsored, nationalist and religious.⁷⁷ These six types of terrorism were developed based on the perceived motivations of each group.⁷⁸ As such, there are significant differences in the scope of operations and targets between each type. For example, the predominant purpose of nationalist terror groups is to succeed in creating a separate state for their own national group.⁷⁹ In contrast, state-sponsored terrorists are primarily used to wage covert wars and are commonly referred to as “guns for hire.”⁸⁰ Attempting to design unilateral policies to combat these two types of terrorism is likely to be ineffective, as the differences in scope, targets and general ideologies of the different groups mandate different polices for effectiveness.

Similarly, researchers relying on a ‘predictive theory’ approach should not focus on terrorism as a collective group. The most notorious terrorist organizations are within the state-sponsored, nationalist and religious organizational categories.⁸¹ Following the 9/11 attacks, the

⁷⁶ See generally “Terrorism: Questions & Answers,” Council on Foreign Relations, at <http://cfrterrorism.org/terrorism/types2.html> (last visited Jan. 22, 2006) (identifying and summarizing six different types of terrorism).

⁷⁷ See *id.*

⁷⁸ See BRUCE HOFFMAN, *INSIDE TERRORISM* (1998) (analyzing some of the differences between terrorist organizations, such as the limitless violence inflicted by religious terrorist organizations as compared to other groups, such as nationalist terrorist organizations, that temper their violence in pursuit of an identified political goal).

⁷⁹ See *supra* note 76.

⁸⁰ See HOFFMAN, *supra* note 78, at 186.

⁸¹ Countries such as Iran, Iraq, Syria, Libya, North Korea and Sudan are typically associated with terrorism, which can be classified as ‘state-sponsored terrorism.’ U.S. Department of State, Office of the Coordinator for Counterterrorism, *Overview of State-Sponsored Terrorism: Patterns of Global Terrorism—2000*, April 30, 2001, at www.state.gov/s/ct/rls/pgtrpt/2000/index.cfm?docid=2441 (last visited Jan. 22, 2006).

Similarly, groups such as the Irish Republican Army (IRA) are also associated with terrorism, which is classified as ‘nationalist terrorism.’ *Id.* Finally, groups such as al-Qaida and Hamas are widely recognized as terrorist organizations and are classified as ‘religious terrorist’ organizations. *Id.*

predominant focus of the United States has been on al-Qaida, one of some twenty-four known religious terrorist organizations.⁸²

However, despite the apparent focus on al-Qaida, a religious terrorist organization, researchers continue to discuss terrorism both on the micro and macro-level.⁸³ This confusing and unfocused approach treating all types of terrorism equally leads to unprincipled conclusions and theories on how best to combat specific types of terrorism. If policy-makers rely on these theories when developing and proposing new measures to combat terrorism, the resulting policies may be substantially vague and ineffective in achieving the immediate goal, reducing religious terrorism. Similarly, if society relies on these theories to determine whether certain anti-terrorism measures are appropriate, policies that constrain civil liberties or expend significant amounts of money may be enacted despite their flawed logic, design and ineffective means.

ii. Terrorism is a Highly Unique Form of Crime

Recent studies focusing on each of the six identified types of terrorism have begun to identify the uniqueness of each branch of terrorism and enumerate differences between known terrorist organizations.⁸⁴ However, this research is still in its infancy, leaving law enforcement and policy-making communities with significantly less information for analyzing terrorism than is available regarding 'ordinary' crime. The law enforcement community has not had adequate contact with different terrorists or the experience with terrorist organizations which is necessary to form reliable theories regarding their underlying motivations, strategies and actions. This lack

⁸² See HOFFMAN, *supra* note 78, at 91-95 (asserting that religious terrorist organizations account for roughly half of the fifty-six known terrorist organizations).

⁸³ Based on the scope and aim of the thirty years of attacks suffered in the Basque Country region of Spain, the Basque Homeland and Liberty group would be characterized as a nationalist terrorist organization. *But see* Abadie, *supra* note 8 (focusing on the economic effects of attacks by the Basque Homeland and Liberty group on a small region in Spain and representing the results as the economic effects of terrorism in general).

