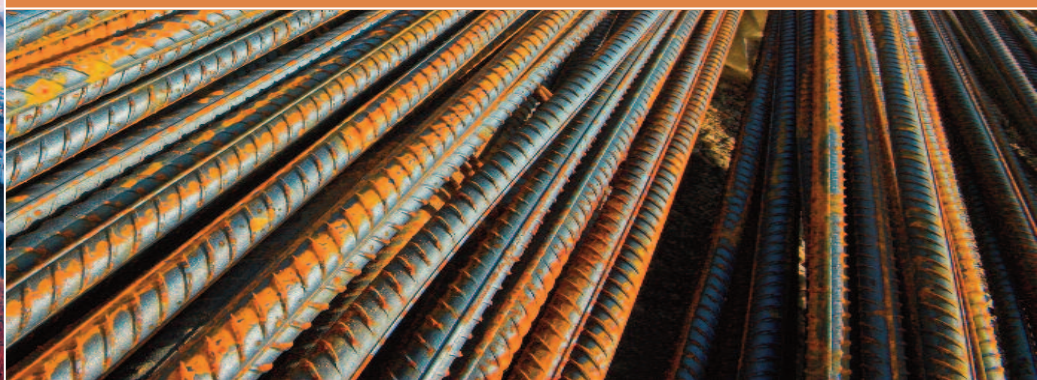
WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

Paving the Way:

Maximizing the Value of Private Finance in Infrastructure

Prepared in collaboration with PricewaterhouseCoopers



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Preface

KEVIN STEINBERG, Chief Operating Officer, Head of Center for Global Industries, World Economic Forum USA, and
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The World Economic Forum is proud to release this *Report, Paving the Way: Maximizing the Value of Private Investment in Infrastructure.* The project was initiated in January 2009 as part of the World Economic Forum's Investors and Financial Services Industries Partnership programs to explore the role of private capital in meeting the world's growing infrastructure needs.

Multiple studies in the recent past have emphasized the importance of infrastructure as an enabler for developing economies, and the fact is that vast segments of existing infrastructure in the developed world are becoming deficient. Estimates for global infrastructure investment need ranges as high as US$3 trillion per year. The World Economic Forum's *Global Risks 2010* report highlighted underinvestment in infrastructure as one of three key global risks to monitor. *Global Risks 2010* furthermore stresses the awareness that underinvestment in infrastructure is one of the most highly interconnected risks, with potential systemic implications.

Given the dramatic need for investments in infrastructure at a time when many government budgets are under severe pressure, the role of private capital in financing infrastructure seems more critical than ever. This *Report* aims to showcase both the opportunities and the challenges associated with attracting and involving private investors in the provision of infrastructure.

The *Report* outlines features of successful infrastructure projects using illustrations from countries that have tapped private finance markets. Examples include projects that demonstrate the results of creating a political, legal, and economic environment that is conducive to investment; establishing a program of opportunities; having a contractual and regulatory framework that deals with issues effectively and fairly; having forums for stakeholders to share experiences; and involving the public at all stages.

The *Report* highlights the notion that private finance will invest in new infrastructure when the investment is based on established practices and approaches, but the challenge remains when the project is novel, untested, or in a new market. Other key findings include:

- The costs and terms of commercial debt have changed significantly as a result of the global economic crisis and there remains a challenge of reinvigorating the capital markets as a source of finance for infrastructure.
- Governments have become lenders of last resort and, as there is a revaluation of the public-private finance relationship, it is possible that more countries will set up state infrastructure banks.
- A move to more specialized infrastructure funds to give investors a better alignment of risk with reward is expected. Investors will also place greater value on fund managers with experience of ongoing infrastructure asset management.
- Retail finance participation in infrastructure funds is likely to grow, but it requires a clear articulation of the value proposition and the threats to achieving it.

The *Report* itself is the result of a year-long multi-stakeholder collaboration of the World Economic Forum and PricewaterhouseCoopers with leading industry practitioners, policymakers, and academics participating in interviews and workshops around the globe. Throughout this process, intellectual stewardship and guidance was provided by an actively engaged Expert Committee.

We trust that this publication will provide relevant input and catalyze important further dialogue among governments, investors, and other stakeholders regarding the role of private finance in infrastructure. Moreover, we hope that the insights it provokes may contribute toward ensuring that the risks associated with a lack of global infrastructure investment are addressed and their potential negative impact on future global growth and economic growth mitigated.

We wish to thank the members of the Expert Committee, interview and workshop participants, and our partners at PricewaterhouseCoopers (especially Victoria Dickinson) for their invaluable support. We would also like to thank James Bilodeau and Anuradha Gurung at the World Economic Forum for their leadership of this project.

Executive Summary

In early 2009, the subject of infrastructure financing came to the fore as many countries announced infrastructure spending as part of fiscal stimulus programs. Yet, in many respects, the focus on stimulus spending distracted attention from the fact that countries need to develop sustainable, long-term models to fund the development, expansion, replacement, or renewal of their national and regional infrastructure.

Estimates of global infrastructure need range as high as US$3 trillion per annum. Current spending on infrastructure is well below this threshold even when fiscal stimulus is considered. Unless governments radically shift their budget priorities or increase taxation a large financing gap will continue to exist. Against this backdrop the role of private financing is becoming increasingly critical to ensure that inadequate infrastructure does not become a bottleneck for economic growth and social progress.

Although private participation in the provision of infrastructure has grown in recent years, in many markets and sectors that growth has been relatively limited and could even reverse in the face of greater demand. This has occurred despite considerable attention being paid to the role of private financing in infrastructure over the last two decades. We believe this is because of another serious and persistent gap with respect to the funding of infrastructure: that of perception between the public and private sectors. A primary purpose of this report is to help close this "perception gap" by providing a common reference point as to what considerations are important to providers of private capital and how the public sector can develop its capacity to address them.

This *Report* aims to establish this common reference point in several ways. At its most basic, the *Report* proposes a common definition of infrastructure (at the beginning of Part 1) that is relevant from a private financing perspective.

The *Report* also lays out a framework for how policymakers can more fully maximize the value of private finance in supporting infrastructure development (Parts 1, 2 and 3). This framework is presented as a progression from "foundational requirements" for involving private finance in infrastructure to a vision of how the large amounts of private capital needed can be mobilized in the future. This framework is a key organizing principle and takeaway of the *Report* and is summarized in the schematic at the end of this Executive Summary. Finally, the *Report* makes extensive use of case studies to illustrate and support this framework with experience from across a variety of regions and projects. These are referenced throughout the report and fully presented in Part 4 of the report. In addition, in Appendix A, the *Report* provides a primer on the infrastructure finance market. Key findings from the *Report* are summarized below.

Defining Infrastructure

It is important to define the term infrastructure since there are many different types, not all of which are appropriate for private funding. From a financing perspective, infrastructure opportunities are usually capital intensive, there is a tangible asset to operate and maintain, and the asset is expected to generate cash over the long term. Yet, there are other important distinctions from a financing perspective such as the type of project (i.e. social vs. economic infrastructure), contractual approach (e.g. partnership, concession, privatization etc.), phase of physical development (i.e. greenfield vs. brownfield), and stage of market development (e.g. new and innovative vs. new and tested). These characterizations more precisely address the chief concerns of private financiers as to whether they will achieve forecasted returns and the likelihood of loan repayment. A focus just on greenfield or brownfield designations or sector (e.g. energy vs. transportation) is too limited from a financing perspective.

Laying the Foundations: Requirements for Private Finance

Even when infrastructure is considered "too important to fail," private finance can still be an option.

For private finance to be an option one needs to evaluate the robustness and sustainability of the different financing options throughout the asset life. It is also necessary to consider what sort of failure might occur—whether it be a gradual erosion of service, the financial collapse of the private-sector party, or the sudden and complete shutdown of the asset—and how to mitigate the impact of such a failure. The tradeoff between the level of fees or charges for the infrastructure and the robustness of financing should be analyzed explicitly.

Given the long life of many infrastructure assets, parties must explicitly address all the tradeoffs within different commercial, contractual, and financing approaches.

It is often very difficult for both the private and public parties to forecast costs and revenues over the long term, particularly when those costs and revenues depend on public usage. But the consequences of getting this wrong may be considerable. Governments risk incurring the public's wrath if the concessionaire makes too big a profit, while the concessionaire risks going bankrupt if it loses too much money.

Contract or concession length should be determined by consumer and investor considerations – not necessarily the life of the asset.

Three key factors should be considered when setting contract or concession policy. First, if the infrastructure is monopolistic, how should the protection of consumers be balanced with maintenance of any necessary capital investment? While a monopoly might lead to a shorter contract, the protection of consumers might lead to a longer one. Second, if debt is being raised to fund infrastructure development, over what period will it be repaid? Forcing repayment over a short period could result in higher, potentially unaffordable, fees or user charges. Third, how long will investors need to achieve an "acceptable" level of return—and what is "acceptable"?

Private financiers will not invest in infrastructure without institutional certainty.

Whether or not private financiers choose to invest is determined not just by the details of the specific transaction but also by the wider political, legal, and economic environment, including any uncertainties about how governments themselves may act at any stage. We believe this is as much an issue in developed economies as in emerging ones, and seeking private-sector participation is no substitute for developing the institutions that create an environment conducive to investment.

Understanding and managing public perception are integral to the success of any deal.

Both public and private parties may not always fully appreciate consumer sentiment. In fact, public sentiment can make or break a deal—and responses vary depending on the nature of the infrastructure. People are used to the idea of mobile phone networks being in private hands, for example. However, they often regard other forms of infrastructure, especially social infrastructure, as the exclusive domain of governments. It is important to involve the public in every stage of the process, to articulate the options clearly, and to ensure that transparent methods for measuring and maintaining operational quality exist. Mechanisms such as profit sharing may mitigate concerns about excessive profits for the private party.

Building the Structure: Developing the Market for Private Finance

Investment by the public sector in a comprehensive program of prioritized opportunities can attract more private capital.

Those countries that have been most successful in attracting finance have established programs of prioritized investment opportunities with a number of features, including clear political support, a proper legal and regulatory structure, a procurement framework that can be understood by both procurers and bidders, and a credible project timetable. These country programs are more than just marketing - they eliminate key frictions such as long project lead times and unclear political risk which directly impact the viability of the business case for investment.

Building transactional capacity within government bodies underpins all successful procurement programs.

Even countries with years of experience in completing complex public-private deals may find it difficult to sustain the necessary commercial expertise and ensure that they get value for money. The recent economic turmoil has exacerbated the situation, highlighting the need to be able to react quickly to changes in the financial environment. To tackle this challenge it is important to maintain dedicated procurement teams that are well trained with career paths that will encourage them to stay. The development of national and regional networks of practitioners to share knowledge and experience can be important as well. Investing in these transactional capabilities can be as important as investing in the infrastructure assets themselves.

Multilateral banks continue to move beyond their role as direct funders of infrastructure to help build transactional capacity and provide risk mitigation.

Adequate finance is only one of the conditions that must be met for an infrastructure project to succeed. Essential skills and improved conditions in the country's market environment are also crucial, and multilateral banks are able to support transactions by providing political cover and resources, such as the joint initiative Multilateral Public-Private Partnership in Infrastructure Capacity Development (MP3IC) program, to assist in these areas. It is important for countries to become aware of and know how to utilize these resources most effectively.

Public and private parties will both benefit from collaboration in land procurement and valuation.

The procurement and valuation of land for new infrastructure is always a controversial subject. The issue is not so much who has the power to assemble land—this usually rests with public parties—but rather who pays for and receives the benefit of the change in land value

resulting from the infrastructure development, how the change is calculated, and at what point in the transaction timetable it is calculated. Several instances exist in which land has been effectively monetized to pay for infrastructure. One such example is the supplement the Greater London Authority will levy to contribute to the funding of a new train link across Britain's capital.

Planning for the Future: The way forward for private finance

Private investors care more about whether an investment is based on established practices than if it is "greenfield".

Many policymakers believe that private financiers are only really interested in investing in projects that already generate an income and do not want to invest in building new infrastructure. This is an oversimplification. There is little about the design, construction, operation, or revenue structure of some new infrastructure that cannot be mitigated through contracts based on established practices. Securing private finance is a problem only when a project is very innovative or unusual, or involves new technology or markets, making its operational and financial performance difficult to predict. Explicitly recognizing and communicating these distinctions can attract private finance to new categories of infrastructure in the future.

Higher prices, shorter terms, and reduced capacity for large underwriting by banks may extend well beyond the current financial turmoil.

Overall commercial bank lending for infrastructure projects proved remarkably resilient in 2008 and 2009, despite the global economic crisis. But there was reduced lending in some sectors that rely on long-term lending, particularly concessions and public private partnerships. For all debt, there have been material changes to terms and cost. As a result, many transactions have proceeded with a "club" of banks collectively arranging the debt rather than using the traditional underwrite-and-syndicate process. Shortened terms may make bank lending more suitable for the construction phase of many projects.

Capital markets may help fill the long-term infrastructure finance gap – if several key obstacles can be overcome.

While there remains a market for well-structured transactions, overall demand for long-term infrastructure bonds has declined dramatically, despite the apparent attraction of such products for long-term investors, such as pension funds, that aim to match their assets with their liabilities. This decline is particularly noticeable in the bond market for public-private partnership and concession-type projects, largely because of the collapse of the monoline insurers. Apart from providing insurance against defaults and thus enhancing the credit rating of the underlying investments, the monolines supplied the transaction skills and due diligence that many capital markets investors were unable to supply for themselves. The challenge now is to reinvigorate the capital markets for infrastructure. This may include changing the risk profile to raise the underlying rating, encouraging the development of substitutes for the guaranteed bonds the monolines offered, or building transaction skills in the banks involved in infrastructure bond issuance.

Applying a regulated asset-based approach such as those often used by utilities may mobilize more private investment.

Regulated infrastructure utilities have been successful in continuing to issue bonds in the current economic climate. This raises the question whether the regulated price and asset-based approach that underpins the utilities' business model should be adapted for other types of infrastructure, such as those projects more typically employing a concession-based approach. A regulated approach reduces long-term risk transfer to the owner or operator in exchange for limiting the upside of investment return. This may be attractive to many investors though governments will have to consider the risks they themselves will then incur. The specifics of each project and the policy priorities of governments will determine whether this approach will be appropriate.

Specialization will be important to the development of infrastructure funds.

There is currently a prevalence of general and private equity-type funds that focus on a range of different sectors in developed markets. Many also do not differentiate between transaction approach such as concession contracts and privatizations. By contrast to the general nature of many funds, the economic crisis has highlighted the variation between infrastructure types as some subsectors have been largely immune to the economic turmoil while others (such as those that rely on user demand) have been more exposed. We believe these variations in the performance and specific charateristics of infrastructure types will lead to the development of more specialized funds that will help investors discriminate between different opportunities. This may be an important factor in channeling the massive amounts of uncommitted capital that has been raised in recent years into viable investment opportunities.

The uneven availability of offerings in different markets may accelerate fund activity and investment in emerging markets, particularly the BRIC countries.

As the full effects of budget deficits materialize, there may be fewer opportunities to invest in established markets. Conversely, there may be more opportunities to invest in emerging economies that have increasingly stable political, legal, and economic regimes. This push/pull

effect may be dampened by the desire to offset budget deficits through asset sales that could maintain interest in established markets.

Retail participation in infrastructure projects is likely to grow.

Retail investors in infrastructure projects have experienced very mixed fortunes to date, and several serious obstacles must be overcome before involving them more widely. Nevertheless, there have been some successful examples of retail participation in the infrastructure markets. We think that retail participation will increase over the next few years, as understanding of the infrastructure offering improves.

Pension funds may not invest as much as many believe until key obstacles are overcome.

Many believe that the amount of money that pension funds invest in infrastructure will increase significantly in the short term. This may be true for some of the larger pension funds that have an established position in the infrastructure market. However, many pension fund managers, often from smaller funds, still regard infrastructure as a specialist investment. Moreover, there is a geographic mismatch between the places in which most pension funds are held and the places in which there are infrastructure investment opportunities. The infrastructure community must therefore help to develop a better understanding of the asset class within the wider pension fund manager and trustee community to promote a broader mobilization of institutional capital in the future.

Governments may increasingly become financiers as well as procurers of infrastructure.

The role of governments as financiers grew in the recent financial crisis as the amount of long-term debt available was severely constrained. Different countries have taken different approaches, and the means they have adopted to stimulate private finance vary accordingly and range from capital contributions to co-lending and debt guarantees. However, one common issue is how and when government support will be withdrawn. A second is whether countries should set up state-owned infrastructure banks. Several such banks already exist, operating at both national and regional levels, and we anticipate that more will be established in the next few years.

Conclusion

The combination of pressing need for infrastructure investment as an economic and social priority and government budget pressure means that the private financing of infrastructure projects is more important than ever. With this urgency, it is imperative that the public and private sector work closely together to overcome any gaps in understanding and then implement this common vision to mobilize the massive amounts of private capital that are needed. Even as parties from the public and private sector address the exigencies of the current economic environment they must look ahead in defining sustainable long-term roles (for each of them) which maximize the value of private investment for all stakeholders in the decades to come. We believe that the framework and case studies presented in this *Report* are useful tools for promoting this process.

Paving the Way:

Maximizing the Value of Private Finance in Infrastructure

Capitalizing on Private Finance

UNDEVELOPED OR UNSUCCESSFUL USE OF PRIVATE FINANCE

Market Characteristics

- Lack of political and public support
- Under-developed procurement policy
- Ad hoc approach to market
- Infrastructure propositions not commercially viable; thus unable to attract private finance solution
- Reliance on attracting foreign investment and investors
- Lack of transaction capacity and know-how
- Failure to recognize the wider benefits and risk transfer that can be achieved by involving private finance
- Uncompetitive private finance proposals

Part 1: Laying the Foundation
Requirements for Private Finance

- Create political, legal, and financial environments that are conducive to private finance *(Texas P3 roads, Lekki Toll Road, Highway 407)*
- Involve all stakeholders, including the public users, in the development and planning phases
- Develop objective financial forecasts and practical debt repayment schedules *(Cross City Tunnel, Mexico toll roads)*
- Analyze tradeoffs among commercial, contractual and financing approaches *(Chicago Skyway, Chilean PPP program)*
- Determine the meaning and impact of failure and establish how to mitigate and manage such risks *(Delhi International Airport)*

Part 2: Building the Structure
Developing the Market for Private Finance

- Attract private finance with a program of prioritized investment opportunities *(India's PPPs, Portuguese SCUT roads program)*
- Identify what is commercially achievable *(Port of Miami Tunnel)*
- Increase collaboration between public and private parties *(Florida I-595, Seagirt Marine Terminal, Australia's Future Fund, Canada Line)*
- Build and sustain transaction capacity *(PPP Canada, Partnerships BC)*
- Leverage the financing and transactional skills of multilateral institutions *(Doraleh Port)*

Part 3: Planning for the Future
The Way Forward for Private Finance

- Sustain the involvement of existing sources of private finance *(UK Treasury Infrastructure Finance Unit, TIFIA funding)*
- Stimulate long-term capital markets
- Respond to changes in the infrastructure finance offering as investor appetite, sectoral and geographic focus change
- Explore the development of new sources of private finance *(Viability Gap Funding, BRISConnections)*
- Propose new ways to increase the involvement of private finance in the infrastructure sector *(IFC Crisis Facility)*

DEVELOPED OR SUCCESSFUL USE OF PRIVATE FINANCE

Market Characteristics

- Strong and transparent political and legal frameworks
- Established program of opportunities
- Close collaboration between public and private parties
- Strong support from all stakeholders
- Continuous innovation in procurement approaches
- Developed local or regional financial capacity
- Ability to attract new sources of finance markets
- Improved transaction capacity and ability to sustain it

Part 1

Laying the Foundation: Requirements for Success

CHAPTER 1.1

Defining and Measuring the Private Finance Opportunity

High on the agenda of governments around the world is the desire to develop their country's infrastructure. Hand in hand with this desire is the challenge of deciding how best to fund this development: determining what is affordable through the public purse and what contribution private finance might make. The working premise is that demand will always outstrip what governments can afford. Hence, there will always be a role for private finance to help bridge this financing gap—indeed, there are already many infrastructure developments that are privately financed.

Before exploring in detail the challenges and opportunities of involving private finance, this chapter gives some background to the subject, namely:

- the definition of infrastructure
- the drivers of demand for infrastructure
- the investment need
- the impact of current fiscal stimulus programs
- existing investment by private finance

It is important to incorporate a financing perspective in defining the term *infrastructure*

The headlines have often made little distinction between the different types or categories of infrastructure and what may or may not be appropriate for private funding. The term *infrastructure* can mean different things to different people and communities. Indeed, even among infrastructure finance practitioners there has often been little consistency in terminology. These inconsistencies make it difficult to comment on what projects or opportunities might be appropriate for private funding. They also make it difficult to determine the different sorts of private finance available; the different approaches that can be taken to procure, structure, and fund projects; and how these may change over time. In this *Report* we attempt to set out some clear and straightforward descriptions of different types of infrastructure projects.

From a financing perspective, any definition needs to take into account both the money flows into and the risk-and-reward nature of infrastructure. This means that any definition will need to capture the fact that infrastructure opportunities are usually capital-intensive and include a tangible asset that must be operated and maintained and that will generate stable long-term cash flows.

There are four key elements that define the type of infrastructure opportunity

We have identified four main elements that will help describe the type of opportunity in more detail:

1. the type of project or enterprise,
2. the contractual approach,
3. the phase of asset development, and
4. the stage of development of the market.

1. Type of project or enterprise

There appears to be some market consensus on the existence of two types of infrastructure projects:

- **Social infrastructure:** These projects involve the building and/or operation of infrastructure assets to support the provision of public services. Typically, public authorities will continue to pay for this infrastructure. Examples include health facilities, schools, housing, and prisons.

- **Economic infrastructure:** These projects support economic growth by providing and operating infrastructure needed for a country or region to function. This kind of infrastructure often has monopolistic characteristics and/or may be subject to price regulation. Often individual users will pay directly for such infrastructure. Examples include transport facilities, utilities (water, gas, and electricity), and telecommunication networks.

Some groups of projects could be described as "commercial infrastructure." Examples are projects that meet the high-level definition of being capital-intensive and generating long-term cash flows. However, these projects are open to commercial competition or may be speculative in terms of pricing. Examples of such projects are cable networks and satellites. For the purposes of this *Report,* we consider these groups of projects to be a subset of the economic infrastructure category rather than a separate grouping.

Another way to assess the type of infrastructure is to consider the source of revenue that will pay for it. In essence, there are two sources: (1) public funding through national taxation and (2) direct user charges. The two ends of the spectrum of payment sources show how these sources might point to distinct categories of social and economic infrastructure. In between there may be various types of subsidies, such as viability gap funding (see Case in Point 3 in Chapter 3.6). The level of reliance on public-sector support or subsidy will have an impact on the government or public authority's choice of contract and financing approach.

2. Contractual approach

The type of project is only half the story; sitting alongside these different types of projects are broad categories of contractual approach. We have identified the following four approaches:

- **Partnership:** A *partnership* is a contractual approach where both the public and private parties have a shared interest in the risks and benefits of a project.

- **Concession:** A *concession* is a contractual approach where a public party, usually the state, gives a third party the right to use or develop land or property for a specific purpose and period.

- **License:** A *license* is given where a party, usually the state, gives a third party the right to own or use something.

- **Privatization:** *Privatization* refers to the transfer of assets and/or operations from the public sector to private ownership and management. In many circumstances in parallel with the privatization process, the state will put in place a regulatory framework to control things such as prices and minimum service standards.

3. Phase or stage of asset development

Two phrases that have come into common usage to discuss stages of asset development are:

- **Greenfield projects:** These are projects that involve the construction or development of new infrastructure assets.

- **Brownfield projects:** These are projects that involve the operation of an existing infrastructure asset with a recognizable revenue stream.

A more meaningful description of the stage of development of an asset could reflect the risks inherent in the proposition, for example:

- **New and innovative:** An asset or project is described as *new and innovative* infrastructure if it uses untested technology or construction/operation methods. An example of a new and innovative project is a carbon capture infrastructure project.

- **New and tested:** *New and tested* infrastructure uses tried and tested technology and construction methods in a new facility or project.

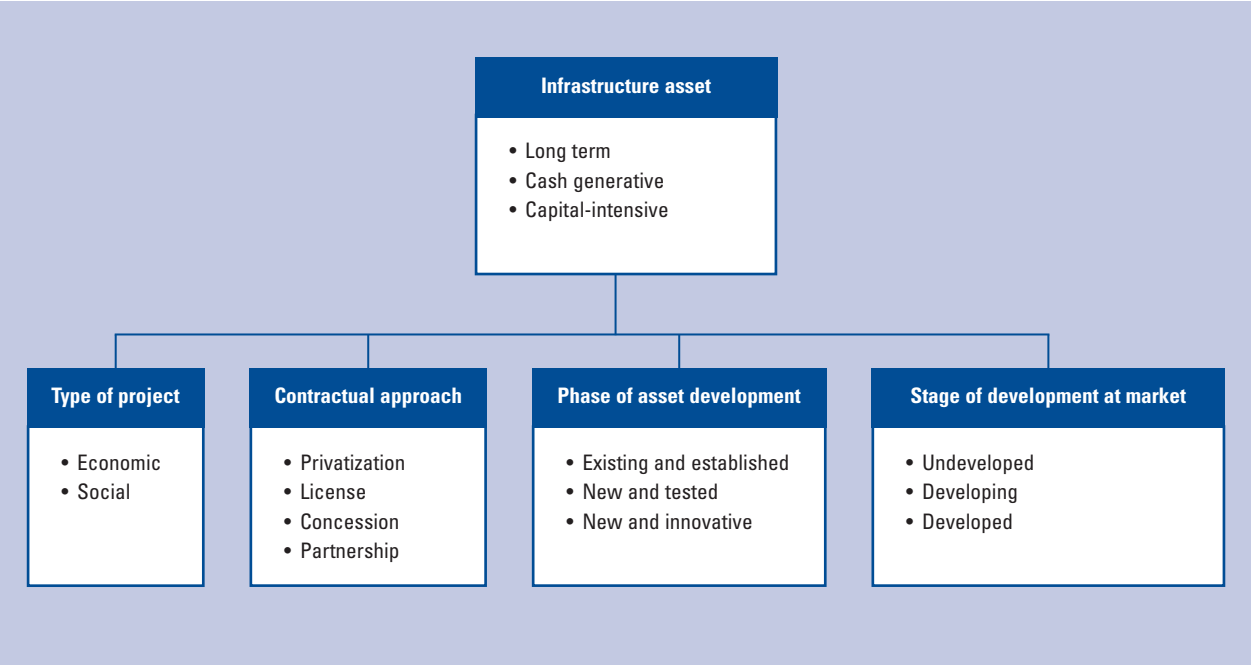
- **Existing and established:** Infrastructure where the asset already exists and there is a track record of its performance and usage is described as *existing and established.*

As with all of these definitions, there can be variations on a theme. For example, existing projects may involve a certain amount of asset renovation or extension, but the key is to identify the predominant characteristic.

4. Market stage: Developed vs. undeveloped

Private financiers are no different from other investors in that they will always consider the risk-reward trade-off of any opportunity. Part of the risk-reward equation will be how developed the market is for the transaction. This will take into account many factors, including the

Figure 1: Parameters for defining infrastructure



technology required, the revenue sources, and the approach and type of project. But the outcomes can often be very country-specific. For example, the public-private partnership approach is mature and developed in countries such as the United Kingdom and Australia. However, this approach is still in its formative stages in the United States. Figure 1 summarizes the four elements of dynamic infrastructure opportunities: type, approach, phase, and market.

Overall, the definition of an individual infrastructure opportunity needs to draw on all four components in order to give a meaningful description. For example, a partnership for a new social infrastructure project in a developed market is very different from the privatization of an established economic project in an undeveloped market. These differences will attract or deter different sources of private finance.

It is worth noting that, within these general descriptions, the market has created a whole variety of subcategories. The creation of subcategories is most prevalent when seeking to describe the contractual approaches: for example, the role of the private sector in concession-type contracts can vary significantly depending on factors such as whether the concessionaires themselves are responsible for the design, operation, or finance of the project. Appendix A.5 has a more detailed description of the variety of contractual approaches and associated acronyms.

Demand encompasses renewal of existing and development of new infrastructure

The need for infrastructure varies greatly across the world and is likely to be driven by one of the following factors:

- **renewal and upgrade** of existing infrastructure: for example, replacing old bridges, expanding sewage systems.
- **expansion** of existing infrastructure: for example, building a telecommunications network.
- **development** of new infrastructure: for example, developing a renewable energy infrastructure.

A number of socioeconomic factors also influence infrastructure needs. For example, China is forecast to be the world's largest car market by 2017, while India is expected to be the third largest by 2030. As a result, there will be increased car ownership in both countries; this will directly influence investment trends by encouraging the development and improvement of road networks.

In a recent survey, 33 percent of CEOs from around the globe indicated that they are worried that inadequate basic infrastructure—for example water, electricity, and transport—could prove a threat to GDP growth.[1] This represents an increase of 25 percent over the year before.

Table 1: Average annual world expenditure on infrastructure: Forecast and percentage of world GDP

Type of Infrastructure	2000–10 (US$ billion)	Approximate % of world GDP	2010–20 (US$ billion)	Approximate % of world GDP	2020–30 (US$ billion)	Approximate % of world GDP
Road	220	0.38	245	0.32	292	0.29
Rail	49	0.09	54	0.07	58	0.06
Telecommunications	654	1.14	646	0.85	171	0.17
Electricity	127	0.22	180	0.24	241	0.24
Water	576	1.01	772	1.01	1,037	1.03
TOTAL	**1,626**	**2.84**	**1,897**	**2.58**	**1,799**	**1.79**

Source: OECD, 2006.
Note: Telecommunications estimates apply to 2005, 2015, and 2025; *electricity* refers to transmission and distribution only; water estimates apply to 2005, 2015, and 2025 only, and only to OECD countries, Russia, China, India, and Brazil.

Before considering what sources of financing are available, what governments can afford, and what can and should be privately financed, it is useful to understand the need for infrastructure more clearly.

Estimates of infrastructure need range as high as US$3 trillion per annum

One of the challenges in trying to establish a need for infrastructure investment is that such a need can be hidden, coming to the forefront of public debate only when there is a crisis or catastrophe—such as the collapse of the bridge over the Mississippi River in 2007—that highlights the need for either the renewal of existing infrastructure or the construction of new.

It is difficult to put a precise number on the scale of investment needed in infrastructure, but a review of a range of reference points provides a sense of the scale of the challenge. Recent work by the Organisation for Economic Co-operation and Development (OECD) and the World Bank provides useful context here:

In 2006, the OECD published a report entitled *Infrastructure to 2030: Telecom, Land Transport, Water and Electricity,* which includes their forecast on average annual world expenditure on these five infrastructure sectors.[2] Overall this report estimated that the global annual investment for these sectors will average 2.5 percent of global GDP—which is currently approximately US$1.5 trillion, based on a current global GDP of US$58.1 trillion.[3] Table 1 summarizes the findings of the OECD.

The OECD's forecast of expenditures across the five sectors they reviewed is summarized in Figure 2. This shows the greatest need to be investment in water infrastructure. Investment in telecommunications infrastructure is expected to drop significantly by 2020.

These estimates do not include all types of infrastructure; the OECD estimates that including electricity generation may add a further 1 percent of global GDP to the bill. Other transport infrastructure such as ports and airports, and social infrastructure projects such as schools and hospitals, will increase this amount further.

The OECD's report highlighted the unevenness of this predicted spending between the OECD countries and the rest of the world.[4] For example, they predict that for the road and rail sector, approximately two-thirds of the expenditure will take place in OECD countries. In the energy sector, the proportion is approximately 40 percent.

In summary, the OECD analysis indicates that expenditure on telecommunications, land transport, water, and electricity (generation and transmission) will be 3.5 percent of global GDP per annum, or at least US$2 trillion per annum in 2009 prices. Including all types of infrastructure will increase this number further. Since the OECD's work for this report was completed before the global financial crisis, the extent to which the current recession will affect their forecast is uncertain.

