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To: Howard Kunreuther, Arthur Lerner-Lam

From: Kevin Flesher, Geoff Shaw

Subject: Our Interest in the April 12-13th Columbia-Wharton/Penn Roundtable on “Risk Management Strategies in an Uncertain World”

Extreme Event (Terrorism) Risk Management and Reduced Ambiguity of Risk: What’s it worth?

Since September 11th, we have seen a significant shift in government and industry priorities to address the threats and impacts of terrorist acts of war. This shift in expenditures and capital investment does not come without cost (real and opportunity). We believe it is important to apply a structured risk management and decision process approach to aid in setting priorities (which security measures to implement and in what order) and assess their expected effectiveness (i.e. how well will they work and what are they worth?).

We would like to explore the question “What is security worth?” from a variety of views to set the framework for a risk management model that government and industry alike can use to collaborate on setting homeland security priorities. The purpose of the model is to aid decision makers in creating strategies and assessing expected effectiveness. We have established an approach to homeland security that breaks the problem space into a) categories of terrorist threats, b) stakeholders that are affected by these threats, and c) mission partners that will either prevent, interdict, or otherwise respond to these threats. To secure the voluntary participation of stakeholders, it is important to quantify the benefit of participation in terms that are measurable and meaningful to each stakeholder.

We believe industry must be included in homeland security, not just as a contractor, supplier, or responder; but as a partner. This partnership should lead to a combination of ‘best practices’ and ‘mandates’ (either by government or industry associations or both) that enable long-term economic competitiveness and enhance shareholder value. We believe that long-term economic benefit will best be realized through industry best practices. Industry collaboration will enable the government to ‘share’ the cost of security measures and reduce the taxpayer’s burden.

Kunreuther and Heal’s draft paper on Interdependent Security, dated 1 February 2002, explored the effectiveness of security measures taken by one agent given the interdependence on the

actions taken or not taken by similar agents. We would like to see this work extended to address a more specific real-world measure being implemented voluntarily by industry participants and in anticipation of USG agency participation.

To mitigate terrorist threats, we will exploit integrated sources of information from foreign states, federal agencies, state governments, and private industry. Initially industry collaboration focuses on movement of suspected terrorists or associates, suspected terrorist-related financial transactions, and suspicious commerce. The question at hand is, with consistently applied provisions in place to detect and detain or otherwise interrupt the movement of terrorists, their money, or their shipments, can a risk management model be developed that will quantify the incremental benefits of these security measures?

We would like to explore these benefits from a number of perspectives as they relate to ‘value’ in the eyes of the stakeholders. Basically, we want to know ‘what’s it worth and to whom? These include the following.

- U.S. economy: There is a negative correlation between terrorist attacks and our economy. There should be significant benefit to preventing the devastating affect that terrorism has on Gross Domestic Product, Consumer Confidence, Capital Expenditure, and Employment.
 - We’ve seen this first hand with the September 11th attack.
 - Our model should address macro-economic value in terms of GDP, Consumer Confidence, Employment, and other relevant economic indicators that would express ‘public’ value. This will become more important to the public as current patriotic feelings and motivations decline to more historic levels.
- Industries: There is a negative correlation between terrorist attacks and industry revenues. This is true both for the industry attacked and industries that were not the target of attack. This negative correlation is loss in revenue, profit, market, market share, employment, and growth. The negative correlation is increased cost of operations, reduced profits, and lower return on investment.
 - We saw this first hand with the September 11th attack: the impacts to commercial airlines, airline suppliers, hospitality and tourism, retail, manufacturing, etc. Using this attack, we saw the impact to commercial air travel, car rental, hotel occupancy, tourism, airline suppliers orders/backlog, and other aviation-dependent industries.
 - Our model should address industry value in terms of revenue, profit, productivity, and other relevant indicators that would express industry value.
- Insurance, Re-insurance, and Capital Markets
 - Terrorism and Acts of War Insurance risk is being re-assessed in light of the current environment. In the current environment both the ambiguity of risk and the level of potential loss associated with possible future terrorist attacks are extremely difficult to quantify and there is no consensus in the risk management field on what, if any, current model would clarify the current situation . As a result coverage is difficult or impossible to reliably price leaving many businesses and entire industries in a potentially dangerous position. If the coordinated program Lockheed Martin and its industrial and USG partners are contemplating

is consistently applied and is stipulated as industry best practice, it would seem that the current uncertainty related to quantifying the ambiguity of risk and the potential loss would be more readily quantifiable. If this is correct, can we quantify the positive impact this would have on current business costs and potential costs to government in the event of another significant attack?

- Our model should address the insurance value of security measures. Government and Industry both need to understand the financial vulnerabilities that put companies, industries, government programs, and ultimately the tax payers' interests at risk. This reflects a delicate balance that needs immediate attention. We cannot afford for any of our critical infrastructures to go bankrupt nor can we afford for the US government to accept unbounded risks at the tax payer's expense.
- U.S. Government and Tax Payers' Interest.
 - It's important to understand that the \$40B emergency supplemental funds and the increase in homeland security expenditure from \$12B in 2001 to \$37B in 2003 carry significant opportunity cost at tax payers' expense.
 - Although this may be more difficult to determine, it's important to understand the value of homeland security in terms of education, social security, welfare, other entitlements, and other political interests of Congress, the Administration, and the American people. It's important to understand this for both current and future generations.

We believe it is important to map homeland security to economic value that translates into future benefits for both citizens and industry. We believe it is important to solicit the voluntary participation on the part of industry to realize this economic value and homeland security. We believe that improved consumer confidence and public confidence will translate into economic growth and strong Administrative and Congressional support. We further believe that this benefit can only be realized through 'full-participation'. Entire industries must participate to realize the benefit of the security measure. Government must overcome industry aversion to sharing relevant information required to reduce terrorist risk through industry participation.

Ultimately, we believe that this approach to homeland security will result in an overall lower cost for maximum benefit to industry, government and the American people. We believe it will facilitate consistent and meaningful analysis and decision making related to the right level of investment in the right security measures and practices that balance industry and government investment, reduce potential jeopardy to American civil liberties, privacy and commercial confidentiality; and clarify what industry and society should be able to endure and what government should be obligated to do in today's environment.

We would like to engage the academic and research communities in this specialized risk management field to focus research resources on homeland security for the benefit of the stakeholders. We have several objectives in mind: a) to understand what investment in security is worth, b) for industry to recognize the value of participation and the need for industry best practices to encourage or otherwise require full participation, c) to create a methodology and model that can serve as an aid to decision makers in setting priorities for homeland security.

We would like to start by developing a risk management model of a specific security measure to be implemented. This security measure integrates industry information with government information to improve on current means of detection and location of terrorists and suspected associates. This simplified model would include the following parameters.

At some point in the future, we would like to extend this analysis beyond terrorism to advance our understanding of risk management as it relates to critical infrastructure dependencies and global virtual supply change management.

We look forward to further discussions on this topic.

Sincerely,
Geoff Shaw, Kevin Flesher