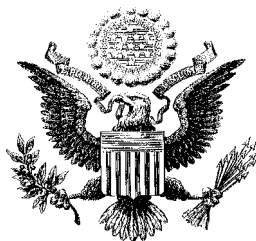


THE ECONOMIC COSTS OF TERRORISM



Jim Saxton (R-NJ), Chairman
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United States Congress
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Executive Summary

The events of September 11 stunned Americans not only because of the heinousness of the attacks themselves, but also because of the underlying vulnerability they revealed. The toll such attacks take on open, unprepared, and unsuspecting nations is severe; particularly significant are the economic effects of such acts and the responses they elicit. These effects need to be understood in order to prescribe appropriate economic policy remedies. This study categorizes and briefly summarizes both the short- and long-term economic effects and costs of such terrorist attacks. Prominent among the long-term effects are: (1) the increased transaction costs and inefficiencies imposed on the economy by terrorism, and (2) the fact that increased spending on security necessarily diverts labor and capital resources away from productive private sector activities and toward necessary, but less productive, anti-terrorist activity. Several estimates of the magnitudes of the various costs are briefly summarized. In general, the estimates of the costs surrounding the September 11 terrorism suggest that these costs are significant, but not inordinately large relative to GDP. While these complex estimates of the long-term costs are commendable, there are a number of reasons to be skeptical of their conclusions. In particular, they fail to consider multiple forms of terrorism, important measurement problems, or the cost-related behavior of terrorists. Consequently, terrorism's long-term costs may be more severe than suggested by many existing estimates. Some timely monetary and fiscal policy responses to such terrorist activity are appropriate.

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INTRODUCTION

The terrorist attack of September 11, 2001 was a watershed event. It highlighted the potentially disastrous consequences of well-executed terrorist activity on a relatively open, unprepared, and unsuspecting nation. The economic effects of such terrorism and the responses they elicit are significant. They need to be understood in order to prescribe appropriate remedies and economic policy responses. This study categorizes and briefly summarizes the short- and long-term economic effects and consequences of terrorist attacks and associated increased security costs. Several estimates of the magnitude of these costs are briefly summarized. A number of reasons to be skeptical of these estimates are outlined. Appropriate policy responses to such terrorist activity are described. Prominent in this analysis are the arguments that (1) terrorism imposes a negative supply-side shock on the economy that raises costs and inefficiencies, and (2) expenditures on security divert labor and capital resources toward the production of necessary, but lower productive activities.

SOME BACKGROUND

Prior to the terrorist attack on September 11, the economy was experiencing a significant slowdown, which began in mid-year 2000. In fact, the macroeconomy was quite weak. Real GDP growth in the second quarter of 2001 was revised down to a low but positive rate. Investment growth had fallen. Manufacturing activity was especially weak with little sign of an imminent rebound. While consumption growth had slowed, it (along with housing strength) was apparently sufficient at that time to keep the economy from outright recession. The labor market had softened as employment growth deteriorated and the unemployment rate increased. Broad measures of inflation as well as forward-looking inflation indicators suggested no resurgence of inflation was imminent.

Despite this somber pre-attack picture, the consensus of economic prognosticators at the time was for a near-term economic rebound. In particular, with an inventory correction well underway, a retreat of energy prices, a substantial Federal Reserve easing of monetary policy in the pipeline, a tax-cut program in place, and a perception that the stock market had stabilized, consensus projections of an imminent rebound in economic activity appeared quite plausible.

COST AND ECONOMIC EFFECTS OF THE SEPTEMBER TERRORIST ATTACKS

The terrorist attack of September 11 imposed a number of significant costs on the economy and thereby substantially changed the economic outlook. These costs can be classified into three categories of both short- and long-term costs.

