Public-Private Partnerships and the Development of Transport Infrastructure: Trends on Both Sides of the Atlantic

First International Conference on Funding Transportation Infrastructure

Institute of Public Economics at the University of Alberta

Banff Centre

Alberta, Canada

August 2-3, 2006

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Introduction

Governments provide a broad variety of services for their people, ranging from health and social programs, to defense, fire, police protection, maintaining a legal system, and the provision of physical infrastructure including transportation systems. The debate over the public sector's role in providing for the needs of the people lies at the very essence of the political process. The debate that is played out in different settings in countries around the world, and the resulting interpretations of those responsibilities are culturally based, and as varied as the different countries in which the debate takes place. Yet, as the interpretation of a government's duty to provide for its people changes from one society to another, the forces shaping those interpretations remain constant. The most basic of these involve the will of the government to extract resources to meet these needs and extent of the resources the national economy can generate.

This investigation focuses on how these forces have shaped the use of public-private partnerships (PPPs) in developing transport infrastructure in Europe and the United States. It begins by introducing the broad, American interpretation of the different ways the public and private sectors can collaborate to develop transport infrastructure and then focuses on recent experience and emerging trends in PPP applications on both sides of the Atlantic. The use of partnerships is expanding in both Europe and the United States. It appears that will be an increasingly important tool in meeting mobility needs in the 21st Century. Transportation professionals on both continents have much to learn from one another on how this dynamic concept can be put to positive use.

An American Perspective on Partnerships

In the United States, as in Europe, the private sector historically had an important role in the construction operation and financing of transportation infrastructure. Although the role of the private sector in highway financing and operations declined during mid-part of the 19th century, private-sector involvement began to reemerge during the 1980s. Since that time, federal and state highway funding has become more constrained, while the need for highly efficient surface transportation systems continued to grow. These dynamics suggest that the role of the private sector will continue to expand in the United States.

While traditional thinking about PPPs in both Europe and the United States has involved situations where the private sector takes on the financial responsibility for constructing new projects, transportation officials in the United States have been eager to find other ways to capture the efficiency and value for money that the private sector can provide. This desire has led to new forms of partnership where public owners have transferred to the private sector responsibility for activities for which it has traditionally been responsible. These types of collaboration include:

- Maintenance and Operation Partnerships
- Program Management Partnerships
- Design-Build Partnerships
- Build-Operate-Transfer (BOT) / Design Build Operate Maintain (DBOM) Partnerships

The PPP arrangements identified above demonstrate ways in which private sector responsibilities have been expanded in the United States, short of transferring financial responsibilities for developing new projects. These PPP options range from transferring tasks normally done in house to the private sector, to combining typically separate services into a single procurement or having private sector partners assume owner-like roles. The U.S. Federal Highway Administration

(FHWA) uses the term "public-private-partnership" to describe any scenario under which private sector entities assume a greater role in the planning, design, construction, operation, and maintenance of a transportation facility compared to traditional procurement methods.

Examples of these types of partnerships include the Virginia Department of Transportation (DOT) and the District of Colombia DOT, which have outsourced the maintenance of their highway and street networks to private companies. It also applies to the 32 states in the United States that have enacted legislation allowing the use of design-build procurement for transportation projects. In the United States the design-build model is viewed as a form of PPP, as the private sector plays a more proactive role in shaping the ultimate design of the project, often assuming cost assurance and other risk areas normally borne by the public sector.

An increasing number of public transportation owners in the United States are also transferring program management and strategic planning responsibilities to private sector firms. This is particularly true with larger and more complex projects and even entire capital programs that benefit from greater emphasis on integrated strategic planning. Assignments have focused on consolidating multi-year capital programs into shorter implementation periods. Specific activities have included strategic planning, financial management, and the coordination of design and construction activities. Program management consultants have also developed project and cash management software and procedures to manage capital funds and bond proceeds and have calibrated the phasing of physical improvements to match available funding, or even maximize the revenue potential of groups of improvements.

While United State's broad perspective of transportation partnerships is perhaps different from the European perspective, it is an instructive platform from which to contemplate the different ways that the public and private sectors can collaborate in the development of transportation improvements. The reality is that there are many ways in which the two can partner without the private sector assuming the responsibility of financing projects.[1]

The Design Build Finance Operate (DBFO) Concession Model

Conventionally in both Europe and the United States transportation improvements have been procured on a design-bid-build basis. This traditional two-step process involves governments retaining the services of private sector engineers to design a project to 100 percent completion and then organizing a second procurement to award a construction contract to the qualified private contractor submitting the lowest bid to build the project. The government assumes all financial responsibility for paying for both the design and construction of the project and then operates and maintains the completed facility itself.

It is true both in Europe and the United States that transportation partnerships depart most substantially from conventionally developed projects when they involve private financings. This is the classic concession model first developed in Europe where private investors use a combination of their own debt and equity to finance the construction of a transportation project. They then have the use of the toll income generated by the project for a specified concession period and use those project generated revenues to repay the underlying debt, recuperate their own equity, and earn a fair profit.

Risk transfer from the public to the private sector is a hallmark of DBFO concessions. Private partners assume the risk that project revenues may be below forecasts leaving them unable to recuperate their investment. They also bear the risks that construction costs could escalate or in some cases that costs could rise as a result of foreign exchange fluctuations. Several other factors including environmental issues, public acceptance risk, and regulatory issues could also lead to costly delays or legal challenges. These issues are not unique to PPP projects, but when

[1] The U.S. Federal Highway Administrations Public-Private Partnership webpage http://www.fhwa.dot.gov/ppp/ provides extensive information on the different PPP models described here, together with links to information on actual projects that have benefited from these PPP options.

they arise on traditionally procured projects their effects are not often clear. Delays escalate costs. When this occurs in the public sector, it interacts with an agency's entire portfolio of capital projects, causing some to be delayed, implemented in smaller pieces, or even cancelled. However, when risk occurrences arise with PPP projects it is much more straight forward to calculate the financial impact to the bottom line, and if they are too great they can cause financial failure. As a result, private sector investors are incentivised to manage risk occurrences better than the public sector. In addition to tapping new sources of capital, this dynamism and efficiency make PPPs attractive to the public sector. While it is often less expensive for governments to borrow money themselves, this comparative advantage is often outweighed by the other efficiencies the private sector brings in developing partnership projects. When this is the case, PPPs may provide better value for money.

The remainder of this investigation will focus on recent experience and trends in the use of DBFO concessions to develop transport infrastructure in both Europe and the United States.

