The Cost of Antiterrorist Rhetoric

Robert W. Hahn

Nearly five months after the tragic TWA flight 800 crash, we still do not know whether the 230 people on board were killed by a terrorist act. With 95 percent of the wreckage recovered, there is little support for the theory that a bomb or missile caused the crash. Nonetheless, the White House quickly reacted to the incident by immediately implementing several heightened security measures and creating a White House Commission on Aviation, Safety, and Security (the Gore Commission). Forty-five days after its creation, the group had already proposed ambitious changes to airport security. Just thirty days after the commission's initial report, President Clinton signed into law most of these recommendations.

These changes will cost billions of dollars to implement and could cause extensive delays at airports. President Clinton assures us that "as a result of these steps, not only will the American people feel safer, they will be safer." But is this really true? The White House has neither given a clear indication of the effectiveness of these measures in preventing terrorist acts, nor acknowledged the true cost of implementation.

As Vice President Gore himself stated, there is no "silver bullet" for improving aviation security. There are difficult tradeoffs that will need to be made in terms of security, direct costs, delay, inconvenience, and civil liberties. For example, using computer background checks to identify suspected terrorists could enhance security at a reasonable cost, but would also curtail individual freedoms.

Improving security is important, but we need to assess the cost and effectiveness of each measure before spending billions of taxpayers' and travelers' dollars on security-enhancing measures. Moreover, we need to confront the question of how safe is safe enough. The sad truth is that the threat of airline terrorism cannot be eliminated unless air travel is banned, and that is simply too high a price to pay. So some level of risk must be deemed acceptable. This article provides a framework for thinking about these risk tradeoffs by examining the costs and benefits of policies selected for reducing terrorism.

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Costs

In the post-TWA crash world, airline travelers can easily tell you about the costs they have incurred. Passengers must arrive at airports earlier, stand in longer lines, answer more questions about the contents of their carryon bags, and show photo identifications before boarding.

Implementing the commission's proposals will lead to even more lines and delays. A rough calculation of the annual costs of delays can be made by multiplying the number of passengers affected by the additional wait by the value of

Table 1

Gore Commission Proposals

	Recommendations	Budget Request	Projected Cost
1.	Consortia to implement changes	none	NA
2.	Conduct airport vulnerability assessments	$5.5 million	NA
3.	Require criminal background checks	none	NA
4.	Deploy existing technology	$161.3 million	$0.4 to $2.2 billion for baggage screening devices; $1.9 billion to provide 3,000 screening devices
5.	Establish a joint government-industry research and development program	$20 million	NA
6.	Significantly expand the use of bomb-sniffing dogs: (114 additional teams)	$8.9 million	$8.8 million
7.	Assess the viability of anti-missile defense system	none	NA
8.	Complement technologies with automated passenger profiling	$10 million	NA
9.	Certify screening companies and improve "screener" performance	$5.3 million	NA
10.	Aggressively test existing security systems	$18 million	NA
11.	Use Customs Service to enhance security	$26.6 million	NA
12.	Give key airline and airport personnel access to classified information	none	NA
13.	Begin implementation of full bag-passenger match	none	$2 billion for startup costs and lost revenue
14.	Give NTSB primary responsibility of providing services for families of victims	none	NA
15.	Improve passenger manifests	none	NA
16.	Increase FBI agent assignments to counter-terrorist investigation	$146.6 million	NA
17.	Airport security training abroad	$2 million	NA
18.	Research taggants	$21.3 million	NA
19.	Explosive detection training for law enforcement	$1.8 million	NA
20.	Central clearing house for explosives crime	$2.1 million	NA

Sources: Recommendations and Budget Request from the White House Commission on Aviation, Security, and Safety (1996). Projected costs from the General Accounting Office (1996).

their time. In 1995, travelers took approximately 390 million trips on U.S. airlines. The Federal Aviation Administration (FAA) and the airlines recommended arriving at the airport thirty minutes earlier than normal because of the security measures implemented in July. The FAA, in its calculations, uses a value-of-time estimate of $48 an hour for business travelers and $42 an hour for nonbusiness travelers in 1995 dollars. This yields an estimate of $9 billion per year in delay costs. Even if the FAA's value of time were halved, the annual cost of a thirty-minute delay would be over $4 billion. As air travel becomes more costly, people will choose alternative forms of transportation, which will likely reduce delay costs about 3 percent.

