

PUBLIC-PRIVATE PARTNERSHIPS AND HOMELAND SECURITY*

*Matt Clark, Department of Homeland Security
Joseph Cordes, The George Washington University
Bryan Roberts, Department of Homeland Security*

INTRODUCTION

THE ATTACKS OF SEPT. 11, 2001 HAVE BROADENED the public sector's role in providing "protective goods and services" to include homeland security in addition to national security and private security (e.g., police and fire protection). Although it is acknowledged that the federal government has a clear responsibility for taking the lead in shaping homeland security policies, the provision of greater homeland security involves significant participation by state and local governments, and the private sector, in addition to the national government.

The classic "market failure paradigm" provides several rationales for public sector involvement in the provision of homeland security. First, increasing homeland security involves financing and providing public goods, whose consumption is non-rival, and also non-excludable. Some of these public goods, such as protection of borders are national in scope; others, such as protection of critical infrastructure, harbors, and "national icons" (such as the Statue of Liberty or the Golden Gate Bridge) provide some benefits that are national in scope, but also have benefits that are clearly concentrated locally and/or regionally. (Cordes, Kirschner, and Levy, 2006).

Security is a service that has both private and public aspects. Eighty-five percent of the nation's critical infrastructure identified by the Department of Homeland Security is owned by the private sector and firms can make private investments to enhance the security of their operations from terrorist and natural-disaster threats. However, the level and type of security investments undertaken by private entities on their own might be suboptimal.

The public sector has a range of policy tools at its disposal for attempting to encourage and/or coordinate private sector responses to terrorist threats. Some of these tools are budgetary in nature, such as direct spending and grant programs, and pos-

sible tax incentives for private security-related investments. Government also has at its disposal non-budgetary tools, such as regulation, which in principle can be used to encourage private parties to make more socially efficient private investments in homeland security measures. A third possible set of policy instruments can involve institutional arrangements, involving mixes of budgetary and non-budgetary arrangements for sharing of responsibility for increasing security between government and private parties.

Our paper examines this latter and evolving particular form of public-private action involving the creation of what has been popularly termed "public-private partnerships." Our analysis is descriptive and preliminary.

The next section of the paper develops a simple typology of cases where production of the optimal level of security involves a mix of public and private action. We then briefly describe the key features of public-private partnerships as institutional arrangements that have evolved for the finance and provision of (mainly) public infrastructure. The paper then describes both current and prospective application of the concept of a public-private partnership to the provision of homeland security, and concludes with a discussion of issues that are relevant to the design of such arrangements that warrant further development and consideration.

PUBLIC-PRIVATE PRODUCTION OF HOMELAND SECURITY

Private parties clearly have private incentives to undertake actions to protect themselves against both the likelihood and the consequences (conditional on an attack occurring) of a terrorist attack. This is perhaps most evident in the case of private infrastructure facilities, but is also relevant to other actions, such as actions taken by commercial airlines to reduce the likelihood of attacks against airliners by, for example, investing in greater screening of passengers and luggage, or in capital to protect airlines against attack by man-held missiles.

*The views expressed in this paper are those of the authors only and do not necessarily represent those of the Department of Homeland Security.

It is easily shown that such private actions often involve externalities – both private and negative. In some cases, the cost of an attack to society exceeds the cost to the owner, in which case there are external benefits from private protective actions, and private spending on homeland security may be less than socially optimal. There are also other cases, such as airline screening of baggage, where achieving a socially optimal amount of screening requires coordination/cooperation among multiple private parties, which may be more readily achievable with government guidance and intervention than without (Kunreuther and Heal, 2003).