Europe's Early Partnership Experience

Spain and France pioneered the use of public-private partnerships (PPPs) for the development of tolled motorways in Europe. Spain began inviting concessionaires to build its *autopista* network in the 1960s, while private *autoroute* concessions in France date from the 1970s.[2] These earliest concessions tapped into private funding sources, freeing public monies to be used on other projects. The private concession companies were generally consortia comprised of construction companies and banks.

New partnership activity came to an abrupt halt in both countries with the oil shocks of the mid 1970s. With their heavy reliance on petroleum-based inputs, construction costs skyrocketed, while traffic growth stagnated. In France, this situation was further complicated by the government's breach of its stated policy that private concessionaires could set their own toll rates during an initial period. Instead, the Ministry of Finance hoped to keep inflation in check by limiting the rate of toll increases on the *autoroute* network, and in 1975 declared that it would regulate toll increases on the country's privately financed highways. The four private concessionaires sued the government for breach of contract, but ultimately lost their case. François Mitterrand's socialist government ultimately took over three of the four private concessions, merging them into existing public toll companies and implementing a system of cross-subsidies with the creation of a new government agency, *Autoroutes de France* in 1981.

In Spain the government addressed the fiscal imbalances caused by the oil crisis by allowing concessionaires to raise toll levels according to established formulae and by extending the terms of certain concession contracts. The government took over the three concession companies with the most serious difficulties, while two others were incorporated into stronger companies in return for toll increases and contract extensions. The government encouraged concessionaires to refinance their most troublesome foreign loans to limit foreign exchange risk exposure and later in 1990 revised its formula for determining future toll increases, linking them directly to the consumer price index. Seven of Spain's original 12 private concession remain in operation today, and a number of Spanish firms participating in these early experiments have leveraged that experience to develop global partnership practices.

In the 1980s, the United Kingdom (UK) emerged as a leading European proponent in the use of transport partnerships. In 1981, the conservative government issued the Riley Rules, which set the stage for private sector involvement in the development of transport infrastructure when the

[2] For a comprehensive overview of the French and Spanish motorway experience, see José A. Gómez-Ibáñez and John R. Meyer, *Going Private: The International Experience with Transport Privatization*, The Brookings Institution, Washington, D.C., 1993, Chapter 8.

benefits of doing so outweighed the costs.[3] With the Riley Rules in place, the Department of Transport was approached by a group of large construction firms that suggested that private investors could construct a new Thames River crossing to relieve the M25, a congested orbital highway east of London. There were already toll tunnels in place on the M25, and the contractor scheme involved transferring the operation of the tunnels, along with the right to collect tolls, to a private concessionaire in exchange for the right to build a new crossing. Given the recent cost-saving advances in cable-stayed bridge technology, British contractors were confident that the concept would work.

British transport officials issued two simultaneous tenders for the project, one using a traditional government procurement approach, and the other on a DBFO basis. This allowed them to compare the costs of the two options, and their findings convinced them that the government would reap significant savings by using the DBFO approach. The Department of Transport awarded the concession to Dartford River Crossing Ltd, in October 1986. As in France and Spain, the concession company was comprised of a construction company, Trafalgar House, supported by a group of financial institutes. Construction began in August 1988 and the new 2.8-kilometer bridge opened to service three years late in October 1991. Traffic levels were strong and the project's success generated considerable interested in similar projects, both in the UK and other European countries.

In 1990, the Department of Transport launched awarded similar partnership concession for the construction of a new crossing of the Severn River between England and Wales, resulting in a new 5-kilometer US $986 million crossing, featuring a 456-meter cable-stayed bridge. In 1991 Scottish officials awarded a DBFO concession for the construction of a new bridge linking the mainland with the Isle of Skye.

In addition to meeting mobility needs, the Dartford, Severn, and Skye Bridge projects served to garner important support for public-private partnerships in the UK. British lawmakers moved quickly to clarify the legal basis for subsequent partnership projects with the passage of the New Roads and Streets Work Act in 1991. This legislation established the legal basis for construction concessions with the Highways Agency and the right of concessionaires to charge tolls on major crossings. Then in 1992, the Thatcher government adopted the Private Finance Initiative (PFI) as its preferred approach for developing new infrastructure of all types, supplanting the previous culture of government procurement.

The Shadow Toll Concept

The PFI also precipitated the development of the "shadow toll" approach in the UK. Developed by the Highways Agency together with the Treasury's PFI Task Force, with shadow toll projects public sector sponsors pay "tolls" to private motorway concessionaires based on the number and type of vehicles using the facilities they finance, build, operate and maintain. Payments can also be made based on roadway availability and safety conditions. Motorists themselves pay no tolls.

For private motorway developers, the primary benefit of the shadow toll approach is to minimize traffic risk. Given that drivers themselves do not have to pay tolls, their choice of route is made solely based on time, distance, and convenience, and is therefore much easier to predict. However, payment caps also limit the amount of money that private investors can expect to make from shadow toll concessions. In the UK, the Highways Agency completes a public sector comparator analysis prior to embarking on shadow tolling projects, and it only does so when these analyses indicate that the private sector can develop the project more efficiently.

The Highways Agency has awarded ten DBFO shadow toll projects in the UK involving 770 kilometers of roads and a construction value of approximately US $2 billion. For the government

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[3] *Seminar Resource Report: Review of Recent Toll Road Experience in Collected Countries*, Seminar on Asian Toll Road Development in an Era of Financial Crisis, World Bank, Ministry of Construction, Japan, Tokyo International Forum: March 9-11, 1999, pp. III 146.

the main incentives for shadow tolling are access to new sources of capital and capturing the efficiencies of the private sector. The shadow tolling approach can also accelerate project delivery by avoiding the need to wait for future government budget cycles, and incentivize private partners to meet high operational standards.

The PFI has led to the implementation of partnerships in all sectors in the UK and arguably marked the coming of age of the partnership concept in Europe. Britain's shadow toll concept has also been used to develop privately financed roads in a small number of other European countries. These include Finland where the 70-kilometer Järvenpää-Lahti highway north of Helsinki was upgraded under a 15-year US $225 million shadow toll agreement, and Spain where the M45 orbital motorway around Madrid was upgraded through three separate shadow toll procurements. With seven shadow toll projects with a construction value of €2.7 billion, Portugal has the boldest shadow toll program of any European nation. While previous shadow toll projects involved upgrade to existing facilities where historic traffic levels were well documented, several of the Portuguese shadow toll corridors traverse areas where roads were either nonexistent or in very poor condition.