These estimates do not include the costs of hiring and training additional personnel, or acquiring, installing, operating, and maintaining new equipment to comply with the new mandates. Moreover, the estimates do not include the lost profits that airlines are likely to incur in the short-term, nor do they include the welfare losses to air travelers who switch to other modes of travel. For these reasons, the $9 billion estimate probably understates the true cost. The assumed delay time, however, may be greater than the actual delays experienced by travelers. If, say, the current policies resulted in a fifteen-minute delay (rather than thirty), the delay costs would be halved. By the same token, new policy proposals could easily lead to a doubling in delay costs.

The Gore Commission proposed twenty near-term changes to airport security, which are summarized in Table 1. The table reveals that almost no information has been provided on the expected costs of the various recommendations; instead, preliminary budget requests have been provided. Congress incorporated these budget requests into two 1997 appropriation bills and the FAA Reauthorization Act that the president signed into law. Some of these recommendations were implemented immediately; others will be implemented shortly as a result of the passage of these laws.

Some of the important and controversial proposals of the Gore Commission have been analyzed by researchers, and their findings do not inspire confidence. Examples of the commission's proposals include the use of explosive detection devices, automated passenger profiling, and passenger-bag matching.

The General Accounting Office (GAO) has reviewed the state of the explosive detection technologies and the FAA's efforts to improve airport security. The GAO found that explosive screening technologies are not particularly reliable; they frequently yield false alarms, and they do not process baggage as quickly as claimed. The FAA has only certified one explosive detection machine (CTX 5000) for checked baggage screening. The certified machine has an actual "throughput rate" that is much less than the designed rate of five-hundred bags per hour; thus, two units are necessary to meet the FAA's throughput requirement. Even with two machines, there is significant potential for operator error. It seems likely, for example, that in the press of rush hour, operators will start ignoring "positives" to reduce the ire of busy travelers.

Delays associated with this technology could be quite expensive. If enough machines are not deployed, slow screening of baggage may result in significant delays. False alarms could lead to hundreds or even thousands of bags needing additional inspection. If this technology leads to delays, airlines would have to react by scheduling longer turnaround times that would probably decrease the number of flights and, in turn, increase ticket prices. Moreover, it would cost up to $2.2 billion just to acquire and install these machines in the seventy-five busiest airports in the United States.

A second proposal, automated passenger profiling, would use a computer database with information on passenger characteristics to determine who could be a terrorist and thus require further scrutiny. This process could reduce the number of bags that must be further scrutinized by up to 80 percent and may be a cost-effective approach to reducing terrorism; but, there are some potential problems with its implementation. The American Civil Liberties Union (ACLU) protests the use of profiling, arguing that it is unreliable and discriminatory. As the ACLU pointed out in testimony before the White House Commission, the actual saboteur does not always fit the profile of a terrorist. There have also been cases where passengers who "fit the profile" have been detained and questioned for hours, although they were not guilty of wrongdoing.

A third proposal is "positive passenger-bag matches," which would ensure that each bag on every flight is accompanied by a passenger. If a passenger fails to board a flight, his checked luggage would be removed. Passenger-bag matching

will prevent the "drop and run" terrorist tactic but will not stop those who are tricked into carrying explosives or the determined saboteur who is willing to give up his own life.

There is particular cause for concern with the proposal to require full passenger-bag matches for all domestic flights. The process of bag matching can be very time consuming. In 1989, then-Transportation Secretary Sam Skinner testified to Congress that this type of requirement for domestic flights "would probably paralyze" the air transport hub system. For example, if a passenger fails to board a plane, it could take several hours to remove his bags from a luggage container on a large plane.