The World Bank estimates that the core needs of developing countries amount to 7 to 9 percent of their GDP per annum, or approximately US$400 billion.[5] Historically, however, less than half of this amount has been invested in infrastructure development and maintenance, leaving a financing gap of 3.5 to 4.5 percent.

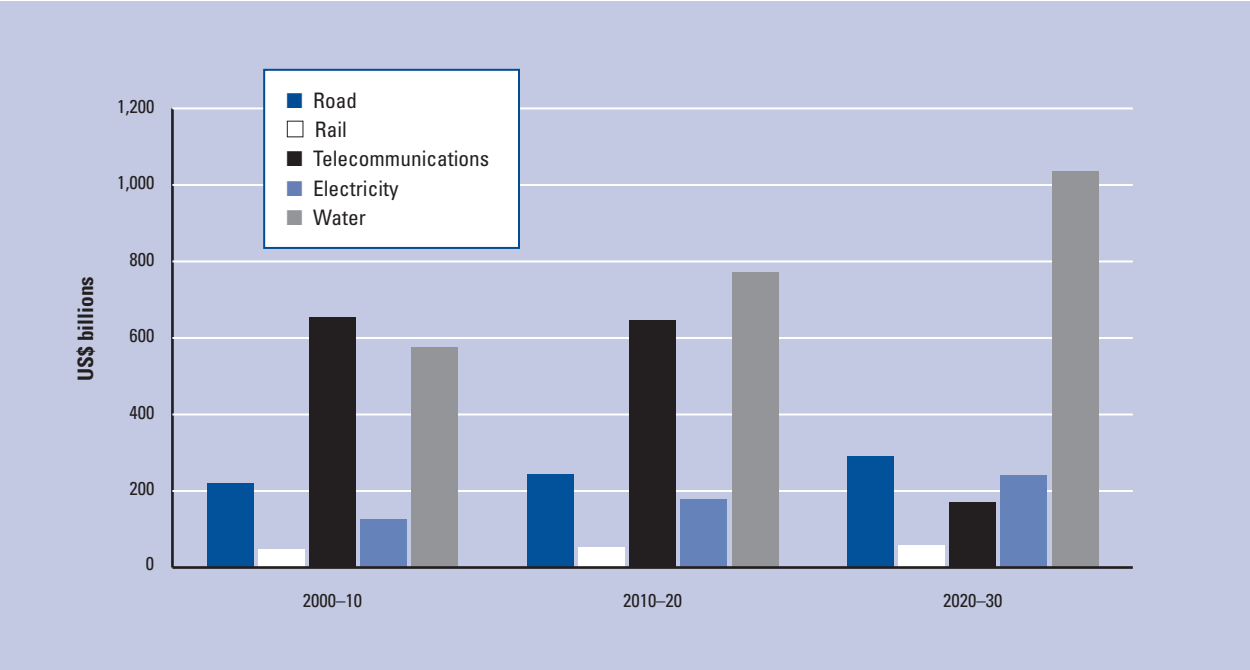
Even this estimate is partial and does not include electricity transmission, waste-water treatment, urban transport, ports, airports, and oil and gas. If these are included in the estimate, then the annual investment need could be more than US$900 billion or close to 20 percent of the GDP of developing countries.

Basing an estimate on these two reports, the investment need could be around US$3 trillion per annum globally (or close to 5 percent of current global GDP), of which approximately US$1 trillion per annum needs to be spent in developing countries.

Current spending on infrastructure is well below this US$3 trillion threshold, even when considering fiscal stimulus

Just as it is challenging to estimate the investment need globally, it is challenging to establish what is actually

Figure 2: Average annual worldwide infrastructure expenditure forecasts



Source: Based on OECD data from OECD (2006), *Infrastructure to 2030: Telecom, Land Transport, Water and Electricity*, p. 29.

being spent. Table 2 shows current infrastructure spending levels in a range of countries, primarily emerging economies, and provides a sense of how much infrastructure investment will need to increase in order to meet the notional 5 percent of GDP target.

Table 2: Current infrastructure spending levels in selected countries

Country	Amount (US$ billions)	Period	Percent GDP*
Argentina	20.7	2009–March 2010	3.7
Brazil	212.6	2007–March 2010	3.5
Indonesia	9.2	2009–March 2010	0.9
Malaysia	2.0	2009–March 2010	0.5
Mexico	200.0	2008–13	2.7
South Africa	60.0	2009–11	4.1

Source: Foreign Affairs and International Trade Canada, 2009.
Note: Information about budgetary provisions for infrastructure has been adjusted to give an annualized number.
* Annualized GDP number.

Although the headlines might lead to the conclusion that the fiscal stimulus amounts to a transformational quantity of additional expenditure, analysis undertaken by the International Monetary Fund (IMF) indicates that the additional budget funding allocated to infrastructure projects in the two-year period of 2009–10 remains a small percentage of GDP. In many countries, the fiscal stimulus provides an additional allocation for only one year. This is illustrated in Figure 3.

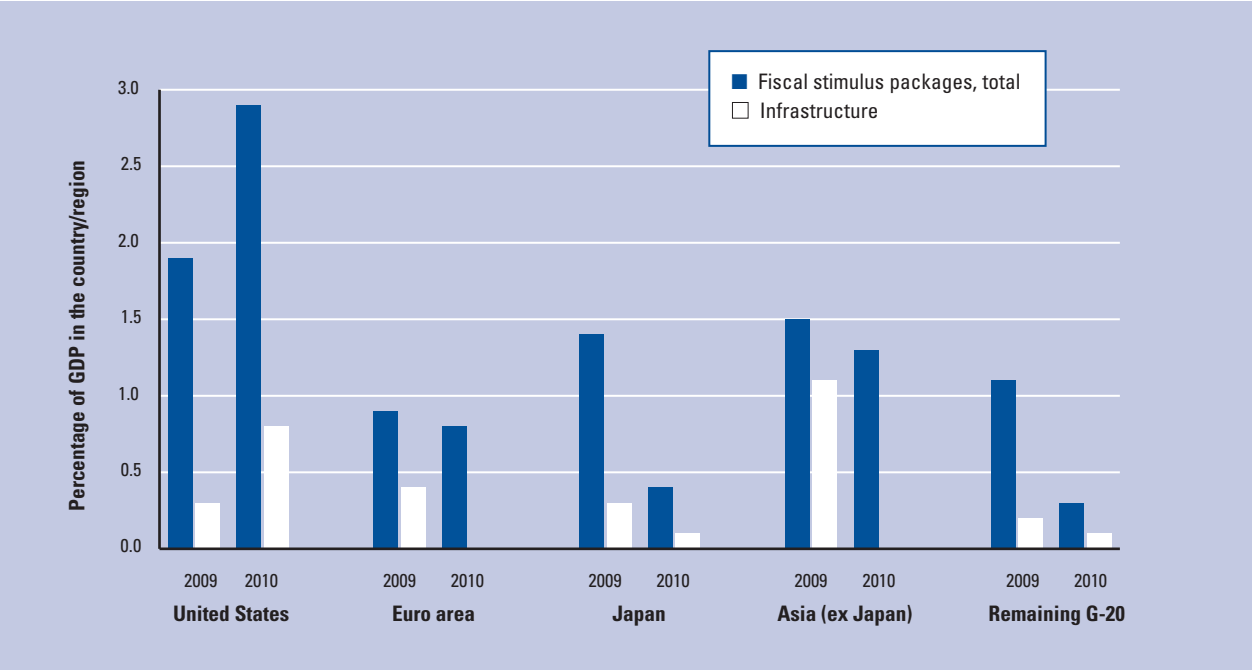
Private finance can help bridge an estimated US$2 trillion per annum financing gap

Having identified the annual investment need to be around 5 percent of global GDP, or US$3 trillion (which is significantly above historical levels of spending in many countries), the expectation is that governments will not be able to fund all infrastructure from the public purse without a fundamental shift in budget priorities and/or an increase in taxation. So there is a gap between funds available and funds needed—what we refer to as the *financing gap*. As it seems unlikely that governments are going to be able to, or indeed want to, fund their investment need in infrastructure alone, the question is: What role can private finance play?

Private finance is not new to infrastructure investment; it has a long history of contributing to help bridge this financing gap. The World Bank's Public Private Infrastructure Advisory Facility estimates that private participation in infrastructure in low- and middle-income countries has averaged 1 percent of national GDP since 2003.[7] Figure 4 illustrates trends in private infrastructure investment in developing countries from 1990 to 2008.

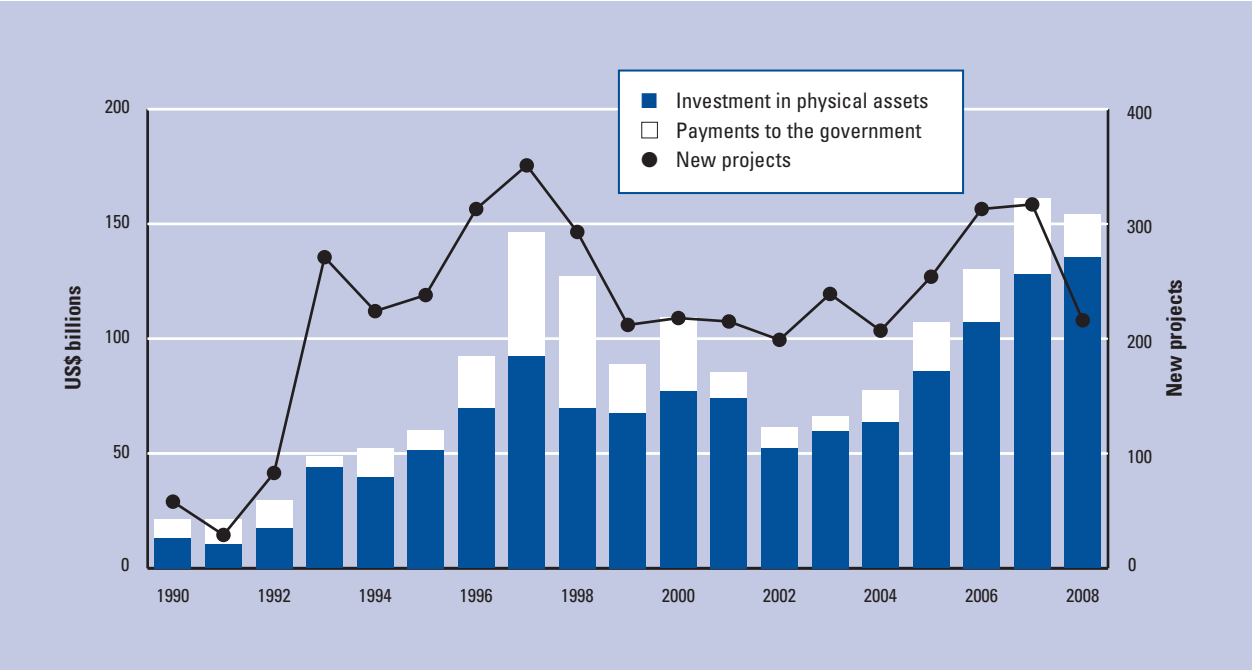
In many developed economies, private finance has been making an increasingly significant contribution to infrastructure development, in particular social infrastructure, through public-private partnership (PPP)–type transactions. For example, in the United Kingdom—which has one of the most highly developed PPP programs—the government estimates that over UK£100

Figure 3: Budget allocations for infrastructure projects, 2009–10



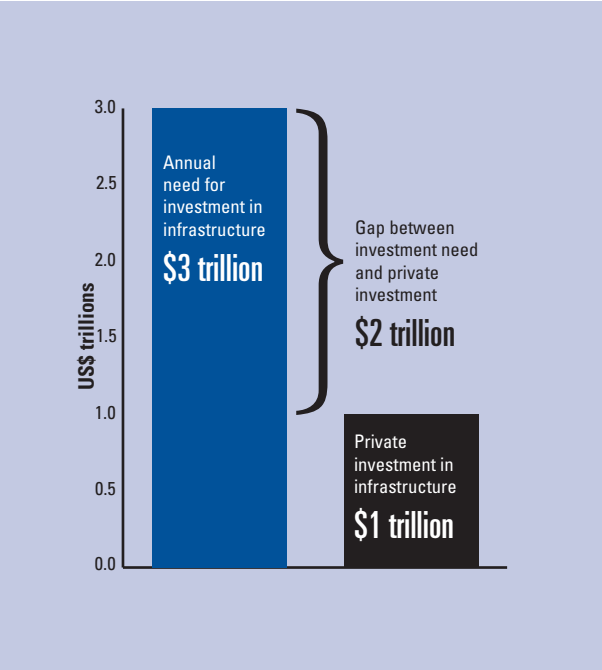
Source: IMF, 2009.

Figure 4: Investment commitments to infrastructure projects with private participation in developing countries, by investment type (1990–2008)



Source: World Bank, 2008, slide 7.

Figure 5: Gap between need and private investment in infrastructure



billion in private-sector investment has been made in infrastructure in the last 10 years.[8] To put this into context, private-sector investment in social infrastructure PPPs represents 10 to 15 percent of the United Kingdom's total investment in public services in 2005–06.[9]

Overall, an estimate made by Ernst & Young in 2007 suggested that global private investment in infrastructure was around US$1 trillion.[10]

If it is estimated that investment need is around US$3 trillion per annum globally, and private investment in infrastructure is around US$1 trillion, then the financing gap is in the region of US$2 trillion per annum if private investment remains constant. This is illustrated in Figure 5.

By providing a factual description of the private finance markets (for more information, see Appendix A), this *Report* seeks to provide some context to the debate about what the future may hold for infrastructure finance in filling this financing gap. Through a dialogue with a number of parties closely involved with infrastructure (such as procurers, enablers, and providers of private finance), we also articulate some of the challenges and opportunities to maximize the role of private finance in the future.

Notes

1 PricewaterhouseCoopers 2010.

2 OECD 2006. The OECD splits land transport into two sectors in this report, which is why we refer to "five" sectors here.

3 CIA 2010.

4 The OECD countries are Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

5 World Bank Group 2008.

6 US DOT 2010.

7 World Bank 2008.

8 HM Treasury 2009.

9 HM Treasury 2006.

10 Ernst & Young 2007.

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CHAPTER 1.2

The Approach to Private Finance for Critical Infrastructure

One of the first observations to make about the infrastructure market is that it might not necessarily be the *size* of the infrastructure that makes it significant, but rather its *criticality* for socioeconomic development or national security. The types of infrastructure that might fall into this category include flood barriers; electricity generation, including nuclear power; water supply; and mass transit. The impact of such asset failure can mean different things in different countries or regions and will depend on the reliance of users on the infrastructure and the availability of alternatives. For example, in some countries the failure of water pumping stations might completely eliminate access to any clean water for a considerable time; in other countries, such a failure might result in a short-term reliance on bottled water. Therefore, essential infrastructure consists of those assets that are either monopolistic or safety critical—assets that are *too important to fail*. This feature of infrastructure impacts the choice and structure of financing.

Failure can manifest itself as an erosion of service or a complete shutdown

Is it actually relevant to think about infrastructure "failing"? In many instances—such as the blackout that occurred in much of Northeastern United States in 2003—the infrastructure still exists, but it is not working in a reliable or sustainable way, or is poorly maintained. However, there are two circumstances in which infrastructure might be described as having "failed"—when there has been a gradual erosion of service or state of repair, and when there has been a sudden and complete failure that may or may not have resulted in a complete loss. This distinction is important because, in the former instance, the infrastructure remains in existence and the concern is potentially more about its ownership and associated financing. In the latter circumstance, when there has been a sudden and complete failure, the concern might be more about the ability to react to failure and, if there has been a total loss, the obligations and financing of replacement infrastructure. These are considerations regardless of whether the infrastructure is publicly or privately financed.

For critical infrastructure, the robustness and sustainability of financing and the strength of the regulatory and bankruptcy regimes are important

Besides the potential social and economic impact of infrastructure that fails or collapses, governments have to factor in several considerations when deciding how to finance an asset. Whether the infrastructure is to be publicly or privately financed, four main factors are:

- the robustness of the financing structure,
- the sustainability of the financing,

Table 1: Factors determining the viability of a financing decision

Issue	Concern	Impact
All or a proportion of refinancing amount is not available	• Capacity issues with market • Concern from lenders with resulting leverage of the borrower • Concern from lenders about the covenant of the borrower	• If the existing facilities default without a refinancing, then the shareholders may need to invest more equity to make up the shortfall or consider selling the opportunity or transferring ownership back to the public sector.
Cost of financing available is higher than anticipated	• General market increase in financing costs • Concern with borrower's performance track record • Concern with the covenant of the borrower	• Shareholders may need to accept a reduction in their dividends. • The business may no longer be economically viable and the shareholders may consider selling the opportunity or transferring ownership back to the public sector.
Conditions of financing available are more onerous than anticipated	• General tightening of terms • Concerns with borrower's track record and/or covenant	• Shareholders will need to consider the impact of the conditions on the operation of the infrastructure and their interest in the company.

- the regulatory regime of the industry, and
- the bankruptcy regime—what happens when either the owner or the asset goes bankrupt.

1. Robustness of the financing structure

As for any business, it is necessary to model "worst case" scenarios—including reduced revenue or increased operational costs—to determine how well the business can withstand adversity before service delivery is affected. The point at which investor returns begin to be materially eroded and there are shortfalls of cash to make debt payments needs to be clearly understood as well. Whether costs (such as debt costs) are largely fixed or can be varied to match or reflect demand will have a considerable impact on the viability of a project.

The use of leverage must be appropriate to the level of risk that sits with the owners/operators. For example, the use of a highly leveraged structure for a new toll road is probably unsuitable given uncertainty around the level of traffic. A toll road operator with very high debt repayments and traffic that falls below expectations will soon be insolvent.

There is a tradeoff between the robustness of the financing and the level of fees or charges for the infrastructure. This tradeoff is particularly pertinent for public authorities letting concession-type contracts and will influence whether the contract is awarded on the lowest overall cost only or looks at the robustness of the financing supporting it.

2. Sustainability of the financing

Because of the long-term nature of infrastructure, the sustainability of financing over the long term must also be considered. This does not necessarily mean that the only possible approach is to have finance in place for the full term of the asset or contract—such an approach may be practically impossible or not the most appropriate or efficient. Rather what is needed is a determination of the threats to and consequences of changes to the financing during the asset or contract life.

For example, are there known refinancing events, and if so, where do the risks of failing to complete such a financing lie? Table 1 presents a summary of issues that might be relevant here.

Governments must look at the robustness of the refinanced structure or whether the refinance has been an opportunity to extract material profits. They should also determine if they have an obligation to maintain financing, and in the event of failure, if the government will become the lender of last resort.

3. Regulatory regime

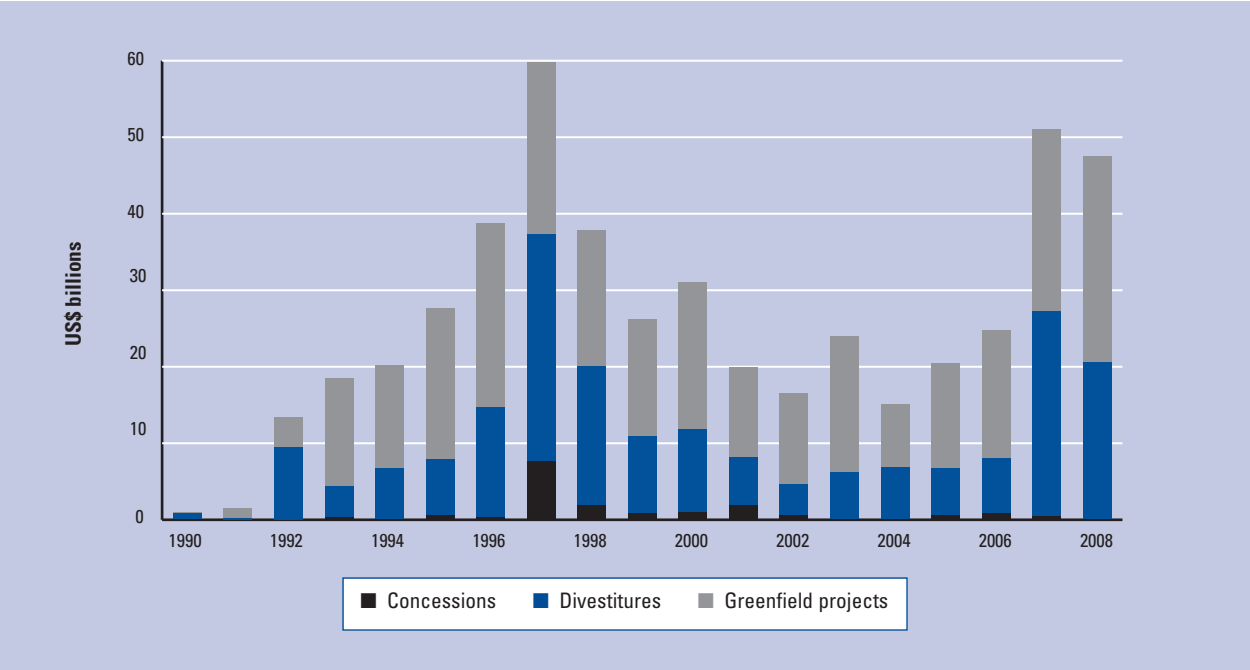
The regulatory regime might be either the framework governing a sector, such as airports, or the requirements set out in an individual contract. Whatever the regime, a balance must be struck between promoting private finance and ensuring the operational security or safety required.

4. Bankruptcy regime and ultimate ownership

In the context of the bankruptcy regime, *ultimate ownership* is about what happens on failure of a privately owned/operated asset. For example, is the government's preference to find a new private-sector owner/operator through a trade sale, or is the desire to have contractual provisions that take it back into public-sector ownership?

One important factor connected with ultimate ownership is that of "step-in rights." In many circumstances, the debt providers will want to retain a right, but not an obligation, to attempt to restore or work out

Figure 2: Investment commitments to energy projects with private participation in developing countries, by type of public and private involvement (1990–2008)



Source: World Bank and PPIAF, 2008, slide 16.

a failed project by stepping into the rights and responsibilities of the private-sector entity. This can happen only in limited circumstances, such as the bankruptcy of the private-sector entity; when step-in rights are invoked, the equity investors and shareholders are no longer party to the transaction.

Public-sector parties concerned about continuity of service delivery may want to have the ability to maintain the contracts and arrangements the private-sector party has established with some project parties should the private-sector entity fail for some reason.

There is currently little consistency in the financing of critical infrastructure

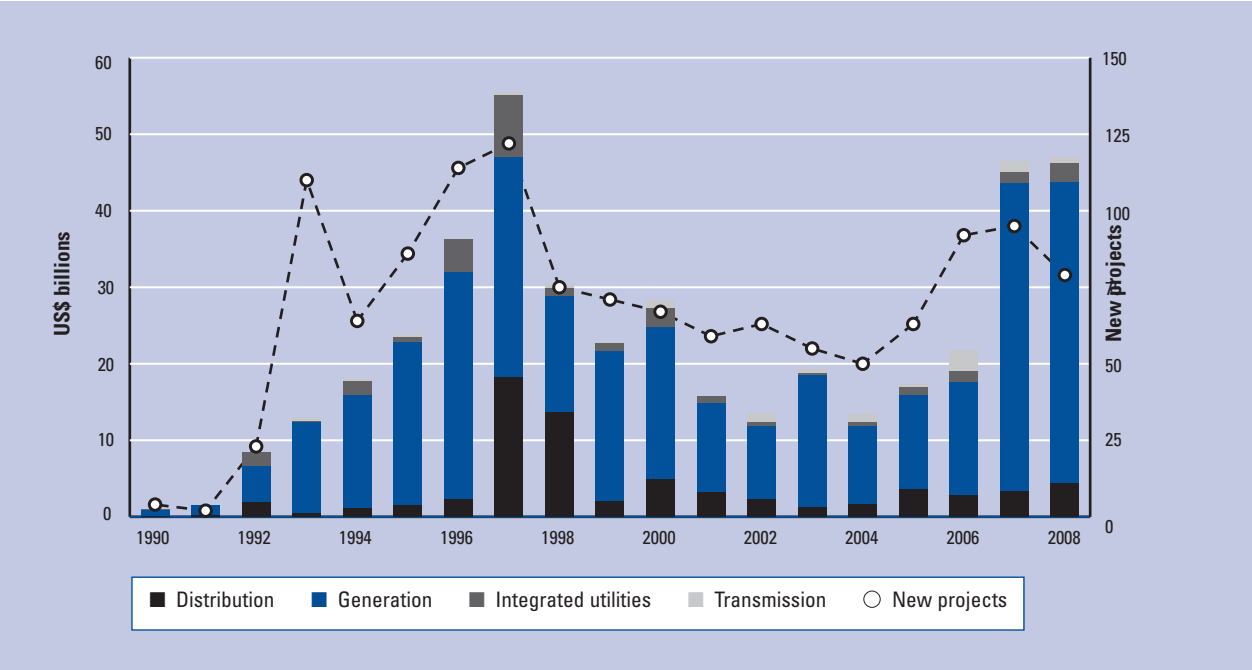
Around the world are examples of infrastructure that can be deemed too important to fail; it is tempting to look for lessons to be learned from the finance approaches taken to fund these projects. Sadly, there is little consistency of approach. For example, each of the four countries of the United Kingdom has a different approach to the water sector.

Much of the electricity generation across the globe is developed, financed, and operated by private parties whether through privatization or concession-type arrangements, as illustrated by Figures 2 and 3. Approaches to the infrastructure required for generating electricity range from the generation being part of an integrated energy company that interfaces directly with retail and corporate consumers to single merchant power companies that sell electricity to the grid operator.

Much of mass transit is publicly owned. For example, Delhi Metro is a joint venture between the Government of India and the Government of National Capital Territory of Delhi. Other mass transit ventures are privately owned, such as Singapore's multimodel transport provider (SMRT), which is listed on the Singapore Stock Exchange with Temasek (the Singapore government's sovereign wealth fund) owning 54 percent of the company. Some mass transit endeavors are public-private partnerships, albeit with very mixed success. For example, London Underground's infrastructure network was operated under a public-private partnership contract but is now back in public ownership.

Airports exhibit a whole range of approaches from publicly owned and operated to fully privatized. Delhi Airport provides a good example of a partnership approach between the government and the private sector (see Case Study 1: Delhi International Airport Limited).

Figure 3: Investment commitments to electricity projects with private participation in developing countries, by segment (1990–2008)



Source: World Bank and PPIAF, 2008, slide 26.

"The private sector can successfully partner with the public sector to develop infrastructure projects."

— Robert Dove, Managing Director, Infrastructure, The Carlyle Group

Private finance is a viable option for critical infrastructure as long as the implications of failure are considered

Failure can mean different things. It is rarely about the catastrophic collapse of the infrastructure but more about commercial failure, poor service, and unreliability. There are a number of factors that affect the financing choice and contractual obligations for such infrastructure, especially if it is to be privately financed. But the range of approaches taken across the world would indicate that infrastructure seen as too important to fail does not preclude the use of private finance. There are many examples where the private financing of critical infrastructure is very successful.

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CHAPTER 1.3

Accomodating the Long-Term Nature of Infrastructure

More than 20 percent of London's main water pipes are over 150 years old; the median age of coal power stations in the United States is over 40 years; and some of the major metro systems, such as Moscow's, are more than 70 years old. If the infrastructure asset will last for many years, what impact does this have on the use of private finance to fund it, in whole or in part?

There are many often interlinking factors that feed in to the final decision on the choice of financing. We will focus on two key ones, namely:

- certainty vs. flexibility of asset functionality, and
- the ability to forecast costs and revenue over the long term.

As these issues are most pertinent in concession-based contracts, we will also touch on the question of how long the concession should be in effect.

There is a tradeoff between the need for contract certainty and the future flexibility of asset functionality

The tradeoff between contract certainty and flexibility means that very early in the planning stage public authorities need to decide whether to retain risks resulting from future changes to the situation or to attempt to pass some or all of that risk to a private party. Indeed, they must consider whether or not the public party is even willing to accept the risk and, if they are willing, to accept its potential cost. For instance, hospitals might be completely privately operated and funded with the private sector taking on all the risk of the appropriateness of the facilities and usage, in the same way that any private company takes on the risk of any venture. At the other end of the spectrum, the public sector may want to retain long-term ownership and usage, and instead let to a concession that defines the current functionality needed. In this circumstance, the public authority retains the risk and cost of future change, although it may seek to put in place methods needed to make changes—either minor or major—as they wish.

As a rule of thumb, the greater the risk and cost of change that is passed to the private sector, the more conservative the funding structures (term, leverage, pricing, etc.) from the banks will be. Equity investors will seek higher returns for the additional risk they consider they are taking on.

Forecasting costs and revenue over the long term is difficult, but vital for the success of the project

Many businesses struggle to forecast revenue and costs over the short term, yet, for many infrastructure transactions, there is a need to forecast these over the long term, sometimes for more than 50 years. How is this possible and what are the consequences of getting it wrong?

A key to the reliability of long-term forecasting is the extent to which there is an ability to fix both revenue and costs, including finance costs, over the long term. For example, many concession-type contracts will fix the payments to the concessionaires if they achieve the required functionality and/or operational performance, or if revenue from some economic infrastructure can be fixed over the long-term. The concessionaire may be able to negotiate long-term subcontracts—for example, for asset operation and maintenance over the concession period.

Basing contracts on fixed costs (especially operational costs with a high fixed element) can attract a premium because the operator is being asked to forecast his performance and costs over the long term but has no one to pass those costs on to in the event those costs differ from the original forecast. There are ways around this, however; the most common is to build in periodic reviews of costs and adjust the revenue to reflect any changes revealed in these reviews. The real risk with this approach, and one that is often overlooked, is that the long-term counterparty will survive the test of time. This should be a concern whether it is the public sector, subcontractors, or even the financial hedge provider making the payments.

In 2008 significant parts of the world's financial system come close to collapse, and it is not unheard of for public-sector parties to default on payments. For example, in 2001 the government of the State of Maharashtra, India, had to bail out its subsidiary, the Maharashtra State Electricity Board (MSEB), when MSEB failed to make payments to the Dabhol Power Company under a power purchase agreement. It is worth noting, however, that this non-payment was only part of a complex set of issues with the Dabhol power project.[1]

The difficulties that often attract the most controversy are transactions with demand risk; one example is toll roads that rely on long-term forecasting of both traffic and toll levels. The only thing that is certain is that these forecasts will be wrong. In bull markets, there is a danger that bidding can be biased by optimism, typically by overestimating traffic forecasts and the way those will grow over the concession period. It is common for traffic growth to be linked to GDP growth and for forecasts to assume year-on-year constant growth, but there is growing evidence, particularly in developed economies, that the linkage between traffic growth and GDP is being lost as people change their travel habits. It is necessary to be realistic about the level of tolls that users will be willing to pay and the alternative routes they may have. For example, when the Cross City Tunnel project in Sydney, Australia, was being bid, the capital costs increased significantly. Consequently, the forecast toll level was increased to reflect this. Very soon after the contract was awarded, it became clear that the tolls were too high and that, as a result, drivers were not using the tunnel. As a result, within months of opening, the project company was insolvent (see Case Study 2: The Cross City Tunnel).

The manner in which the bidding process is structured and the criteria by which the contract is awarded can also encourage over-optimism; for example, if the decision to award the contract rests on the size of the upfront payment to the public authority, unrealistic assumptions about the size of that upfront payment can result. The flip side of over-optimism is overly conservative forecasts that are exceeded significantly by the operator, resulting in materially greater returns than expected. In some circumstances, such overshooting the expected goal can be an issue for the public sector (see also the discussion in Chapter 1.5 about public perception).

It is important to look beyond the life of the asset in determining the length of a concession

Because many of the factors that influence the final decision on the choice of financing are most pertinent in concession-based contracts, a crucial question is "How long should the concession be?" Concession terms vary widely across the globe and across sectors; some terms are for less than 10 years, while others can run for up to 99 years.