The risks and sheer magnitude of the Portuguese shadow toll program have tested the shadow toll concept. In the end, the size and accelerated nature Portuguese experiment has over extended the *Junta Autónoma de Estradas* (JAE – the Portuguese highway agency). With annual shadow toll obligations expected to increase to US $700 million the agency is hard pressed to meet other needs. It hopes to convert all of its shadow toll corridors to real toll operations, but it is not clear if there will be political support for that controversial move. Moreover, with relatively limited traffic volumes on several of its shadow toll corridors, it is not clear that toll revenues would be able to meet debt servicing needs.

Although the shadow toll approach generated significant interest in several European countries when it was first introduced in the mid 1990s, very few new European partnership projects are currently being proposed as shadow toll arrangements. While there may be instances where the concept is appropriate, it seems unlikely that major European shadow toll initiatives on the scale of the Portuguese program will be proposed.

European Union

At the same time that Europe's experiments with shadow were unfolding, there has been a resurgence of real toll partnership activity. It can be argued that the shadow toll concept was born out of Europe's mixed experience with partnerships in the 1980s, which included the demise of private concessionaires in France due to the government's breach of contract, as well as the deeply flawed Eurotunnel partnership. Fortunately, these experiences also provided lessons learned for improving the model. Today rather than abandoning the partnership concept, the European finance and transportation communities are approaching PPPs with greater caution and intelligence.

The sweeping structural changes occurring across Europe during the 1990s also supported the emergence of the partnership approach as an important tool to meet the Continent's infrastructure needs. These changes included the fall of the Soviet Union and communism in Central European in the early 1990s. As the Central European governments embraced the market economy there was an urgent need to develop modern transportation infrastructure to link them physically with Western Europe. The highway system throughout Central Europe was sorely lacking and was a logical place to begin the reorientation. With limited resources and crushing public debt, the PPP approach was the most logical way for these nations to contemplate embarking upon the needed improvements.

At the same time as Soviet influence was disintegrating, Western European nations accelerated their integration, culminating with the signing of the Maastricht Treaty in February of 1992. The Maastricht Treaty strengthened the European Union, integrating all aspects of public policy in Europe – including transportation – and setting the ground for the establishment of a common

currency. In December 1992, the European Commission published its first White Paper on the future development of a common transport policy. The goal underpinning the policy was to open the transport market and create physical infrastructure integrating Europe.

One of the primary means of achieving these goals was the creation of the Trans European Networks (TENs), a series of rail and motorway expansions that would create new and improved transport connections within the European Union, as well as Central European nations that aspired to accede to the Union in the future. In addition to the physical aspects of Europe's transportation system, the White Paper established important policy precedents that would govern the way in which the needed physical improvements would be implemented. Perhaps the most important policy issue articulated in the White Paper was the use of user fees as the primary means to finance Europe's transportation improvements.

With European policy calling for an aggressive expansion of the Continent's rail and motorway systems with user fees as the preferred means of funding these new improvements, it is no coincidence that new transport partnerships appeared across Europe in the 1990s. However, it is important to recognize there were a number of other important European policy developments that reinforced this trend. Primary among these is the Growth and Stability Pact which was enacted in 1997 and established fiscal standards and budgetary discipline for all nations adopting the euro. One of the most important stipulations of the Pact is that budget deficits among member governments should not exceed three percent of gross domestic product (GDP). This has put enormous pressure on Euro Zone governments to seek alternatives to debt financing for large capital intensive infrastructure projects, and many have turned to PPPs.

The European Commission has also instigated laws that regulate and standardize PPP procurement practices. These involve European-wide advertisement for procurements with no preference afforded to domestic companies. In addition, they prohibit cross-subsidization techniques that were used in some countries to extend existing private concessions in exchange for the construction of unprofitable routes. While these changes have supported the expanded use of partnerships across Europe, they have also created confusion in some countries, such as France where existing concession laws, some of which had been in place for 400 years, have had to be annulled.[4]

The European Commission has also established a number of tools and encouraged European institutions to adopt policies to facilitate the use of PPPs. Perhaps the most important of these is the European Investment Bank (EIB), which is the world's largest institutional lender and regularly makes loans to support the development of PPP initiatives with within Europe and beyond. Established by the European Economic Community under the Treaty of Rome in 1958 with the mission of financing projects within member nations to promote regional development and socioeconomic cohesion, the EIB is particularly supportive of PPP projects and provides private investors with access to low cost money.

The Delors Package which set the stage for the Maastricht Treaty also led to the establishment of important European structural funds to support the development of transportation and environmental projects. The first of these was the Cohesion Fund which was established in December 1992 at the Edinburgh Summit. The summit allocated 15.15 billion European currency units (ECU – the predecessor to the Euro) for the 1993-1999 period. This money was earmarked for transport and environmental projects in member nations where per capita GDP levels were below 90 percent of the European Community average. Four countries qualified for Cohesion Fund monies: Greece, Ireland, Portugal and Spain. Monies were allocated based on population levels and overall size of territory. Initial policy called for the Cohesion Fund to underwrite 80 to 85 percent of project implementation costs in order to minimize the indebtedness of recipient governments.

[4] Benjamin G. Perez, *Achieving Public Private Partnership in the Transport Sector*, iUniverse Press, New York, 2004, Vasco da Gama Bridge Case Study, p. 10.

One of the first projects to benefit from a Cohesion Fund grant was the Vasco da Gama Bridge, a U.S. $1.0 billion, 12.3 kilometer crossing of the Tagus River Basin in Lisbon. At the encouragement of a group of Portuguese construction companies, the Portuguese government had chosen to develop the project on a PPP basis, following the Dartford crossing model in the UK. Completed at a time when European transport policy was being formulated, the success of the Vasco da Gama partnership has had a profound impact at the European level.[5]

When the Cohesion Fund was established it had not been envisioned that grants would be used to support partnership projects, let alone one that also benefited from toll proceeds from an existing bridge. As a result, officials in Brussels reviewing Portugal's grant application found it challenging to determine the amount of an appropriate level of award for the Vasco da Gama Bridge. Their ultimate decision also involved interaction with officials from the EIB in Luxemburg, as the Bank was providing financial support to the project's private investors. Upon its completion the Vasco da Gama Bridge gained great recognition at the European level. It had been built on time and within budget and also involved the restoration of the Tagus Basin, which was designated as a wetland of European significance. It had also leveraged grant monies provided through the Cohesion Fund. In addition, by including the revenues from the existing April 25 Bridge it required no capital outlay from the Portuguese government.