Currently, bag matches are required by the FAA for international flights. International travelers are requested to arrive two hours early to allow time for all the inspections. If this requirement for domestic flights causes about the same delay as for international flights, each passenger could spend an additional hour in the airport. This would increase the expected delay cost from $9 to $18 billion. But considering the larger scale of the domestic market (international passengers account for less than 10 percent of U.S. carriers' passengers), actual delays and delay costs could be much greater.

The positive bag-match requirement and the new explosive detection technology introduce another important delay cost that is not easily quantified—the anxiety of missing a flight because of unpredictable security delays. This cost has not been explicitly considered in any of the proposals endorsed by the Gore Commission, even though it is likely to be significant in some cases.

Although the president asked and received from Congress over $400 million to implement the initial proposals, the actual annual cost of implementation would be in the billions. Implementing full passenger-bag match alone will cost $2 billion annually and, as previously noted, the initial cost of deploying explosive detection devices to screen checked baggage is $2.2 billion. Moreover, the initial cost of machines aimed at screening passengers for explosives would be approximately $1.9 billion.

Benefits

What will these increased expenditures in time and money buy the American public in terms of security? In a "best case scenario" these changes could eliminate or substantially reduce the threat of airline terrorism. Counter-terrorist expert Michael Ledeen maintains that checking identification, tickets, and baggage more carefully is a good idea; but, even with these enhanced procedures, he believes most earlier terrorist incidents still would have occurred.

Given the paucity of information on benefits, we can develop a scenario based on the assumption that the threat from airline terrorism is completely eliminated. Since 1982, 548 people died in U.S. carrier incidents of sabotage, including TWA flight 800, or about thirty-seven people a year. Dividing this number into the cost estimates for current heightened security measures yields an annual cost per life saved of over $200 million. Excluding the TWA crash, this number would jump to a cost per life saved of well over $300 million. To put this number into perspective, a review of studies suggests that the implicit value of life for air travelers falls between $5 and $15 million. The FAA uses a value of $2.3 million per statistical life saved in evaluating its policies.

If historical trends are indicative of future terrorist threats, the number of deaths prevented is likely to substantially overstate the benefits because the measures are not likely to be very effective in deterring terrorists. Nonetheless, I cannot rule out the scenario that terrorist activity could increase dramatically over my baseline estimates. There would need to be a ten- to one-hundredfold increase in the number of lives saved before this investment would be as attractive as alternative methods of saving lives. A number of life-saving investments required by the Department of Transportation, such as side impact standards for automobiles and cabin fire protection in aircraft, have been over two-hundred times more cost-effective than these proposals.

Some may argue that even if the security measures are not very effective, people benefit psychologically by believing they will work. I cannot refute this argument directly. It may be that people are willing to pay large sums to feel safer, but I think a strong argument can be made that absent concrete research supporting this assertion, the money would be far better spent by leaving it in the hands of taxpayers or having the government spend it on safety measures that will save more lives, and at a substantially lower cost.