There are three factors that should be considered in setting the concession term:

- Is the opportunity monopolistic or competitive in nature?
- Is there debt to be repaid during the concession period?
- Is the level of investor return an issue?

Monopolistic or competitive infrastructure

Many governments will want to retain some degree of control over monopolistic infrastructure (for many of the reasons highlighted in Chapter 1.2). They will need to consider carefully the balance between the length of the concession and the industry's regulatory regime to ensure that users are not faced with unsustainable price increases and/or deteriorating service. It might be preferable to let a series of shorter-term concessions rather than a series of long-term concessions, as happened with the United Kingdom's rail franchise. One of the major drawbacks of short concessions, however, is that they can limit the appetite and ability of the concessionaire to make significant capital investment for many of the reasons outlined below.

Repayment of debt

If the concession requires significant upfront capital investment funded by wholesale debt, then the concession length will need to strike a balance between the

Case in Point 1: Mexican toll roads program

Success is not about signing the contract and arranging the finance but is about taking a robust and sustainable approach.

Overview

In the period 1989–94, the Mexican government let a series of 53 concessions for toll roads. The program more than doubled the size of the national toll road network and represented a combined total investment of US$13 billion in 1994 dollars. But the viability of the toll roads was greatly undermined as a result of miscalculations of investment costs as well as over-optimistic forecasts of operating revenues. This situation was worsened by the 1994 Mexican currency crisis, which essentially stalled the toll road program: commercial banks were left with non-performing loans estimated at US$4.5 to US$5.5 billion, concessionaires were forced to write off large portions of their investments, and toll road users were burdened with very high tolls. By 1997, the government cancelled 23 of the 53 concessions, recovering the right to operate, maintain, and exploit these roads while absorbing US$7.3 billion in bank loans and short-term borrowings.

Building upon these lessons, the Mexican government launched three new programs in 2003 that have resulted in an increase in private investment in road projects.

The table below provides a high-level summary of some of the issues encountered in the earlier program and how they have been addressed in the current program.

1989–94 program approach

Concession length	The government awarded short-term 15-year concessions; this initially drove up tolls, leading to adverse user behavior as drivers simply avoided the toll roads. Subsequently these concessions were extended to 30 years.
Design and construction costs	Among the main factors that affected the viability of the program were the frequent cost overruns and construction delays. Information deficiencies, problems with securing rights of way, unanticipated design changes, and local community resistance, among others, resulted in an increase in the average cost per kilometer of new highway from US$1.7 million (the original estimate) to US$2.6–2.8 million.
Usage and revenue forecasting	Traffic shortfalls and higher-than-expected operations and maintenance expenditures caused the actual project revenues to be, on average, 30 percent below the original estimates. There were also free competing roads, which affected traffic usage.
Financial structure	The financial structure of the projects contributed to their downfall. High debt-to-value ratios in combination with short-term commercial bank loans characterized by high floating interest rates further hampered the profitability of the projects.

2003 program revised approach

The New High Concession model	In this model, the Ministry of Communications and Transport provides final designs, sets the maximum tenor of the concession to 30 years, sets the tolls, and assigns the concession to the bidder that asks less government contribution or pays more for the concession.
The Service Contract model (PPS)	The Ministry of Communications and Transport assigns a service contract and a concession to a private-sector firm to design, finance, build, operate, and maintain a highway for a period ranging from 15 to 30 years. The private firm provides services in exchange for periodic payments based on road availability and traffic levels (shadow toll).
The Asset Utilization model:	The Ministry prepares concessions of highways with more than 10 years of continuous operation. The concessionaires are responsible for operating, maintaining, and collecting toll revenues on the existing toll roads as well as building and later operating the new highways as outlined in the concession. Many of the opportunities promoted under this approach are those from the earlier program that are now under government control.

period over which debt is available, the period over which it is amortized, and the level of fee or user charge.

Of particular concern is the presence of significant debt to be repaid when the concession period is short. In that case, the annual finance costs may create prohibitively high user charges. For example, the annual debt cost of repaying US$100 at a 6 percent interest rate over 15 years is approximately 25 percent higher than the annual repayment amount over 25 years.[2]

Mexico's 1990s toll road program, in which concessions were awarded to the bidder proposing the shortest concession period highlights this problem. The short concessions led to very high tolls, resulting in traffic well below forecast. Ultimately, the majority of the concessions reverted to public ownership (see Case in Point 1: Mexican toll roads program, which provides more detailed commentary, including the lessons learned that were reflected in the more recent 2003 program).

Case in Point 2: Chilean private-public partnership roads program

The Chilean public-private partnership (PPP) roads program was established in order to modernize the country's road infrastructure to meet the needs of a growing economy. The program invited the participation of the private sector in the construction, maintenance, operation, and financing of these roads. There were three main aims:

1. to use private-sector expertise to develop and finance public works,
2. to externalize the construction and operation of the facilities, improving the level of service and security, and
3. to free public resources to focus on projects and programs with higher social priorities.

Between the early 1990s and early 2000s, Chile awarded, on a competitive basis, 21 real toll road concessions worth an estimated US$5 billion. Bidding started with smaller projects in order to test the market and reduce risk to the private sector. The bidding attracted 27 consortia from more than 40 Chilean and foreign companies from 10 countries, with financing arranged through both the domestic and international bank and bond markets and supported by exchange rate reserves.

Prior to launching the program, the government established a dedicated agency to manage the procurement. They also enacted specific and detailed legislation relating to concessions and put in place a transparent procurement process.

By starting with a number of pilot projects, the government was able to refine both its bidding process—in particular, its bid evaluation criteria—and key contract terms. Some of the most notable changes to the contract terms tried to address some of the issues relating to predictable and realistic forecasting of traffic. Different approaches included the government putting a cap and floor on the level of toll that could be bid; a variable concession term that adjusts to ensure investors the return they bid; and the government providing minimum revenue guarantees. Overall, the government wanted to award concessions that could deliver long-term financial stability and balance the toll level against the traffic volumes.

The PPP program was transparent and competitive, and is generally considered a success story.

Level of investor return

A concession period that is long enough for investors to achieve their bid return must, at the same time, not be so long the investors can make windfall gains. This can expose the public authority to the criticism that they "gave away the concession too cheaply."

One of the challenges to achieving a target or "acceptable" investor return is that if the forecasts are based on a number of variables, including the level of user demand or financing costs—then it is difficult to know the long-term outcome. This might lead to a shorter concession period over which forecasting might be more certain. A longer concession can mean a significant risk transfer over a long period of time—for example, if there is demand risk for more than 50 years. Here it could be argued that if the private party actually makes higher profits than forecast, that is still acceptable because they were also willing to accept the risk of no profit at all, or possibly even capital loss.

There are a number of contractual ways around this conundrum. For example, the Chilean roads concession has demand risk, but the period of the concession can be flexed so it terminates once the investors have reached their target return (see Case in Point 2: Chilean private-public partnership roads program). To take another example, the United Kingdom's Dartford River Crossing reverted to government ownership once the capital cost was repaid and investors reached their target return.

Very long term concessions also introduce the issue of how the market values very long-term returns. When thinking about how NPV is calculated (see Appendix A.2), it may be appropriate to consider the timing of different investment cash flows and to adjust the discount rate to reflect the changing risk profile over the current, medium, and long term. The greater difficulty in forecasting revenue/costs should also be considered in this calculation.

> "If governments lead and set understandable frameworks, others will follow."
>
> — Michael Till, Partner and Co-Head, Infrastructure, Actis

The long life of infrastructure assets means certain trade-offs must be explicitly addressed accross commercial, contractual, and financing arrangements

Private finance can be successfully used for long-term arrangements, but before doing so the procuring authority needs to think carefully about how the infrastructure may need to respond to changing conditions.

These considerations are likely to involve some tradeoffs, such as the level of risk transfer vs. the level of profit, the certainty of a fixed return vs. the need for flexibility to accommodate changed circumstances. Concession length must also be considered.

There is no single correct response to all financing requirements, and what is appropriate in one situation might be unacceptable in another. However, none of the related issues are new and there are examples of experience across the globe that can help understand the consequences of certain choices.

Notes

1 Hansen et al. 2005.

2 This analysis is based on a simple calculation that ignores additional debt costs and assumes a straight line repayment.

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CHAPTER 1.4

Navigating the Political, Legal, and Economic Environment

Uncertainties are events that are indefinite, while risks apply to events that have a measurable probability. Uncertainties are often the result of the aims and actions of third parties, rather than directly related to the infrastructure being considered. (Please see Appendix A.6 for further discussion of these aspects of risk.) Many of these uncertain events are linked to the political, legal, or economic environment, and they are highly relevant to private finance of infrastructure. Some of the issues to consider include:

- Is the bidding process in this country transparent and fair?
- Does the public authority have the power to enter into the contract?
- Can the public-sector party be brought to court if they fail to fulfill their contractual obligations?
- Will courts in this country uphold decisions?
- Can the lending be done in the local currency?
- Is the opportunity open to foreign investors?

These are questions that apply to developing, emerging and developed economies. For example, it is crucial to know when regulatory approaches may be outdated or flawed, or whether the political support for the transaction is uncertain. The Texas roads program, which has been hindered by political indecision, is one such case (see Case in Point 1: Texas P3 roads program).

Political support and transparency during the procurement and bidding process is a key factor that attracts private finance

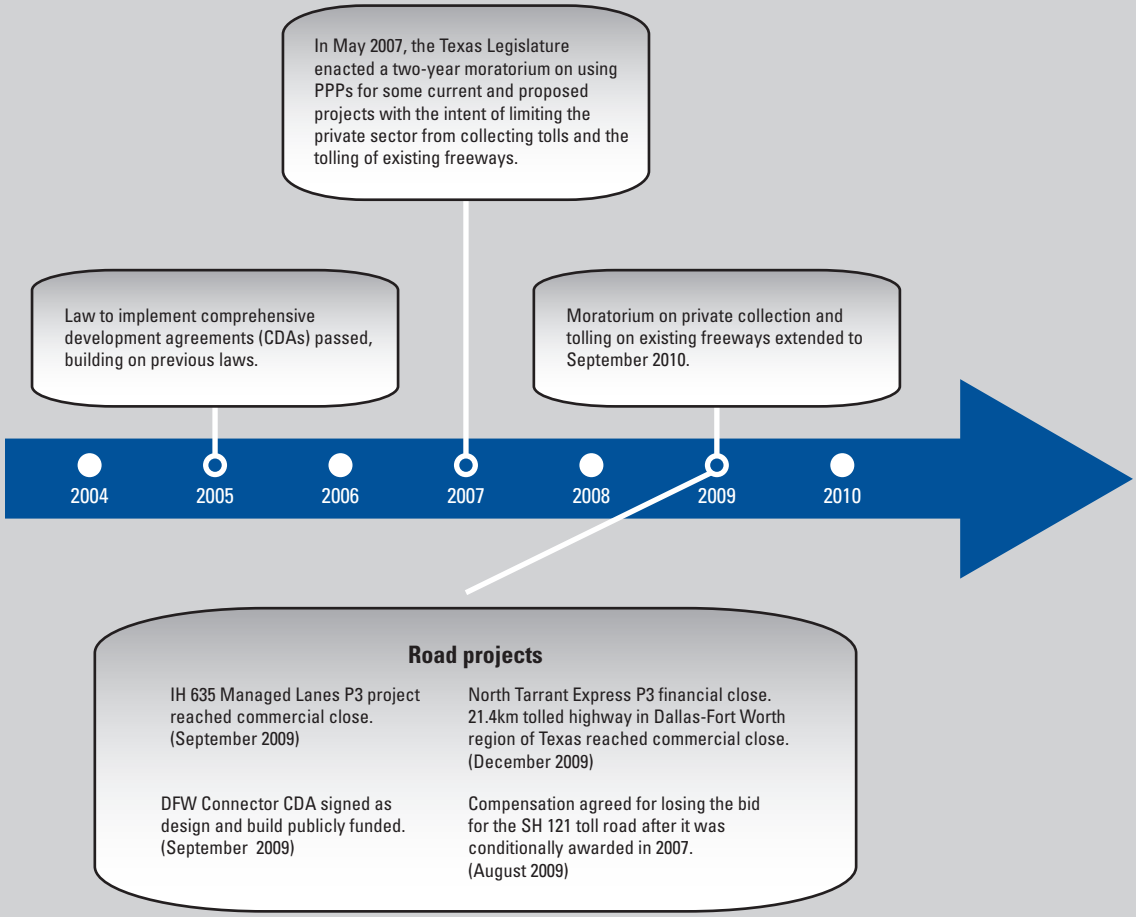
Strong political support is one of the characteristics of procurements that have attracted a wide range of bidders, including leading and experienced players.

In the United Kingdom, the public-private partnership (PPP) concept was launched in the early 1990s with that government's Private Finance Initiative (PFI), but the program initially had limited impact. It was not until 1995–96 that momentum started to build and contracts began to be signed. There was a widely held belief that there would be a change of government in 1997 and that the incoming government would not support the program. However, instead of abandoning the program, the incoming government commissioned a review on how to re-invigorate it. The review recommendations included:

- Government departments should set out clear lists of their projects and establish the priority of those projects. The private sector was able to see a clear

Case in Point 1: Texas P3 roads program

In Texas laws were passed in 2005 to allow public-private partnership (P3) type projects with an expectation that this could be applied to a number of roads projects. But within two years there was a moratorium enacted, which prevented private companies from collecting tolls and the tolling of existing roads. While a small number of projects have proceeded, the scale of the P3 program originally planned has not been achieved.



pipeline of prioritized opportunities, which catalyzed private investment.

- Any impediments to the progress of projects, particularly legal ones, should be expeditiously resolved.

- Financially and commercially experienced people were needed to support the public authority project teams. An existing taskforce was re-focused to help build up PFI expertise and to start the process of coordinating the initiative across government departments and standardizing the procurement process. Two years later, Partnerships UK (PUK)—itself a PPP—was formed. PUK's aim was to provide the public sector with the same level of financial and commercial expertise enjoyed by the private sector.

Chapter 2.1, which picks up many of PUK's detailed recommendations, focuses on the benefits of having a program of prioritized opportunities in place. What is relevant here is that the review was a clear statement of the new government's support for the program and a catalyst for renewed investor and lender interest. This led to the signing of more than 600 projects, by September 2009, with a combined capital value of more than £55 billion.[1]

There are many examples of strong political support acting as a catalyst. For example, India currently has the largest program of PPPs in the world, with its five-year plan (2007–12) estimating an investment need of US$492 billion for roads, railways, ports, and power and water facilities.[2] The World Bank is supporting India's program with US$1.2 billion of financing.[3] Other examples abound: since the 1980s, Malaysia has completed a number of PPP-based road concessions,[4] as did the Chilean government in the 1990s and Singapore in 2004.[5]

Another factor that attracts private finance is a public, comprehensible and transparent procurement process to determine which contracts will be awarded. If the process is perceived as corrupt or designed to give an advantage to a particular bidder, it will deter others and ultimately undermine the legitimacy of the process. The process itself needs to be conducted in a timely and efficient manner, and bidders will expect the public authorities to have the ability and capacity to do this. One significant challenge of India's current road-building program (which aims to build 7,000 kilometers a year over the next five years) is for the public authorities to have the capacity to handle such a large number of parallel procurements.

In some countries, not all new infrastructure projects involving the private sector are subject to a competitive process and unsolicited bids are accepted. A brief summary of some of the advantages and disadvantages of an unsolicited bid approach is provided in Table 1.

Table 1: Advantages and disadvantages of the unsolicited bid approach

Advantages	Disadvantages
An unsolicited bid may offer solutions not otherwise available—for example, it may access an alternative land bank.	The approach may be limited in application. For example, because of the extensive land required for new roads, it may not be feasible for them to come to market as unsolicited bids.
The procurement process is potentially quicker and cheaper.	The best test for whether a proposal will give value for money is for there to be a comparable competing bid. However, by its nature, an unsolicited bid will not have the benefit of competitive bidding.
An unsolicited bid may be a route for furthering local projects that are not national priorities.	An unsolicited bid can potentially undermine the creation of coordinated, prioritized programs.
	An unsolicited bid provides no assurance that projects will actually proceed—for example, the unsolicited bidder can withdraw their offer.

Consideration needs to be given to the availability of local banking and environment for foreign investment

Other important considerations in many markets, particularly in emerging economies, is what currency to invest or lend in and the depth of the local banking and foreign exchange markets. For example, if the revenues and costs are in the local currency but financing can be arranged only in a foreign currency, then one party needs to take the exchange rate risk. If the country lacks a developed foreign currency market, then this risk would most likely be taken by the public authority. Yet wider fiscal policy and regulation on the part of the government may seek to avoid such risks.

To overcome this vicious circle and its impediment to private finance, the PPP toll road transaction in Nigeria that was funded through the local banking markets with the support of the African Development Bank is an instance of such an approach (see Case Study 3: Lekki Toll Road Concession).

The involvement of private finance in infrastructure can often require a review of general local and national laws to ensure that they cater to private-sector involvement, such as the right to private land ownership. Governments need to be clear about whether they want to attract foreign private finance and, if they do, whether they are prepared to make the necessary changes to facilitate this. Frequent areas of concern are tax regulations and repatriation of profit.

Private financiers view the political, legal, and economic environment as integral to long-term contract management

Project success should not be measured by a successful initial finance raising or contract signature but, given the long-term nature of the investment (Chapter 1.3), needs to reflect the long-term contract management as well. Some of the questions asked by potential investors will be about how the public authority will act in the future—for example, whether the public party will honor its contract obligations and what happens when things go wrong. A common stipulation in toll road projects is that no competing roads be built for the contract term or within a defined period, for instance. Breaking this obligation, as happened with the Don Muang Tollway in Bangkok,[6] can undermine not only the commercial viability of the project but the participation of the private finance community as a whole. A broken or unmet obligation may mean that private financiers may lose interest and confidence in a given market.

The concern for private financiers is not so much that things might go wrong with the project but rather that, if they do go wrong, there is a robust and independent judiciary to bring about a fair resolution. A very good example of this is the Highway 407 ETR real toll road project in Canada (see Case Study 4: Ontario Highway 407 toll road), which led to a major dispute between the public and private parties on the interpretation of part of the contract. Despite the importance of the dispute, it has followed the legal process and has undoubtedly given confidence to future investors in the country.

Uncertainty can also come through the application of broader regulatory regimes, especially when they provide for periodic price reviews. For example, in 2009 the United Kingdom's water industries' five-year price review process was highlighted in the press for setting the targeted return for investors too low and potentially driving investors from the sector.

Seeking private-sector participation is not a substitute for developing a country's institutions. Although some lenders or investors might be prepared to take some risks for grossly inflated returns, this attitude will probably represent poor value for money and gives no platform on which to build a successful program of investment. It might work for one project but is not a sustainable approach.

Notes

1 HMT Treasury website: PFI Signed Projects List September 2009

2 World Bank 2009.

3 World Bank 2009.

4 Ward and Sussman 2006.

5 Ministry of Finance, Singapore, 2004.

6 Cuttaree 2008.

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CHAPTER 1.5

Understanding and Managing Public Perceptions

Much of this *Report* has focused on the role of private finance in developing infrastructure, but—as end users of infrastructure projects—the public is a critical part of the success of any infrastructure-related enterprise. For certain types of infrastructure the public is already accustomed to the notion that the provision and operation of infrastructure is in the hands of the private sector and is happy to have a direct relationship with that operator. Such is the case with mobile phone networks, where there is virtually no resistance to the involvement of private finance. In other cases, however, concern can be pronounced, especially in the social infrastructure sector with projects such as roads, bridges, schools, and railways. This chapter explores the impact of public sentiment on the success of private finance and considers how best to garner public support.

There are five key factors that can influence public sentiment:

1. who finances the infrastructure,
2. the cost,
3. the level of profit expected and who profits,
4. who delivers the project, and
5. the established approach for the sector.

Whether infrastructure is paid for through general taxation or directly by the user can greatly influence support

When individuals pay directly for infrastructure, there is a greater chance of resistance, especially if the quality of the operations does not seem commensurate with the cost involved. If the project is paid for through taxation, the link between the form of payment and the specific infrastructure is less direct and therefore less likely to be seen by the public as something to reject.

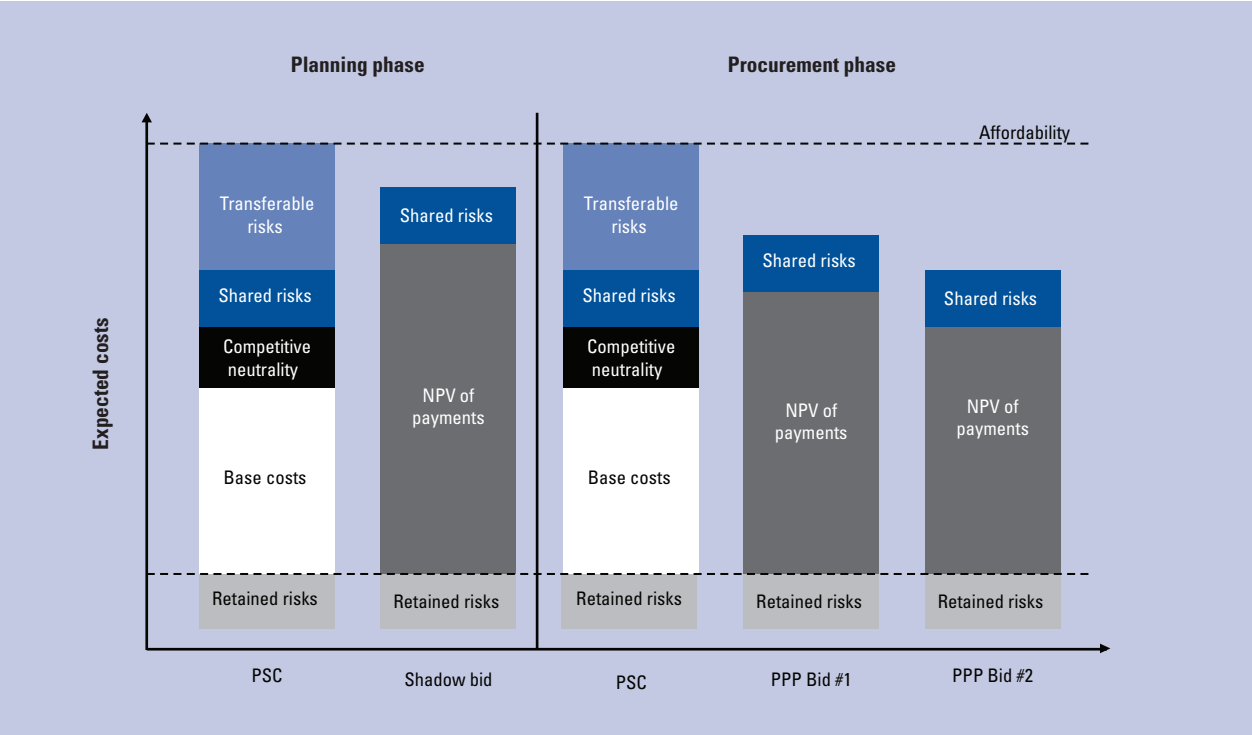
How infrastructure has been paid for in the past influences perceptions. For example, in many countries the power generation industry has a long history of private financing. As a result, users have almost no resistance to paying for this service. Applying a toll to a previously "free" road, however, can be easily resisted. This resistance has been one of the impediments to the global shift of procuring much infrastructure, especially social infrastructure, using private finance.

The complexity of human behavior is beyond the scope of this *Report,* but a great deal of research—such as Kahneman and Tversky's Prospect Theory[1]—has demonstrated that people value gains and losses differently even if their choices have the same economic end result.

Assessments of private-sector approaches must consider full life-cycle costs and the expected costs of risks

Much of the public's concern about private finance stems from the belief that private finance involvement

Figure 1: Illustrative comparative analysis of public and private funding solutions



Source: PricewaterhouseCoopers, unpublished document, 2010.
Note: PSC is the "Public Sector Comparator" or the public sector cost of delivering a proposed contract . The shadow bid is an estimate of what PPP bids will be.

inherently costs more. This perception is likely to be true if the financing costs are considered apart from other contract terms such as construction effectiveness, operational efficiency, and risk transfer. After all, most governments can fund themselves more cheaply than commercial enterprises can. However, this assumption does not factor in the expected cost of the whole contract delivery, including risk transfer. In order to make an informed comparison of the cost of public and private solutions, a comparative analysis (often called a *value-for-money analysis*) needs to be completed, which takes into account all of the costs and the risk transfer. Figure 1 provides a summary of how this analysis is developed for both the planning and procurement phases of a project.

In this analysis, five elements are identified as making up the public-sector cost of delivering the proposed contract (the *public-sector comparator* or *PSC*):

- **Retained risks:** The expected cost of risks retained by the public sector.
- **Base costs:** The expected capital and operational expenditure needed to build and operate the infrastructure.
- **Competitive neutrality:** An estimation of the cost savings of competitive bidding processes.
- **Shared risks:** The expected cost of risks shared between the public and private parties.
- **Transferable risks:** The expected cost of risk transferred to the private sector.

Alongside this analysis, the public sector will need to decide what it can afford. If the PSC is above what it can afford, then consideration will need to be given to whether reducing the transferable risk and increasing the retained risk is possible, or if the benefit of competition has been underestimated.

Education and transparency about all costs and rewards associated with different financing options are critical to assessing those options on a truly comparable basis. It is essential to present clear and comparable information to enable the public to reach a balanced judgment.

Mechanisms such as profit sharing may mitigate concerns about excessive profits by the private party

The appropriateness of the profit to be made is a particularly controversial area. This is primarily an issue for elements of social infrastructure, such as schools and courts, which are often regarded as a core part of the public balance sheet, from which no one should profit. Even if people accept the reality that profits will be made, there could be a public outcry when most of the profits are channeled toward the private sector.

Arrangements can be put in place to ensure that the public authority shares in the future success of a project; this is the case with the recent transaction for the Seagirt Marine Terminal (see Case Study 5: Port of Baltimore, Seagirt Marine Terminal). The extent to which this factor may or may not be an issue will vary across geographies, but it should not be overlooked because private enterprises are, by nature, seeking profits, and have obligations to their shareholders to do so.

There are a variety of ways to garner public support

Experience from many successful projects and programs around the world show that there is a wide variety of approaches that can be considered and actions that can be undertaken in order to garner public support. These include:

- the involvement of all stakeholders,
- the perception of a crisis,
- the transformational nature of projects,
- the choice of contract approach, and
- the choice of a public relations (PR) approach.

All stakeholders need to be involved in the procurement process

It is critical to ensure that all stakeholders, including the public and end users, are well informed of the approach to be taken and the decisions made at each step of the procurement process. Getting a few pathfinder projects can help, since this allows feedback from all parties on what worked and what did not, which helps to foster ownership of the program. The New South Wales government in Australia requires all public-private partnership (PPP) project proposals to consider environmental and community issues alongside financial and budgetary factors prior to receiving government support. This ensures that all appropriate stakeholders are involved, including the government, the private sector, and the community.[2]

A crisis can be a catalyst to change the financing approach

In some circumstances the public needs to be convinced that the need for infrastructure development and the associated expenditure fulfills a critical need. History tells us that an infrastructure-related crisis can often be the catalyst for such a shift in opinion. For example, failure of flood protection, power outages, or bridge collapses can lead to support for private finance if it delivers the infrastructure that will improve people's lives. Sadly enough, history also tells us that such crises often need to happen twice before public support for the investment case becomes overwhelming. For example, in the 20th century, London was twice affected by flooding (1928 and 1953) before the Thames Barrier was constructed.[3]

Resistance to private finance may lessen if the result is new infrastructure or improved operations

Public support for infrastructure development can increase when the investment is regarded as transformational. Transformative infrastructure projects do not merely repair existing infrastructure, but seek to transform and improve the sector. Examples of these include developing a high-speed rail network, renewable energy sources, or new schools or hospitals. Such improvements will be seen as critical to improving the quality of life in that community or sector, and, consequently, resistance to private finance may fade.

Certain infrastructure projects are "hidden." For example, people will think about power-generation infrastructure only when the lights do not come on. Other types of infrastructure—such as the development of a new bridge or a new subway system—are much more visible in people's daily lives.

The immediacy of the more visible infrastructure can help build public support for its upkeep (and the associated expenditure). This visibility can be a double-edged sword, however, as the public and communities may feel a much greater sense of ownership of this more apparent infrastructure. Consequently it may resist changes to operational models, especially if those changes entail a transfer of ownership from public or private hands.

> "Complex and, in many countries, new structures, PPP projects are often misperceived. Consequently, there is a critical need to engage all relevant constituencies—informing them while heeding their concerns—before, during, and after the PPP procurement process."
>
> — Samara Barend, Former Executive Director, New York State Commission on State Asset Maximization

The choice of contract approach can greatly impact public opinion

Privatization can be viewed as the public sector selling its crown jewels, or most valuable assets. Privatization can also be seen as the private sector profiteering from the delivery of "public" services and assets. On the other hand, privatization can be viewed as a partnership between the public and private sectors whereby the benefits from privatization can flow to the public sector and provide the financing for the development and improvement of other infrastructure. Partnerships and concessions can be viewed as tapping private-sector skills and expertise and transferring operational risk to the private-sector party.

Given these potential impacts of contract approach on public opinion, the way the preferred approach is

determined and its potential benefits will need careful explanation. The Chicago Skyway project is an example of a successful approach that incorporated two points of view: some referred to it as a privatization, others a concession, but what it did achieve is a significant up-front payment to the City of Chicago with very little public resistance (see Case Study 6: Chicago Skyway Project).

One criticism of projects involving private finance is that they are typically those that are the easiest to develop, deliver, and, possibly, profit from; and that the most complex or controversial projects are thought to be typically left for public funding. Consequently, governments should articulate the fact that such partnerships enable them to efficiently meet a need that they could not otherwise fulfill.

Having a public relations plan should be integral to any project

A successful public relations approach should assure and communicate the fact that all the projects are not only carefully selected but also well designed. In addition, consistency and transparency should be upheld at every stage of the project. An example of a public authority thinking carefully about how to position its PPP program in the mind of the public is California, which promotes its program as "performance-based infrastructure" that aims at being better, safer, and more accountable.

Notes

1 Kahneman and Tversky 1979.

2 NSW Government 2006.

3 The Environment Agency 2010.

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Part 2

Building the Structure: Developing the Market for Private Finance

CHAPTER 2.1

Creating a Program of Prioritized Opportunities

Statistics on PPP transactions suggest that approximately 58 percent of the total has been invested in Western European countries over the past 10 years. So what is it about the approach taken by countries in this region that has led to this success? A key factor is that some of the countries that have been most successful at attracting private finance have had a clear program and pipeline of opportunities for review by private financiers. Examples of successful PPP programs are those in British Columbia, Canada (see Case in Point 1), and the Portuguese SCUT roads program (see Case in Point 2). The features of a successful program of opportunities are examined in this chapter.

Building a program does not merely require identifying projects but also cultivating the broader environment in which projects will progress

Some of the features that are needed to support a program are listed in Figure 1. The absence of any of these elements will jeopardize the successful outcome of the project.

One of the reasons these features of infrastructure projects are important is that projects typically require a long lead time, from identifying the opportunity to closing the contract. Even in countries with an established PPP program supported by standard contracts, an established procurement framework, and cross-party political support, it takes on average just under three years to tender and reach financial close on a PPP project.[2] The investment payback time is even longer. If there is a construction period, then the debt repayment might not start for three or four years after the contract has been signed; the time for equity payback may be many years after that.

During this project procurement period, private financiers are likely to have invested significant time and resources to develop the opportunity, often in a competitive bidding process. They will recover these on contract close only if they win and the project proceeds. It can be difficult to put a number on these costs, but, to provide some context, a private-sector consortium is claiming compensation of about UK£ 27.8 million following the cancellation of a PPP hospital project some 20 months after the consortium had been appointed the preferred bidder.[3]

We will discuss in greater detail some of the key features of a project programme that can help overcome some of these initial frictions.