As a result of these achievements the European Commission revised the statutes establishing the Cohesion Fund to encourage the use of partnerships on all projects receiving grants. CE N° 1264/99 was enacted in June 1999, adding the following language to the earlier regulations:

> The Commission shall support beneficiary member states' efforts to maximize the leverage of Fund resources by encouraging greater use of private sources of funding.

Due to the success of the Vasco da Gama Bridge concession, the Cohesion Fund now encourages recipient governments to use PPPs. Moreover, as of May 1, 2004, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia became eligible to receive Cohesion Fund Grants. In addition, similar provisions encouraging the use of partnerships were included in the 1999 Instrument for Structural Preparation and Adhesion (ISPA), a structural fund supporting environmental and transportation projects in Central and Eastern European countries with the potential to accede to the EU. The success of the Vasco da Gama Bridge partnership also led to an important precedent at the EIB. It represented the first time that the EIB renegotiated one of its loans. This milestone recognized the fact that the project's risk profile had changed once construction was completed and when healthier than expected revenue flows began. The Bank's willingness to renegotiate the underlying debt was also seen as an important European validation of the PPP process.

European Partnerships in the 21st Century

With these various tools, policies and precedents in place, new and successful transport partnerships have been completed across Europe, from the 6.0-kilometer, US $69.5 Hvalfjordur Tunnel outside of Reykjavik, to the US $850 million, 3.0-kilometer Rion-Antirrion Bridge and the 72.5-kilometer €1.2 billion Athens Ring Road in Greece. Privately financed rail lines connect Stockholm with Arlanda international airport and London's Paddington Station with Heathrow. Oil rich Norway has completed its first transport partnership, the 27-kilometer, £140 million E39 linking Trondheim and Kristiana in the west. After ten years of indecision, Poland's 90-kilometer, €660 million A1 motorway running inland from Gdansk will open in 2008. In Hungary, where Central Europe's first privately financed motorway was nationalized in 1999 due to the government's unwillingness to facilitate refinancing the underlying debt, the privately-financed, 58.6-kilometer, €412 million M6 motorway now links Budapest with Dunaujváros to the south.

[5] Perez, op cit, Vasco da Gama Bridge Case Study, pp. 241-313.

France and Spain continue to lead European transport partnerships into new territory. In France, the €1.2 billion Perpignan-Figueras high-speed rail link between France and Spain reached financial close in 2005. In the same year, the €870 million A-41 bridge and tunnel link between Villy-le-Pelloux, France and Saint Julien Genevois, Switzerland also reached financial close as a 55-year private concession. In 2007, Cofiroute – the sole private highway concession company to survive the nationalizations of the 1980s – will inaugurate the 17.5 kilometer, €1.7 billion A86 West tunnel concession with an unprecedented term of 70 years. Following in the footsteps of Portugal's Brisa and Italy's Autostrade, France has also sold the state's share in three of its publicly held motorway companies in November 2005 in transactions with a value of nearly €13 billion.[6]

In Spain construction is now underway on the world's largest transport partnership. Madrid's €4 billion, 99-kilometer Calle 30 will open in 2008. This project will place 56 kilometers of orbital highway in tunnel, solving capacity problems on the antiquated facility and enabling the restoration of environmentally degraded areas. Although the status of Portugal's shadow toll projects remains unsettled, that nation of 10 million people boasts over 220 kilometers of new real toll facilities, representing transactions worth in excess of €2.2 billion. Plans are also being formulated for a third Tagus crossing concession to serve a new airport for Lisbon.

While the PFI planted the seed in Europe that PPPs bring value for money, the transport and fiscal policies pursued by the EU during the 1990s have led to important changes in cultural expectations towards pricing policies for transport projects and the use of PPPs in developing them. This is reflected in the fact that Austria, Switzerland and Germany now have national truck tolling schemes in place. The much delayed German autobahn truck tolling program was actually implemented on a partnership basis. Each of these schemes generates significant cash flows which are being used to fund the development of other transportation improvements, including the Löschberg and St. Gothard rail tunnels, which will open in 2007 and 2012, respectively, at a cost of €18 billion. The Czech Republic and UK are in the process of implementing national distance-based truck tolling schemes. Although not all of these schemes involve partnership elements themselves, they reinforce the EU policy of user fee finance and create further momentum for future PPP activity.

The growing use of partnerships in developing Europe's transport has also fostered entrepreneurship in the infrastructure services sector. The construction firms and investing houses that have teamed to build transport partnerships in Europe are now marketing their strategic infrastructure development experience and winning new opportunities abroad. French motorway operator Cofiroute, for example, is involved with transport partnerships in Germany, Greece, the UK, Chile, and the United States. Cintra of Spain is developing projects in Portugal, Ireland, Italy, Chile, Canada and the United States. Sweden's Skanska, Telvent and Dragados of Spain, Bouygues of France, German Hochteif, and Balfour Beatty of the UK are each developing transport partnerships both at home and abroad.

At the same time that these European infrastructure developers are venturing overseas, they are also seeing new competitors at home, as well as foreign investors who are buying existing European concessions. Originally developed by a Portuguese and English team, the Vasco da Gama Bridge itself is now owned by Macquarie Infrastructure group of Australia. Building on its experience in the dynamic Australian infrastructure market, Macquarie now holds the world's largest portfolio of private transportation assets. Its European holdings include the Warnow Tunnel in northern Germany, the M6 Birmingham Ring Road in the UK, and the entire 1,775 kilometer network of société Autoroutes Paris-Rhin-Rhone (SAPRR), which links Paris with cities to the south and east.

The American Context

[6] France A-41 Case Study, *Infrastructure Journal*, 2006, http://www.ijonline.com.

For several important reasons, PPPs have played a much less prominent role in the development of transport infrastructure in the United States than in Europe. Although private investors in America built canals and railroads that transformed the country in the 19th century, the modern highways that were first built in the 1930s and 1940s were built by public companies held by state and local governments. Tolls were preferred in the eastern portion of the country, while western states used revenues from a dedicated gasoline tax to finance untolled "freeways." This pattern continued into the mid 1950s when more than 3,300 kilometers of tolled motorways and turnpikes were in service primarily in the Northeast by the mid-1950s, and 800 kilometers of freeway in California.[7]

As growth shifted towards suburban locations following World War II, the United States saw unprecedented growth in car ownership and the demand for mobility. Recognizing that the nation's highway system was inadequate to meet growing demands, President Eisenhower called for the construction of a comprehensive national system of high performance roads. This was achieved with the passage of the Federal-Aid Highway Act of 1956, which appropriated $25 billion to construct over 68,300 kilometers of interstate highways within a ten year period. While the authority to continue user fees on existing toll roads was grandfathered, by law tolls were not allowed on the new Interstate Highways System. Instead the program was funded by a national fuel tax of four cents a gallon paid into a national Highway Trust Fund, together with a vehicle excise tax. The trust paid for 90 percent of highway construction costs, with state governments required to pay the remaining 10 percent.