The Increase in Traffic Fatalities

Although these proposals are well-intentioned,

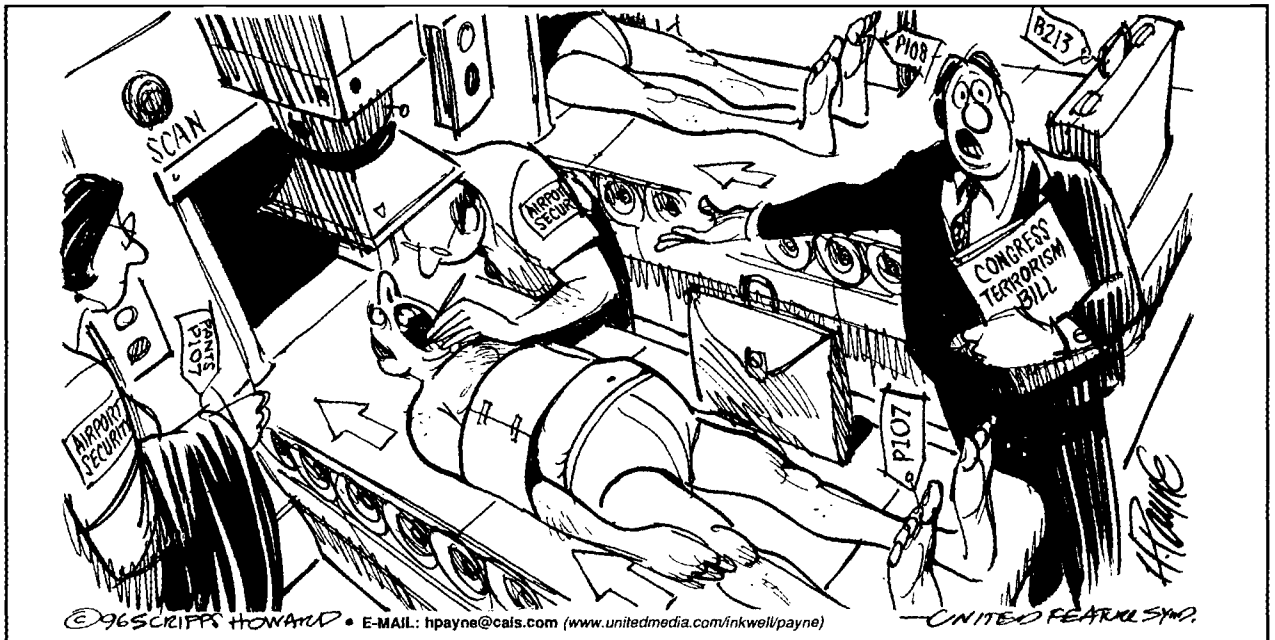
they could result in a substantial increase in traffic fatalities. As air travel becomes more expensive or more inconvenient, people tend to switch to other modes of transportation. In 1995, the FAA published a study investigating the impact of requiring child-restraint systems in commercial airplanes on infant fatalities. The basic finding was that if this requirement were to raise the cost of traveling for families, it might actually lead to a net increase in infant mortality since some families would switch to travel by road, a more risky mode of travel. Of course, one would expect an increase in the travel costs for such families because airlines would charge them for each infant seat.

In an earlier study, Richard B. McKenzie and John T. Warner tried to identify the impact of airline deregulation on the level of travel on highways and the resulting change in fatalities. They found that the cheaper fares and greater convenience of air travel had a negative impact on the level of highway travel and a negative impact on highway fatalities. Higher air-travel costs and longer delays are likely to make some air travelers switch to automobile travel. The impact on fatalities of switching from air travel to road travel would depend on the elasticity of the demand for air travel and the difference in the fatality rate between air and road travel.

Steven Morrison and Clifford Winston calculated the modal share elasticity of air travel from an intercity demand model. They found that elasticities for business and nonbusiness travelers were -0.18 and -0.38 respectively. Using these estimates as the base and a range of -0.5 to -0.1 for business and -0.7 to -0.2 for nonbusiness, we can calculate the expected volume of air travel that will be diverted to road travel.

Automobile safety experts point out that simply comparing the average fatality rate for the two modes of transportation overstates the risk of automobile travel for three important reasons. First, travel on rural interstate highways, not average roads, directly competes with air travel. Second, traffic fatalities are commonly expressed in vehicle miles (total miles traveled by a vehicle), while air fatalities are expressed in passenger miles (total miles traveled by individuals). Finally, unlike air travel, traffic fatalities are highly dependent on the characteristics of individual drivers.

Taking these factors into consideration, there is likely to be an annual increase of sixty fatalities as



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a result of the recently implemented security measures, ranging from thirty to 140. Thus, it is quite likely that there will be a net loss of lives as a result of the new laws, in addition to billions of dollars of costs to consumers and taxpayers.