The procurement policy: Political support with a clear investment rationale is crucial

If political support is undefined and procurement policy lacks clarity then investors will not even want to establish a presence in the market. In many respects, this has happened in the United States with its P3 program. In the past few years, a number of international corporate

Case in Point 1: The British Columbia PPP program

Partnerships BC is a dedicated agency created in 2002 to evaluate, structure, and implement public-private partnership (PPP) projects in the Province of British Columbia, and to act as a center of procurement expertise. It was established because of a serious infrastructure gap in health, advanced education, and transportation. The agency is wholly owned by the Province of British Columbia and reports to the Minister of Finance, its only shareholder. Current funding for Partnerships BC is C$6–8 billion.

The core business of Partnerships BC is to:

- provide specialized services for government and its agencies, ranging from advice and project leadership/management to identifying opportunities for maximizing the value of public capital assets and developing PPPs;
- foster a business and policy environment for successful PPPs and related activities by offering a centralized source of knowledge, understanding, expertise, and practical experience in these areas. It does this at all stages of a project from the initial feasibility analysis and preparation of business cases through to the procurement process and to project implementation; and
- manage an efficient and leading-edge organization that meets or exceeds performance expectations.

Since 2002, Partnerships BC has been involved with approximately 30 projects with a capital value approaching C$10 billion, including Abbotsfield Regional Hospital & Cancer Centre (C$355 million), Sea-to-Sky Highway Improvement Project (C$600 million), and the William R. Bennett Bridge (C$144 million).

Each completed PPP project in British Columbia has achieved value for money for British Columbia taxpayers, including (1) quantitative factors such as life-cycle savings and (2) qualitative factors such as appropriate risk transfer and performance-based contracts that ensure that high-quality infrastructure and services are provided by the private-sector partners.

Case in Point 2: The SCUT roads program, Portugal

In 1996, the Portuguese government set up a program to procure seven shadow toll road concessions to upgrade or build approximately 900 kilometers of roads at an estimated capital cost of €5 billion. The projects were commonly referred to as *SCUT projects,* reflecting the acronym for *Sem Custos par os Utilizadores* (translated as "No Cost to the Users").

The government wanted to achieve rapid growth of both its internal road network and transport links with Spain. However, given national constraints on its ability to deliver and finance such an ambitious undertaking, the government needed to structure a program that would attract international bidders and financiers.

Although the early programs threw up some challenging procurement issues, such as those relating to land expropriation and environmental permits, within three years the first two concessions had been awarded and all seven were in place by September 2002. The projects were primarily financed by a combination of project finance banks, both local and international, and the European Investment Bank. In 2007, all of the concessions were fully operational. By any measure this was quite an achievement.

The success of the program has been tarnished by the budgetary burden that the shadow toll regime has created for the government. Shadow tolls are actual payments made by the government to private-sector operators of a road based on factors such as the number of vehicles using the road in a given period. The shadow toll subsequently provides the finance for these privately funded road schemes under a design, build, finance, and operate (DBFO) program. In 2007 it was announced that the concessions would be converted to real tolls, but the terms of the conversion are still subject to negotiation.

Figure 1: Key factors in a successful infrastructure project programme

- ☑ Clear policy
- ☑ Political support
- ☑ Ongoing pipeline
- ☑ Presence of necessary laws and regulations
- ☑ Administrative capability and capacity
- ☑ Pathfinder projects
- ☑ Sizeable oppportunities
- ☑ Credible project timetable

investors and contractors established teams in the United States in the expectation of a substantial program of PPP projects, but there have been fewer opportunities than anticipated. Those investor teams have been repatriated or downsized and are not even certain that they would return if the sector develops.

Another factor that helps to indicate the presence of political and policy support is the ability to demonstrate that the program is fully integrated with and reflects a country's infrastructure needs and has mainstream support. Recently the Australian government has pioneered a move to establish independent bodies, such as Infrastructure Australia, charged with auditing the nation's existing infrastructure and putting in place long-term planning and prioritization of infrastructure investment. The Australian government is building its procurement programs around this work (see Case in Point 3: Australia's Future Fund and Infrastructure Australia).

Ongoing pipelines of opportunities are more likely to attract bidders than ad hoc procurement

The concern of investors is primarily whether the opportunity is a one-off or there is the possibility of repeat opportunities. This information will help them assess the size of the potential market and whether the opportunity is one that they can build a team and/or business around. Having a program not only encourages more investors to enter into the market but should also create a more competitive environment. This competition should in turn generate better overall value for money because future deals should benefit from a more streamlined and quicker process with experienced practitioners on both sides of the transaction.

For investors, having a pipeline of bidding opportunities means they can hope to have a higher probability of success, which in turn allows them to consider the cost of bidding across this portfolio of bids rather than on a project-by-project basis.

The necessary laws and regulations must be in place before transactions take place

Developing a procurement process that does not fit with the existing relevant laws and regulations is highly costly and time-consuming. This is also one of the areas that will be a main deterrent for private investors. Sometimes the insufficiency of the existing laws is not known or understood until the parties are in the heat of a transaction. To mitigate this risk, selecting a small number of pathfinder projects that can be used to test the approach planned for the main program can provide substantial benefits, as it will bring to the fore circumstances where the existing laws and regulations are inadequate.

> "A program of opportunities that creates a steady stream of relatively consistent deals over a number of years can contribute to achieving national policy goals."
>
> — Ryan Orr, Executive Director, Stanford University – Collaboratory for Research on Global Projects

Administrative support needed for a successful program should not be underestimated

There are significant advantages in supporting a clear program with "standard" procurement routes, where various factors, such as the procurement timetable, contract and regulatory regimes, and payment mechanisms, are familiar. Investing time and effort in advancing these routes helps. This requires substantial administrative support not only to put the processes in place but also to coordinate and monitor their implementation across procuring bodies and over time (see Case in Point 1: The British Columbia PPP Program).

Pathfinder projects preempt problems and demonstrate success

There is strong evidence that, in developing a new sector, if the public authority can articulate a program of prioritized opportunities with pathfinder projects to test and refine the proposition, projects are more likely to attract greater commercial interest and competitiveness among private finance solutions. One example of a successful program that used a pathfinder approach is India's PPP program. The highways portion of that program alone, launched in summer July 2009, is probably the biggest

Case in Point 3: Australia's Future Fund and Infrastructure Australia

Future Fund

The Future Fund approach was first established by the Australian government in 2006 to assist future Australian governments in meeting the cost of public-sector superannuation liabilities by delivering investment returns on contributions to the Fund. Subsequently, three "sister" funds were established in 2008 to focus on certain kinds of infrastructure. These included the Building Australia Fund, the Education Investment Fund, and the Health & Hospitals Fund. These three funds are referred to as the *Nation-Building Funds*.

The value of these funds on 31 December 2009 was:

Fund	$A billions
Future Fund	66.2
Education Investment Fund	10.1
Health & Hospitals Fund	4.9

Investment responsibility of the Future Fund lies with a board of guardians, while administrative and operational support is offered by a management agency. The Future Fund has received contributions from government budget surpluses as well as proceeds from the sale of the government's holdings of Telstra and the transfer of the 2 billion remaining Telstra shares. Funds will be withdrawn only after 2020. The exceptions will be to meet operating costs or if the balance exceeds the target asset level.

The Building Australia Fund is funded from government budget surpluses in 2007–08 and 2008–09. It is focused on building critical economic infrastructure including roads, rail, port facilities, and broadband facilities. Expenditure will be guided by Infrastructure Australia's infrastructure priority list.

Infrastructure Australia

Infrastructure Australia was established by the Australian government in April 2008 to develop a plan for Australia's future infrastructure needs and to facilitate its implementation. Infrastructure Australia's role is to advise the Australian government, state governments, investors, and infrastructure owners concerning nationally significant infrastructure priorities, desirable policy and regulatory reforms, options to address impediments facing national infrastructure, the needs of users, and possible financing mechanisms. It accomplishes this by:

1. conducting audits on all aspects of nationally significant infrastructure, in particular water, transport, communications, and energy;
2. drawing up an infrastructure priority list involving billions of dollars of planned projects; and
3. advising government, investors, and infrastructure developers on regulatory reform and procurement guidelines aimed at ensuring efficient use of infrastructure networks and speeding up project delivery.

Key stakeholders include Australia's states, territories, and local governments as well as the private sector.

Achievements

- Thirty-six programs had been started and/or completed by June 2009. These include the North-South Bypass Tunnel (Queensland government), the Alternative Waste Technology Facility (New South Wales government), and the Defense Headquarters Joint Command Facility (Australian government);
- the completion of the national infrastructure audit;
- the development of an infrastructure priority list; and
- the development of best practice guidelines of public-private partnerships.

PPP program in the world: it has an estimated investment of US$70 billion over the next three years, with private-sector participation expected to be about US$40 billion, of which US$10 billion is expected to come from foreign investors. The public procurers intend to use the experience of the past five years to make the procurement investor friendly (see Case in Point 4: India's PPP program).

Another example is found in the Chilean roads program. The success of the original program is due at least in part to its innovative structure, which allowed the government to flex the concession period so that investors could achieve target return. A number of these projects are now on the secondary market (see Chapter 1.3 Case in Point 2: Chilean private-public partnership roads program).

Case in Point 4: Public-Private Partnerships: India

Overview

Public-private partnerships (PPPs) in India were established to leverage public capital to attract private capital while also benefiting from private-sector expertise, operational efficiencies, and cost-reducing technologies. At the central government level, these partnerships are coordinated by the Government of India (GoI) through the Ministry of Finance (Department of Economic Affairs). The GoI has also announced various policy initiatives in order to foster an enabling environment for PPPs. These include fiscal incentives, a streamlined approval process, and a stable policy environment

As of 2007, there were more than 300 PPP contracts signed in the country. India is expected to have an investment requirement of US$500 billion over the next five years, with US$150 billion expected through PPP projects. It is the biggest PPP program in the world.

Key stakeholders include the Ministry of Finance (GoI), sectoral ministries (such as Roads, Aviation, etc.), private institutions, and Indian states. The sectors handled include highways, railways, ports, airports, and power. Recently, the GoI has started experimenting with PPPs in social sectors such as health, education, and housing.

Funding

The India Infrastructure Finance Company Limited (IIFCL) has sanctioned US$4.6 billion (as of October 21, 2009) in financial assistance to 95 projects across 5 sectors. The IIFCL lends up to 20 percent of project costs. Other institutions that have provided financial assistance include the Infrastructure Development Finance Company (IDFC), ICICI Bank, the State Bank of India, Punjab National Bank, Canara Bank, and Infrastructure Leasing & Financial Services Limited. Multilateral agencies are also active in the infrastructure financing, and one of them—the Asian Development Bank (ADB)—has been allowed to raise rupee bonds and carry out currency swaps to provide long-term debt. Dedicated infrastructure funds are being encouraged in order to provide equity. An example of this includes the India Infrastructure Finance Initiative.

From 1995 to 2007, senior debt accounted for 68 percent of project financing, on average. The rest took the form of equity (25 percent), subordinated debt (3 percent), and government grants (4 percent)—which are typically viability grants provided during construction to PPPs deemed economically desirable but not financially viable. Typical concession terms encourage the use of debt over equity.

The scale of this investment is illustrated by the State Bank of India coming out as the No. 1 Global Initial Mandated Lead Arranger in the 2009 Project Finance International league tables—they arranged lending for 37 deals with total lending of US$19.9 billion, representing 14.3 percent of total lending nationwide in the year.

Successes

Some of the achievements to date include the modernization of the Mumbai and Delhi International Airports, improvement of various port facilities, greenfield private ports, several national highways, and the commercial utilization of surplus land. The roads building program aims to build 7,000 kilometers each year for the next five years. This translates to approximately 20 kilometers per day; currently, approximately 10 kilometers of roads are being built each day, more than double the rate of a year ago.

Investment in a project program is vital to maximixze the role of private finance

The risks of private finance are magnified if a programme is not in place. Table 1 summarizes the possible consequeneces if key program features are missing. Evidence that there is an ability to attract private finance by creating a clearly articulated and well thought through and supported program of opportunities seems overwhelming. This ability seems to be characteristic of countries and sectors that have been successful in involving the private sector.

Notes

1 Dealogic, accessed February 3, 2010.

2 NAO 2007.

3 Griffiths 2010.

Table 1: Possible risks if key program features are absent

Factor	Risk if absent
Clear policy	Lack of a clear policy can mean the program is not integrated with infrastructure needs. Delivery bodies are not appropriately empowered, leading to ad hoc and uncoordinated approaches to procurement that may lead private players to cherry pick the most favorable terms.
Political support	Lack of political support can result in uncertainty that the program will proceed.
Ongoing pipeline	Lack of an appropriate pipeline can increase transaction costs, lack of credibility, and variation of bids, making comparison difficult.
Presence of necessary laws and regulations	Lack of needed laws and regulations can mean delays or ultimately abandonment of the project.
Administrative capability and capacity	Inadequate administrative ability can result in lack of consistency and coordination across public bodies and inability to transact projects and ongoing contract management.
Pathfinder projects	Not using pathfinder projects can result in no time to review whether all other factors are in place and whether draft contracts include appropriate and realistic terms, such as risk transfer.
Sizeable opportunities	Few opportunities can lead to a lack of interest and competition, which in turn may increase costs.
Credible project timetable	An unrealistic timetable may lead potential bidders to question the whole procurement process and in turn they inflate costs, and so on, to give some protection should the timetable and process extend beyond that planned.

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CHAPTER 2.2

The Challenge of Building and Sustaining Transaction Skills

At the heart of any infrastructure transaction is the government—as partner, regulator, grantor of concessions and licenses, seller, or investor. Yet despite the importance of the infrastructure sector, building and sustaining the relevant skill set within the government has been a challenge in both developing and emerging markets.

In this chapter, we have highlighted some of the consequences of those skill gaps, the environment that can perpetuate them, and how they might be addressed.

Insufficient commercial skills can severely hinder infrastructure procurement

Skill gaps can become an impediment to infrastructure development in four areas:

- intelligent procurement,
- provision of best value for money,
- efficient decision-making, and
- the ability to react to change.

Intelligent procurement

Intelligent procurement means the ability to design and promote commercially viable propositions or programs. Projects or programs that have come to market based on poorly thought out proposals will fail to attract private finance or will attract such a range of responses that it is then difficult to compare and select a winning bid. Such an approach may also create a wider loss of credibility and can taint the program or project even when it is relaunched.

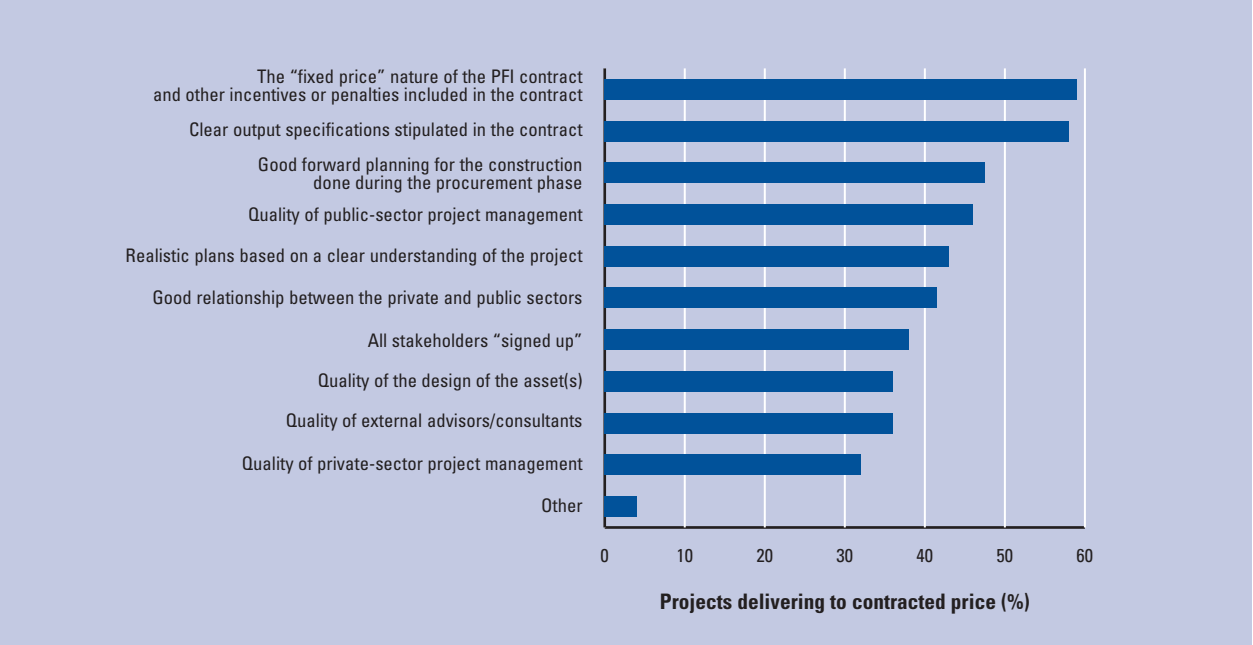
Provision of best value for money

One of the greatest challenges in the procurement process is negotiating transactions that represent good value for money; this is a concern whether infrastructure is being publicly or privately financed. There can often be a perception (one that sometimes reflects reality) that public authorities do not have the necessary business acumen to transact the "best" deal.[1] In Chapter 1.5 (about public perception), we touched on the use of value-for-money analysis and the creation of a public-sector comparison to a private sector bid. There is not an expectation that all of these skills will be, or even should be, held in-house; rather there is an understanding of the scope of work required by specialist advisors and an ability to interpret their findings as needed.

Efficient decision-making

While there undoubtedly remains a role for governments to appoint specialist advisors, as indicated above, this should not be a substitute for knowledge of the fundamentals (whether technical, legal, or financial) by public servants so that informed decisions can be made. The public authorities should not consider the use of advisors to be a reason to abdicate their decision-making

Figure 1: Reasons for delivery to contracted price



Source: Based on NAO, 2009.

role. Being able to understand the fundamentals also ensures that advisors can be challenged and an educated conclusion—including whether to accept or reject the advisors' recommendations—can be reached.

The ability to react to change

A sound understanding of the commercial environment, particularly the financial markets, will help governments react to change faster and more effectively. This is true whether it is a change that occurs during the course of the transaction or in the context of downstream contract revisions. As evidenced in the current economic environment, some public procurers did not know how to react to the turmoil around them, and, after a period of denial, many problems remained; others came up with practical and relevant responses.

Several of these transaction capacity factors are captured by a review undertaken by the UK financial comptroller who looked at the reasons that it is important to deliver projects to their contracted prices, as shown in Figure 1.[2] Many of the reasons highlighted are about clarity of what is wanted, responsibilities, management skills, and relationships among parties.

Transaction capacity can be built through a combination of understanding of skills needed, training, and dedicated funding

The following can be effective in addressing skills gaps:

- recognizing what skills are needed for complex transactions,
- training staff,
- avoiding staff rotation, and
- providing sufficient funding for public bodies that promote and procure infrastructure.

We address them futher below.

Recognizing the skills needed for complex transactions

This *Report* only touches briefly on the complexity of actual procurements and transactions. Private parties will employ specialist and experienced staff and advisors to develop multiple opportunities. Yet for the public counterparty, involved staff may only experience one infrastructure procurement project in their career. Often their responsibility for delivering a project will be an addition to their current workload rather than a separate assignment. As a result, they may become overwhelmed by the volume and complexity of the process.

Recognizing the complexity of transactions and properly resourcing the procurement teams goes a long way toward a successful procurement.

Training Staff

Even when proper resources are in place it is vital that employees have relevant training to fulfill their role. In some instances, this will be specialized training on issues such as public procurement laws. In others, it will be general training about project management, including financial analysis and operational standards.

Avoiding staff rotation

It is not uncommon for public-sector employees to regularly rotate their posts. Although this can be very beneficial for developing the breadth of the authorities' overall experience, it can severely limit the development of specialist knowledge. Infrastructure projects can be particularly hard hit by this approach because of the time they take to progress: project timelines can easily exceed a rotation. The level of procurement by some public authorities, however, may not merit a specialist team. In such circumstances the timing of rotations needs to be carefully considered.

Providing sufficient funding for public bodies that promote and procure infrastructure

Procurements valued at many million dollars cannot be transacted on a shoestring. Indeed, attempting to transact a procurement with minimum upfront costs can prove to be a false economy, as it may result in suboptimal transactions with reduced value for money over the period of the contract.

Some countries and regions may provide a template for building transaction skills

It is common to set up a national or local unit solely focused on setting policy and promoting and advising on the procurement of PPP projects. Globally there are at least 150 such units.[3] The majority of these organizations have been set up as government agencies, often within the ministry of finance, but there are a handful of examples where they are PPPs themselves. For example, Partnerships UK is 51 percent owned by private-sector parties;[4] in Germany, Partnerschaften Deutschland has been set up recently with majority ownership held by the federal and state government and 28 percent by private-sector companies.[5] These units aim to become the knowledge and expertise centers that support the wider procurement.

The European Investment Bank (EIB) has recognized that institutional knowledge is key to success and has sought to supplement existing PPP networks, through the European PPP Expertise Centre (EPEC), which brings together the public-sector PPP taskforces across the European Union (both member states and candidate countries).

Some of the more mature regional infrastructure markets have sought to help other regions. For example, Partnerships UK assisted in the Infrastructure Consortium for Africa's publication *Attracting Investors to African Public-Private Partnerships: A Project Preparation Guide,*[7] and they also regularly run training courses on PPP for countries across the globe.

The challenges of building transaction capacity will be different in every country and region, but getting it right is at the heart of any successful infrastructure development. The approach taken by the EIB to provide a forum to support regional liaisons is one model that can be usefully applied across the world.

Notes

1 *Business acumen* was described as "the ability to take sound commercial decisions based on an understanding of the motivations of private sector counterparties" in the United Kingdom's National Audit Office report *Commercial Skills for Complex Government Project,* dated November 6, 2009.

2 NAO 2009a.

3 This figure represents the World Economic Forum's own estimate and includes units at the national and local/state levels.

4 See the Partnerships UK website: http://www.partnershipsuk.org.uk/PUK-Shareholders.aspx.

5 See the Partnerschaften website: http://www.partnerschaften-deustscheland.de/.

6 See the European PPP Expertise Center: http://www.eib.org/epec/.

7 World Bank and ICA 2009.

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CHAPTER 2.3

Multilateral Banks: Building Skills and Markets

Multilateral development banks (MDBs) are "institutions that provide financial support and professional advice for economic and social development activities in developing countries."[1] The largest of these include banks from the World Bank Group along with the following four regional development banks: the African Development Bank (AfDB), the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), and the Inter-American Development Bank (IADB) Group. MDBs occupy a unique position: they not only provide finance for infrastructure projects, but their multinational ownership structure and pan-regional outlook mean that they can provide an important bridge between the public and private sectors.

The MDBs play a significant role in financing public-private partnership financing for infrastructure

The MDBs provide significant financing for public-private partnerships (PPPs). One of the consequences of the current global financial crisis is that the importance of multilateral and bilateral agencies, as well as export credit agencies, is increasing. These multilateral sources of funds are particularly important because more traditional sources of funds—such as governments and private finance—have less money and fewer resources available since the global economic crisis began in 2007.

An example of MDBs working together to provide financing and facilitate private finance is the role taken by the AfDB and MIGA for the Doraleh Container Terminal project in Djibouti (Case Study 7).

> "Through collaborative efforts of the multilateral development banks, the PPP approach has emerged as an effective tool for governments to enhance the private investments in infrastructure and social sectors needed for economic development and poverty alleviation."
>
> — Rajat M. Nag, ADB's Managing Director General

Improving conditions for private-sector participation is a vital service provided by the MDBs

In many cases, money is no longer the core resource being sought from MDBs. In the case of ongoing projects, MDBs often act as independent mediators between public and private parties when issues develop. For example, issues of corruption and abuse of political power can be addressed by MDBs, which may have the leverage and recognized neutrality to improve the situation. Multilateral banks and other multilateral financial institutions, including subregional banks, can stand up to

"PPP assistance is most effective when it is part of a long-term engagement effort and integrated with broader sector reforms and institutional capacity development. With this in mind, ADB endeavors to play a pro-active role in PPP advocacy along with other key donors and private sector stakeholders."

— Joe Yamagata, Deputy Director General of the Private Sector Operations Department of the ADB and Chair of the PPP Task Group in ADB.

political pressure and provide informal political risk cover when they act as independent mediators.

The role of international development financial institutions now focuses on improving conditions for private-sector participation through the development of PPP policy, legal, and regulatory frameworks and institutions; improving the overall investment climate; and developing PPP pilot transactions. Recent support has included the development of cross-sector legal, regulatory, and institutional frameworks, which are crucial in building and sustaining the required political commitment and institutional capacity for larger-scale private-sector participation in infrastructure.

The MDBs play an important role in encouraging participation of the private sector in funding infrastructure projects because of their long-term relationship with developing member governments. PPP development requires sustained policy dialogue and support for the development of suitable legal, regulatory, and institutional frameworks and assistance in the development of PPP pathfinder projects—and MDBs can offer an approach to many developing-country governments that allows the private sector a seat at the table. PPPs often require prior sector restructuring and tariff reforms to be effective. The use of PPPs on a larger scale requires substantial government capacity to identify and develop projects and to regulate and monitor PPP contracts. Support for policy reforms, capacity development, and pilot transactions can often proceed in parallel, and MDB involvement can keep all parties in the dialogue.

There are several elements that an MDB can provide that are particularly important for a project to be successful. These include:

- sector-development planning that adequately considers the role of the private sector in infrastructure development;
- project preparation in terms of adequate feasibility studies, land acquisition, and social and environmental assessments;
- delivery and management of government PPP support; and
- appropriate risk-sharing arrangements between public- and private-sector partners.

The feasibility of PPPs in countries where public services have devolved to subnational and local governments, and the potential for PPPs at different government levels have to be carefully assessed. Country-specific conditions need to also be considered, as past PPP projects have been less successful because of a deficiency of institutional capacity, a lack of economies of scale, and insufficient government funds.

MDBs are partnering to provide a consistent set of tools for capacity building

A critical joint capacity development initiative involving the World Bank Institute, the IADB, and the ADB Institute is the Multilateral Public-Private Partnership in Infrastructure Capacity Development (MP3IC). The objective of the MP3IC is to develop and implement a learning program that is relevant for a globally diverse group of PPP practitioners. The MP3IC has focused on three important aspects of governance: the role of leadership and stakeholder involvement, the need for transparency and accountability, and the role of subnational and local governments in ensuring cost-effective delivery of infrastructure.

The future scope of the MP3IC program will emphasize modules and products that are cross-sectoral in nature for wider applicability. The modules will be suitably structured to address the breadth of political and administrative decision-makers as well as the deeper requirements of PPP practitioners and program managers. Potential training institutions in different regions will be identified to develop and deliver programs.

Risk mitigation and guarantees are one further service that the MDBs can supply

The MDBs—either directly, or indirectly through related agencies such as the World Bank Group's Multilateral Investment Guarantee Agency (MIGA)—provide risk mitigation through formal political or partial risk insurance (or guarantees) against certain non-commercial (country or political) risks to investments in developing countries. Covered risks include transfer restriction, expropriation, breach of contract, war and civil disturbance, and the non-honoring of sovereign financial obligations. Breach of contract coverage can be particularly useful for PPPs where governments are contractual partners.

MDBs have provided unique assistance in response to the financial crisis

The MDBs have responded to new needs for technical assistance that have become evident only following the financial crisis. This includes:

- providing rapid-response assessments of contingent liabilities.

- maintaining existing assets pursuant to a greater focus on operation and maintenance (O&M) projects because these projects are relatively easy to structure at a time of constrained liquidity.

- assisting projects in distress or putting into place measures for dealing with contractual issues that may arise. Governments need technical assistance in making decisions on whether to slow or stop investments; how to respond to the potential entry of new investors into distressed projects; and whether to contribute their own debt or equity to projects, allow asset sales, and permit mothballing of projects or termination of contracts.

- maintaining a project pipeline in the face of changing market realities. Once these pipelines shut down, fully restarting them typically takes years. To keep the momentum going, governments will need to evaluate innovative approaches to structuring PPP projects.

Notes

1 World Bank. Multilateral Development Banks (accessed May 13, 2010).

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CHAPTER 2.4

Understanding and Managing Land Value

Infrastructure related issues around land vary significantly from country to country. In some parts of the world land is a commodity that can be freely sold and bought, and in others it is people's lifeline—their land is the source of their livelihood. However, regardless of region, land ownership and land value are generally extremely emotive topics and are very important to infrastrcuture finance decisions. We consider these implications in further detail in this chapter.

Both the cost of acquiring land and the change in its value caused by its development must be considered

At its simplest, on one side of the project "income statement" are the costs associated with land and on the other side is the change in the value of that land as a result of the project. It is important to capture both sides of this equation.

The costs of acquiring land for infrastructure development can be significant. These can include compensating the existing landowners and those who claim the value of their land has fallen or been impacted. Such claims include the noise of being under an airport flight path, the unsightly nature of a power station and increased local traffic. On the other side of the "income statement" is the potential increase in land value that results from the infrastructure. For example, the land corridor around a new metro line is likely to go up in value because of improved accessibility.

The full complexity of value change must be considered

Value change calculation is a particularly complex area when existing landowners are seeking not just the current land value but also future land value increases and the loss of future earnings. A further complexity is introduced when neighbors claim compensation for blight from development.

When calculating the total compensation amount, ascertaining a value will usually follow a negotiated process as subjective elements are involved. These negotiations can take a long time, sometimes years. Transparency is very important as public authorities need to show they are not abusing their power to obtain land by failing to fully compensate owners.

Even when an established land acquisition process is in place, there can still be costly uncertainty. This is especially true when the legal process to arrive at an agreed amount favors landowners or is protracted. For example, to assist in the private financing of roads in Spain, the government has recently re-assumed the risk of assembling the required land. Private financiers were no longer willing to take on this risk because courts were awarding greater amounts of compensation than forecast.[1] A further challenge is that resolving land issues, including the compensation costs, can be out of

step with the planned procurement timetable and be a significant cause of procurement delay. In India, a government review discovered that at least 70 percent of 190 delayed infrastructure projects had stalled because of problems over land acquisition, and the compensation to be paid to landowners was an especially important factor in these delays.[2]

> "India is one of the most exciting countries for investing in infrastructure because of the large investments required. And that is why we have seen huge capital flows into India's infrastructure sector over the past four years. However there are some issues that need to be addressed urgently like land acquisition and the government's lack of internal capacity to bid out the contracts that are needed to meet these investment targets."
>
> — Luis Miranda, President and CEO, IDFC Private Equity

Public authority for land acquisition is most important for site-specific infrastructure

Whether it is new infrastructure or the expansion of existing infrastructure, the project may require significant land assembly. The powers for compulsory land assembly (with corresponding compensation) usually rest with the public sector. These powers are particularly important for site-speccific infrastructure. For example, some infrastructure, such as power plants, may not need to be located on a precise site. As a result, private developers who already own land that could be developed or existing landowners have less ability to obstruct the process. But if the infrastructure project is site-specific or requires compensation for many landowners, such as a new road or railway, then it is difficult for the private sector to take on the risk of assembling all of the parcels of land at a purely commercial rate. The greatest risk in this case is that of "ransom" strips of land that are critical to the project, but that the landowner will not sell or will sell only at a greatly inflated price.

It can be difficult to capture the benefit from land value increases—but examples exist

There are examples across the globe where the link between infrastructure cost and land value increases have been made. In China and Hong Kong, for example, combining the redevelopment of rail stations with commercial development has meant that the commercial developer can fund or contribute to the project costs. The Mass Transit Railway Corporation in Hong Kong (MTR Corporation Limited) uses a "rail plus property model,"[3] which allows it to augment revenue from rail services with the financial benefit of development rights to properties attached to the rail network, thereby integrating the infrastructure and commercial development. These developments might include residential, commercial office, and retail space.