⁸⁴ See *supra* note 76.

of information and experience inhibits the design of policies and procedures necessary to identify and neutralize members of these organizations, which are heavily relied upon to combat ‘ordinary’ crime.⁸⁵

In most cases, policy-makers and law enforcement agencies simply alter current policies aimed at reducing general criminal conduct and apply them to combat terrorism.⁸⁶ However, the general lack of information regarding terrorism coupled with the limited experience law enforcement agencies have with terrorist organizations has led to the misapplication of these sociological theories.

There are fundamental differences between a common criminal and a terrorist that diminish the effectiveness of a mere cross-application of criminal theories. For example, common criminals generally strive to avoid detection by reducing the public nature of their crimes while terrorists seek to focus public attention on their actions by attacking highly visible targets such as skyscrapers, commuter trains and embassies.⁸⁷ Furthermore, criminals serve personal interests or delusions and do not receive widespread support and accolades for their actions.⁸⁸ Conversely, terrorists serve political or religious ideologies that are furthered by highly visible and destructive acts, which actually garner support for future actions by a

⁸⁵ For example, criminal profiling has developed into a highly useful technique for identifying particularly egregious offenders, such as serial killers, rapists and bank robbers. This technique focuses on various aspects of a particular crime, such as the apparent interpersonal coherence, forensic awareness and criminal characteristics of the perpetrator, as well as the significance of time and place of a crime to develop a sufficient psychological profile of the likely culprit. See Wayne Petherick, *Criminal Profiling: How it Got Started and How it is Used*, Chapter 4: Investigative Psychology, at http://www.crimelibrary.com/criminal_mind/profiling/profiling2/1.html?sect=20 (last visited Jan. 22, 2006).

⁸⁶ For example, the PATRIOT Act is largely comprised of pre-existing statutes enacted to combat general criminal conduct. See Pub.L.No. 107-56 (2001). In many cases, these amended statutes only provide law enforcement agencies with an additional thirty days to engage in the same investigative techniques, such as intercepting wire, oral or electronic communications that may be related to terrorism. See *id.* at 201.

⁸⁷ See HOFFMAN, *supra* note 78, at 91-95.

⁸⁸ See Filler, *supra* note 4, at 359 (discussing the public animosity toward criminals, particularly child rapists); see generally ROBERT AGNEW, *WHY DO CRIMINALS OFFEND? A GENERAL THEORY OF CRIME AND DELINQUENCY* (1st ed. 2005).

relatively large community of individuals.⁸⁹ As such, merely amending statutes and policies aimed at curbing general criminal activity is an improper application of the underlying sociologic theories that were relied upon to develop the original techniques.

C. Specific Recommendations for Reducing Errors

The general problems with studies relying on the ‘predictive theory’ approach can be reduced by focusing the analysis on a specific type of terrorism and acknowledging the psychological and motivational differences between common criminals and terrorists. Such differences prevent the wholesale application of common criminal theories to terrorism, as relying on theories created and developed from the study of different forms of ‘typical’ crime will lead to improper conclusions and ineffective techniques. As such, researchers should frame their studies with the understanding that policy-makers and law enforcement agencies must develop new techniques for investigating and neutralizing terrorism within the United States.

First, researchers must effectively focus studies and propose policies aimed at neutralizing a specific type of terrorism. Focusing on a specific type of terrorism, such as religious terrorism, may narrow the analysis of terrorism to a more appropriate and manageable level. Once the focus is religious terrorism, researchers can more effectively measure the public response to a religious terrorist attack, which is one of the hypothesized aims of religious terrorism.⁹⁰

Also, researchers relying on some form of the ‘predictive theory’ approach to support theories or certain proposals must understand that public perception changes quickly, which will

⁸⁹ See HOFFMAN, *supra* note 78.