By 2000, the Interstate Highway System was an 84,900-kilometer network of highways, of which over 79,200 kilometers (93.3 percent) were untolled. Almost all of the 5,700 kilometers of tolled highway that are now part of the Interstate System originally were built prior to construction of the Interstate Highway System and were subsequently designated as part of that system. By the 1980s the vast majority of the Interstate System was completed, and since that time most federal aid highway money has been dedicated to the preservation of the existing system and widening and upgrading of targeted segments. States find they often have insufficient funds to add new capacity to keep pace with growing traffic volumes.

The federal fuel tax has only been increased four times since 1956, with the most recent increase occurring in 1993 to the current 18.4 cent per-gallon level. Since that time, the real dollar value of the gasoline tax has decreased by approximately 25 percent due to inflation.[8] Expenditures from the Highway Trust Fund currently exceed income, with some observers estimating that current reserves will be expended as early as 2008. While vehicle miles traveled and fuel consumption do increase, the resulting growth in net revenues from the fuel tax and other taxes supporting the Highway Trust Fund are no longer able to keep pace with growing expenditures. As a result state and local governments are assuming the responsibility for underwriting an increasingly important share of overall transportation expenditures in the United States.

Due to the increasingly limited availability of federal trust fund monies for new construction, many state and local governments began to take on greater responsibilities for funding transport improvements in the 1980s. This was particularly true in high-growth areas in southern and western states that needed to develop new projects to support their continuing expansion. This dynamic led to renewed interest in toll-based finance, and the thought that local toll roads could be built independent of the Federal-aid highway program in congested metropolitan areas. Aware of the use of partnerships to develop toll roads outside of the United States and the promising advances in automated toll collection technology, seven different states approved new legislation to allow private investment in highway projects in the late 1980s. In 1987, Congress

[7] Gómez-Ibáñez and Meyer, p. 166.

[8] Jack Basso, " Prospects for Funding and Reauthorization of TEA-21 and its Impacts on the States," 2005 presentation to the National Conference of State Legislatures.

also approved a pilot program authorizing 35 percent federal funding of government-sponsored toll road projects in nine states.

While these developments were unfolding, the fundamentals underlying the American financial sector generally remained unfavorable to transport partnerships. The market for municipal debt in the United States is enormous.[9] The reason for this is that the interest investors earn on public debt is not taxed. As a result, many of the country's largest institutional buyers invest exclusively in publicly issued municipal debt. As a result the market for private activity debt in the United States is limited and characterized by strong competition among a small number of blue chip issuers, making it extremely difficult for private toll road developers to obtain debt on favorable terms.

Transport Partnerships in the United States

In spite of these factors, a number of states including Virginia and California began to pioneer the use of PPPs to develop American toll roads in the late 1980s. The first of America's new breed of transport partnerships is the Dulles Greenway, which is an extension of an existing public toll road linking Washington Dulles International Airport with the Capital Beltway, Washington's heavily traveled orbital highway. The Virginia Department of Transportation (VDOT) had built the earlier toll facility in the median of the existing airport expressway. It was Virginia's fist tolled motorway and soon became highly profitable. Later in the 1980s as growth in the area continued, VDOT became interested in extending the toll facility to the town of Leesburg in Loudon County.

In 1988, as VDOT was contemplating its options for extending the toll road, Virginia became one of the first states in America to enact legislation enabling private companies to finance, build and operate tolled highways. Shortly thereafter the Toll Road Investors Partnership II (TRIP II) – a consortium comprised of Shenandoah Greenway Corporation of Virginia, Italy's Autostrade, and the Texas-based engineering and construction firm Brown & Root proposed – submitted an unsolicited proposal to develop the extension on a purely private basis. VDOT awarded TRIP II a 40-year concession to build and operate the 22.5-kilometer, US $326 million facility. Construction was completed six months ahead of schedule in September 1995, and when it opened the Dulles Greenway was the first purely private toll road built in the United States in over 100 years. Initially the Greenway suffered from disappointing financial results, with initial traffic daily traffic volumes of 8,000 vehicles rather than the 35,000 forecast. TRIP II defaulted in July 1996, but then worked with its creditors to restructure is debt, and has since seen revenues grow steadily.

Just one year after Virginia passed its PPP legislation, the California legislature approved Assembly Bill 680 (AB 680) in July 1989, enabling the California Department of Transportation (Caltrans) to issue a request for statements of interest for up to four transport partnership projects to be implemented on a demonstration basis. Prospective investors were invited to identify projects they felt would be of greatest benefit to the state. Nine consortia submitted detailed proposals for eight different private toll road projects, and ultimately four groups were selected.

AB 680 stipulated that the demonstration projects be implemented without any financial support from the state. The absence state funding made the successful implementation of the AB 680 demonstration projects particularly challenging. As a result, only one of the AB 680 projects moved forward in a timely manner. This is the $134 million, 16-kilometer, SR 91 Express Lanes facility which opened to traffic in late 1995. The Express Lanes are located in the median of the existing Riverside Freeway (SR-91), which traverses a densely settled section of Orange County and provides onward connections through the Santa Ana Mountains to suburban Los Angeles.

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[9] According to the CIA *World Factbook*, the U.S. federal debt totaled $8.4 trillion in April 2006, which is equivalent to 64.7 percent of GDP, making the United States world's the 35th most indebted nation in terms of percent of GDP.

Located in a valley with no alternative routes, the existing freeway had become highly congested.[10]

Proposed by the California Private Transportation Company (CPTC), initially comprised of the United Infrastructure Company and Cofiroute of France, the project involved constructing two new "express" travel lanes in each direction in the median of the existing highway. With one point of access and one point of egress, the barrier-separated Express Lanes are essentially a bypass route through an extremely congested portion of the Riverside Freeway corridor. CPTC brought US $30 million in equity to the project and a US $101 million debt package. The project's relatively modest price tag was palatable to the financial community, and the well documented traffic volumes and vexing congestion levels on the parallel highway suggested that a large number of motorists would be willing to pay to use the new facility.