In London there will be a supplementary tax of 2 pence on business rates to contribute to the funding of a new UK£15.9 billion Crossrail project (an East-West train link).[4] It is anticipated that this supplement will raise approximately UK£4.1 billion, or just over 25 percent of the financing needed.

Monetizing land to pay for infrastructure remains an option and a challenge

Both public and private parties can monetize land to pay for infrastructure, such as by selling parts of existing land banks or vacant/underused land to raise funds to invest in infrastructure. This is typically an option in urban areas. It has not always been preferred because it does not result in a sustainable source of finance—there is a limit to what can be sold—but it has been effective with a number of different approaches.

This option has been used extensively in China with the sale or leasing of land parcels on the periphery of cities to fund infrastructure within the city. For example, in Changsha, the capital of Hunan Province, China, approximately 50 percent of the RMB 6 billion funding for an outer ring road came from the sale of leasing rights to land strips on either side of the highway with access and development approval. In its original state, this land had little value.[5]

In another example, in India a project was launched in the late 1980s to develop the Bangalore-Mysore infrastructure corridor.[6] The project involves constructing a 111 kilometer tolled expressway between the two cities and developing five townships with a population of approximately 100,000 each along the road corridor. Theoretically, the project can leverage the increase in land values from the new road and from the township development to finance the infrastructure. While possibly pioneering in its thinking, the project is still incomplete and has been mired in controversy, much of it around land assembly.[7] Nevertheless, it may provide valuable lessons for other countries wanting to explore other financing approaches.

Notes

1 Infranews 2009.

2 Livemint & the Wall Street Journal. 2009.

3 MTR 2007.

4 Greater London Authority 2010.

5 Peterson 2006, pp. 5–7.

6 http://www.nicelimited.com.

7 Raghuram and Sundaram 2009.

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Part 3

Planning for the Future: The Way Forward for Private Finance

CHAPTER 3.1

Adressing the Appetite for New Infrastructure

There is a widely held belief that private financiers, particularly private infrastructure funds, are only interested in investing in projects that are already generating income, and they have no appetite to invest in building new infrastructure. Indeed, one of the first questions asked of infrastructure private financiers is whether their interest lies in greenfield or brownfield assets and opportunities (see also Chapter 1.1).

Greenfield and brownfield characterizations do not fully describe the features of interest to investors and lenders

For many, a preference for *greenfield* projects implies an appetite for construction risk, while a preference for *brownfield* projects translates to an interest in an existing, fully operational asset. This distinction is too simplistic and masks what investors and funders are really looking for in an opportunity. A recent survey of infrastructure funds found that 50 percent of funds indicated no preference in project phase.[1]

Why is this important? Every government has different infrastructure priorities, whether the focus is on developing new infrastructure or tackling the renewal, refurbishment, or expansion of existing assets. Governments that want to attract private finance need to know whether the finance is going to be interested in their proposition. If the greenfield vs. brownfield designation is too broad, they must consider other features of asset development that will attract or, more importantly, deter investors and lenders.

The degree of innovation required and historical performance are as important as how "new" an asset is

Construction risk can be mitigated through contractual arrangements, which de-emphasizes the importance of the project phase in investment. A more important question is whether new opportunity concerns developing a new market, such as a toll road where there is no history of tolling; or if it is about new technology or design, as in the renewable energy sector; or whether the approach itself is novel. Brownfield opportunities may well have a construction element—for example, to renew or expand existing infrastructure—but there will already be a track record of the performance and operation of the asset and its revenue generation. A more relevant terminology would describe infrastructure in three ways:

- new and tested,
- new and innovative, or
- established.

These terms better address the true nature of the construction/development risk—that is, can the infrastructure be built and, more importantly, will it work as

Table 1: Characteristics of new infrastructure categories

	New and tested	New and Innovative	Established
DEVELOPMENT	An existing pool of experienced contractors is competent to do the work required. Contractors are willing to commit time and price with substantial liabilities if planned completion not achieved.	Few or no experienced contractors are available to do the work required. Few contractors are willing to commit to a time and price and/or provide performance guarantees.	This category is not applicable unless there is an element of renewal or expansion, in which case the principles for new but not innovative or for new and innovative apply.
TECHNOLOGY	Design and materials are tried and tested, even if they are applied in a new context.	Untested	This category is not applicable unless there is an element of renewal or expansion, in which case the principles for new but not innovative or for new and innovative apply.
REVENUE: AVAILABILITY	The start of revenue payments is only dependent on achieving the required performance and availability.	The start of revenue payments is dependent on full commissioning and achievement of the required performance and availability over sustained period.	There will be a track record of availability and performance.
REVENUE: DEMAND	Demand depends on usage and the time taken to establish it.	In addition to the risk of usage and time taken to establish demand, it also depends on full commissioning and achievement of required performance and availability over sustained period.	There will be a track record of usage and whether or not a steady pattern has been established.

Source: World Economic Forum analysis.

planned—and thus the timing of costs and revenues. Table 1 summarizes the characteristics of these three new groupings. The simple matrix in Figure 1 show how these different characteristics might apply to certain project types.

Taking this theme of development, technology, and revenue a step further, what follows is a more detailed commentary on the approach private financiers might take, as well as some actions to address the issue of determining the type of infrastructure in which they are interested.

> "The problem with developing new infrastructure is there can be a binary result—it either works or doesn't—which is why investors look for tried and tested approaches to be adopted."
>
> — Stephen Vineburg, Chief Executive Officer, Infrastructure, CVC Capital Partners

Development focuses on whether the asset can be built at the cost and in the time planned

Some of the questions private financiers consider with respect to design and construction are the following:

- Is there a company with which I can contract to deliver all of the construction works under a single agreement?
- Is the contractor competent to perform the work required? Can the contractor show me examples of completed work?
- How long will it take to complete the work?
- What recourse will I have if the contractor fails to complete the work on time?
- Is the design tried and tested or is there something novel about it?
- Can I make changes to the design along the way?

Figure 1: Illustrative application of new infrastructure to project characteristics

CARBON CAPTURE PROJECT	Established	New known	New innovative
Development			■
Technology			■
Revenue			■

EXISTING TOLL ROAD WITH LAND WIDENING	Established	New known	New innovative
Development		■	
Technology	■		
Revenue	■		

NEW TOLL ROAD	Established	New known	New innovative
Development		■	
Technology	■		
Revenue			■

Source: World Economic Forum analysis

These questions are not just about trying to establish whether the proposal entails construction risk but also who will manage it.

A recent review of the delivery of construction contracts in the United Kingdom's Private Finance Initiative (PFI) sector showed that nearly 70 percent of construction was completed on time; a variety of reasons was cited to explain the 30 percent that were behind schedule: poor project management, failure of construction contractor, design changes, and latent defects, to name a few.[2] What this report does not highlight is who paid for the consequences of the failure to deliver on time. The expectation is that the construction contractor paid for this failure; equityholders likely "lost" earnings during the delay period, and the impact on debt was probably limited to increased surveillance costs.

Even extremely complex construction can be privately financed, as in the case of the recently closed Port of Miami Tunnel project (see Case Study 8), which is technically complex, and involved boring of a 5 kilometer tunnel. In fact, one of the reasons the State of Florida decided on the public-private partnership route was to bring on partners experienced in this type of construction. When there are well-established design approaches, competent and experienced contractors of sufficient size and willingness to share construction risk, and well-understood materials and construction methods, the fact that construction is involved should not in itself deter private finance.

New technologies can mean greater operational risk

Projects that involve new technologies, such as a new type of incinerator to generate energy from waste, may well be a red flag for private finance. If the incinerator turns out not to work, no energy can be generated from it and no income received. The cost and time that will be needed to complete remedial works may be too great to make the overall project's economics viable.

Historically, the development of new technologies or infrastructure sectors has either relied on manufacturers or contractors assuming the risk or has relied on public funds to develop the first generation.

The problem with relying on manufacturers or contractors is that they need to be willing to take all the risk of any performance failures or shortfalls. Such an approach requires a manufacturer or contractor who can either put up significant guarantees that investors can access easily—which may mean they will need to be insured, bonded, or cash collateralized—or who have demonstrable financial strength to support corporate covenants behind contractual guarantees.

Alternatively, the public sector can retain, publicly fund, or support the first generation of a new technology in order to establish a track record and stimulate the market. Private finance will then come in to fund future projects. This can be a more realistic approach. The publicly funded method is prevalent in the renewable energy sector. The American Recovery and Reinvestment Act 2009 contains a provision for loan guarantees to newer technologies,[3] and many countries offer "feed-in-tariffs" to guarantee power prices for renewable energy around the average market rate.

Revenue considerations extend to availability, performance, and usage

There are three defining characteristics of project revenue that are relevant to private investors:

1. *Fixed or variable:* the revenues are either largely fixed, and based on the availability of the infrastructure, possibly with some known performance measures; or they are variable, based on the level of usage or volume.

2. *Contracted or user-pay based:* the revenues are either contracted, typically over a long period; or they are based on a user-pays basis, with no certainty of demand or how they will build over time.

Case in Point 1: Transport Infrastructure Finance & Innovation Act (TIFIA) Funding

The TIFIA act was established in 1998 as a US federal credit program for eligible transportation projects of national or regional significance. The program is run under the US Department of Transportation (DOT), and offers three types of financial assistance: secured or direct loans, loan guarantees, and standby lines of credit. The goal of the program is to leverage federal funds by attracting substantial private and other non-federal investments in a bid to improve the transportation system in the United States.

Some of the key features of TIFIA credit assistance are the provision of improved access to capital markets; flexible repayment terms, such as delayed repayment for up to five years after construction completion; and potentially more favorable interest rates than can be found in private capital markets for similar instruments.

US$122 million has been authorized for each fiscal year from 2005 through 2009. This level of funding can support more than US$2 billion of average annual credit assistance.

The amount of federal credit assistance may not exceed 33 percent of total project costs, and DOT has to establish a capital reserve to cover expected credit losses before it can provide TIFIA assistance.

Total TIFIA assistance thus far has been US$7.7 billion, which has supported projects with a combined cost of US$29 billion. The availability of this government support has been crucial in allowing some projects to reach financial close during the recent global economic crisis.

Examples of TIFIA assistance include the I-595 corridor roadway improvement in Florida (TIFIA loan of US$603 million), the Port of Miami Tunnel (TIFIA loan of US$341 million), the Washington Metro Capital Improvement Program (TIFIA loan guarantee of US$600 million), the Warwick Intermodal Station (TIFIA loan of US$42 million), and the Central Texas Turnpike (TIFIA loan of US$900 million).

3. *Upfront or periodic payment:* revenue receipts are either receivable in full as soon as the asset is commissioned or there is a period of build up over a number of months or years.

The third characteristic is a feature of new market-based infrastructure, where there is no track record of usage—such as a new toll road on a new route. This type of infrastructure requires private financiers to make an educated guess on the build up and final level of usage of the asset, as well as on the unit price or toll the user is willing to pay. The accuracy of these guesses influences the project's ability to service debt during this build-up period, and the overall debt capacity of the project.

Broadly speaking, the lower-risk revenues are those that are availability-based with long-term contracts; on the other end of the risk spectrum are situations that provide a new service, with patronage building up over a few years and where revenue is entirely based on user fees. The higher risk may mean there are fewer potential investors and those who are interested will seek a higher return for taking on that risk. Recognizing some of the challenges of attracting private finance to projects at the higher risk end of the revenue spectrum is critical. There are examples of government funding to help mitigate some of these risks: see, for example, the US TIFIA funding (see Case in Point 1) and how it was applied to the Florida I-595 project (see Case Study 9).

An alternative to a solely private financed solution might be a mixed public and private funding solution. This approach can raise some complex contractual issues in order to deal with the inter-relationship between the two funding sources. However, these issues are not insurmountable, as illustrated by the approach taken to fund the Canada Line in Vancouver, Canada (see Case Study 10).

Debt finance providers view the risks and rewards differently than equity investors do

We have talked about private finance in general terms, but there are differences in appetite for new infrastructure between types of private finance. Commercial banks, for instance, see new projects as an opportunity to expand their customer/relationship base, whereas refinancing existing projects does not offer them these opportunities.

Although commercial debt is in the most senior or protected position should problems arise, equity will need to have been completely written off before commercial debt is at risk. But because debt-holders will have a far greater total amount of money at risk, their focus will always be on what can go wrong, what is the likelihood of these problems, and what can mitigate them if they do happen. Equity investors are also interested in these factors, but they will also want to consider the upside of the project.

As the risk profile of the infrastructure changes over time, the source and structure of the financing should be allowed to change as well

It should be expected that an enterprise's financial structure will change over the course of its life. Private financiers willing to take the risk of new or startup infrastructure may well look to recycle their investment by selling it to investors seeking established cash flows. Debt may be refinanced by banks in the capital markets. When embarking on a procurement it is important to understand the depth of the potential private finance market—if it is insufficient or poor value for money—and consider what needs to be done to encourage more sources of funding.

> "Usually an asset's financing structure changes over time as the risk reward proposition changes."
>
> — Cressida Hogg, Managing Partner, Infrastructure, 3i

To answer the original question of whether private finance will invest in new infrastructure, the answer is undoubtedly "yes", but the range of options and depth of finance markets will vary greatly over the life of a project.

Notes

1 Preqin 2009.

2 NAO 2009.

3 World Economic Forum 2010.

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CHAPTER 3.2

Unlocking the Capital Markets

Since 2002, the amount of commercial bank debt loaned to finance infrastructure has increased steadily year on year, even through the global economic crisis of 2007–08. During the same period, debt in the capital markets grew initially before reaching a plateau from 2003 to 2006, followed by a decline. These trends are illustrated in Figure 1, which shows the total amount of annual debt arranged for infrastructure projects across the globe.[1] In this chapter we discuss the long-term trends in capital markets and how to unlock their potential for infrastructure finance.

A drop in lending to infrastructure PPPs and concessions reflects the move away from long-term lending and reliance on monoline guarantees

The upward trend of the infrastructure loans market is a bit surprising given the current pessimism surrounding the infrastructure finance markets. Some large transactions—such as the Gatwick Airport deal—were completed in late 2009. Looking at the period 1999–2002 seems to point out the historically cyclical nature of the sector.

These trends do not tell the full story of lending for infrastructure, which encompasses all sources of lending, including traditionally short-term debt more commonly needed for privatizations and acquisitions. Analysis of PPPs and concessions, which most commonly use long-term lending and rely on the monoline guarantee for bond issuance, paints a different picture that shows lending volumes falling markedly in 2009, as shown in Figures 2 and 3.

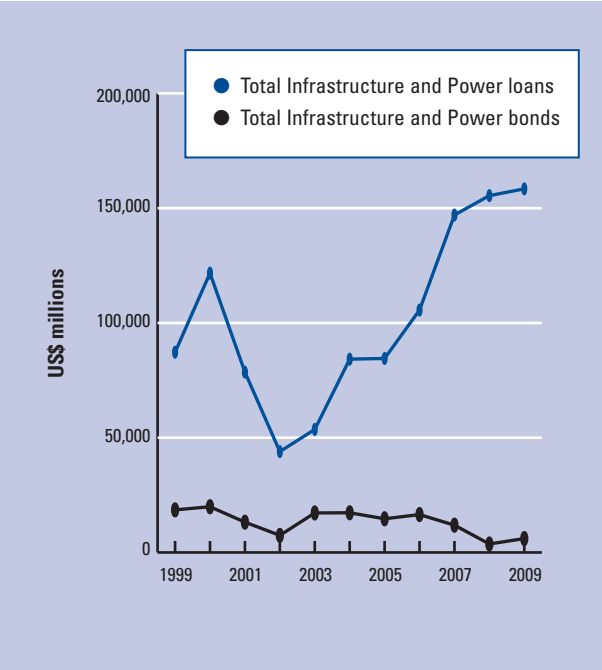
Although PPPs and concessions represent only part of the overall infrastructure market, the data clearly show the trend. Capital markets bond issuance started to contract during 2007; bank loans continued to increase during this period, but then contracted rapidly during 2009, dropping by just under 25 percent. This divergence between long-term lending and overall financing trends is apparent in both bank lending and bond markets.

The capital and liquidity constraints of banks has led to reduced capacity, shortened terms, and increased costs

In many respects, what has happened in the past 18 months has been a retrenchment by banks from long-term, very cheap lending that characterized the preceding few years. This retrenchment has been driven by liquidity and/or capital constraints, leading to increased pricing, shortened terms, and overall reduced lending capacity.

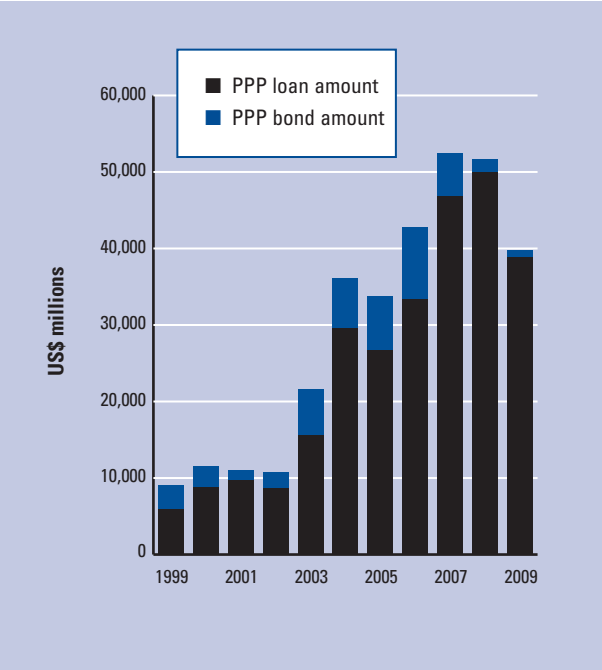
For example, globally, deal margins in the PPP sector have more than doubled in the period 2006 to 2009 (see Figure 4). The reduction in loan term has not been entirely consistent across the banking community, but a survey of 20 of the leading banks in the UK PPP

Figure 1: Infrastructure and Power: Global loans and bonds, 1999–2009



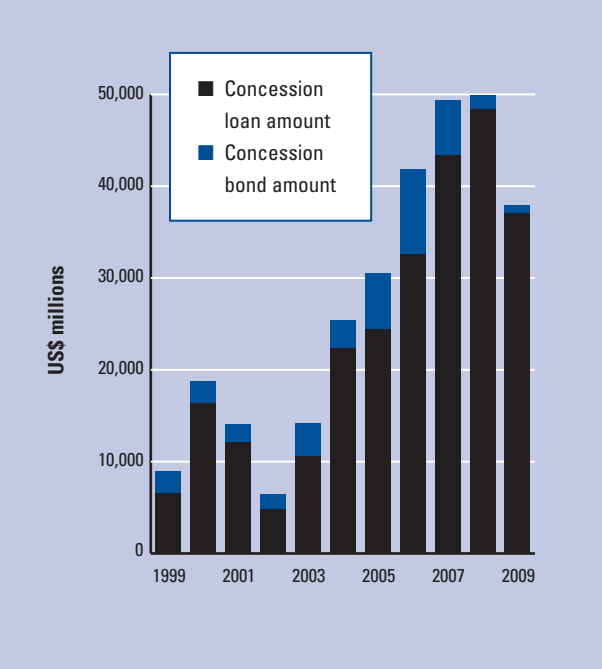
Source: Dealogic (accessed March 4, 2010).

Figure 2: Total global infrastructure: PPP loans and bonds, 1999–2009



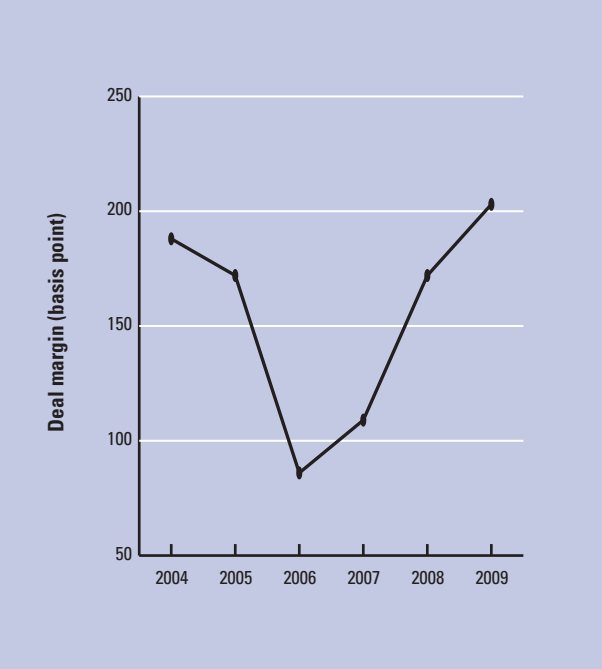
Source: Dealogic (accessed February 3, 2010).

Figure 3: Total global infrastructure: Concession loans and bonds, 1999–2009



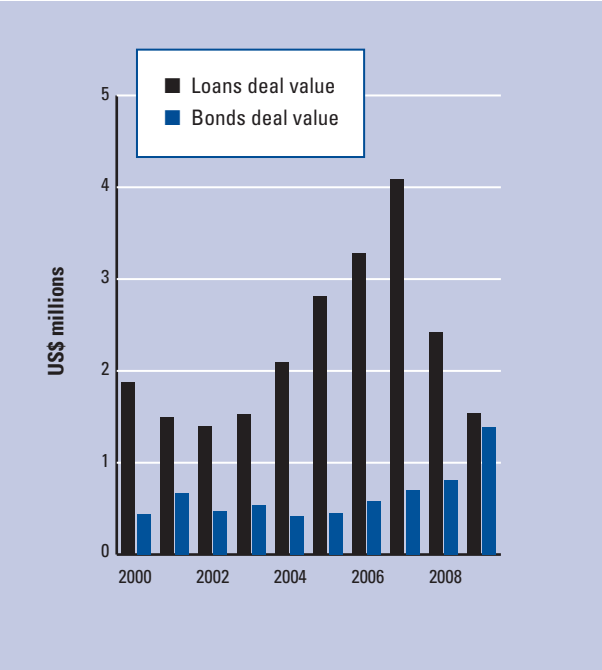
Source: Dealogic (accessed February 3, 2010).
Note: It should be noted that the totals for PPPs and concessions do not tally directly to the global amounts because some authorities record transactions as both a PPP and a concession.

Figure 4: Deal margins for PPP transactions



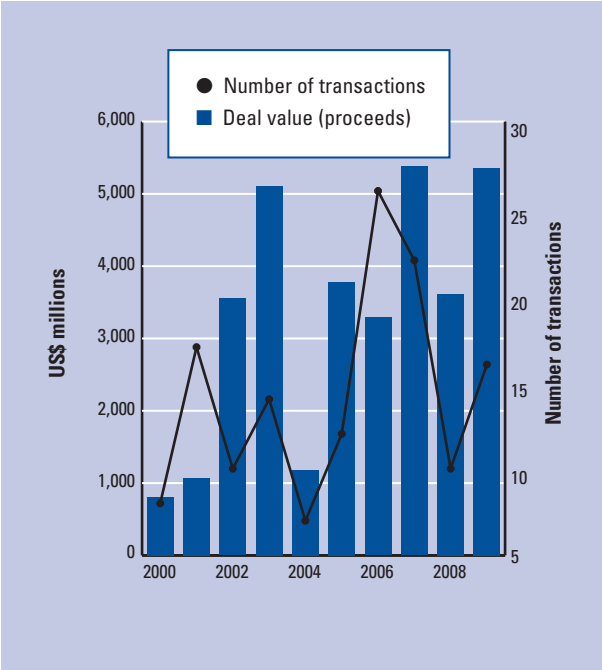
Source: Dealogic (accessed November 3, 2009).

Figure 5: Corporate bonds and loans, 2000–09



Source: Dealogic (accessed February 1, 2010).

Figure 6: Bond issuance in the UK water utility sector



Source: Dealogic (accessed November 3, 2009).

market completed in early 2009 reported "a consistent desire for a shortening of loan maturities."[2]

> "Banks are best suited to financing infrastructure construction periods and then refinancing in the capital markets."
>
> — Nick Pitts-Tucker, Former General Manager, Co-Head of Corporate Banking Group II and Structured Finance Department, Sumitomo Mitsui Banking Corporation

The corporate bond markets have not witnessed the drop in volumes that has occurred with infrastructure

Infrastructure issuance trends differ markedly from corporate issuance trends in the capital markets. Corporate issuance increased in the period 2007 to 2009, and for the first time since these data began to be captured in 1995, bond issuance for corporate loans came close to outstripping corporate loans (see Figure 5).

Some pockets of infrastructure bond issuance—such as issuance to UK water utility companies—have continued strongly in 2008 and 2009 (see Figure 6). This trend seems to indicate that the capital markets remain an option for structured transactions, in which the investment proposition, the nature of return, and the risk-reward profile are understood by investors and comparable to other similar investment opportunities. Why aren't other infrastructure bonds, particularly those in the PPP and concessions sector, not following a similar trend?

The infrastructure bond market must overcome a vicious cycle of declining investment grade projects and loss of credit enhancement and transactional skills from the monoline insurers

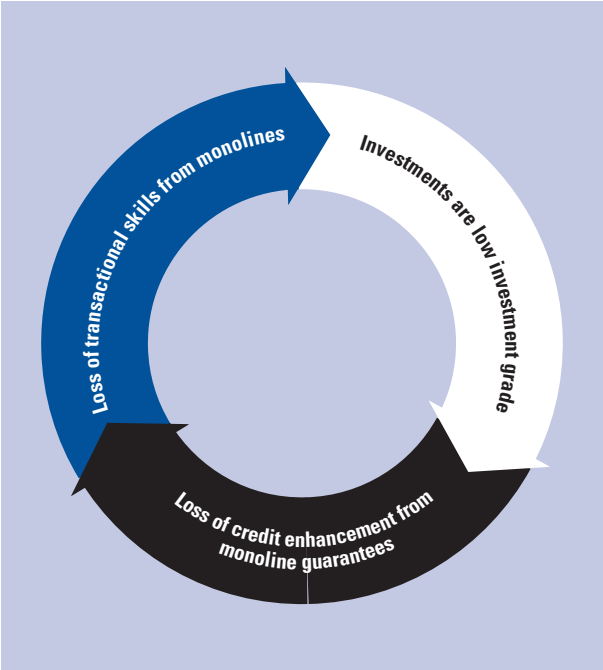
Much of the infrastructure bond market, particular for the PPP and concessions sectors is of low investment grade. This is steadily exacerbated as credit enhancement through monolines has fallen away together with the transactional skills those monolines bring to the market. This "vicious circle" is illustrated in Figure 7.

By contrast, the regulated asset base that underpins the UK water utility bond issuance helps to secure a better underlying credit rating, between BBB– and A. We have identified three challenges that need to be overcome to reinvigorate capital market interest in infrastructure projects in developed and emerging economies. These are summarized in Table 1. In emerging economies, the list of challenges will grow to include elements such as political instability, uncertain regulatory regime, and undeveloped domestic corporate markets. Each of these factors will demand their own responses.

Table 1: Challenges limiting capital markets interest in infrastructure projects

Challenge	Possible response
Underlying opportunities are low investment grade	Obtain a guarantee from monoline insurer. Change the risk-reward profile to increase the rating. As part of this change, the financial structure may need to reduce the senior debt leverage, possibly by introducing "first loss" or subordinated bonds.
Loss of credit enhancement from monoline guarantees	Encourage the re-emergence of the monoline insurers. Create state-supported substitutes for monoline insurers.
Loss of transaction skills from monolines	Build transaction skills in arranging banks or a body substituting for monolines.

Figure 7: Vicious circle in the infrastructure bond sector



Source: World Economic Forum analysis

Substitute or recreate the monoline role

A recurring question is whether to reconstitute the role of monoline insurers, including their transactional skills. There appear to be no moves to try and recreate monoline bodies. Those monolines that survived the financial crisis will no doubt rebuild their balance sheets and consider if and how they will re-engage in the infrastructure market.

Now there is greater focus on revising project financial structures with the incorporation of "first loss" or subordinated bonds. The goal behind this restructuring is to reduce the risk to the senior debt tranche, as illustrated in Figure 8.

In this model, the amount of senior bonds required has been reduced and the gap has been filled by subordinated bonds. The senior bonds would continue to be issued to institutional investors, but the subordinated bonds would be acquired by specialist investors and would attract a higher yield than the senior bonds. If there are any shortfalls in the project financing, these subordinated bonds would be adversely impacted before the senior bonds. By creating this first-loss position, the rating of the unwrapped senior bonds is anticipated to improve.

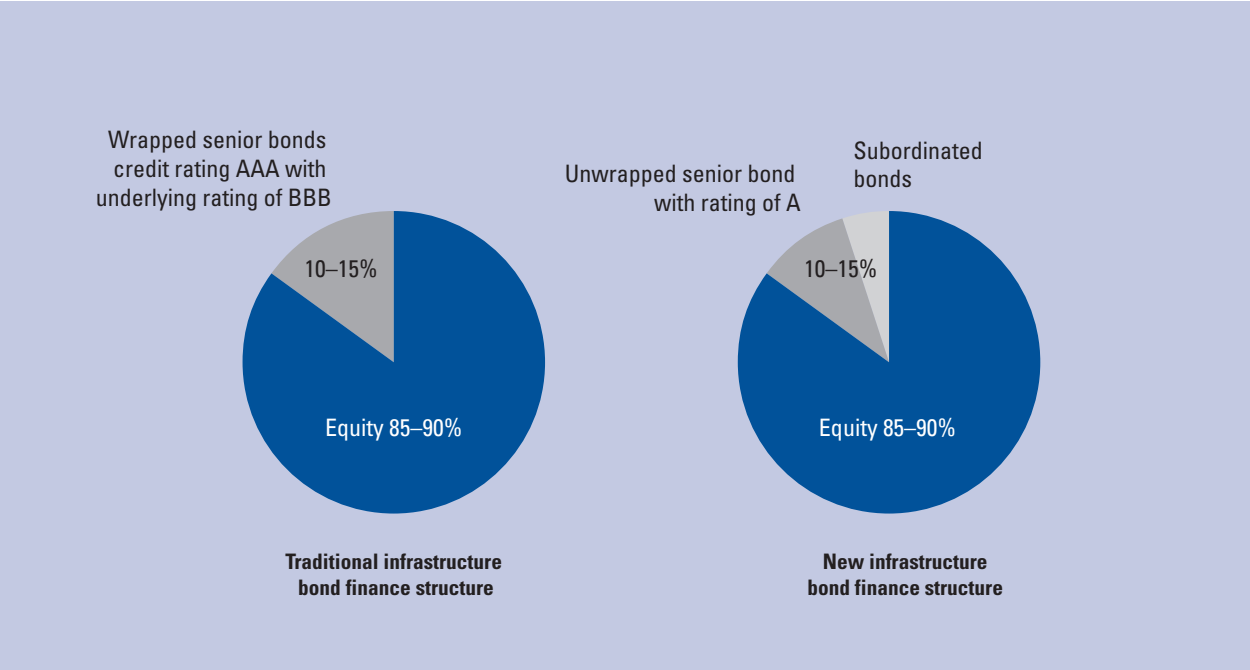
Could the regulated price and asset base approach used for utility companies be more widely adopted?

Regulated infrastructure utilities have continued to be successful in issuing bonds in the current economic climate. Should the regulated price and asset base approach that underpins the business model for utilities be adapted for other types of infrastructure, such as those projects more typically employing a concession-based approach? A regulated approach is often applied to existing monopolistic infrastructure networks that may require capital expenditure over a long period and where protecting consumer interests is paramount as consumers have little, if any, choice of supplier. The concession approach is typically used where a single new asset is being developed but the user/consumer can choose whether or not to use/pay for it; ongoing capital expenditure is more for ongoing maintenance rather than wholesale replacement or upgrade.

From the outset, the concession approach provides for significant risk transfer to the private sector, which may result in significant variation in their investment return. While the regulated regime also transfers risk, this risk transfer is largely contained within a regulatory review period. Thus, in some respects, the regulated approach reduces the long-term risk transfer to the owner/operator but also limits their investment return.