Short-term Costs:

- **Immediate Loss of Human and Nonhuman Capital:** As noted, the human costs have been horrendous. In addition to these human costs, the immediate and most obvious short-term economic costs result from the loss of life and loss of productive capacity of those killed. Additionally, the destruction of capital; the destruction of buildings, surrounding buildings, infrastructure, airplanes, and other public and private property of building tenants and others was substantial. Cleanup and repair costs also were substantial. Important and severe as these costs were, however, they constitute a relatively small percentage of the total physical and human capital assets of the U.S. economy as a whole.¹
- **Effects of Uncertainty on Consumer and Investor Behavior:** Another category of short-term costs relates to the effects of increased uncertainty and its impact on consumer and investment behavior. An immediate effect of the terrorist attack, after all, was a dramatic increase in uncertainty and apprehension which became evident in financial markets. In effect, a sharp upward repricing of risk occurred. Increased uncertainty usually increases market volatility, thereby boosting risk premiums. This normally affects behavior; it induces investors, for example, to move out of riskier assets (such as stocks and speculative grade bonds) into safer, more liquid, and shorter-term assets (such as short-term U.S. Treasury securities, gold, or cash). It tends to adversely impact the stock market as well as commitments for long-term investments and purchases and to boost demand for short-term liquidity, which works to lower spending.

This increased uncertainty has negative impacts on consumption and investment as consumer and business confidence deteriorates. Discretionary consumer purchases such as long-lived consumer durables (e.g., cars, major appliances, etc.) or vacations and travel as well as long-term business commitments are often postponed or canceled as purchasers retrench and demand contracts. Additionally, related stock market declines reduce consumption (via negative wealth effects) and investment (via a higher cost of capital).

- **Effects of Retrenchment on Specific Industries or Localities:** These retrenchments in consumer and investment spending can have concentrated (adverse) impacts on certain industries. Thus, another category of short-term

¹ See, for example, estimates of the costs by Gary Becker and Kevin Murphy in "Prosperity Will Rise Out of the Ashes," Wall Street Journal, October 29, 2001. Becker and Murphy estimate these losses as only 0.2% of physical assets and 0.06% of total productive assets.

costs pertain to the abnormal losses suffered by certain directly impacted industries, sectors, localities or regions. The September 11 attacks did have immediate and concentrated impacts on a number of industries: most notably, airlines, aerospace, travel, tourism, insurance, lodging, restaurants, recreation, gambling casinos and related activities. These industries suffered concentrated economic and job losses. Of course, regions or localities with heavy concentrations of these industries suffered disproportionately as well.²

Long-term Costs:

There are significant long-term economic costs of terrorism as well. The economic costs of a permanently increased, ongoing terrorist threat will be important and may very well bring major changes to our way of life. These long-term effects may be classified into three categories of costs.

- **Increased costs of security analogous to a “security” or “terrorist tax”:** Part of these additional long-term security costs entail added delays, inefficiencies, and frictions and have effects similar to an added transaction tax on the economy. In effect, these costs will be analogous to a “security” or “terrorist tax” on the economy, and impose an adverse supply-side impact on the economy.

Such costs will take many forms and entail multiple dimensions. A cursory list would include travel delays, additional security checks and inspections, longer cross-border transfers, higher insurance costs, additional informational requirements, higher construction costs, intelligence agency upgrades, higher shipping costs, more regulation, the maintenance of higher levels of inventories (as insurance against supply disruptions), immigration restrictions, slower mail deliveries, and a myriad of other costs. These various costs, while essential, do nothing to increase the quantity or quality of the supply of goods or services. In fact, these measures will raise the cost of doing business, stifle gains from free exchange, add inefficiencies, and hence constitute a negative supply-side shock or added “tax” on the economy. As a consequence, the real return to capital will decline and over time, these costs may adversely impact both the economy’s productivity growth and long-term potential growth rate.

- **Anti-Terrorist Expenditures Crowd Out More Productive Activity:** Another form of longer-term costs of security involves the opportunity cost of spending additional money to fight terrorism. After the September 11 attacks, a variety of new spending on security occurred. As this happens, economic resources will be directed to shoring up security and diverted away from more productive private sector activity. These expenditures involve necessary security spending to shore-up buildings, intelligence, and defense. More specifically, it involves expenditure for security guards, guards dogs, building fortifications and barriers, metal and

² See, for example, Ross Devol, Armen Bedroussian, Frank Fogelbach, Nathaniel Goetz, Ramon Gonzalez, and Perry Wong, The Impact of September 11 on U.S. Metropolitan Areas, Milken Institute Research Report, January 2002.

bomb detectors, and a myriad of other security devices. It will involve the costs of backup site and facility maintenance, contingency and disaster planning, better training, increased screening and hiring, and increased mail security.