Policy Flaws

While we do not know the final outcome of the Gore Commission proposals, they contain some important flaws. First, the policies are likely to have a minimal impact on airline terrorism—precisely because they do not dramatically increase the cost of carrying out terrorist acts. Terrorists will find the weakest link in the chain that will serve their purposes. If some U.S. airports and flights become less vulnerable, they will go after other targets, such as smaller airports.

Second, in some cases, the policies are too centralized. Notwithstanding the potential problems with a rigorous passenger bag-match requirement for domestic flights, airlines and airports would be forced to comply with such a regulation if the FAA requires it. Another example is contained in the provision that shifts responsibility to the National Transportation Safety Board for working directly with the families of air accident victims. As a representative of United Airlines points out, this will merely add another step in the emergency response process. The airlines possess information and resources to assist family members that government agencies would not have.

Third, to the extent possible, the beneficiaries of the antiterrorist measures should be those who foot the bill. Unfortunately, this principle appears to have been ignored in the current legislation. The initial appropriations under the new antiterrorist laws will be paid for by taxpayers. The administration has argued that airline terrorism is a matter of national security, but the primary beneficiaries of the antiterrorist measures would be air travelers. If this is true, then air travelers should be asked to pay the lion's share of the cost.

Conclusion

The government's reaction to the TWA crash is both predictable and problematic. Our elected officials, including the president, have allowed the cart to go before the horse, by passing a piece of legislation based on emotion rather than reason. Fortunately, however, there is one reason to be optimistic: not much damage has been done yet. The recent spate of antiterrorist laws leaves a great deal of flexibility with the FAA in developing regulations. If the regulations are developed judiciously, then some useful policy changes could be introduced. But such policy changes are unlikely to emerge unless we can learn from our regulatory successes and failures.

There are four general lessons to be learned from this antiterrorist response. First, it is desirable to move beyond the rhetoric and to examine the implications of a multibillion-dollar policy before foisting it on an unknowing and emotionally vulnerable public. Each step to reduce the threat of terrorism has costs that can be measured in terms of direct expenditures, delays, inconveniences, civil liberties, and fatalities. Policies that are likely to lead to a net increase in fatalities, such as those under consideration, should not be implemented without a clear understanding of their likely effects.

Second, terrorist-free air travel is not a realistic option because the cost—banning air travel—is simply too high. Moreover, a much more sophisticated approach to terrorism may not be desirable either, given the high cost. The Israelis have the most sophisticated security system in the world, but travelers often spend three hours in the airport getting their baggage and themselves inspected. Even if it were possible to transfer all of their technologies and procedures to the United States—a dubious proposition given the relative scale of airline operations in the two countries—the cost would be astronomical in terms of dollar expenditures, delay, and increased fatalities.

Third, since we cannot prevent all terrorist threats, we must decide on the costs we are willing to bear to get small reductions in this threat. We must also recognize that while some additional measures to reduce terrorism may be worthwhile, one quickly runs out of attractive options. For example, eliminating curbside baggage check-in probably makes sense if it reduces the likelihood that a terrorist can avoid boarding a plane with explosives. Restricting access to secured areas and improving the training of security personnel make sense if this can be done at a reasonable cost. It also makes sense for federal agencies to share vital information about security threats with relevant airport and airline officials, provided the costs in terms of privacy

are acceptable. On the other hand, deploying explosive detection technologies that are not extremely reliable is likely to lead to significant delays with little benefit in terms of enhanced safety.

Fourth, politicians of all stripes have a strong tendency to overreact in the face of crises. Their overreaction is desirable to the extent that their rhetoric has a calming effect. But when their rhetoric yields hastily assembled policies, the results are often less than benign. Thus, policy proposals offered in the heat of the moment should be received with a healthy dose of skepticism.

Terrorism is likely to be with us for the foreseeable future. Moreover, in a more open world, it becomes more difficult to contain. We should zealously attempt to contain it, but we should be wary of giving up our freedom and our time before having a reasonable idea of what we will get in return for these sacrifices.

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