In considering whether it might be appropriate to apply the regulated approach to infrastructure more generally, we highlight some possible challenges, for example, in the case of a real toll road and a shadow toll road (see Appendix A.5 for further description).

Figure 8: Subordinated bonds and senior debt tranche



Source: World Economic Forum analysis, based on proposal described by Hadrian's Wall Capital.

Real toll road

Real toll roads are open to competition, and consumers can decide whether or not to use them. The concession structure passes the risk of non-usage to the private-sector party. In such cases, market choice should self-regulate the amount charged to customers. If there is no comparable alternative infrastructure, a regulated approach may be more appropriate.

If the project includes building a new asset, then the concession approach provides for a significant transfer of the construction cost and time risk from the public to the private sector.

Shadow toll road

In circumstances where the government pays the concessionaire for the availability and usage of a road (a *shadow toll*), the regulated approach has the potential advantage of ensuring that the government pays only for actual operating and maintenance costs, and not for the contingency and risk transfer premiums that will be built into the concessionaire's price. But this regulated approach may well lead to future price increases and create potential budgeting volatility for the public authorities.

In either the case of real toll roads or shadow toll roads, consideration would also need to be given to the cost of implementing the regulatory regime and how it would be applied to what might be a series of fragmented road concessions that represent only a portion of the total road network.

A robust approach to long-term financing for infrastructure is complicated but possible

The overall amount of commercial debt arranged for infrastructure transactions has proved remarkably resilient through the global economic crisis. However, the cost of that debt has increased and the lending terms tightened. In addition, the provision of certain types of debt—such as long-term loans and bonds issued through the capital markets—has declined. We have explored two ways these markets might be revived: 1) re-engineering of the project financial structure or 2) introducing new contractual approaches that make the risk-reward equation more attractive. However, neither approach is a silver bullet that will solve market problems. More work still needs to be done at a national or regional level to ensure long-term financing for infrastructure.

Notes

1 The information throughout this chapter has been sourced from Dealogic's database. The Dealogic infrastructure sector group includes the following sectors: Airports, Bridges, Defence, Education, Govt Buildings, Hospital, Other, Police, Port, Rail Infrastructure, Road, Telecom, Tunnel, Urban Railways (including Light Rail and Mass Rail transit), Waste, and Water & Sewerage. We have also included in the data information on the Energy/Power sectors, including renewables. The financing type includes project finance, privatization, acquisition finance and refinancing.

2 PwC 2009.

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CHAPTER 3.3

The Specialization of Infrastructure Funds

By some estimates US$100 billion has been raised by more than 100 infrastructure-focused funds across the globe.[1] Much of this was raised from 2006 to 2008. Despite fears about the effects of the global economic crisis and cracks in some transactions, 2009 witnessed continued fundraising with some significant fund closures, such as Actis's US$750 million fund in October 2009.[2] But what are the challenges that the sector faces and how might it develop over the following five years?

There is currently a prevalence of general and private equity-type funds, first-time infrastructure fund managers, and funds with a focus on developed markets

Four elements characterize the current infrastructure fund market, namely:

- prevalence of general funds,
- dominance of first-time infrastructure fund managers,
- focus on developed markets, and
- existence of funds based on the structure of a private equity–type fund.

We will discuss these elements in greater detail.

Prevalence of general funds

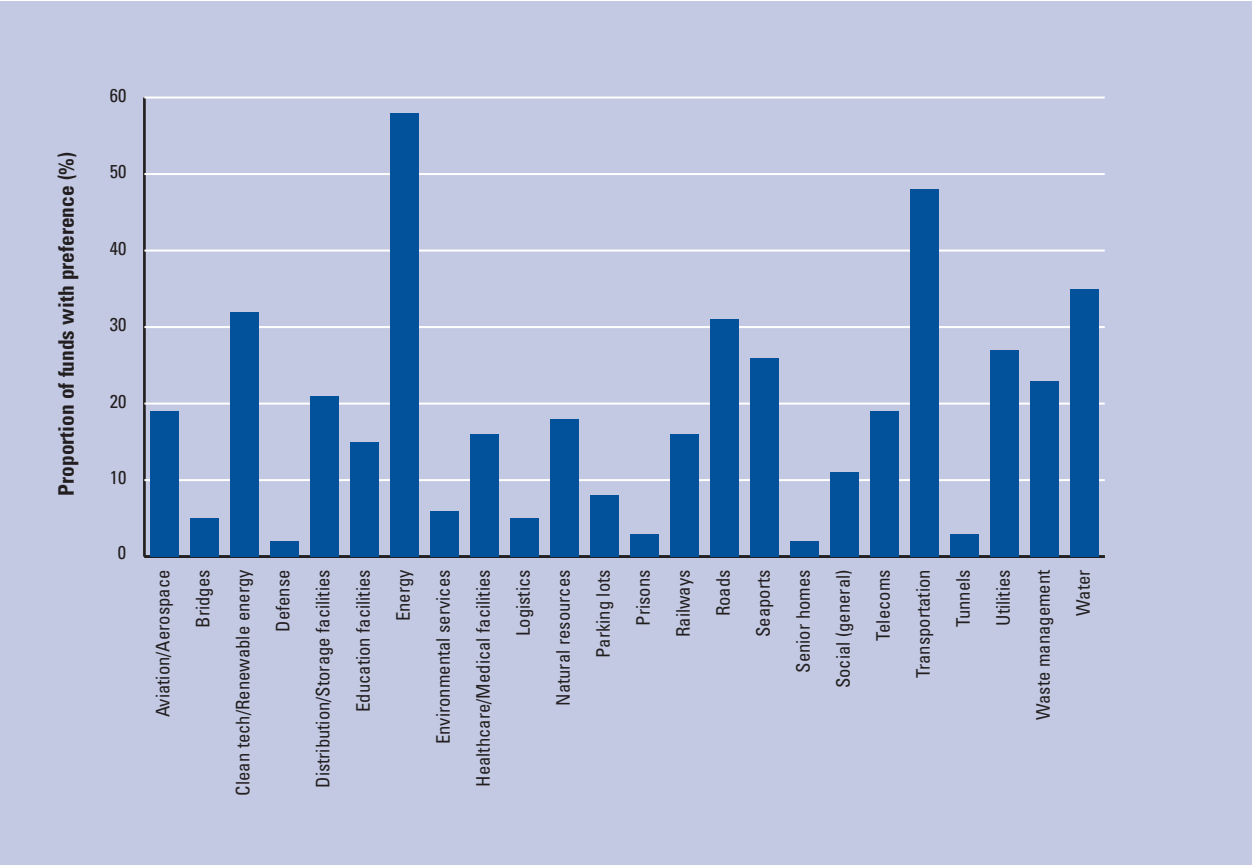
Recent reviews of infrastructure funds have concluded that the majority are targeting a range of different sectors,[3] as illustrated in Figure 1. The fact that many funds are allocating capital to energy, transport, water, roads, and renewable energy suggests that these are the sectors offering the most investment opportunities. They are also the sectors that provide assets that best fit the long-term stable profile that many investors desire.

It would seem that many funds are also targeting both new and existing transaction opportunities (although there are limited data here). This might stem partly from different views on what really differentiates greenfield and brownfield opportunities (as discussed in Chapter 1.1).

Many funds are generalists and do not distinguish between concession contracts and privatizations. One exception is public-private partnerships (PPP), where funds have been developed to focus solely on these types of transactions. Another area is investment in clean energy infrastructure, where a number of specialized funds exist.

Many fund managers do specialize around geographies, such as North America, Asia, or Europe.

Figure 1: Infrastructure investment preferences



Source: Preqin, 2009.

First-time infrastructure fund managers

As shown in Figures 2 and 3, nearly three-quarters of new fundraising by first-time fund managers is in infrastructure, but more than half of the funds are held by managers with more than one fund. Some of the largest fund managers—such as Macquarie and Highstar Capital—have also raised multiple funds.[4] This would seem to indicate that investors are starting to recognize the importance of a track record in infrastructure, not only to develop well-structured transactions but also to provide the depth and breadth of resources necessary for ongoing asset management.

A focus on developed markets

Although fund managers are located across the globe, most funds seem to focus on North America (Figure 4). There seem to be fewer and smaller funds raised in Asia and the rest of the world.

Private equity–type fund structure

Many infrastructure funds have relied on the tried and tested private equity model that is familiar to many investors. However, because the market is maturing, some concerns are being raised around issues such as fee structure, leverage, and information requirements that affect compatibility with the infrastructure proposition. A particular concern with the leveraged fund approach is the refinancing risk this creates. This will become critical in coming years, when leverage debt arranged prior to the global economic crisis becomes due for renewal. It is likely that investors will call for change in the model in response to this.

> "Investors need to be principled in terms of what a fund does and does not do."
>
> — Hazem Shawki, Managing Partner, EFG Hermes Private Equity

Challenges for infrastructure funds include finding investment opportunities, perceptions of instability, and unproven track records

Some of the challenges confronting current infrastructure funds are discussed in greater detail below.

Figure 2: Unlisted fund managers by number of funds launched

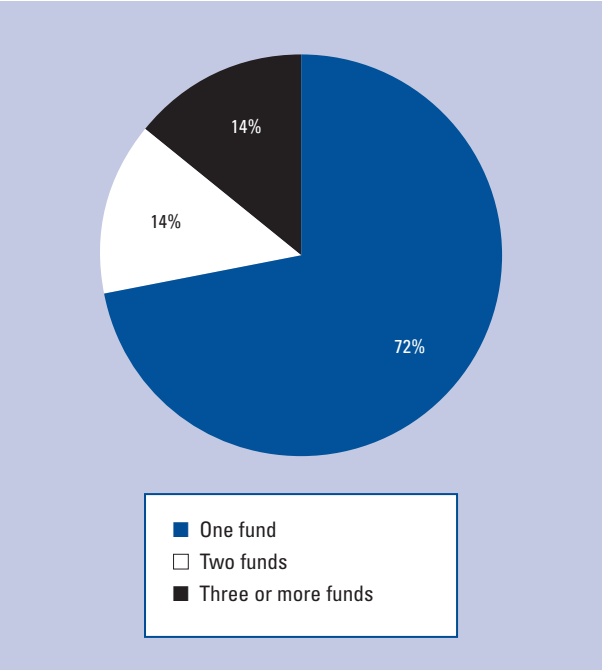
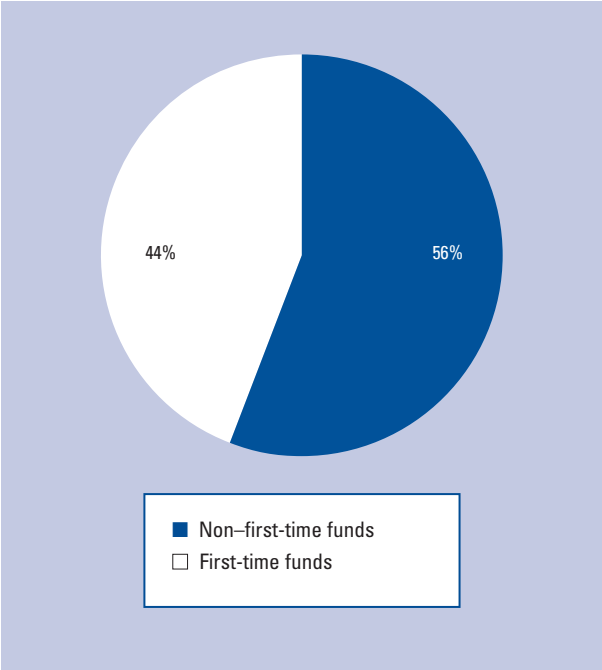
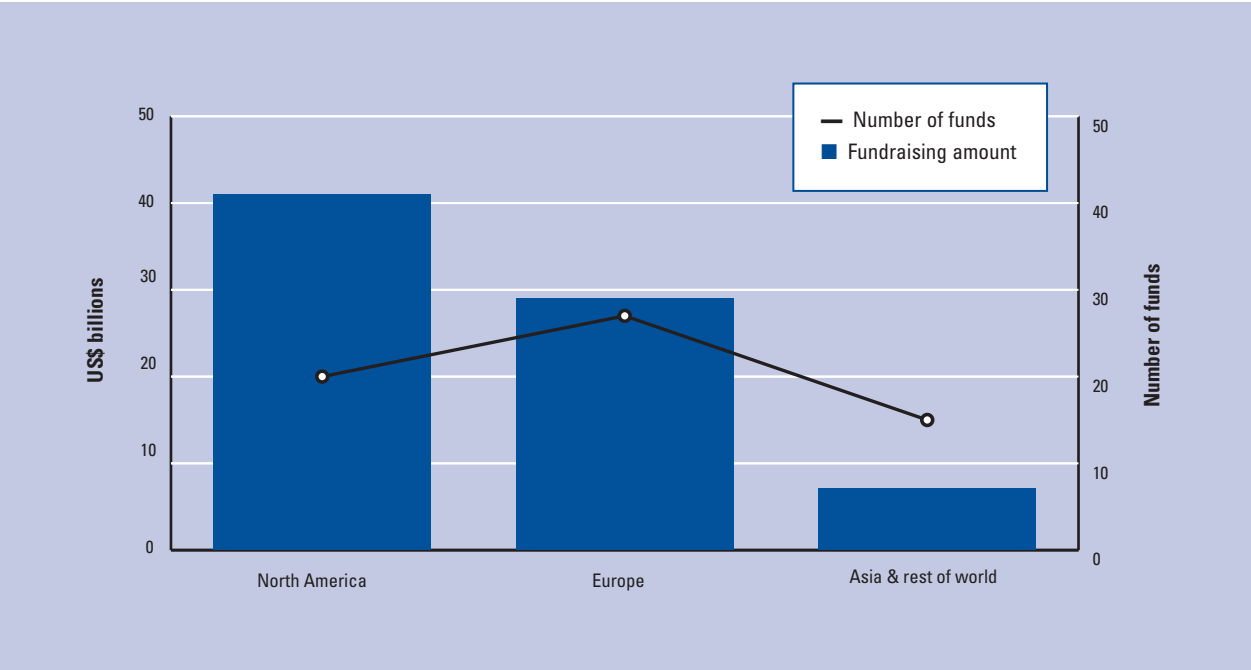


Figure 3: Proportion of fundraising by fund type, 2007 to mid 2009



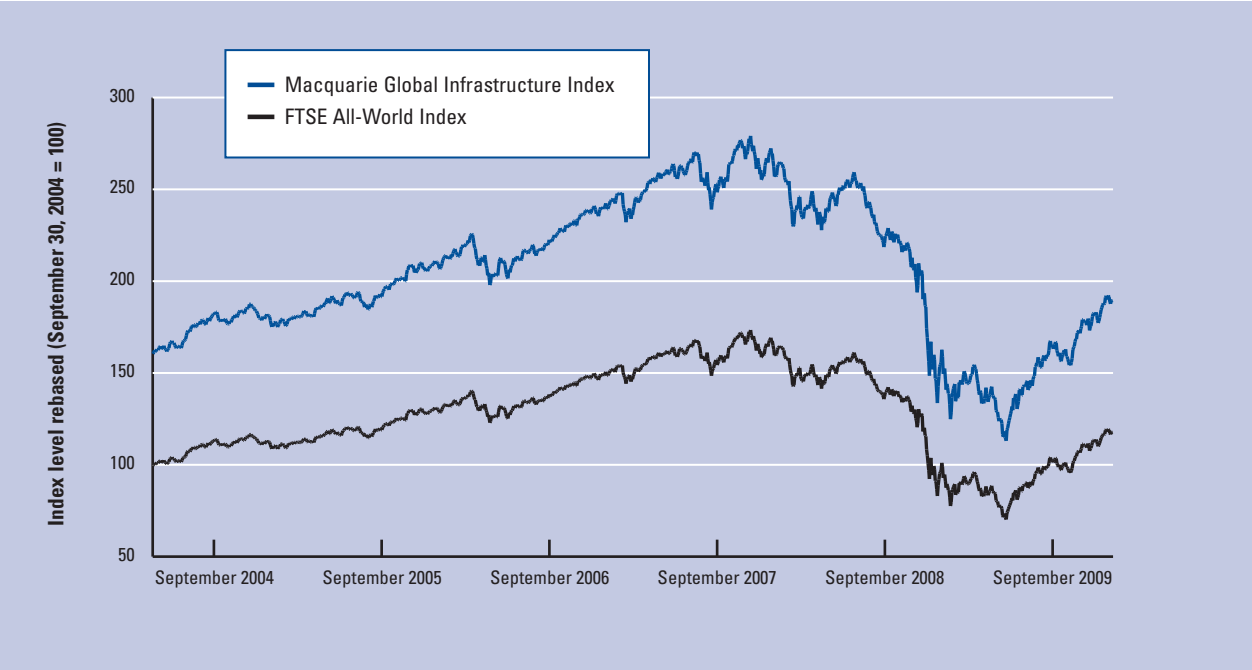
Source: Preqin, 2009.

Figure 4: Infrastructure fundraising by primary geographic focus, 2007 to mid 2009



Source: Preqin, 2009.

Figure 5: A Comparison of Macquarie's Global Infrastructure Index and the FTSE All-World Index, September 2004 to September 2009



Source: Macquarie Global Infrastructure Index.

Finding and winning investment opportunities

There is a tension in the market between the rapid rate of fundraising and the availability of investment opportunities. There are more funds chasing opportunities than there are opportunities. There seem to be a number of reasons for this mismatch. Despite the apparent pursuit of private-sector investment in infrastructure by many governments, some major markets seem to be stalled by political and social resistance to private finance, as seen in the US social infrastructure market. In response to the global economic crisis, sellers of assets are holding them until they think values have recovered, at least in part. The shortage of deals is also linked to the unavailability of cheap credit to support investment opportunities. For example, in the Gatwick Airport sale in 2009 some sellers provided "stapled debt".[5]

Perceptions of instability

Some believe that the *low-risk-and-stable-return* mantra of the infrastructure offering has been debunked during the recent economic downturn. There has certainly been some instability in the listed infrastructure fund market, with funds pulled down in value by association with their parent. The unlisted model seems to have been largely unaffected, however, and fundraising is tough but continuing.

Macquarie's Global Infrastructure Index,[6] which tracks the stock performance of companies engaged in the management, ownership, and operation of infrastructure and utility assets, has continued to outperform the FTSE All-World Group index (Figure 5).

Some infrastructure, such as social infrastructure in partnership with government, is low risk and largely immune from wider economic activity. However, other sectors, particularly those that rely on user demand such as airports, ports, and real toll roads, have seen downturns. While the infrastructure proposition may be low risk, this does not mean that over the lifetime of the investment there will not be periods of volatility. This in turn is leading some investors to challenge fund managers to deliver higher returns on future fundraisings.

A factor that has affected virtually all transactions has been the impact of low inflation and deflation. Many long-term forecasts for income growth are inflation-linked and assume constant inflation over the long term. This does not create problems if both revenue and costs are linked to the same indices, but as soon as there is a mismatch, there could be a potential erosion of cash.

Many funds are not yet proven

As highlighted above, the majority of infrastructure funds are first funds for their respective managers. Although there is no reason to doubt the competence of these managers, this does potentially create some skill capacity issues in the industry, particularly given the long-term nature of the investment. The more-established funds have exhibited a noticeable trend in the last couple of years of building asset management experience, developing a more active involvement in the routine

asset management, and bringing more focus to improving the operational efficiency of the asset.

The next five years are likely to see more specialized funds, more focus on emerging markets, and an emergence of retail investment

We believe there will be three main changes in the sector in the next five years:

- a move to more specialized funds,
- a geographical shift of focus to emerging markets, particularly BRIC countries, and
- the emergence of retail infrastructure investment.

A move to more specialized funds

As we have highlighted throughout this *Report,* the term *infrastructure* captures many different types of opportunities, risks, and returns. Given this, it seems likely that investors are increasingly going to want to discriminate among the groups of assets in which they invest. Funds will likely become more focused on their propositions and specialize in a particular infrastructure type, approach, geography, etc. Having this focus should also help address some of the skill gaps, as it will allow the development of specialist teams. This specialization has already occurred in the PPP market. Much of the investment in renewable energy has been undertaken by specialist funds.

This move to more specialized funds could proceed in tandem with a shift from a reliance on the short-term private equity–type model to much longer term funds, such as the Union of Mediterranean's sponsored InfraMed Fund.[7]

A geographical shift to emerging markets, particularly BRIC countries

There seems to be a push-and-pull effect that will accelerate the fund activity and investment in countries such as Brazil, Russia, India, and China (BRIC). Investment is already happening and a number of specialist funds have already been established by both domestic and foreign investors. But this investment is anticipated to increase significantly through a combination of fewer opportunities in established markets and a strong pull from the scale of opportunities available in these emerging economies. This pull effect is apparent not only in the size of the potential market but also in the strong belief that that market is underpinned by a stable political, legal, and economic environment. There is growing evidence of a shift to the largely undeveloped markets found across much of Africa and parts of South Eastern Asia, such as Vietnam. An example of this is the joint venture between Morgan Stanley and Orascom Construction Industries.[8]

The challenge remains that many of the opportunities in emerging markets will be focused on asset development rather than existing and established assets. These opportunities present different country-level risks as well. Fiscal pressures in developed markets may encourage governments to go ahead with some infrastructure asset sales, thereby weakening the pull effect.

> "Expanding the role of infrastructure funds in emerging markets should be built on strong local knowledge with local partners."
>
> —Sadek Wahba, Global Head, Morgan Stanley Infrastructure

The emergence of retail infrastructure investment

The experience of retail investors in infrastructure has so far been very mixed. There are some challenges with developing this type of investor participation, but it seems likely that it will increase. Chapter 3.4 provides more detail about the potential for retail investment in infrastructure.

The outlook for the infrastructure fund sector looks positive but the offering to investors will evolve

The last five years have taken many first-time investors in infrastructure up a very steep learning curve. The investment proposition has been severely tested over the last 18 months, and in most circumstances has demonstrated its robustness. Some of the issues that have come to light, such as volatility of earnings in some sectors, should not be glossed over. Both investors and fund managers need to spend time to better understand the intricacies of the available opportunities, building skills across the whole investment life. Overall, the prospects for infrastructure funds look more positive as the depth of experience and level of activity increases.

Notes

1 Based on data from Preqin, 2009.

2 Actis 2009.

3 Preqin 2009.

4 See http://www.macquarie.com and http://www.highstarcapital.com.

5 Bowman 2009.

6 Macquarie Global Infrastructure Index Series.

7 EIB 2009.

8 InfraNews 2010.

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CHAPTER 3.4

Tapping the Retail Investor

Much of the focus of this *Report* has been on the role played by institutional investors, such as pension funds, in providing equity private finance for infrastructure. Despite institutional investors dominating the market, some attention should be paid to the current and potential role of retail investors.[1] In this chapter we will look at some of the examples of retail investment in infrastructure that have happened across the globe. We will consider what lessons can be learned from these examples and how this investor base can be cultivated.

Serious challenges to retail participation include educating investors about the risks of the sector and determining the best approach to market

While to date there has been only limited penetration of infrastructure opportunities into the retail market, there are examples where this approach appears to have been successful. We have summarized a handful of examples (Table 1) to give some background to the retail investment proposition and some of the benefits or issues that have arisen.

Looking across successful and unsuccessful experiences to date, some of the factors that are important to be addressed are:

- educating retail investors about risk,
- considering the financial and political environment,
- deciding on a single asset or a portfolio of investment opportunities,
- determining when to bring an issue to market, and
- deciding whether to take the listed or the unlisted route.

Educating a retail investor about risk

This *Report* has highlighted some of the complexities of investing in infrastructure and some of the very sector specific risks that exist. Retail investors need to understand these risks prior to investment; for example, infrastructure may deliver steady and predictable revenues when considered over the long term, but that does not mean that there will not be periods of volatility. Educating retail investors about the risks seems to be a particular challenge since many institutional investors are only just beginning to build a good understanding of the market.

Considering the financial and political environment

Just as institutional investors do, retail investors will want to understand the context within which the infrastructure opportunity is being transacted. Countries with a stable geopolitical environment and high degree of transparency are more likely to meet retail investor requirements. This probably helps to explain the Nakilat's

Table 1: Examples of infrastructure propositions for retail investment in infrastructure

Example	Background	Success factors or issues
Municipal bond market, United States	This market represents a major source of private finance for state and local governments. In 2008, issuance was approximately US$385 billion,[1] although this figure covers a whole range of state and local government financing, not just infrastructure. The market is dominated by retail investors, either individuals investing directly or through mutual funds.	This is a long-established market. The market is supported by exemptions from both state and federal taxes.
Nakilat, Qatar	Nakilat (which means "carriers" in Arabic) is a Qatari shipping company that forms an integral link of the liquefied natural gas (LNG) supply chain for the State of Qatar. It was established in 2004 and is a joint stock company owned 50% by its founding shareholders and 50% by the public as a result of an IPO in 2005. Nakilat is building a large fleet of vessels to transport LNG produced from Qatar's North Field, the world's largest non-associated gas field with approximately 15% of the world's proven reserves, to global markets. By 2010, Nakilat will own 54 LNG vessels, making it the largest LNG ship owner in the world.[2]	The development of the LNG industry is an important part of the development of Qatar's economy. The other shareholders are all bodies of the Qatari State.
IPOs, India	There have been a number of IPOs in India in recent years involving both corporate companies directly involved in the provision of infrastructure, such as construction companies, and those investing in a range of infrastructure or concession companies. Most recently, on February 11, 2010, ARSS Infrastructure Projects Limited was listed on the National Stock Exchange of India. ARSS is a construction company. Its share offer went 60% to institutional investors, 10% to corporate, and 30% to retail investors. It was heavily oversubscribed—for example, the allocation to retail investors was 18x oversubscribed.[3]	The interest in investing in infrastructure reflects the importance the government has placed on spending in the sector. To some degree the model is unproven, as the IPOs have all been recent.
EDF, France	In June 2009, EDF, an integrated energy company in Europe, launched a 5-year bond open to private individual investors in France to help fund EDF's French investment program.[4]	EDF targets domestic investors to invest in domestic infrastructure. The investment is relatively short term: 5 years. There is a fixed interest rate of 4.5%.
Railtrack, United Kingdom	Railtrack owned the national UK rail network of track, bridges, stations, and signals. In 1994, it was established as a government-owned company; then in May 1996, it was privatized and listed on the UK stock exchange.[5] The shares were launched at UK£ 3.90, but by February 15, 1999, were trading at UK£15.51.[6] The initial listing provided that at least 30% of the shares go to the public.[7] Yet, following increased infrastructure renewal costs and financial penalties for failure to meet performance targets, in October 2001 it was taken into administration and was ultimately transferred to Network Rail, a company limited by guarantee (from the government).[8]	Retail investors had already invested in other privatizations in the United Kingdom, such as gas and water, so they had a familiarity with this type of opportunity. But the collapse of company left all shareholders, both institutional and retail, with a significant loss of value of their shares.
BrisConnections, Australia	IPO to fund the public-private partnership to develop $A 4.9 billion road projects in Brisbane, Australia was popular with retail investors, yet the issue required further capital contributions that they were unable to fund. See Case Study 11: Brisconnections.	See Case Study 11: BrisConnections.

1 See Chapter 2.3 on municipal bonds.
2 Nakilat website: http://www.nakilat.com.qa (accessed February 12, 2010).
3 NSE website: http://www.nseindia.com. IPO Current Issues at NSE on February 12, 2010.
4 EDF Group website: http://www.edf.com; see also EDR 2009.
5 NAO 2000.
6 UK Parliament, House of Commons 1999.
7 Railtrack Share Offer Prospectus, May 1, 2006.
8 NAO 2004.

success in having retail investors hold 50 percent of its shares (see Table 1). This was an opportunity with the full support of the state and of vital importance to the prosperity of the country. Interest in infrastructure initial public offerings in India probably reflects the sector's strong political support and the large number of works already in the pipeline.

Deciding on a single asset or a portfolio of investment opportunities

As we have mentioned, one of the challenges of infrastructure opportunities is that, while they may deliver a steady yield when measured over the long term, there might still be periods of volatility. Given this reality, retail investment in a single infrastructure asset can emphasize exposure to risks. The opportunity most suitable for retail investors is probably one that has an underlying portfolio of assets, which can dampen volatility and spread risks.

Determining when to bring an issue to market

Retail investors can be involved either during the establishment of the infrastructure (at the primary stage) or once it is all up and running (the secondary stage). Investing during the primary stage can expose investors to a greater range of risk, including the risks inherent in the construction/development of the infrastructure. Investors will also have no or little return for their investment during this period, which is likely to be unattractive. It seems to be a better fit for retail investors to invest at the secondary stage when there is a more established risk profile with an immediate yield.

Deciding on the listed or the unlisted route

A relevant debate is whether it is appropriate for retail investors to invest in unlisted funds, and/or whether any fund should invest in unlisted infrastructure. Listed and unlisted investments have different characteristics, such as tradability and value volatility (as discussed in Appendix A.2). These different funds are also subject to different regulatory regimes. Macquarie's International Infrastructure Securities Fund, aimed at retail investors, will invest only in infrastructure that is expected to be listed.[2]

Retail investment will increase as challenges are overcome

The examples we have highlighted above show that retail investment in infrastructure opportunities, or industries inextricably entwined with infrastructure, can happen successfully in the right circumstances. It seems likely that the retail role will develop over time; indeed, as some of the existing unlisted funds develop, there might be a natural follow-on fund for the retail market. But the retail sector will probably only grow as different aspects of the sector, including the dichotomy between periods of volatility and long-term stable annuity cash flows, are better understood.

The success of infrastructure-related listings in India probably also hints at another factor that might spur growth. Many of the countries and regions with the greatest demand for infrastructure investment are ones with high levels of personal savings (often as a substitute for state welfare support). The challenge here is to match individuals with savings with infrastructure investment demand and to develop products that allow the general public to invest in the development of their national or regional infrastructure.

Notes

1 For the purposes of this *Report, retail investors* refers to individuals investing on their account and for their own benefit.

2 See the Macquarie Funds Group, Macquarie International Infrastructure Securities Fund, Product Disclosure Statement dated January 31, 2009, issued by Macquarie Investment Management Limited.

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CHAPTER 3.5

The Obstacles to Greater Pension Fund Investment

There is an obvious match between the long-term natures of infrastructure and pension funds, which would seem to make them a "natural fit". Yet there are some fundamental challenges to making this marriage work. In this chapter we discuss these challenges and how to overcome them.

There is a financial and philosophical fit between pension funds and infrastructure finance opportunities

There exists a substantial track record of pension funds already investing in infrastructure. The government-run Canada Pension Plan holds 4.9 percent of its C$123.9 billion in infrastructure investments and the Ontario Teachers' Pension Plan has infrastructure assets valued at C$7.9 billion (all valued at 31 December 2009).[1]

Other major pension funds have reported their commitment to the sector. For example, in early 2010 CalPERS announced plans to invest around US$1.3 billion in infrastructure.[2] It is estimated that US$24 trillion is invested in pension funds globally (see Figure 1). Even if only a small percentage of that amount, say 1 percent, is invested by pension funds in infrastructure, then that would represent a potential investment of US$240 billion.

Beyond the financial rationale, there is also a philosophical fit since pension funds, whether public or private, can be regarded as part of a country's "national savings". Investing in a country's infrastructure is akin to investing in its future.

If there is a potentially significant pool of pension funding that could be invested in infrastructure and a persuasive philosophical argument to do so, why is pension fund participation in the market still relatively small?