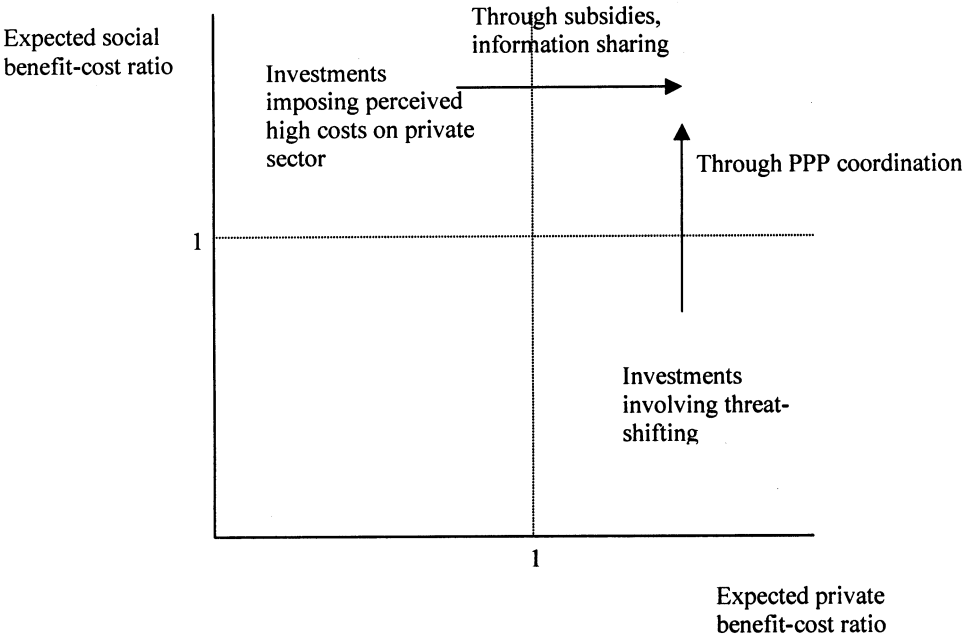
In still other cases, efforts to increase private security can actually impose negative externalities by shifting terrorist threats elsewhere in society (Cordes, Foreman, and Kirschner, 2006). One such example might be private investments in hardening infrastructure. In such instances, threat shifting introduces a wedge between private and social returns on security investments. A firm making a security investment might reduce its own risk, but it might increase the risk of other potential targets. The social return to an individual security investment will typically be less than the private return.

Suboptimal private investments can also occur when private-sector entities lack information that would enable them to properly assess the risk of various catastrophes, resulting in either too much private sector investment if the risk is overstated, or too little if understated. Whether lack of such information constitutes a market failure, in the sense that government action could lead to an improvement even in principle depends, of course, on whether the government possesses superior information about the relevant risks. Such a case seems plausible in the case of terrorist threats, where assessment of risks may involve the use of classified information as distinct from natural hazards.

Figure 1 illustrates the range of possible relationships between private and social returns to homeland security investments. Any private investment in protection against terrorist acts will involve private and social costs and produce private and social returns. Each investment thus has a private and social expected benefit-cost ratio.

The four quadrants of the diagram define whether these benefit-cost ratios are less than or greater than one. Clearly, private investments in the upper right-hand quadrant are least likely to

Figure 1



pose issues for public action because both the private and public benefit cost ratios are greater than one. Market failure in such cases is still possible, however; if, for example, a private investment in security has a positive net return that is lower than that obtainable from other private investments and the investment has positive externalities. Similarly, private investments in the lower left-hand quadrant are inefficient and should not be made.

Private investments in the upper left-hand and lower right-hand quadrants each raise issues of public-private coordination of investment. In the upper left quadrant, social returns to the investment are high but private returns are low. One possible real-life example of such an investment is the equipping of civilian airliners with missile defense systems. The cost of doing this is high, as every airliner will need to have the system. Private returns to incurring this cost may not be such that the expected benefit-cost ratio is positive. Social returns are more likely to be positive, however, because the secondary impacts resulting from a successful attack on an airplane in the United States might be quite large.¹ In such a situation, subsidy of the airline industry to install defense systems could lead to a positive private return. Also, if the airline industry were unsure of what the consequences to their industry alone might be in the case of a successful missile attack and the public sector had better information on this than the private sector, then sharing of that information might alter the airline industry's perception of the expected private benefit-cost ratio.

The lower right quadrant involves cases likely to be found in the case of investment against man-made (though not natural) hazards in which investments that produce private protection from attacks induce threat shifting. For example, a bank protecting its headquarters building from a truck bomb attack by building concrete barriers and installing video monitoring systems might perceive a high private return to those investments, but this might shift risk to other targets in the same city. If the other targets include some for which the consequences of an attack are significantly greater, the expected social benefit-cost ratio could be less than one.