The costs of protection against bio-chemical terrorism also will be significant and will call for expenditures of a different type. For example, the costs of developing inoculations, providing antibiotics, and developing treatments will be significant. Our “anthrax scare” experience has shown that the costs of protecting private and public sector mail delivery services including mail handlers, of installing detection devices, and of providing medical care and insurance can be significant. The costs of screening for exposure to and infection by bioterrorist agents such as anthrax can also be substantial.

As a consequence of this increased security spending and associated crowding out of more productive activity, the total private productive capital stock will be less than it would otherwise have been. The so-called “peace dividend” – a dividend that freed up resources for additional private sector growth – is lessened. In short, monies for a necessary security buildup crowd out more productive private investment. Consequently, the long-run costs of combating terrorism to some extent involve adverse effects to the private capital stock and thereby aggregate supply, productivity, and the long-run potential growth rate of the economy.

- **Other long-run costs:** Another catch-all category of long-run costs of terrorism is “other long-run costs.” This includes the hard to measure long-run costs of added anxiety, stress, and mental disorders associated with the increased uncertainties of, and permanent threat of, terrorism as well as the costs of alternative forms of terrorism (e.g., bio-, nuclear-, or cyber-terrorism.)

SOME ROUGH, PRELIMINARY ESTIMATES OF THE COSTS OF SEPTEMBER 11

A number of studies have come up with preliminary estimates of the costs of the September 11 terrorist attacks in the U.S. In general, the cost estimates of these studies cannot be directly compared and contrasted with one another for a number of reasons. For the most part, for example, these studies are imprecise, providing “back of the envelope” or rough orders of magnitude estimates. The studies make differing assumptions, measure different categories and alternative dimensions of costs, define and aggregate these costs differently, and are not comprehensive. Nonetheless, a summarization of these efforts is instructive in identifying both rough orders of magnitude of these costs and their uncertainty as suggested by the wide range of estimates. The following summary categorizes these costs as outlined above.

Short-term cost estimates

- **Immediate Loss Estimates:** Becker and Murphy estimate the immediate loss of human and non-human capital to be in the range of \$25 billion to \$60 billion, or about 0.2 percent of the economy's physical assets and 0.06 percent of total productive assets.³ A study by the Milken Institute put property damage at \$10 billion to \$13 billion and human capital losses on the order of \$40 billion.⁴ An International Monetary Fund (IMF) study identifies the direct costs of the September 11 attacks as totaling about \$21.4 billion (including direct insurance costs) or about 0.25 percent of GDP.⁵
- **Estimates of Short-Term Lost Economic Output:** Early, preliminary estimates of lost economic output resulting from the terrorist shock were provided by a Milken Institute study. This study estimated lost economic output in the immediate aftermath of the attack at \$47 billion and lost stock market wealth at \$1.7 trillion.⁶ From the benefit of hindsight, however, these short-term effects of uncertainty on economic behavior have apparently proven to be temporary partly because of an adept and rapid offsetting policy response, early success of the war on terrorism, and because, thankfully, we have not experienced another terrorist attack.

The Federal Reserve, after all, immediately provided liquidity to the market and subsequently lowered interest rates by a full 175 basis points on top of the substantial ease already undertaken earlier in the year and, therefore, already "in the pipeline." Further, a government rescue package was put in place. While the immediate financial market reaction to the terrorist shock was negative (i.e., the stock market fell and risk spreads widened significantly), these markets rebounded as they digested the Fed ease, the government rescue package, and the re-emergence of business and consumer confidence. An analogous reaction occurred in the economy itself; most economic indicators suggest that the economy rebounded from an initial retrenchment. In particular, consumption, retail sales, and housing held up as interest rates fell and confidence rebounded. Subsequently, GDP, orders, and later production and employment have all rebounded after initial declines. In general, then, the initial negative response of the macroeconomy and financial markets proved short-lived.