Obstacles to pension fund investment include geographic mismatches, the role of pension trustees, and positioning by the infrastructure industry

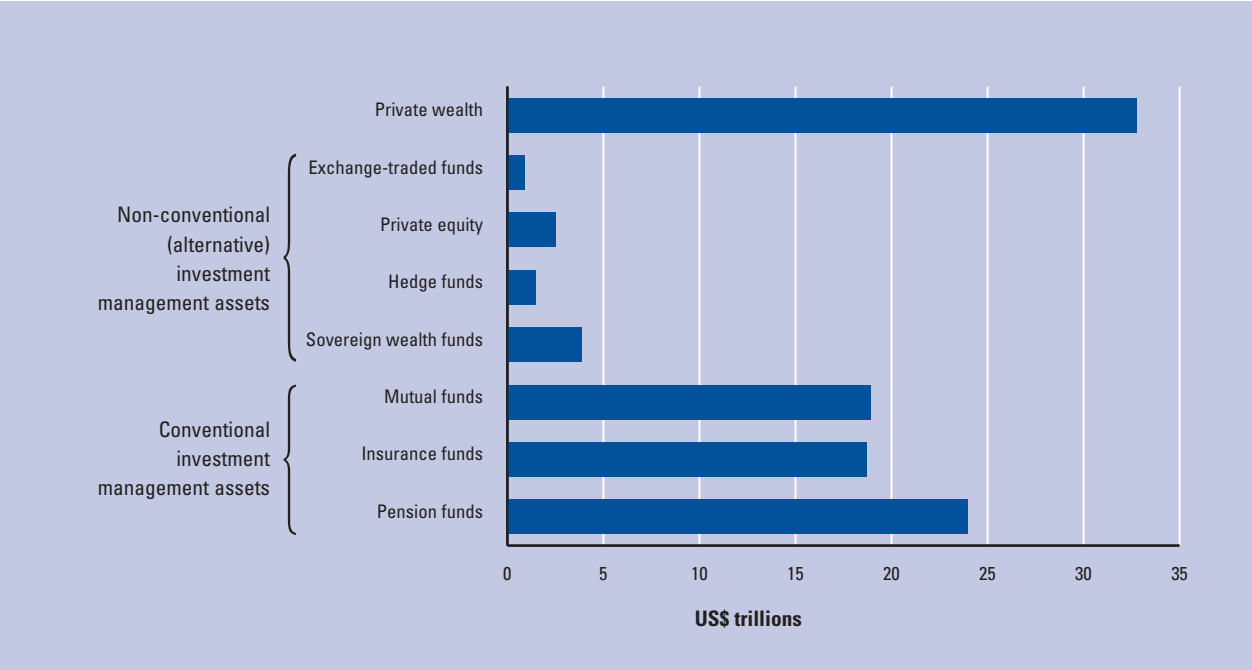
Aside from financial challenges, there appear to be three main obstacles to pension funds investing in the sector:

- geographic mismatch between pension funds and infrastructure opportunities,
- role of pension trustees and investment advisors, and
- failure by the infrastructure industry to explain and promote the infrastructure proposition.

Geographic mismatch between pension funds and infrastructure opportunities

Money held in pension funds is not always located where the investment is needed. For example, 64 percent of pension funds worldwide are held in the United

Figure 1: Assets under management, 2008



Source: IFSL, 2009.

States and only 16 percent are held in countries outside of the United States, Japan, and a handful of Western European countries, as seen in Figure 2.

Furthermore, recent surveys by Watson Wyatt,[3] reviewing the US$872 billion alternative assets under management used by the top 100 asset managers on behalf of pension funds,[4] indicated that over 50 percent of their infrastructure investment was in Europe (Table 1). There seems to be a bias towards investment in Europe, potentially at the expense of other geographies that have a greater need for infrastructure investment. Europe offers a relatively stable political environment, a largely homogenous legal and economic environment, and has generally embraced the involvement of private finance in infrastructure.

Table 1: Infrastructure investment by region

Region	Amount invested in infrastructure in region
Europe	54%
North America	30%
Asia Pacific	15%
Other	1%

Source: Watson Wyatt, 2009a, 2009b.

It is surprising that the amount invested in infrastructure by these top 100 managers is not greater. The survey found in 2008 that only 9 percent of the alternative assets were invested in infrastructure (Table 2).

Table 2: Investments in alternative asset classes

Subdivision of alternative asset class	Percent invested
Real estate	58%
Private equity fund of funds	20%
Fund of hedge funds	13%
Infrastructure	9%
Commodities	negligible

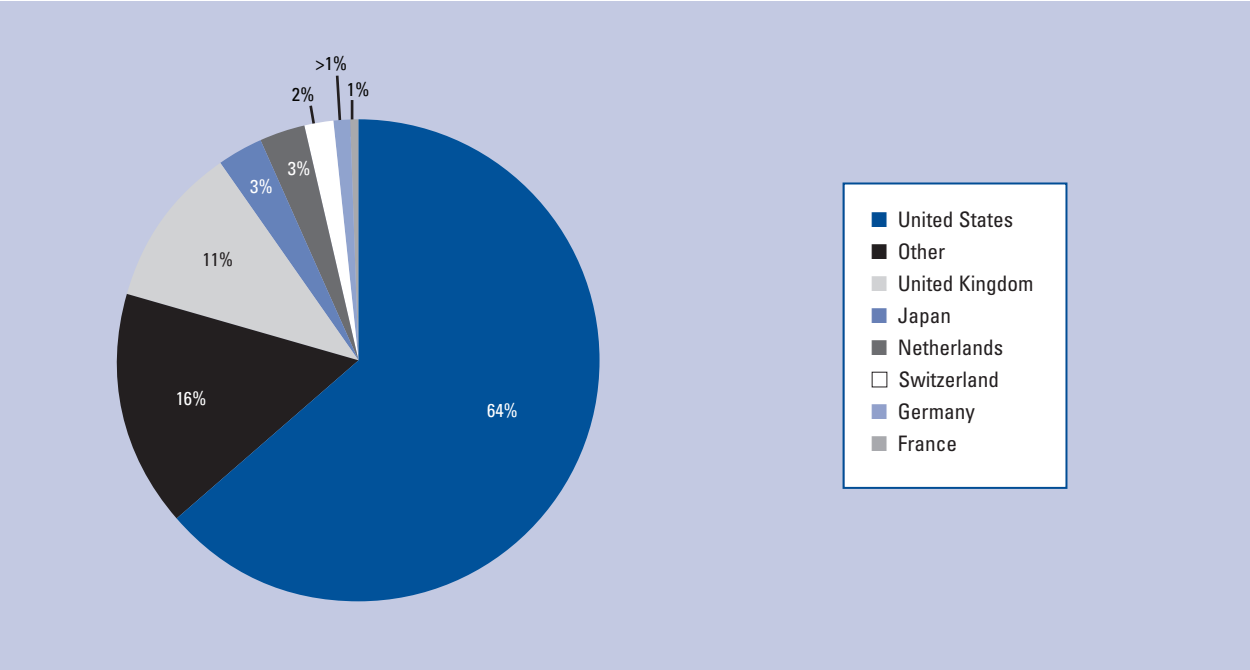
Source: Watson Wyatt, 2009a, 2009b.

So what seems to be holding back greater investment by pension funds?

The role of pension trustees and their advisors

An important factor that is little discussed is the role of the pension trustees and their advisors. The trustees work on behalf of the pension fund beneficiaries to oversee the fund's investment strategy and implementation. Despite this important role, many trustees are not necessarily investment experts, and a number may well be employees of the entity that has its pensions in the fund. This can have two consequences. First, the trustees are very reliant on their investment advisors and second, they have a natural inclination to stick with more traditional, easy-to-understand investment assets such as government bonds or equities. If they are to diversify into the alternative asset class, then they will be reliant on their investment advisors to explain to them the risks and rewards of an infrastructure opportunity. While there are a number of such advisors who have built up their infrastructure knowledge, there are undoubtedly a

Figure 2: Proportional share of sources of pension fund assets at end of 2008



Source: IFSL estimates based on IFSL, 2009.

large number, often in the smaller advisory practices, who have not. Thus the relative lack of interest in and/or knowledge of the sector by these advisors becomes an impediment to pensions making the move to invest in infrastructure opportunities.

Failure by the infrastructure industry to explain and promote the infrastructure proposition

A small but significant number of pension funds have built up considerable expertise in the market with specialist teams transacting and managing investments directly, as illustrated by the funds highlighted earlier in the chapter. But the fact remains that there are many more pension funds that have little, if any, expertise. For these funds infrastructure as an asset class remains a niche within an alternative investment niche. Against this infrastructure deficit, there seems to be a need for the industry itself to do more to promote itself to the broader pensions community.

The pension sector is not a homogenous group of investors, but there are some clear trends in the types of investments they are seeking and the industry needs to more fully understand them.

The financial deterrents to pension fund investment include illiquidity, lack of immediate yield, lack of linkages, and lack of opportunities for smaller pension funds

In addition to the general deterrent factors highlighted above, there are some more specific financial concerns that may be deterring pension investors. Some of these have been brought into the limelight in the recent economic downturn.

Illiquid investments

Infrastructure investments are generally illiquid; they cannot be readily bought or sold, so holding them can create issues in volatile markets. In 2008 during the economic turmoil, when equity values fell rapidly many infrastructure values held up well. What appeared a good thing actually created a number of fund management issues. Some funds found the percentage of total value held in infrastructure breached allocation limits, but they could not speedily reduce their exposure to correct this.

The lack of yield

Pension funds are continuously trying to balance their assets with their liabilities to current and future beneficiaries, and for that reason they need to make investments that give them an immediate return or yield. This means that exposure to expensive and uncertain bidding processes and the time required for asset construction are incompatible with their need for yield. This in effect means that they are limited to investing in funds that are

already generating distributions or to investing directly in existing, fully operational infrastructure.

Not always index linked

Many pension fund liabilities are index linked, typically to a national consumer price index, and so they seek investment opportunities that also provide index-linked returns. However, there is a limited pool of infrastructure investments that have an explicit index link.

The size of investment

The pension fund community includes a significant number of small funds with investment allocations that are insufficient for infrastructure. For example, in the United Kingdom there are approximately 2,500 pension funds, of which approximately 1,000 are managing funds of less than UK£5 million; only 190 are managing funds of more than UK£1 billion.[5]

Pension funds also provide debt to infrastructure projects, but in the past this has often relied on monoline insurance. The decline of the monoline insurers has led to a decline in debt offerings.

Notes

1 See the websites of the Ontario Teachers' Pension Plan, at http://www.otpp.com/wps/wcm/connect/otpp_en/home/investments/inflation+sensitive/infrastructure, and the CPP Investment Board, at http://www.cppib.ca/Investments/Inflation_Sensitive_Investments/infrastructure.html.

2 CalPERS is the Californian Public Employees' Retirement System. The increased funding to infrastructure was reported by a number of sources, including Diamond's article in *Pensions & Investments* (Diamond 2010).

3 Watson Wyatt 2009a, 2009b.

4 *Alternative assets* are taken to mean investments in hedge fund of funds, real estate, private equity fund of funds, infrastructure, and commodities.

5 Pension Funds Online, available at http://www.pensionfundsonline.co.uk.

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CHAPTER 3.6

Government as Provider and Facilitator of Finance

The global economic crisis has seen parts of the private finance offering virtually disappear; for example, the capital and commercial bank debt markets have become severely constrained in the amount and terms of their lending. This has meant that governments have become the lender of last resort in many circumstances. In parallel with this responsibility, governments have also put in place a range of measures to try to support and stimulate the provision of private finance, primarily in the debt market.

Government measures to support and stimulate private finance have benefits but create issues

Government measures to support and stimulate private finance include:

- up-front payments,
- direct co-lending,
- direct guarantees, and
- indirect guarantees.

The following is a brief description of what these measures may entail, followed by a summary of some of the benefits and issues of the different approaches (Table 1).

Government up-front payments

Up-front payments take the form of either direct capital contributions toward project costs or the provision of necessary but separate infrastructure (thereby reducing the private finance need)—for example, passenger stations for a new rail line.

Direct co-lending

Governments can co-lend alongside commercial banks on the same commercial terms—for example, the United Kingdom set up the Treasury Infrastructure Finance Unit, in early 2009 (see Case in Point 1 in Appendix A.4). The main purpose of this approach is to bridge the difference between available commercial debt and a project's funding needs.

Direct guarantees of debt

Governments may guarantee a proportion of commercial debt. This approach is aimed at reducing project risk—such as construction and/or revenue risk on a demand-based project. This has been used in France, Portugal, and Spain.

Indirect guarantees of debt

Rather than providing a direct guarantee of the commercial debt, governments may provide guarantees that are contingent on the outcome of future events. For instance, if a local government party defaults, the national government will support its obligations or guarantee the amount of debt paid if a partnership or concession is terminated.

Table 1: Government measures to stimulate the involvement of private finance

	Benefits	Issues
Up-front payments: Capital contributions	• Reduces private-sector funding requirement • Provides access to cheaper public funding • Risk transfer is relatively undisturbed if used in moderation	• Increased operating leverage • Difficulties refinancing public-sector support • Need to consider carefully the impact on any debt rating[1]
Direct co-lending	• May be quickly implemented • Retains structure of envisaged transaction • Reversible in better credit markets	• Does not deal with increased debt costs • Requirement for government lending skills/operation • Potential conflict of interest to manage • Investor and private funder issues to consider • UK model provides only liquidity not better terms • Leaves government with the challenge of how to dispose of stakes
Guarantees: Direct	• Might assist project affordability	• Helps credit capacity and debt costs but not liquidity issues • Benefit may be limited by the widening of government spreads • Leaves government with contingent funding requirement (at default or termination)
Guarantees: Indirect	• May attract new debt to the market (as investors may regard it as quasi-sovereign debt with no direct project risk) • Should help with pricing	• Leaves government with contingent funding requirement

1 Moody's Investor Service 2009.
Source: World Economic Forum analysis.

"It will be interesting to see if the economic crisis catalyses governments within regions to work more closely together to pool their resources—whether finance or know how."

— Rashad Kaldany, Vice President, Asia, Eastern Europe, Middle East and North Africa, International Finance Corporation

Responses have occurred at the regional and multilateral levels as well

The response to the crisis has not rested with individual governments acting alone; there have also been regional and multilateral responses. For example, in 2009, the International Finance Corporation (IFC) established an Infrastructure Debt Crisis Fund for public-private partnership (PPP) projects (see Case in Point 1: IFC Infrastructure Crisis Facility).

In Europe, the European Investment Bank (EIB) instituted a €6 billion increase in funding of energy, carbon capture, infrastructure, and clean transport projects for each of the years 2009 and 2010.[1] The EIB was also behind the September 2009 launch of the Marguerite Fund,[2] which aims to raise €1.5 billion to invest in environmental, energy, and transport infrastructures. Cornerstone investors in this Fund are the French Caisse des Dépôts (CDC), Italy's Cassa Depositi e Prestiti (CDP), the KfW Bankengruppe (KfW) of Germany, and the EIB.

Enhancements to established support mechanisms have been instituted

For a number of countries, the response to the global economic crisis has not led to the introduction of completely new approaches but rather to the improvement of existing programs and initiatives. For example, India already had in place a Viability Gap Funding scheme (see Case in Point 3) to assist with the financing of important projects that are commercially untenable. In the United States, the existing TIFIA funding program (see Case in Point 1: TIFIA Funding in Chapter 3.1) has been expanded and the model used to develop Transportation Investment Generating Economic Recovery (TIGER) funds. In Canada, the P3 Canada Fund was launched (see Case in Point 2: PPP Canada).

There are also examples of governments responding to the crisis by removing known deterrents to private finance. For example, in Spain the government recently announced that they will assume the risk of the cost of land acquisition for road PPP projects.

There is also the question of how much finance may come from sovereign wealth funds (SWFs; see Chapter 3.4). It is estimated that total assets under SWF management are valued at US$3.5 trillion with funds representing half of those assets making some investment in infrastructure.[3] Establishing the extent of the actual

Case in Point 1: IFC Infrastructure Crisis Facility

The International Finance Corporation (IFC) launched the Infrastructure Crisis Facility (ICF) in April 2009. It created a pool of both debt and equity financing for infrastructure projects in developing countries whose viability was threatened by liquidity problems caused by limited private participation resulting from the global economic crisis. In addition, funding is available for advisory services.

By October 2009, pledges of US$4 billion had been made by International Financial Institutions (IFIs) for a debt pool, and the first loan had been made to a port project in Vietnam. This debt pool facility is managed by Cordiant Capital Inc.

IFC provided US$300 million to the fund. DEG, the German development finance institution, has earmarked US$400 million to co-finance programs under the ICF, in addition to €500 million set aside previously by KfW for the debt pool. PROPARCO pledged €200 million to the ICF debt pool for projects in Africa, after earlier committing €800 million in co-financing. The European Investment Bank (EIB) committed €1 billion in co-financing.

Case in Point 2: PPP Canada

In September 2009, the Government of Canada established PPP Canada to support the development of public-private partnerships (P3) by working with both public- and private-sector parties and to serve as a center of excellence and federal focal point for P3s. At the same time, they established a C$1.2 billion fund aimed at developing the market for projects procured by the public procurement partnership route or the alternative finance procurement route followed by some provinces.

The amount of the funding support, in combination with any other direct federal assistance, may not exceed 25 percent of the project's direct construction costs. In addition, the level, form, and conditions of any funding support will vary depending on the needs of a given project.

Eligible projects are for the construction, renewal, or material enhancement of public infrastructure that achieve value for the public, develop the P3 market, and generate significant public benefits.

Case in Point 3: Viability Gap Funding scheme in India

Overview

India's Viability Gap Funding (VGF) scheme was established in 2006 for competitively bid infrastructure projects where the economic benefits could be demonstrated but the financial returns were below investor thresholds. The scheme provides funding in the form of grants to meet the gap for making a public-private partnership (PPP) project commercially viable.

As of March 2009, 139 projects have been approved with a capital investment of Rs 118,830 crore (approximately US$25.97 billion) and a VGF commitment of Rs 38,993 crore (approximately US$8.52 billion).

The sectors covered under the scheme include power, transportation (roads, railways, seaports, airports), water supply/sewerage, and international convention centers. The key features of the VGF scheme are that:

- funding can take various forms, including but not limited to capital grants, subordinated loans, support grants, and interest subsidies;
- funding is disbursed contingent on agreed milestones and will be available in installments;
- funding by the Government of India is limited to 20 percent of projects costs. If required, an additional 20 percent can be made available by the sponsoring Ministry or Agency. The Government of India funding will normally be a capital grant during construction;
- funding is to be disbursed after the private-sector company has subscribed and invested its equity contribution;
- funding will be released in proportion to the disbursement of the remaining debt; and
- funding will be released through the lead financial institution.

Financial overview

A revolving fund of Rs 200 crore (approximately US$43.3 million) is provided by the finance ministry to the empowered institution. The empowered institution then disburses funds to the respective lead financial institutions and claims reimbursement at that point from the Ministry of Finance.

An Empowered Committee in the Department of Economic Affairs will consider and authorize funds up to Rs 50 crore (approximately US$10.8 million), beyond which the approval of the finance minister will be required.

Table 2: Approaches taken by various state infrastructure banks and their impact on infrastructure financing

Bank	Remit for infrastructure finance	Impact on infrastructure financing
European Bank of Reconstruction and Development (EBRD)[1]	Describing itself as a "transition bank," the EBRD was established in 1989 to support the financing of projects in Central Europe and Central Asia that serve the transition to market economies and pluralistic democratic societies. It is owned by 61 countries as well as the European Community and European Investment Bank. It has a capital base of €20 billion and supports infrastructure projects in a range of sectors including transport, environment, energy, and shipping. It primarily supports projects in the private sector.	It is difficult to establish a precise number for the amount spent on infrastructure as it is spread across a number of sectors. In 2008, the EBRD provided the following funding: 1. Municipal and environmental infrastructure: €279 million 2. Transport: €660 million
Development Bank of South Africa (DBSA)[2]	Established in 1983 by the South African government, the DBSA plays a number of roles to support the funding of physical, social and economic infrastructure in South Africa and the Southern Africa Development Community region. These roles are described as Financier, Partner, Advisor, Implementer, and Integrator. Its portfolio is split approximately 75:25% between public-sector projects and infrastructure funded through private-sector intermediaries.	It is difficult to establish a precise number for the amount spent on infrastructure as it is spread across a number of sectors. In 2009, the DBSA provided total funding, both equity and loans, of Rand 9.3 billion creating a total portfolio of Rand 20.48 billion. Of this, approximately 15% went to road and drainage projects, 8% to other transport, and 21% to water projects.
The Brazilian Development Bank (BNDES)[3]	The BNDES is a federal public company established in 1952 linked to the Ministry of Development, Industry and Foreign Trade. It aims to provide long-term financing to enhance Brazil's development and the competitiveness of Brazil's economy, including large-scale industrial projects and infrastructure. In the infrastructure sector, much of its current focus is aimed at the energy sector, including renewables, logistical bottlenecks including access to ports, expanding the telecommunications network, and developing urban infrastructure.	It is difficult to establish a precise number for the amount spent on infrastructure as it is spread across a number of sectors. In 2008, BNDES' total disbursements were R$92.2 billion, of which R$35.1 billion (38%) went to the infrastructure sector. This includes R$13.8 billion to roads/highways and R$8.6 billion to electric power.

(cont'd.)

investment in infrastructure can be difficult because many SWFs do not report their holdings publicly. The Abu Dhabi Investment Authority (ADIA), one of the largest SWFs, has infrastructure investments representing between 1 percent and 5 percent of their portfolio.[4] They recently acquired a 15 percent stake in Gatwick Airport from Global Infrastructure Partners.[5] SWFs are also concentrated, by number and value, in Asia and the Middle East, where there is significant demand for infrastructure investment, so these funds offer a better geographic fit than pension funds do.

> "The question for state or national infrastructure banks is whether their aim is to substitute private finance or provide an additional source of finance either to wholly fund projects or fund alongside commercial providers."
>
> — Richard Abadie, Partner, PricewaterhouseCoopers LLP

There appears to be impetus in many countries to set up state infrastructure banks

Given the change in many governments' role for the financing of infrastructure, many countries have revisited

Table 2: Approaches taken by various state infrastructure banks and their impact on infrastructure financing *(Cont'd.)*

Bank	Remit for infrastructure finance	Impact on infrastructure financing
KfW Bankengruppe (KfW)[4]	KfW is owned by the Federal Republic (which also guarantees it) and Lander (federal states) of Germany. It was established in 1948 as part of the post-war reconstruction effort. Today it describes itself as a promotional bank and it supports economic, social, and ecological development in Germany and worldwide as is an advisor to the German federal government.	While KfW is not solely focused on infrastructure, lending to the sector does form a part of its remit. It is difficult to establish a precise number for the amount spent on infrastructure as it is spread across a number of sectors and banks within its group. It lends to all types of infrastructure across the globe. For example, in 2008 it committed a total of €340 million to invest in renewable energies (other than large-scale hydro), which was more than the World Bank in the same period. It also plans to lend a total of €3 billion for municipal and social infrastructure in Germany in 2009 and 2010.
State Bank of India (SBI)[5]	The SBI is the largest commercial bank in India, both in terms of its geographic reach and its balance sheet size. It is a public-sector bank with the Government of India having a majority shareholding (approximately 60%). It is listed on Indian stock exchanges.	As with other banks it is difficult to establish precise numbers of lending to the infrastructure sector. However, this was primarily done through SBI's Project Finance SBU. This unit completed the following lending in 2008 and 2009 (see Table 3): In 2009, the SBI established a US$1.04 billion private equity fund with Macquarie Capital, with the IFC a minority shareholder and cornerstone investor, to invest in infrastructure in India.[6] The SBI also topped the 2009 Project Finance International League Tables as the Global Initial Mandated Lead Arrangers, having arranged US$19.9 billion for 37 deals in 2009.[7]

1 EBRD website: http://www.ebrd.com and the EBRD Annual Report 2008.
2 DBSA website: http://www.dbsa.org and DBSA Annual Report 2008/09.
3 BNDES website: http://www.bndes.gov.br and Annual Report 2008.
4 KfW website: http://www.kfw.de and Annual Report 2008.
5 SBI website: http://www.statebankofindia.com.
6 Macquarie website: http://www.macquarie.com.au; Macquarie Press Release 2009.
7 PFI 2010, p. 48.

the question of whether they should establish state infrastructure banks (either state-owned or state-sponsored). Consequently, we have reviewed some of the existing state infrastructure banks and have summarized in Table 2 the range and impact of approaches that have been taken (see also Table 3). In the United States, the 2011 budget sets out plans for a US$4 billion National Infrastructure Innovation and Finance Fund.[6] In the United Kingdom, the Liberal Democrat political party has also been calling for the establishment of the UK Infrastructure Bank.[7]

Table 3: State Bank of India lending amounts in FY 2008 and FY2009

Amount (Rs crores)	FY 2008	FY 2009	Growth (%)
Aggregate project cost of projects sanctioned	1,45,045	1,93,595	n/a
Aggregate debt requirement	92,558	1,33,894	n/a
Of the above, debt sanctioned by SBI	20,195	25,854	28.0
Debt syndication	54,951	64,069	16.6

Source: http://www.statebank.com/.

Notes

1 EIB 2008.

2 EIB 2009.

3 Preqin 2010.

4 ADIA 2010.

5 InfraNews 2010.

6 GPO 2010.

7 Vincent Cable 2009.

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Part 4

Case Studies

List of Case Studies

Part 4 is a collection of 11 case studies from around the world that illustrate various outcomes—successful or otherwise—for different financing approaches. Included are the following studies:

Delhi International Airport Ltd.

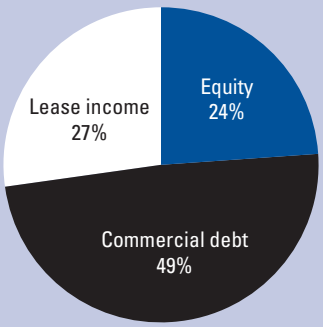
PUBLIC-PRIVATE PARTNERSHIP FOR CRITICAL INFRASTRUCTURE

The contractual approach was designed to meet the government's aims of retaining a degree of influence over a major infrastructure asset while securing a private partner to undertake a major modernization of the facilities, including operations and associated finance-raising

Fast facts

Size	Rs 102.25 billion
Date	2006
Location	New Delhi, India
Type	Economic
Approach	Public-private partnership
Phase	Existing and established
Market	Developing

Finance



Rs 102.25 billion

OVERVIEW

In 2006, following a competitive bidding process, the Government of India awarded the Delhi International Airport concession to the Delhi International Airport Private Limited (DIAL) with a mandate to operate, maintain, develop, design, construct, finance, upgrade, and modernize the Indira Gandhi International Airport, Delhi, for a period of 30 years until 2036, with a further option to extend the concession by 30 years. The concession master plan describes five phases of development of the airport. The first phase will require a capital investment of US$2 billion and will be completed prior to Delhi hosting the Commonwealth Games in October 2010.

KEY STAKEHOLDERS

The Airports Authority of India (AAI) has a 26 percent stake in DIAL and is the designated public body for the project. The AAI is a public-sector body wholly owned by the Government of India. The AAI was constituted in April 1995 by merging the erstwhile National Airports Authority (NAA) and International Airports Authority of India (IAAI) with a view to accelerating the integrated development, expansion, and modernization of the airports in the country to conform them to international standards.

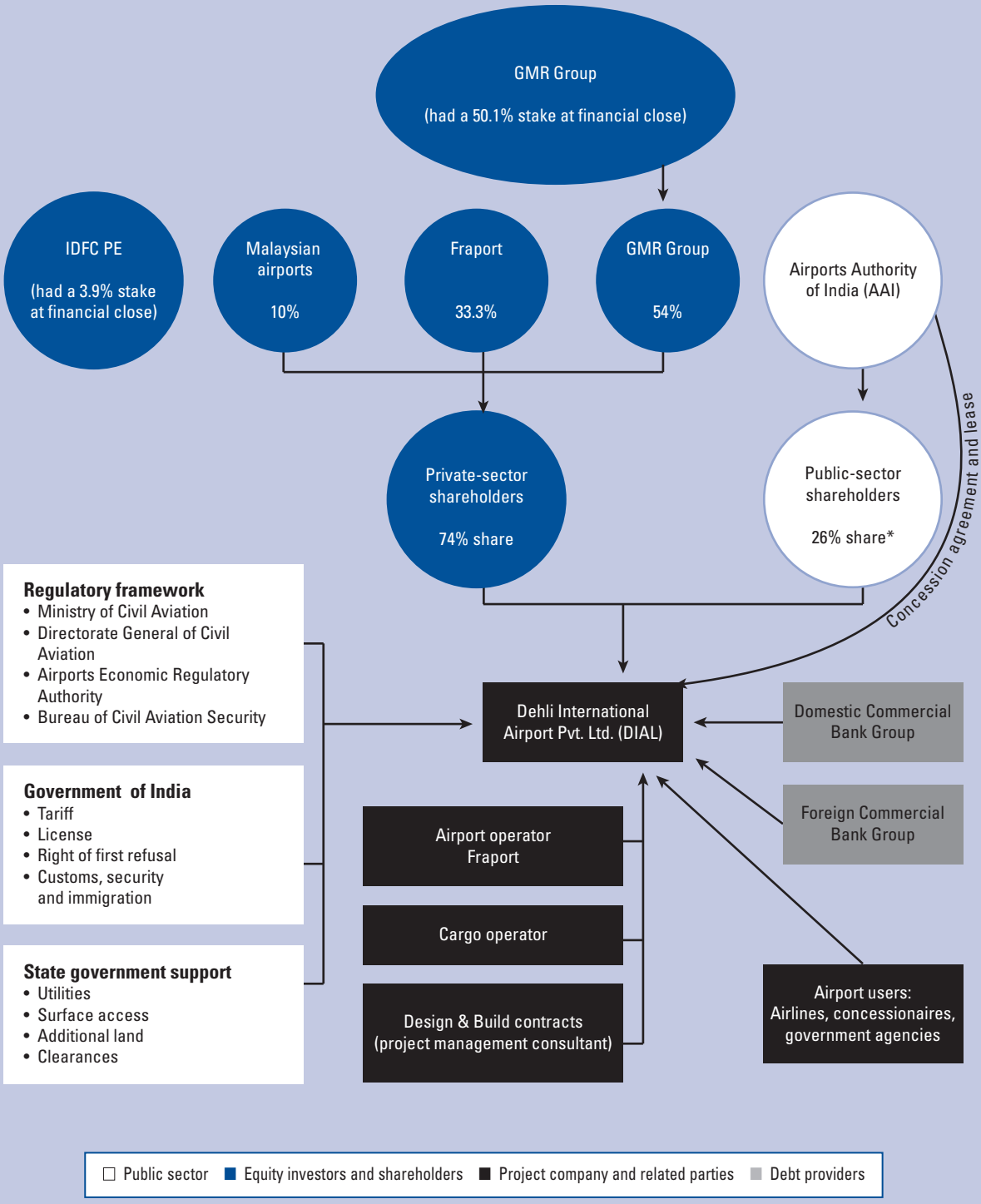
Private-sector shareholders have a 74 percent stake in DIAL. The original constituents were:

- GMR Group: The consortium leader, with a 50.1 percent equity stake *(54 percent stake in February 2010)*
- Fraport AG: A German airport company, with a 10 percent equity stake
- Malaysia Airports Holdings: A Malaysian airport company with a 10 percent equity stake
- Infrastructure Development Finance Company Ltd. Private Equity (IDFC PE): Financial investor, with a 3.9 percent equity stake *(nil in February 2010)*

Delhi International Airport Ltd.

PUBLIC-PRIVATE PARTNERSHIP FOR CRITICAL INFRASTRUCTURE

Structure



* Shares in name of AAI

Delhi International Airport Ltd.

PUBLIC-PRIVATE PARTNERSHIP FOR CRITICAL INFRASTRUCTURE

FINANCIAL OVERVIEW

A summary of the sources and uses of funds is shown in the table below:

- The leverage ratio of debt to equity is 1.25:1.
- An annual fee of 45.99 percent of the gross revenue is paid to the AAI. This amount was bid by DIAL as part of the competitive tendering process.
- An annual performance fee is payable to airport operator Fraport.
- DIAL has arranged a 17-year commercial debt split between the Indian domestic bank group (75 percent) and external or foreign debt (25 percent). This split is to reflect the mix of DIAL's revenues between local and foreign currencies and is part of DIAL's foreign exchange risk management. Because a proportion of DIAL's revenues are in foreign currencies, the inclusion of external commercial borrowings creates a natural hedge.
- The concession contract prevents DIAL giving security to lenders over the core airport assets, but it can be given over non-core assets. Lenders can take security over the shares in DIAL.