A number of policy instruments are available for addressing these cases of potential private market failure. Actions located in the top left quadrant, where social benefits are high but private benefits may be low can, of course, be addressed through

traditional budgetary mechanisms such as direct spending and/or subsidy programs. Actions located in the lower right quadrant could in principle, be addressed by regulation of private actions, or (at least in theory) by taxing private actions that are believed to generate external costs. Other possible interventions, however, can include greater sharing of information about potential risks between public and private parties, as well as explicit coordination of public and private investments in, for example, investments in protective infrastructure. In both of these cases, some form of what has come to be known as public-private partnerships may offer additional policy options.

WHAT ARE PUBLIC-PRIVATE PARTNERSHIPS?

“Public-private partnerships” (PPPs) were first initiated in the United Kingdom in the early 1980s as part of a broader privatization effort undertaken by the Thatcher government. (Sadka 2006). PPPs are usually understood as a form of contractual relationship between private- and public-sector entities that organizes the construction, operation, and ownership of physical infrastructure such as roads, airports, and bridges. More general definitions have also been employed, for example:

1. A PPP is “a cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.”²
2. A PPP is “a contractual agreement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility.”³

The latter definition is so broad as to encompass practically every form of relationship between the public and private sectors that are intended to provide a service to the public. These would include traditional forms of contracting in which the government lends a contract to a private-sector firm through a competitive or noncompetitive bidding

process, and risks are borne either by the government (“time and materials” contracts) or the private sector (“fixed price” contracts.)⁴ They would also include newer forms of relations associated with infrastructure projects that are summarized in Table 1, which also includes the extreme endpoints of government-only to privatization. For the sake of making the term “public-private partnership” meaningful, we will exclude traditional contracting arrangements.

PPPs have become very popular over the last decade as a way of providing goods and services whose provision traditionally had government involvement. PPPs emerged in order to provide goods and services at lower cost and/or better quality. Formal analysis of the incentive properties of these contractual arrangements, and understanding what particular arrangement is optimal for delivering a particular good or service, is not yet extensive.⁵ PPPs can better induce private-

Table 1
The Traditional Spectrum of Public-Private Partnerships

<i>Contractual/Institutional Arrangement</i>	<i>Description</i>
Government	No private-sector involvement. Direct accountability to government officials.
Public corporation/agency	No private-sector involvement. Direct accountability to Board of Directors appointed by government.
Design-build	The private sector designs and builds infrastructure to meet public sector performance specifications, often for a fixed price, so the risk of cost overruns is transferred to the private sector. (Many do not consider DB's to be within the spectrum of PPP's).
Operation-maintenance Service-license	A private operator, under contract, operates a publicly owned asset for a specified term. Ownership of the asset remains with the public entity.
Finance only	A private entity, usually a financial services company, funds a project directly or uses various mechanisms such as a long-term lease or bond issue.
Design-build-operate	The private sector designs and constructs a new facility under a long-term lease, and operates the facility during the term of the lease. The private partner transfers the new facility to the public sector at the end of the lease term.
Lease-develop-operate	The private party leases an existing facility from a public agency; invests its own capital to renovate, modernize, and/or expand the facility; and then operates it under a contract with the public agency.
Build-own-operate-transfer	A private entity receives a franchise to finance, design, build and operate a facility (and to charge user fees) for a specified period, after which ownership is transferred back to the public sector.
Build-own-operate	The private sector finances, builds, owns, and operates a facility or service in perpetuity. The public constraints are stated in the original agreement and through ongoing regulatory authority.
Buy-build-operate	Transfer of a public asset to a private or quasi-public entity usually under contract that the assets are to be upgraded and operated for a specified period of time. Public control is exercised through the contract at the time of transfer.
Privatization	No government involvement.

Source: Canadian Council for Public-Private Partnerships, http://www.pppcouncil.ca/aboutPPP_definition.asp.

sector implementers to make welfare-enhancing investments that under traditional contractual arrangements might be neglected. PPPs have the potential to reduce the risk of public-sector “white elephant” projects due to involvement of the profit-oriented private sector. Generally, PPPs seek to bring the benefits of the private sector’s emphasis on efficiency while avoiding moving to full privatization.