- **Estimates of Losses of Specific Industries or Locations:** More direct and concentrated costs of the terrorist attacks on specific sectors or industries as well as regions or localities, however, proved more substantial. In particular, industries such as airlines, aerospace, travel, tourism, lodging, restaurants, postal

³ See Becker and Murphy, *op. cit.*

⁴ Peter Navarro and Aron Spencer, "September 11, 2001: Assessing the Costs of Terrorism," *The Milken Institute Review*, Fourth Quarter 2001, pp.19, 20.

⁵ International Monetary Fund, Chapter 11, "How Has September 11 Influenced the Global Economy," *World Economic Outlook*, December 2001, p.16.

⁶ See Navarro and Spencer, *ibid.*, p22.

services, insurance, and related activities suffered more concentrated effects of the attacks. More specifically, mass layoff data collected by the Bureau of Labor Statistics (BLS) identified job layoffs and separations due to the September 11 attacks. The data show that at least 125,000 workers were laid off for 30 days or longer because of the September 11 attacks. This figure underestimates the full extent of the terrorist-related layoffs because the BLS counts only layoffs involving 50 workers for more than 30 days, which means layoffs involving smaller firms or for shorter periods are not counted. Manufacturing, transportation and warehousing, and accommodation and food services were industries most affected. And the layoffs were concentrated in California, New York, Florida, Illinois, Nevada, Texas, and Washington.⁷ A Milken Institute Study estimated that Metropolitan areas in the U.S. would lose as much as 1.6 million jobs in 2002 because of the terrorist attacks. According to this study, these losses would be concentrated in industries such as travel, tourism, airlines, hotels and dining, and in metropolitan areas with high concentrations of these industries.⁸

The impacts of September 11 on the insurance industry, of course, are a separate story beyond the scope of this paper. But insurance industry consensus estimates of the immediate insurance industry costs are in the \$36 billion to \$54 billion range, the largest insured losses in history.⁹

Long-term Cost Estimates

Longer-term costs involving increased inefficiencies, frictions or transactions costs as well as the diversion of resources to anti-terrorist activities will tend to increase business costs, lower productivity, and adversely affect long-term potential economic growth. Estimates of these important effects, however, are imprecise and difficult to make. Existing estimates vary widely because of different assumptions, coverage, and classifications. Such long-term estimates necessarily assume a persistent or permanent terrorist threat.

- **Estimates of Security Costs Analogous to a Terrorist Tax:** Becker and Murphy estimate that long-term airline security and waiting costs would increase costs about \$11 billion per year. They contend that such ongoing terrorist costs would add about 11 percent to the cost of air travel and impose a cost on the economy of about 0.1 percent of GDP. In addition, the costs of ongoing terrorism (which has an adverse impact on the return to capital) would lower investment and consequently, lower the capital stock, resulting in a loss of about 0.2 percent

⁷ See U.S. Dept of Labor News, Bureau of Labor Statistics, "Mass Layoffs in January 2002," February 28, 2002, pp 2-3; BLS, mass layoff data by State and Industry, unpublished, March 2002 (from BLS Mass Layoff Statistics Program); and Kirstin Downey Grimsley, "Terrorism-Related Layoffs 'Substantial,'" Washington Post, March 5, 2002.

⁸ See Ross Devol, *et al.*, *ibid.*, p.1.