The SR-91 Express Lanes was the first fully automated toll facility in the United States, as well as the first facility in the United States to use variably priced tolling. Toll prices were designed to manage the number of vehicles using the facility so that free flow conditions were maintained at all times, including peak periods. Tolls varied by hour of the day, day of the week, and direction of travel. The project was also designed to encourage carpooling, as high occupancy vehicles (HOVs) with three or more passengers used the express lanes at no cost. As such, the SR-91 project is also the United States first operating High Occupancy Toll (HOT) Lane.

In spite of its long list of firsts, the SR-91 partnership has faced many challenges. Due to weaker than expected revenues, CPTC exercised its right to charge HOV vehicles a half-priced toll rather than allowing them to use the facility at no cost soon after its opening. In 1999, due to on-going congestion in the parallel lane Caltrans began plans to widen the Riverside Expressway. However, this violated an important non-compete clause in CPTC's concession agreement which stipulated that no competing facilities could be build in the Riverside Expressway corridor during the concession period. CPTC and Caltrans explored a number of options, but ultimately could not resolve the situation. So, in 2002 CPTC sold the United States' second privately developed toll partnership to the Orange County Transportation Authority. The facility continues its HOT operation in 2006 and is viewed favorably by the local community. Tolls range from $1.15 to as high as $7.75 during peak hours on peak travel days. HOV3 and low emission vehicles are able to use the facility at no cost, with the exception of super peak periods when they pay a 50 percent toll.

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991

As these two state-initiated partnership projects were in their initial stages of development, there was recognition at the federal level that the expanded use of tolling could be used as a tool to manage congestion and also provide significant new revenues to help meet the nation's transportation needs. This was reflected in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, which authorized funding levels and policy for highway, transit, and safety programs for the 1992 to 1997 period. ISTEA also established United States Federal Highway Administration (FHWA) Value Pricing Pilot Program. The pilot program allowed the implementation of variably priced tolls on the Interstate Highway System on a test basis in up to 15 states. This was a particularly novel development because if represented the first time since its creation that tolls – and ergo PPPs – could be used to undertake improvements on the Interstate Highway System.

The Value Pricing Pilot Program was continued in Transportation Efficiency Act for the 21st Century (TEA-21), which authorized funding and policy from 1996 to 2003. By the end of the TEA-21 authorization period, there were a total of four HOT lane facilities in the United States, two of which operated on the Interstate Highway System. However, none of these was

[10] This discussion of the SR-91 Express Lanes is based on the FHWA *Guide for HOT Lane Development*, U.S. Federal Highway Administration: Washington, D.C., May 2003, Benjamin Perez and Gian-Claudia Sciara principal authors.

implemented on a partnership basis. There were, nonetheless, a small number of partnership projects that began to appear around the nation during the TEA-21 authorization period. United Toll Systems LLC developed three bridge and connector road projects in Alabama between 1994 and 1998. These Greenfield projects improved roadway links to new real estate developments and industrial parks. The largest is the 20.8 kilometer Alabama River Parkway, which also includes a 328-meter, four-lane bridge. The privately owned and financed Foley Beach Express opened to traffic in June 2000. This 10 kilometer, $44 million facility provides a bypass route to a popular Alabama beach area and was built by Baldwin County Bridge Company.

Construction began near Laredo Texas in 1999 on the privately financed Camino Colombia, a $90 million, 35-kilometer, two-lane roadway and truck route connecting the Laredo area with the Colombia Solidarity Bride over the Río Grande to Mexico. This facility opened to disastrous financial results in October 2000, went into receivership in 2003, and was ultimately sold at auction to the Texas Department of Transportation.

The most significant roadway partnership to move forward during the TEA-21 authorization period was the Southbay Expressway in San Diego. This 18.3-kilometer, $642 million four lane highway is the second AB 680 partnership project to advance in California. The facility will link the San Diego area with the only commercial port of entry from Mexico. Caltrans awarded a 35-year concession to California Transportation Ventures (CTV), a consortium of Parsons Brinckerhoff and Egis Projects of France, which was sold to Macquarie Infrastructure Group in 2002. The project holds the distinction of being the first PPP to receive financial assistance from the U.S. Department of Transportation's TIFIA program.[11] The $140 million, 38-year TIFIA loan has a fixed rate borrowing cost equal to 30-year Treasury notes and was essential in bringing the transaction to financial close in May 2003. Construction began later in 2003 and will be complete in 2006.

The Las Vegas people mover completes the list of operating transport facilities that have been built on a partnership basis in the United States. This $640 million, 6.4-kilometer, seven-station transit system was developed by a group of local casinos to provide transit links between their facilities. Project financing was raised using tax exempt revenue bonds issued by Salomon Smith Barney and the Nevada Department of Business and Industry. Service on the Las Vegas monorail was inaugurated on July 15, 2004 and was it soon carrying 30,000 passengers a day. Operations were halted in early September 2004 following the loss of a guide wheel on one of the monorail cars. Service resumed in mid-2005, with ridership levels decreasing and some observers believing the project will not be able to generate adequate income flows to meet its debt service requirements.

Renewed Momentum for American Transport Partnerships in the 21st century

While the United State's initial experiments with transportation partnerships may seem tentative and small in scale compared with the European experience, support for the partnership is gaining momentum on several fronts. Twenty-one states and one U.S. territory have now passed legislation that enables the use of PPPs for the development of transport infrastructure projects. Many of these laws have been enacted or enhanced in the past five years, and several states have embarked on major partnership programs.[12] One of the most notable pieces of PPP legislation was passed in the spring of 2006 in Louisiana, which hopes to complete several major projects needed in the aftermath of the hurricane Katrina disaster on a PPP basis.

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[11] The Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA), enacted as part of TEA-21, established a new Federal program to provides Federal credit assistance to nationally or regionally significant surface transportation projects, including highway, transit, and rail. The program is designed to fill market gaps and leverage substantial private co-investment by providing projects with supplemental or subordinate debt.

[12] The FHWA PPP Webpage contains comprehensive analysis of the current state PPP enabling legislation prepared by the law firm of Nossaman Guthner Knox and Elliott LLP http://www.fhwa.dot.gov/ppp/legislation.htm.