PUBLIC-PRIVATE PARTNERSHIPS AND HOMELAND SECURITY

In order to promote and strengthen homeland security, the Department of Homeland Security (DHS) is spending over \$30 billion dollars every year on a wide range of programs and activities. Homeland security differs from national defense as traditionally understood, in part because the actions of private agents as well as the public sector are critically important to achieving it. DHS is therefore engaged in many activities that involve collaboration between public and private parties, and hence, can be understood as PPPs according to definition (1) stated earlier, including:

- **Traditional infrastructure.**
 - *Land border crossings.* Some existing land border crossings are owned and operated by the private sector (for example, the Ambassador Bridge and Blue Water Bridge in the Detroit region.) The private sector has expressed interest in building new crossings in certain high-volume transit areas. New crossings could be implemented as PPPs.
- **Information sharing and coordination.**
 - *The National Infrastructure Protection Plan (NIPP)* is one of the most important public-private partnerships that DHS is establishing. The NIPP will be discussed in more detail later.
- **Regulatory, policy, and program analysis.**
 - *The USCAP (Civil Aviation Partnership)* brings together DHS agencies (Transportation Security Administration), commercial airlines (through the Airline Transport Association), and airline manufacturers (Boeing) to quantitatively analyze regu-

lations, policies, and programs impacting the civil aviation industry. A quantitative model of the airline industry was created using public information as well as information proprietary to the private sector, which has been used to analyze such issues as the optimal level of airport safety screeners and the cost of an aircraft missile defense program. USCAP was intended to reduce asymmetric information problems – in this case, the government lacked proprietary business information useful for assessing economic impacts.

- **Risk analysis and assessment.**
 - *RMAP* is a partnership that grew out of USCAP. New government and private partners have been added. The partnership is intended to conduct risk assessment and management and assist partners to prioritize risks and maximize returns to security investments.
 - The NIPP will also focus on risk analysis and assessment.
- **Risk sharing.**
 - *Terrorism Risk Insurance Act.* Implemented by the U.S. Department of the Treasury, this program subsidizes provision of terrorism insurance to ensure that such insurance is available to the private sector. It could be viewed as a public-private partnership, although it is strictly speaking a subsidization program.
 - *Natural disaster insurance.* Kunreuther (2006) reviews the “natural disaster syndrome,” in which individuals in disaster-prone regions inadequately prepare for and protect against the possibility of catastrophic disasters. He outlines public-private partnership measures that could reduce future disaster losses and speed recovery.
- **Disaster response.**
 - *The National Response Plan (NRP)* is focused chiefly on coordinating the public-sector response to a significant disaster. However, roles for the private sector are identified, and mechanisms for coordinating private- and public-sector response. The NRP can therefore be viewed as a PPP.

Many of the DHS PPPs described above are intended to bring private firms, public entities, and non-government organizations (NGOs) together to enhance the provision of security services.⁶ Thus, while these arrangements do conform to the broad definition of a PPP, most of those listed above differ from what might be considered to be the “traditional PPP model,” which typically involves a good or service to the public that can be sold to the public at a price and thus generates a revenue stream. Unlike traditional PPPs, DHS PPPs do not produce services that can be traded in a market.

A classic example is the National Infrastructure Protection Plan (NIPP).⁷ The NIPP’s stated goal is to “Build a safer, more secure, and more resilient America by enhancing protection of the Nation’s (critical infrastructure and key resources) to prevent, deter, neutralize, or mitigate the effects of deliberate efforts by terrorists to destroy, incapacitate, or exploit them; and to strengthen national preparedness, timely response, and rapid recovery in the event of an attack, natural disaster, or other emergency.” The NIPP is intended to integrate and coordinate the efforts of public- and private-sector organizations with regard to infrastructure and resource protection. It will assemble databases on critical infrastructure and provide mechanisms for sharing information about terrorist threats, conducting risk assessment, and developing strategies for risk management. Institutional structures will be established to bring partners together to accomplish this. These structures include “coordination councils” for key sectors of critical infrastructure as well as regional partnerships and groupings and international mechanisms. The NIPP requires active involvement and efforts from its partner members.

DESIGN, IMPLEMENTATION, AND MONITORING ISSUES

Because PPPs never arose in the delivery of national security as traditionally studied, the PPPs for the provision of homeland security raise potentially novel issues of institutional design, implementation, and monitoring. Because the typical DHS PPP is not a contractual arrangement for the delivery of a public good or service that can be sold to the public, the small but growing literature on the design of effective institutional

structures for traditional PPPs may be of limited applicability to the case of DHS PPPs, whose objective is to facilitate the effective delivery of homeland security services that are not readily traded in markets.