⁹ Testimony of Mark J. Warshawsky, Deputy Assistant Secretary for Economic Policy, U.S. Treasury before the Financial Services Subcommittee on Oversight and Investigation, U.S. House of Representatives, February 27, 2002, p.1.

in long-run GDP. Becker and Murphy estimate that the total of these terrorist costs reduce GDP by about 0.3 percent.¹⁰

Estimates of business costs associated with terrorism were also made by Anna Bernasek. According to her estimate, these business costs increased as much as \$151 billion. This estimate included figures for the costs of logistics, insurance, workplace security, information technology, travel and transport, and employee costs.¹¹ The Navarro, *et al.* study also tallied the “microeconomic cost of the terrorist tax” and concluded the “tax” summed up to \$41 billion the first year.¹²

- **Estimates of the Costs of Diverting Resources to Anti-Terrorist Activity:** The Council of Economic Advisers (CEA) argued that increased spending on security will likely be associated with slower economic growth since more capital and labor are diverted toward security production and away from the production of final demand. Assuming the private security budget doubles, the CEA asserts that “increased security costs reduce the level of output and productivity by about 0.6 percent after 5 years below what they would have been otherwise.”¹³

The International Monetary (IMF) provided “rough orders of magnitude” estimates of the effects of security cost increases as well. For example, higher business costs associated with higher security costs, increased inventory holdings, and higher insurance premiums total about 0.33 percent of nominal GDP. Another 0.25 percent of GDP would be associated with the losses of directly affected sectors such as airlines, hotels, and leisure activity. In addition, higher costs of capital could reduce the capital stock by 0.2 percent and output by 0.1 percent after five years.¹⁴ “The loss of output from all these sources could be as much as $\frac{3}{4}$ percent of GDP.”¹⁵ The IMF estimates put the effect on the five year growth rate to be “considerably smaller than most estimates of the much-debated impact of information technology on growth since 1996.”¹⁶

The Congressional Budget Office (CBO) estimates that such terrorist costs will total about \$20 billion in 2002 or approximately 0.3 percent of GDP in the non-farm business sector. This reduces the level of total factor productivity for 2002 and later years by about 0.3 percent. Further, CBO estimates a consequent reduction of productivity growth of about 0.03 percent.¹⁷

¹⁰ See Becker and Murphy, *op. cit.*

¹¹ See Anna Bernasek, “The Friction Economy,” *Fortune*, Monday, February 18, 2002 (available on line, p.3).

¹² Navarro *et al.*, p.24. This estimate covers the costs related to civil aviation including costs of extra waiting.

¹³ *Economic Report of the President*, 2002, p. 56.

¹⁴ International Monetary Fund, *World Economic Outlook*, December 2001, p.19.

¹⁵ *ibid.*, p.19.

¹⁶ *ibid.*, p.19.

¹⁷ Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2003-2012*, p.39.

In sum, while difficult to measure or compare, and showing a wide degree of disparity, these recent estimates suggest that the total costs of security or of responses to terrorism are significant, albeit generally relatively small as a percentage of GDP.^{18, 19}

- **Some Case Study Evidence:** Additional evidence pertaining to the macro-economic effects of the costs of terrorism is available in the form of recent case studies. One study, for example, found that after the outbreak of terrorism, per capita GDP in Spain's Basque Country declined about 10 percent relative to a control region. Further, the relative performance of stocks of firms with significant business in the Basque Country was negatively related to terrorist activity.²⁰ Another study of Spain and Greece found that terrorism had a negative effect on net foreign direct investment and by implication on growth.²¹ A recent World Bank study about the heightened Palestinian-Israeli conflict shows that this conflict, which involves a good deal of terrorist activity and response to terrorism, has had significant negative consequences for both the Palestinian and Israeli economies.²²

REASONS TO BE SKEPTICAL OF RECENT ESTIMATES

There are a number of reasons to be skeptical of these recent estimates of the macroeconomic costs of terrorism. Not only are these estimates necessarily imprecise and often based on dubious assumptions, but a number of measurement problems plague the efforts. Different and multiple forms of terrorism are usually not jointly considered and behavioral aspects of terrorism make for multiple venues and thereby make accurate calculations of terrorism's costs quite difficult.

- **Measurement Problems:** The most important forms of long-run costs of terrorism are often also the most difficult to measure. Frictions, inefficiencies, or transactions costs, for example, are important but inherently difficult to measure. Similarly, the crowding out of (unobservable) productive capital is quite important but difficult (or impossible) to measure (since the counterfactual cannot be observed). Still other elements of the costs of terrorism such as the

¹⁸ The Milken Institute Study concluded that total costs could approach \$2 trillion. This figure includes an estimate of psychological costs of the terrorist attack of \$100 billion. See Navarro, *ibid.*, pp 24, 31.