A 2006 survey of tolling activity in the United States since the ISTEA authorization period reveals that in addition to the seven operating toll road partnerships, an additional 19 toll partnerships are under development, as well as an additional 22 toll projects for which the partnership approach is being considered.[13] Together these projects extend across 14 states. With a total of 168 recent toll projects in various stages of completion in the United States, over 28 percent of these will or are likely to be developed as PPPs. This number could increase, as the development model for projects in the early planning stages has often not yet been determined.

In addition to two operating PPPs, the state of Virginia has six major PPP toll road projects under development. These include plans to add tolled HOT lanes to both the Capital Belt way (I-495), as well as I-95, which are two of the most heavily traveled highways in greater Washington, D.C. With estimated construction values of $693 and $999 million, respectively, VDOT has awarded PPP concessions to finance, build and operate these projects to a consortium of Fluor Daniel, the Texas-based engineering and construction firm, and Transurban, the Australian toll road operator. Three of VDOT's remaining PPP projects have multi-billion dollar construction values and involve combined transit and highway expansions, sub aqueous tunnels, and 328 miles of Interstate truck-only toll lanes.

Oregon DOT recently awarded the right to develop three toll road partnerships to Macquarie, and both Maryland and Georgia are studying PPP options for four major toll facilities. However, the most ambitious PPP plans are in the state of Texas, and involve the Trans-Texas Corridor (TTC) network. In March 2005, the Texas Department of Transportation (TxDOT) signed a Comprehensive Development Agreement with Cintra of Spain and Zachry Construction, giving them the right of first refusal to develop any portion of the 1,330-kilometer I-35 corridor extending from Oklahoma to the Mexican boarder on a PPP basis. Cintra/Zachary intends to start with a $7.2 billion segment from north of Dallas to south of San Antonio, which it intends to develop exclusively with private funding. TxDOT is finalizing plans to award a similar concession for the 1,080 kilometer I-69 TTC corridor and is also reviewing proposals to build a 27-mile, $650 million managed lane facility in the median of the Airport Freeway in Dallas, and a similar $3.5 billion, 24 mile expansion of the I-635 in Dallas. Apart from to these highlights, five other toll road partnerships are at various stages in Texas.

In addition to these partnerships involving major new projects, the there has also been a flurry of major asset privatizations in the past two years, which in essence are long-term lease arrangements. The first of these was the City of Chicago's 99-year lease of the 13-kilometer Chicago Skyway to Cintra/Macquarie for the sum of $1.83 billion. Cintra/Macquarie's bid for the facility stunned the American financial markets as it was $1.0 billion more than the next highest bid. In January 2006 Governor Mitch Daniels of Indiana awarded a 75-year lease of the 278-kilometer Indiana Toll Road to Cintra/Macquarie for a fee of $3.8 billion and a commitment to undertake $400 million in improvements. This transaction reached financial close on June 26, 2006 with Cintra and Macquarie each committing $374 million, together with loans issued by a consortium of seven European banks in the amount of $3,248 million. In May 2006, VDOT agreed to award a 99-year lease to Transurban of Australia for the operation of the Pocahontas Parkway (Virginia Route 495) in Richmond. This 14.7-kilometer, publicly procured $324 million toll road opened to disappointing traffic volumes in May 2002. The value of the long-term lease is estimate to be approximately $522, and in addition Transurban has committed to expand the facility to connect with Richmond International Airport.

The possibility of other long-term lease arrangements is being considered in other areas such as Delaware, Pennsylvania, and New Jersey, where officials are contemplating a long term lease arrangement for the New Jersey Turnpike and the Garden State Parkway. Annual revenues on

[13] Benjamin Perez and Stephen Lockwood, "Current Toll Road Activity in the U.S.: A Survey and Analysis", U.S. Federal Highway Administration: Washington, D.C., June 2006.

two New Jersey toll roads exceed that of the Chicago Skyway by a factor of 17; an income stream that would leverage an extremely large fee.

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005

Delayed by two years, the United States' SAFETEA-LU authorization legislation was signed in August 2005, establishing transport policies the 2005 to 2010 period. The legislation provides a number of new programs that reinforce the recent momentum transport PPPs have achieved. The legislation contains six separate tolling programs which together mainstream the conversion of HOV lanes to HOT operation in all fifty states and allow tolling for the maintenance or addition of new general purpose lanes on the Interstate Highway System. There are also a variety of programs with funding designated to support these same applications.

Most importantly, SAFETEA-LU extends the ability to issue tax exempt bonds to privately financed toll roads and freight transfer facilities. The legislation limits the total amount of private activity transportation bonds to $15 billion, which will be allocated among the best qualified facilities based on a review of formal applications submitted to FHWA. Passage of the private activity bond legislation reflects the government's desire to increase private sector investment in U.S. transportation infrastructure. Providing private developers and operators with access to tax-exempt interest rates will lower the cost of raising capital significantly, making investment opportunities in transportation infrastructure more attractive for private sector partners. Together the new tolling programs, private activity bonds, and enhancements and increased funding for the TIFIA program will encourage the use of PPPs in the current authorization period and beyond.

Learning from the Trans-Atlantic Partnership Experience

The European experience demonstrates that the transportation and fiscal policies can be aligned to support the use of partnerships. Some might attribute the great expansion in the use of transport partnerships to the user fee finance policy set forth in the 1992 White Paper on common transport policy. However, the real driver behind the expanded use of partnerships was the fact that at the time Europe was embarking on the development of the TENS – an initiative evocative of Eisenhower's vision for the Interstate Highway System in the United States – fiscal policies dictated that national debt levels could not exceed three percent in countries adopting the Euro. Together, these policies dictate – albeit implicitly – that Euro Zone nations consider the partnership approach for any major, capital intensive transport projects. Given that PPPs are in essence financial transactions, they can only be used successfully on projects with the most robust financials. Stated in transport parlance, this means that they are successful only on those projects that attract robust traffic volumes and that can be constructed at a reasonable cost.

In addition to effective policies, the European partnership experience also demonstrates the importance of effective institutions in achieving successful outcomes. No European institution has played a greater role in moving European partnership projects forward than the EIB. In 2004, the EIB established a new TENs Investment Facility designed to invest €50 billion in 30 priority TENs project with an estimated construction value of €400 billion.[14] Its support of the development of the TENs includes conventional long-term lending with very long maturities and appropriate grace periods together with the introduction of pioneering financial instruments aimed at addressing risk issues and hence serving as a catalyst for private sector investment. These include:

- A €500 million Structured Finance Facility supporting private, public or semi-public special purpose vehicles (particularly in cross-border PPP projects) on a risk-sharing basis;
- A €90 million Risk Capital Facility to assist in injecting money to projects and special venture capital companies; and

[14] European Investment Bank 2004 Annual Report: Volume I, Activity Report, Luxemburg: 2005, pp 22-25.