A careful review of planned partnerships such as the NIPP to evaluate incentives for private-sector partners to participate could be quite useful. An obvious but important incentive issue that warrants further consideration is the alignment of private and public incentives in such arrangements. Public-sector participants in DHS PPPs will concern themselves primarily with social welfare, but private-sector participants will also need to consider the interests of their specific organization. What tensions might this difference in underlying concern produce? Problems such as free riding and barriers to information sharing could also conceivably arise in these partnerships. What does the institutional design literature suggest regarding optimal design of these partnerships? Another important issue is identifying methods to evaluate the functioning of the partnerships. How do PPP members know when participation in a PPP is altering outcomes and providing them benefits?

Notes

- ¹ If, for example, the air transport system is shut down entirely for several days in reaction to a successful attack, as happened after 9/11, then the impacts on the economy as a whole will be quite large.
- ² The Canadian Council for Public-Private Partnerships: http://www.pppcouncil.ca/aboutPPP_definition.asp.
- ³ The National Council for Public-Private Partnerships: <http://ncppp.org/howpart/index.shtml#define>.
- ⁴ In practice, risks may be borne by both parties. For time-and-materials contracts, if the contract will come up for bid in the future, the private contractor may reduce profit to absorb unexpected costs in order to improve chances of re-winning the work. For fixed-price contracts, the government’s commitment to not subsidize the activity beyond the fixed amount might not be credible. Analysis of contracting between the government and private sector should take into account the fact that many contracts come up for rebid and thus introduce repeated-relations considerations into the decision-making of the parties. Even if a contract is a one-shot deal and does not come up for rebid, governments often provide incentives to private firms through formal and informal reputational mechanisms.
- ⁵ Sadka (2006) provides a useful overview of PPPs from a public economics perspective and summarizes the

economic literature on them. Hart (2003) analyzes the microeconomics of PPPs from the viewpoint of incomplete contracts and evaluates when a PPP arrangement that bundles together building and operating is preferable to a traditional unbundled approach. See also Dewatripont and Legros (2005).

- ⁶ An increase in homeland security can be defined as a reduction in the risk of a terrorist or natural disaster. DHS defines risk as the product of three terms: threat (the probability of a disaster occurring), vulnerability (the probability of a disaster being “successful”), and consequences (the expected value of losses from a disaster if “successful”).
- ⁷ See http://www.dhs.gov/xprevprot/programs/editorial_0827.shtm for the full NIPP document.

References

Canadian Council for Public-Private Partnerships. Toronto, ON, Canada. http://www.pppcouncil.ca/aboutPPP_definition.asp

Cordes, Joseph, Mary Catherine Foreman, and Charlotte Kirschner. Estimating the Benefits of Homeland Security Measures. Mimeo, George Washington University, Washington, D.C., 2006

Cordes, Joseph, Charlotte Kirschner, and Alice Levy. Achieving Greater Homeland Security: Who Should Pay and How? Lexington, KY: University of Kentucky. The Buck Starts Where? Paying for Public Services. Martin School of Public Policy and Administration Symposium, May 18-19, 2006.

Dewatripont, Mathias, and Patrick Legros. PPPs: Contract Design and Risk Transfer. *European Investment Bank Papers* 10 (2005): 120-141.

Hart, Oliver. Incomplete Contracting and Public Ownership: Remarks, and an Application to PPPs. *The Economic Journal* 113(March 2003): C69-C76.

Kunreuther, Howard. Disaster Mitigation and Insurance: Learning from Katrina. *The ANNALS of the American Academy of Political and Social Science* 604 (March 2006): 208-227.

Kunreuther, Howard, and Geoffrey Heal. Interdependent Security. *Journal of Risk and Uncertainty* 26 (2003): 231-249.

National Council for Public-Private Partnerships. Washington, D.C. <http://ncppp.org/howpart/index.shtml#define>

Sadka, Efraim. Public-Private Partnerships: A Public Economics Perspective. Washington, D.C.: International Monetary Fund, 2006. IMF Working Paper No. 06/77.