¹⁹ Federal Reserve Chairman Greenspan has stated that the adjustment to productivity of a terrorist attack would likely be a "one-time" event. Such a "one-time" event, however, may last for many years. Additionally, this argument may be less relevant to a situation involving an ever-present, on-going terrorist threat that employs differing and multiple forms of terrorism. In this case, terrorism may have a longer lasting impact on productivity growth. For Greenspan's statement, see his testimony before the Joint Economic Committee. Testimony by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System before the Joint Economic Committee, U.S. Congress, October 17, 2001.

²⁰ Alberto Abadie and Javier Gardeazabal, "The Economic Costs of Conflict: A Case - Control Study for the Basque Country," National Bureau of Economic Research Working Paper 8478, September 2001.

²¹ See Walter Enders and Todd Sandler, "Terrorism and Foreign Direct Investment in Spain and Greece," *Kyklos*, vol. 49, No.3, 1996, pp.331-352.

²² According to the Bank of Israel, the *intifada* has cost Israel 4 percent of GDP. See Fifteen Months – Intifada, Closures and Palestinian Economic Crisis: An Assessment, World Bank, March 18, 2002, p.12.

costs of anxiety, stress, or mental disorders associated with terrorism are difficult to measure. Formal estimates of these long-run costs, therefore, should be accepted with a degree of skepticism.

- **Multi-Faceted Aspects of the Macroeconomic Costs of Terrorism:** Another reason to be skeptical of recent estimates of the long-run macroeconomic costs of terrorism is that these estimates are partial and not comprehensive or all-inclusive. The long-term costs of new or alternative forms of terrorism are not included in the cost calculation of conventional forms of terrorism. The full costs of preventing bio-chemical, nuclear, or even cyber-terrorism, for example, are not included in estimates of the airplane terrorism that we have witnessed.

This is important since the costs of preventing one form of terrorism are often quite different from the costs of protection against another form; e.g., the costs of airplane security are quite different from dealing with bio-chemical terrorism. In short, alternative forms of terrorism will involve reactions affecting different industries, different costs, and different forms of preventative spending. Accordingly, the costs of defending against a general terrorist threat may be significantly more expensive than spending to prevent a single form of terrorism. These considerations are generally not taken into account in the recent estimates of long-term terrorist costs summarized above and, therefore, they should be accepted with a degree of skepticism.

- **Behavioral Characteristics of Terrorism:** Another reason to be skeptical of recent estimates of the long-term costs of terrorism is that these estimates do not incorporate behavioral characteristics of terrorists – which raise the cost of prevention – into their cost calculations. Terrorism, after all, is different than natural disasters, since terrorists are rational actors. Accordingly, when governments raise the costs and make it more difficult to pursue one method of terror, terrorists will quickly switch to other, less costly, forms of terror.²³ In short, venue changes will occur in order to circumvent preventative cost structures and thereby will raise the cost of preventing terrorism. These considerations, however, are not taken into account in recent estimates of the costs of terrorism.

In sum, there are a number of reasons to be quite skeptical of recent estimates of the long-term costs of terrorism. The wide array of cost estimates based on dubious assumptions and rough “back-of-the-envelope” guesswork suggests that the estimates may not be particularly reliable. But other reasons suggest that these costs may be more substantial than these estimates indicate. For the most part, for example, these recent estimates do not take into account multiple forms of terrorism, important measurement problems, or the cost-related behavior of terrorists. Add to this the daily experience of observing anecdotal, albeit significant security costs and one is led to conclude that the long-term costs of terrorism may be higher than some recent estimates suggest.

²³ See J. Brauer, “September 11, 2001 and the Economics of Terrorism,” Comments for Phi Kappa Phi Forum, Augusta State University, September 19, 2001, p.3.