⁹⁰ *Id.* Researchers can then apply these observed public effects to gauge any terrorist response, which can assist in determining the origin and cause of the terrorists’ motivations for engaging in such actions. Researchers can also strive to determine the *modus operandi* of religious terrorist organizations, which will assist in the development of procedures and techniques for measuring the economic and social effects of terrorist attacks inflicted by such groups.

affect previous support for any proposed policies or procedures.⁹¹ It is important to acknowledge the effects of such a potential shift while analyzing behaviors and developing any theories. However, it may be difficult to design theories or suggestions to account for potential changes in public support. As such, any theories of public behavior or reaction that are translated into theories or anti-terror policies should focus on the current situation and avoid forecasting future public reaction to continued threats of terrorism.

V. CONCLUSION

As Judge Richard A. Posner recently explained, “[t]here is really rather little that can be done to reduce the likelihood of future terrorist attacks beyond what is being done already, at least if the focus is on the sort of terrorist attacks that have occurred in the past”⁹² Inherent in these words is the understanding that the terrorist attacks have changed significantly in recent times, as new and more determined organizations develop and execute terror plans across the globe. This increase in terrorist activity, coupled with the precisely planned and dishearteningly effective attacks on 9/11, has increased the focus on terrorism, both in the United States and abroad.

A product of the increase in the focus on terrorism has been the rise in the number of studies attempting to measure the economic and social effects of a terrorist attack. Some attempt to quantify the economic costs of terrorism while others focus on the reduction in civil liberties society would support in return for more effective anti-terror policies. In either case, many rely on permutations of three measurement approaches; the ‘statistical time series’ approach, the

⁹¹ For example, public perception of the PATRIOT Act was initially broad, as the House of Representatives passed the bill 357-66 and the Senate 98-1. The Library of Congress, Thomas Online, *Bill Summary & Status for the 107th Congress*, at <http://thomas.loc.gov/cgi-bin/bdquery/z?d107:HR03162:@@X> (last visited Jan. 22, 2006). However, this support has begun to dissipate as various civil liberties groups mounted constitutional attacks to certain provisions. *See generally* Doe v. Ashcroft, *supra* note 4.

⁹² Richard A. Posner, Book Review, *The 9/11 Report; A Dissent*, N.Y. TIMES, Aug. 29, 2004, § 7, at 1.

‘contingent valuation survey’ approach or the ‘predictive theory’ approach. Each can introduce inherent biases and measurement errors into the results.

To briefly recount, the ‘statistical time series’ approach is plagued by too few results and lagging economic effects that cannot be presently measured. Similarly, the ‘contingent valuation survey’ approach leads to inherent problems with risk quantification and general errors with survey design and implementation, such as poor representation and the embedding effect. Finally, the ‘predictive theory’ approach, which relies on sociological and behavioral evidence of public reaction to mass attacks and widespread uncertainty, introduces errors based on presumptions and theories regarding societal behavior.

Based on the errors identified above and potential solutions, the ‘predictive theory’ approach seems to be the best suited for measuring economic and social effects of terrorism. This approach provides flexibility and does not rely on a presently insufficient pool of data. There are inherent criticisms of any theory derived largely from patterns of social behavior and reaction that cannot be easily answered or dismissed. The most effective response to such criticisms of these ‘predictive theory’ studies is to focus on the benefits of this approach. The benefits can be derived by focusing on the inherent problems and error introduced by the ‘statistical time series’ and ‘cognitive valuation survey’ approaches. Researchers using a ‘predictive theory’ approach avoid a myriad of problems, such as insufficient data for study, the inability to quantify lagging economic effects and general problems with surveys, such as risk quantification, representative samples and the embedding effect.

Despite the fact that the ‘predictive theory’ approach is predicated on supposition, researchers can significantly improve the results of these studies by focusing on a specific type of terrorism and recognizing that public support and risk perception change abruptly. These

adjustments will permit researchers to more appropriately balance the interests of society, from both a civil liberty and monetary viewpoint, with the interests in curtailing future terror attacks through restrictive policies and procedures. Such policies and procedures will likely continue to be necessary to protect the United States and the rest of the world, as terrorism continues as a dangerous and destructive force to peace and prosperity.