- A Guarantee Fund to hedge against risks associated with transport PPPs.

In 2004 alone, the EIB provided €8 billion in loans for TENs projects. The Bank's 2004 Annual Report addresses transport PPPs specifically, indicating that:

> The vast majority of the EIB's PPP lending is concentrated in the transport sector (85%)....The EIB has invested some €17.4 billion in a range of transport PPPs....In this area, the Bank works in close cooperation with the main players in this type of project: the European institutions, public authorities and the private sector. In addition, the Bank has set up a dedicated inter-directorate unit, enabling it to play to the full its role of giving advice and transferring know-how in the structuring of PPPs.

The Vasco da Gama Bridge was one of the EIB's initial experiences with transport partnerships. In that project it coordinated closely with the Government of Portugal and the project's private developers. The project depended on the contributions of each of these entities, and would have been impossible to develop on a PPP basis without the support of all three. Stable like a three-leg stool, the policies described above demonstrate the way in which the EIB used the Vasco da Gama Bridge model to strengthen the use of PPPs in developing transportation infrastructure across Europe.

On the other side of the Atlantic in the United States the use of the partnership approach in developing transport infrastructure is less advanced, but demonstrates many of the same lessons. It is interesting to note that in many important regards the United States experience is the antithesis of that in Europe. This explains why the use of partnerships in developing transport infrastructure has been the exception rather than the rule. The United States has a culture of free roads and in 2006 is celebrating the 50th anniversary of its unparalleled Interstate Highway System. Developed with the proceeds of a dedicated fuel tax, the vast majority of the 75,000 kilometer system operates free of tolls. Moreover, the United States also has a strong appetite for public debt and has structured its tax code to incentivize the use of tax free municipal bonds to develop public infrastructure of all types.

Although these precedents are well established, it now appears that the United States is at a juncture where the established model for developing transport infrastructure may no longer be sustainable. The purchasing power of the fuel tax is diminishing at a time when there is limited appetite on the part of the federal government to raise taxes. The maintenance needs of the nation's aging highway system now consume the vast majority of Trust Fund income, leaving local and state governments with little support for the construction of new capacity. User fees are a logical source, and there is new interest in toll-based finance on the part of many state and local state governments. At the federal level there has been interest in tolling, but that has focused on the use of variably priced tolls as a tool to manage congestion. However, with the SAFETEA-LU Authorization Act it appears that the federal government is beginning to recognize the need to be able to use tolling to undertake new highway improvements and expansions.

In the opinion of some observers, the United State's earliest partnership experiments demonstrate that concessions were viewed as being appropriate for use on marginal, less important projects. California's AB 680, for example, stipulated that the partnership projects it enabled would not receive any funding from the state, suggesting that state funding should be focused on the most urgently needed projects.[15] This approach is now changing. Several states

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[15] Statement of Karen J. Hedlund Partner, Nossaman, Guthner, Knox & Elliott, LLP before the Subcommittee on Highways, Transit, and Pipelines Committee on Transportation and Infrastructure U.S. House of Representatives Hearing on "Understanding Contemporary Public Private Highway Transactions: The Future of Infrastructure Finance?" May 24, 2006.

have recently passed PPP enabling legislation and, as in Louisiana, have serious aspirations of using partnerships to meet their most pressing needs. This shift is further corroborated by the fact that several high profile, multi-billion dollar projects are being developed around the United States using the concession model. This new breed of partnership projects is evocative of the heavily traveled toll facilities developed by public turnpike authorities in several northeastern states prior to the establishment of the Interstate Highway System. However, unlike the earlier turnpikes which were financed exclusively with toll-backed debt, due to their magnitude there is a growing likelihood that the most ambitious of these emerging schemes can only be developed by blending public and private money.

The co-mingling of public and private funds has been a hallmark of European infrastructure partnerships, and the most successful partnerships have included European, national and private monies. In the United States this approach is comparable to blending federal, state or local, and private monies to develop partnership projects. The new SAFETEA-LU private activity bonds program will encourage this type of collaboration. The TIFIA program is also another important tool for developing partnership projects and uses federal funds to strengthen the fundamentals of projects that would not be possible to develop as partnerships without this support. In this aspect the TIFIA program is very similar to the EIB's TENs Investment Facility. However, with only $610 million worth of funding allocated to the TIFIA program in 2005 through 2009, it will only be able to leverage a fraction of the investment that the €50 billion strong TENs Investment Facility will generate over the same approximate period.

The experience in Europe during the past 15 years – the formative period of the European Union – demonstrates the power of aligning transportation and fiscal policies. The European experience contrasts with America's initial attempts to support partnerships through its TIFIA and private activity bond programs, which have been funded at much lower levels. With the pronounced dichotomy between European's conservative fiscal policies and developing culture of tolling and America's passion for debt and limited appetite for tolls, it is unlikely that transport partnerships will achieve the same level of prominence in the United States as in Europe. Nonetheless, it does appear that European partnership accomplishments have encouraged many U.S. states to develop large high profile transport projects on a partnership basis. The fact that successful private infrastructure developers from Europe and beyond, are now aggressively seeking out investment opportunities in the United States will both foster the transfer of knowledge and continue to encourage state and local governments to use partnerships to meet their most pressing infrastructure needs.

The experience with partnerships on both sides of the Atlantic also demonstrates that involving the private sector in all aspects of the delivery of transportation infrastructure can bring value for money. Partnerships capture private sector innovation and the efficiencies emanating from its profit-seeking motivations. These factors were the foundation upon which the UK's PFI was built, and American innovators are also proving that there are many beneficial ways in which the public and private sectors can partner to deliver transportation improvements short of using private funding to develop new infrastructure. When partnerships do involve funding, the trans Atlantic experience demonstrates that the partnership approach is most successful when it is used on the most urgently needed projects, as these high-profile endeavors are far more likely to generate healthy cash flows than marginal projects.

Ultimately the roles of the public and private sectors in government in meeting infrastructure needs are shaped by cultural expectations and precedent. The accomplishments resulting from the collaboration of the public and private sectors on both sides of the Atlantic demonstrate that partnerships between the two will be an increasingly important feature of major transport improvements on both continents in the 21st century.

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The authors are grateful to Gian-Claudia Sciara of the University of California Berkeley for her thoughtful review of this paper.