APPROPRIATE MACROECONOMIC POLICY RESPONSE

Despite the uncertainty surrounding estimates of terrorist costs and the skepticism with which these estimates should be taken, macro policymakers should be prepared to act in the case of renewed terrorism. The full economic effects of terrorist attacks, after all, will depend in part on the macroeconomic policy response. Such a response should include a monetary policy focus on the short-term effects of changes in liquidity and in aggregate demand as well as a fiscal policy response or offset to the longer-term effects on aggregate supply, productivity, the return to capital, or economic growth. Policy to facilitate provision of terrorist risk insurance also merits attention.

Should renewed terrorist attacks bring about sharp increases in uncertainty analogous to September 11, for example, the response of the Federal Reserve should be similar to its response following that earlier attack. Specifically, monetary policy should quickly respond to heightened uncertainty by lowering interest rates and providing liquidity to the market in order to accommodate sharp changes in the demand for money and liquidity and thereby to stabilize markets and provide a dependable anchor to the price system. The Federal Reserve did this following September 11, performing its monetary policy and central bank responsibilities in an exemplary fashion.

Fiscal policy, on the other hand, necessarily will be involved in government spending on security cost upgrades, emergency spending packages to aid in cleanup, rebuilding, and fighting terrorism. Since such spending must be financed in ways that remove resources from the private sector, the effectiveness of these measures in stimulating the economy over time is doubtful. Further fiscal action to bolster the economy may be needed. These measures should include tax relief to bolster the economy by boosting aggregate supply and after-tax returns to capital in order to offset the adverse effects of the negative supply-side effects of the “security tax” described above. Tax measures that act to increase the return to capital and foster incentives to save, invest, and innovate would be most appropriate in this regard. Such tax measures may include, for example, accelerated depreciation allowances, liberalized expensing provisions, and front-loading scheduled tax rate cuts, among other tax relief proposals.

Provision of continued terrorism risk insurance poses a difficult, complex dilemma for government policymakers. It is difficult (or impossible) for private firms to accurately price or calculate the new risks of terrorism and private insurers may not be able to absorb additional catastrophic losses from terrorist attacks. As a result, private insurers have backed away from providing terrorist risk coverage. On the other hand, an absence of the availability of widespread terrorist risk insurance will entail significant, substantial costs and consequences to the macroeconomy. Consequently, an argument can be made for a public sector role in this case. In particular, federal government policy should be to facilitate the provision of insurance for terrorism, albeit as much as possible from the private sector; i.e., government programs should encourage participation by private insurance providers. Consequently, a temporary and limited backstop for terrorist

insurance appears to be appropriate (possibly involving a government risk sharing program).²⁴

SUMMARY AND CONCLUSIONS

The events of September 11 stunned Americans not only because of the heinousness of the attacks themselves, but also because of the underlying vulnerability they revealed. The toll such attacks take on unprepared and unsuspecting nations is severe; particularly significant are the economic effects of such acts and the responses they elicit. These effects need to be understood in order to prescribe appropriate economic policy remedies. This study categorizes and briefly summarizes both the short- and long-term economic effects and costs of such terrorist attacks. Prominent among the long-term effects are: (1) the increased transaction costs and inefficiencies imposed on the economy by terrorism, and (2) the fact that increased spending on security necessarily diverts labor and capital resources away from productive private sector activities and toward necessary, but less productive, anti-terrorist activity. Several estimates of the magnitudes of the various costs are briefly summarized. While these complex estimates are commendable, there are a number of reasons to be skeptical of their conclusions. In particular, they fail to consider multiple forms of terrorism, important measurement problems, or the cost-related behavior of terrorists. Consequently, terrorism's long-term costs may be more severe than suggested by many existing estimates. Some timely monetary and fiscal policy responses to such terrorist activity are appropriate.

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²⁴ See, for example, Testimony of Mark J. Warshawsky, "Economic Impact of the Lack of Terrorism Risk Insurance," Before the Financial Services Subcommittee on Oversight and Investigation, U.S. House of Representatives, February 27, 2002; and Rawle O. King, "Terrorism Risk Insurance: A Summary of Legislative Proposals" CRS Report for Congress, December 7, 2001.