KEY CONTRACTUAL FEATURES

- DIAL's revenue is made up of two main elements:
  1. **Aeronautical charges:** Existing charges remain unchanged until the completion of capital upgrades, when a 10 percent increase will be permitted. Thereafter, these charges are capped by CPI-X increase to achieve a target revenue for a five-year regulated period. The CPI used will be the All India CPI.
  2. **Non-aeronautical charges:** These are the revenues from non-aeronautical activities, such as advertising, duty-free retail sales, car parking facilities, and food and beverages.
- DIAL is responsible for developing the airport as per the concession master plan. The first phase requires the upgrade of two existing terminals and the construction of a new runway (and associated infrastructure), followed by the completion of a new third terminal, cargo facilities, and airport access. The entire construction period was approximately 36 months, with targeted completion in March 2010.
- DIAL leases the site from the AAI for a nominal rent. The concession also allows DIAL to develop 5 percent of the total airport size for commercial property development; this is expected to primarily constitute hotel construction. The income secured from this commercial development is contributed as quasi-equity for the airport's development.

Table 1

Source of funding	Amount	Use	Amount
Equity and internal accruals	Rs 25.00 billion	Capital costs	Rs 80.26 billion
Commercial debt (Rupee and ECB)	Rs 49.86 billion	Preliminary expenses	Rs 6.72 billion
Lease payments from commercial development	Rs 27.39 billion	Upfront payments to AAI*	Rs 1.96 billion
		Financing costs	Rs 6.68 billion
		Contingency	Rs 6.63 billion
TOTAL	**Rs 102.25 billion**		**Rs 102.25 billion**

Note: The total of RS 102.25 billion converts to circa US$1.9 billion (November 2010).
* An upfront fee of Rs 1.5 billion, together with payment for capital works in progress

Delhi International Airport Ltd.

PUBLIC-PRIVATE PARTNERSHIP FOR CRITICAL INFRASTRUCTURE

- The contract has some performance measures: for example, following completion of capital upgrades in 2010, DIAL should achieve a rating of at least 3.5 for Airports Council International passenger surveys; the airport master plan should be updated at least every 10 years; and DIAL should participate in the International Air Transport Authority within 12 months of contract signature. DIAL provides a performance guarantee of Rs 5 billion for the first five years of contract; this guarantee is required to be escalated as per the CPI on an annual basis.

- All the shareholders are required to maintain their stake in DIAL for a specified period. In addition, financing agreements executed with lenders also have minimum management control requirements.

- The Government of India provides a cap on DIAL's risk from change of law and has an overall cap on its annual liabilities to DIAL.

- On termination for default by a party, compensation is to be paid by the party at fault as follows:

  —*AAI default:* 100 percent outstanding debt and 120 percent equity invested as part of core assets

  —*DIAL default*: 90 percent of debt outstanding

- DIAL has right of first refusal to develop a new airport within 150 kilometers of the project during the first 30-year concession period.

KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

The Government of India had two main aims in wanting to modernize the airport and improve the efficiency of its operations and financing while retaining some influence. By choosing a public-private partnership, the Indian government has retained influence on the operation of DIAL through the AAI's 26 percent shareholding but does not have control. DIAL has arranged external financing to fund a major program to upgrade the airport, and DIAL's private-sector shareholders include specialist airport operators.

This airport is the second largest in India in terms of passengers handled and has seen significant growth—in the three years from the end of 2004 to 2007, passenger numbers grew 25 percent per annum. The opportunity to invest in the enterprise was attractive to private investors, and 10 groups responded to the initial expression of interest, with 6 groups selected to submit detailed bids.

LESSONS LEARNED

The Indian government took time to consider an approach that best met their aims and built a contract and procurement process that reflected this. Some changes were made to the national legal framework prior to launching the procurement to, for example:

- ensure that the state would continue to provide certain activities such as air traffic control, security, and customs;

- provide commercial incentives, such as making land available; and

- prepare to establish an independent regulator for airports and airlines.

There was significant interest in the opportunity, and the competitive bidding process has secured the Government of India a 45.99 percent interest in DIAL's revenues along with a 26 percent management stake. The contractual approach, revenue forecasts—including the regulated revenue structure—and sector knowledge demonstrated by DIAL meant that the project was strongly supported by commercial banks.

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The Cross City Tunnel

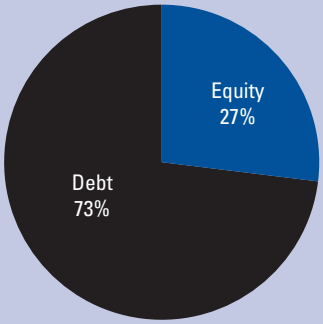
THE CHALLENGE OF LONG-TERM FORECASTING

Forecasts for traffic and tolls should be rigorously challenged by all parties because they underpin the project's economics and overall viability

Fast facts

Size	$A 789 million
Date	December 18, 2002
Location	Sydney, Australia
Type	Economic
Approach	Concession
Phase	New
Market	Developed

Finance



$A 789 million

OVERVIEW

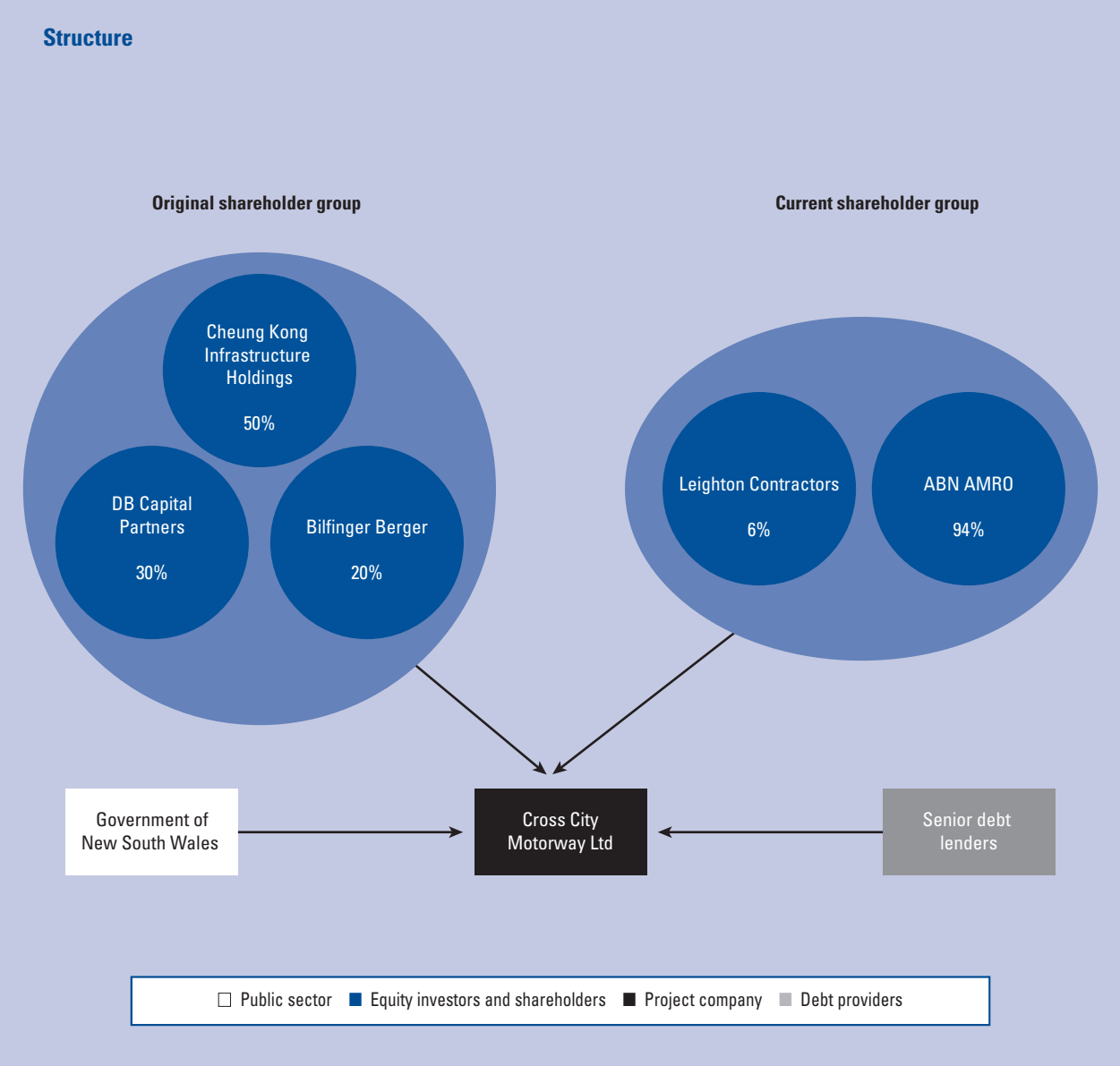
The Cross City Tunnel is a 2.1-kilometer-long tunnel located in Sydney, Australia. It links the western fringe of the central business district (CBD) to the eastern suburbs. The project was a public-private partnership intended to design, build, finance, and operate the tunnel that would charge users a toll. The concession was awarded to Cross City Motorway Ltd, composed of Cheung Kong Infrastructure Holdings, DB Capital Partners, and Bilfinger Berger. It reached financial close on December 18, 2002, and opened for traffic in August 2005. However, traffic through the tunnel never reached the levels forecast and after December 2006, after little more than a year, the company was insolvent, with debts of over $A 500 million. In June 2007, Leighton Contractors and ABN AMRO acquired Cross City Tunnel group for $A 700 million.

KEY STAKEHOLDERS

- The New South Wales government led the procurement of this project.
- The original concessionaire, Cross City Motorway Ltd, was a special-purpose company owned by Cheung Kong Infrastructure, the largest diversified infrastructure company in Hong Kong with a market cap of approximately HK$30 billion (2001); DB Capital Partners, one of the largest infrastructure fund managers in Australia; and Bilfinger Berger, one of Germany's largest civil engineering companies with operations globally.

The Cross City Tunnel

THE CHALLENGE OF LONG-TERM FORECASTING



The Cross City Tunnel

THE CHALLENGE OF LONG-TERM FORECASTING

FINANCIAL OVERVIEW

Source of funding	Amount	Percentage
EQUITY		**27.5%**
Cheung Kong Infrastructure (50%)	$A 110 million	
DB Capital Partners (30%)	$A 66 million	
Bilfinger Berger (20%)	$A 33 million	
DEBT	**$A 580 million**	**72.5%**
TOTAL	**$A 789 million**	**100.0%**

The debt was provided by a domestic and international banking group.

KEY CONTRACTUAL FEATURES

- During the bidding phase, the public sector selected an alternative and more expensive tunnel route proposed by the Cross City Motorway consortium. As there was no additional public funding available, these additional costs were planned to be recovered through higher tolls.

- The government committed to close a number of surface roads, thereby "encouraging" people to use the tunnel.

KEY DRIVER FOR THE INVOLVEMENT OF PRIVATE FINANCE

The primary objectives of the Cross City Tunnel project are to reduce through traffic in central Sydney, thereby easing traffic congestion and improving environmental amenity in the CBD and on streets approaching the CBD, and to improve east–west traffic flows.

LESSONS LEARNED

- There is a need to develop more realistic and accurate traffic forecasts, and, in turn, more realistic financial forecasts. The project encountered serious trouble when the tunnel failed to attract the traffic required to meet interest payments. Even when use was free, patronage was still below the very optimistic forecasts of 90,000 vehicles a day. The low traffic volume was exacerbated by the high cost of the toll—$A 3.56; all these factors resulted in a negative reaction by users.

- Assessment of project bids should include identification of key assumptions upon which success depends. Such critical assumptions should be subject to independent evaluation.

- There is a need to develop better and more flexible pricing models for PPPs. For example, the economic benefit of using a toll road during peak hours is very different from the benefit of using it late at night. Despite the difference in benefit, the driver still pays the same price. By closing down travel alternatives, government removed incentives for the operators to use pricing to attract business.

- There is a need for greater transparency in PPP contracts. Both the private sector and government need to be more open about questions regarding risk and pricing. In a similar vein, there is a need to make the details of the project open to public scrutiny before the project is completed. This did not happen in the Cross City Tunnel project, and the use of a public auditor would have been advantageous.

- There is also a need for governments to pursue PPP projects that are not only profitable, but that also serve to protect (and improve) the public interest.

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The Cross City Tunnel

THE CHALLENGE OF LONG-TERM FORECASTING

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Lekki Toll Road Concession

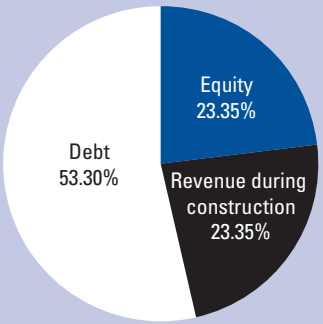
ARRANGING LOCAL FINANCING

A pilot public-private partnership with a high level of local participation in the financing aspects

Fast facts

Size	US$347 million
Date	April 24, 2006 (financing October 2008)
Location	Lagos State, Nigeria
Type	Economic
Approach	Public-private partnership
Phase	Combination of new-and-existing and established
Market	Underdeveloped

Finance



US$347 million

OVERVIEW

The Lekki Toll Road Concession is a US$347 million, 30-year public-private partnership toll road concession signed on April 24, 2006, between Lagos State and the Lekki Concession Company (LCC). The project aims to solve the historical problems of heavy traffic and poor road conditions from Lekki to Epe in southern Nigeria. The road will be tolled with different toll rates depending on vehicle size. The sponsors will handle traffic risk. The project will be accomplished in two phases:

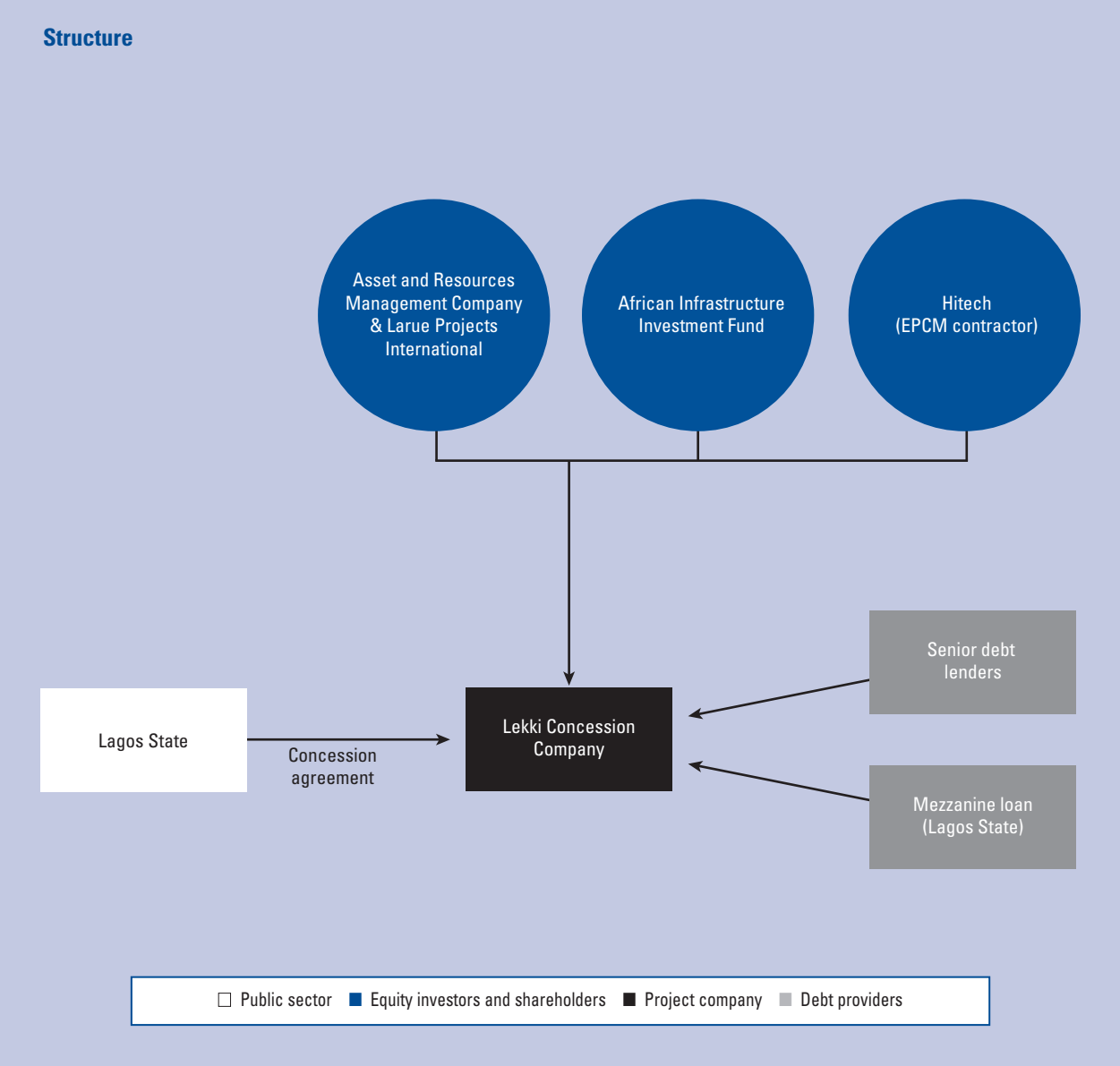
- **Phase I:** Expansion and upgrade of 49.4 kilometers of the Ozumba Mbadiwe Avenue/Lekki-Epe Expressway
- **Phase II:** Construction of 14 kilometers of Coastal Road; there is also an option to improve the Southern Bypass

KEY STAKEHOLDERS

- **Lagos State:** Project promoter and mezzanine lender
- **Lekki Concession Company (concessionaire):** Party responsible for operations. Macquarie Bank of Australia and Old Mutual of South Africa (through the African Infrastructure Investment Fund, or AIIF) are major shareholders. Other shareholders include:
  - —*Asset and Resource Management Company (ARM):* Key investor; investment management firm
  - —*Larue Projects International Ltd:* Key investor
- **First Bank, UBA, Diamond Bank, Zenith Bank & Fidelity:** National senior lender syndicate
- **African Development Bank (AfDB) and Standard Bank:** Regional senior lenders
- **Hitech:** Contractor; construction company and equity provider

Lekki Toll Road Concession

ARRANGING LOCAL FINANCING



Lekki Toll Road Concession

ARRANGING LOCAL FINANCING

FINANCIAL OVERVIEW

Source of funding	Amount	Percentage
TOTAL EQUITY	**US$81 million**	**23.35%**
Local equity (ARM, Larue, Hitech)	US$27 million	7.78%
International equity (AIIF)	US$20 million	5.77%
Mezzanine (Lagos State)	US$34 million	9.80%
REVENUE DURING CONSTRUCTION	**US$81 million**	**23.35%**
TOTAL DEBT	**US$185 million**	**53.30%**
Local bank debt	US$59 million	17.00%
International bank debt (Standard Bank)	US$75 million	22.60%
Development finance (AfDB)	US$51 million	14.70%
TOTAL FUNDING	**US$347 million**	**100%**

The funding structure for the project is: debt 53 percent, equity 23 percent, and revenue during construction 23 percent. There is a sovereign guarantee in place covering a termination scenario.

The AfDB was identified as a potential source of long-term financing and, together with Standard Bank, was able to offer a financial package that matched the long-term nature of the project revenues.

Furthermore, the AfDB and Standard Bank were able to structure a swap facility whereby the LCC's exposure to dollar-denominated obligations to the AfDB was significantly mitigated. AfDB participation was critical to this deal, without which neither Standard Bank nor the local banks would have participated.

KEY CONTRACTUAL FEATURES

- This PPP contract will be based on the design, build, operate, and transfer (DBOT), and the rehabilitate, operate, and transfer (ROT) business models.
- The concessionaire will upgrade and rehabilitate the existing 49.5 kilometer long expressway.
- Phase I will involve the construction of a new ramp to carry traffic onto the Falomo Bridge; the construction of new interchanges, footbridges, walkways, and bus stops along the expressway; the construction of 6 kilometers of the new 20-kilometer-long coastal road, which will serve as an alternative road up to Toll Plaza 1; and the construction of 10 interconnecting link roads between the expressway and the coastal road.
- The concessionaire will also construct three toll plazas along the expressway and will be responsible for the operation and maintenance of the toll road during the concession period.
- Phase II will see construction of the remaining 14 kilometers of the coastal road, and is dependent on the Lagos State government's completion of civil works on the new coastal defenses that require additional financial resources.
- The project is expected to create 635 short-term and 1,146 long-term jobs, with a good proportion of the employees being women.

KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

- **Convenience:** Traffic decongestion, easier access to and from the Lekki-Epe corridor, breakdown and recovery assistance, ambulance service, customer call center, and so on
- **Journey times:** Shorter and more predictable journey times, reduced wear and tear on motor vehicles, and reduced fuel consumption by road users
- **Safety and security:** Law enforcement and improved road safety
- **Other benefits:** Increase in employment opportunities, lower vehicle operating costs, support for continued and new business growth, and the enhancement of real estate values in the region

Lekki Toll Road Concession

ARRANGING LOCAL FINANCING

LESSONS LEARNED

- This was a predominantly Nigerian transaction. The LCC team, the contractors, and the local lenders as well as most of the shareholders were all Nigerian. Such a high level of local participation seemed vital in addressing the public relations, technical, political, financial, commercial, and legal issues that arose throughout the process. Additionally, financial close was successfully achieved in October 2008 on ground-breaking terms for Nigeria.

- The project emphasizes the role of the state in ensuring the success of PPP projects. Lagos State government consistently demonstrated a strong commitment to the concession, including investing N5 billion in mezzanine finance and political support.

- The Lekki Toll Road Concession emphasizes the role of PPPs as the preferred model for road infrastructure financing and delivery in Nigeria.

- This project will also serve as a starting point for a new private-sector highway services industry within the West African region.

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Ontario Highway 407 Toll Road

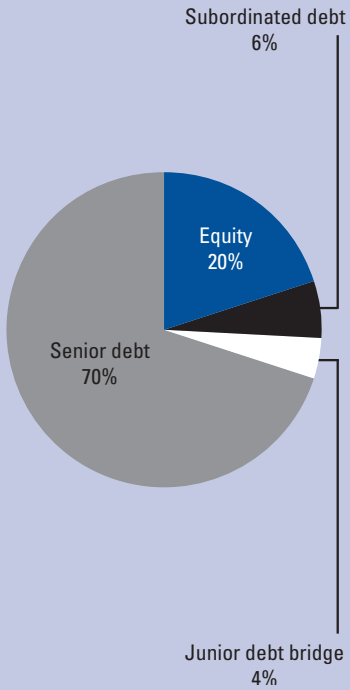
BEST PRACTICES IN DISPUTE RESOLUTION

All parties must understand the contract principles, otherwise disputes will arise; if they do, judicial independence is of critical importance

Fast facts

Size	Approximately C$4.0 billion
Date	1999
Location	Toronto, Ontario, Canada
Type	Economic
Approach	Concession
Phase	Existing and established
Market	Developed

Finance



C$4.0 billion

OVERVIEW

In 1999, an international consortium comprised of Concesiones de Infraestructuras de Transporte (CINTRA), SNC-Lavalin (SNC) and Grupo Ferrovial (Ferrovial) was awarded a C$3.1 billion bid for the concession of Highway 407 in Ontario. The consortium was to own and operate the 69 kilometers of the toll Highway 407 that was already in service and to design, build, own, and operate the 15-kilometer eastward and the 24-kilometer westward extensions. C$900 million was added to the bid to cover construction costs, debt service, and working capital, making a total transaction of approximately C$4.0 billion under the 99-year concession. SNC-Lavalin and Ferrovial-Agroman Internacional SA were the engineering, procurement, and construction (EPC) contractors.

The Ontario Highway 407 also used only electronic toll roads, which was ground-breaking at the time and minimized user distraction.

KEY STAKEHOLDERS

The initial and current shareholdings for the concession are shown below.

- The Province of Ontario government was responsible for the procurement.
- The shareholders of concessionaire—407 Express Toll Route (ETR) Ontario—have gone through a number of sales and disposals. The table below shows the initial and current shareholding structure.

Concessionaire*	Initial share (%)	Current share (%)
CINTRA	58.46	53.23
SNC	26.92	16.77
Grupo Ferrovial	14.62	—
Macquarie Infrastructure Group	—	30.00

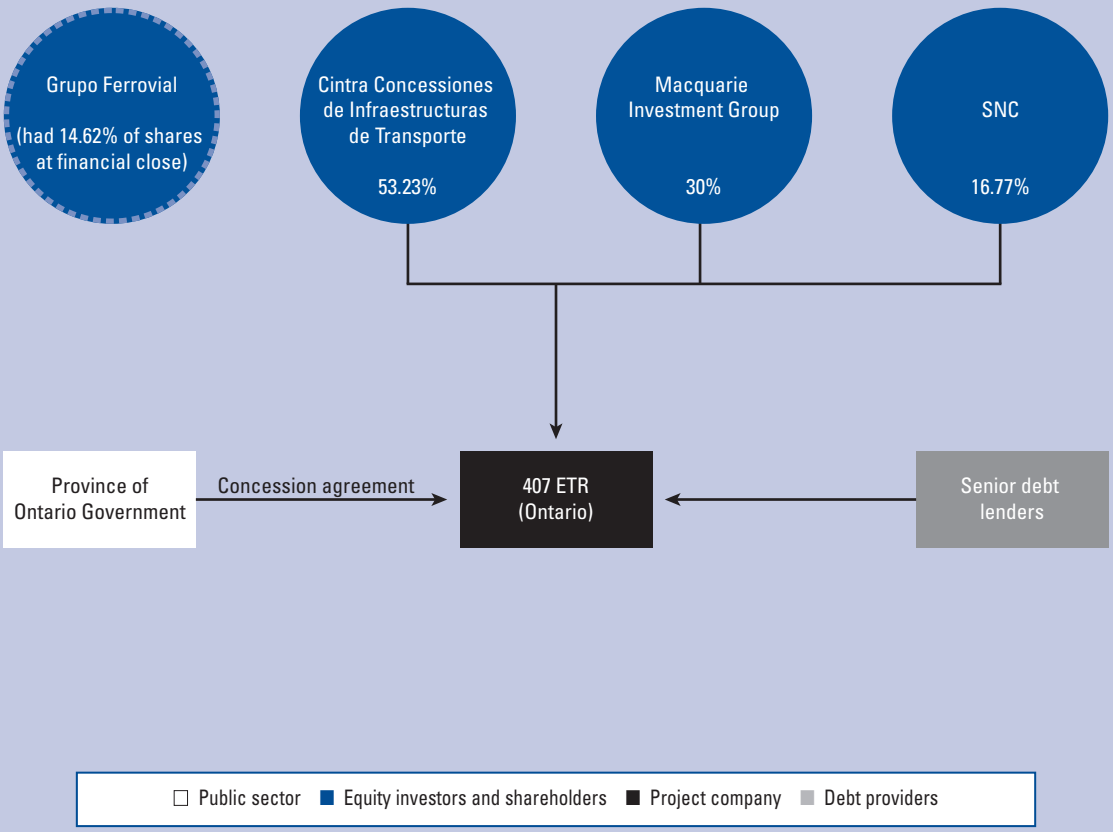
* In October, 2009, CINTRA and Grupo Ferrovial merged to create Ferrovial.

All of the shareholders are experienced infrastructure investors.

Ontario Highway 407 Toll Road

BEST PRACTICES IN DISPUTE RESOLUTION

Structure



Ontario Highway 407 Toll Road

BEST PRACTICES IN DISPUTE RESOLUTION

FINANCIAL OVERVIEW

The approximate amounts of financing put in place at financial close are detailed below. The consortium financed their construction period through short-term senior debt, which was then refinanced by a series of capital markets bond issues two to three years later.

Type of financing	Amount	Percentage
Equity	C$708 million	20%
Subordinated debt	C$217 million	6%
Junior debt bridge	C$150 million	4%
Senior debt	C$2,500 million	70%
TOTAL	C$3,575 million	100%

KEY CONTRACTUAL FEATURES

- Four principal documents defined the legal and regulatory framework within which sponsors were to operate:

  —The 407 Act

  —The Share Purchase Agreement

  —The Restriction on Transfer Agreement

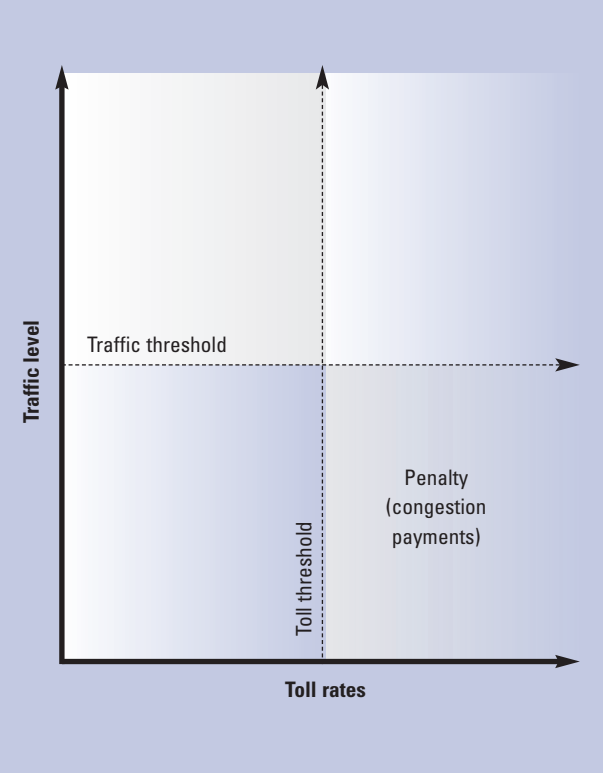
  —The Concession and Ground Lease Agreement

- Under the concession agreements, the concessionaire is free to raise the toll rate while achieving traffic levels above the traffic threshold. If traffic levels fall below the traffic threshold and the toll rate is above the toll threshold, a penalty applies. This arrangement is shown in Figure 1.

  —The traffic thresholds are based on a "base year" for traffic. The nullification of the base year has been disputed by the Ontario government.

  —These arrangements are aimed at dealing with congestion with the assumption that the penalty congestion payments will provide an incentive to improving the highway management and infrastructure to mitigate congestion. The structure does, however, set a minimum level of tolls regardless of traffic.

Figure 1: Threshold



KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

- Private financing is allowed for the construction of extensions at no additional cost to taxpayer.
- Extensions were intended to reduce congestion on existing highways.
- Enhanced transportation infrastructure desired to stimulate economic activity in communities across

the Greater Toronto Area and throughout the province.

LESSONS LEARNED

- Judicial independence: One of the interesting features of the project has been the dispute that arose between the ETR and the government on the right to increase tolls. But the legal process, as outlined below, has been notably independent:

  —The 407 ETR designated 2002 as the base year during that same year.

  —In January 2004, Ontario alleged that the 407 ETR did not have right to increase tolls without first obtaining the government's approval.

  —On February 2, 2004, Ontario alleged that the 407 ETR had not achieved conditions required to establish 2002 as the base year. Also during February, tolls on Highway 407 increased by a full cent to 13.95 cents per kilometer.

  —On July 10, 2004, an arbitrator found in favor of the 407 ETR on all issues. Ontario appealed against the decision.

  —On January 7, 2005, the Ontario Superior Court of Justice ruled in favor of the 407 ETR and dismissed the appeal by the provincial government.

  —On August 16, 2005, the arbitrator of the Ontario Court of Appeal ruled that base year was achieved in 2002 and that the Province, by its conduct, had accepted 2002 as the base year. The Province announced intentions to appeal decision.

- Complexity of contract: Conditions included in contract for establishment of base year were open to varied interpretations.

- Long-term arrangements: The contract lacked terms to provide the government with adequate control of toll rate increases, allowing the 407 ETR full discretion in this area.

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Port of Baltimore, Seagirt Marine Terminal

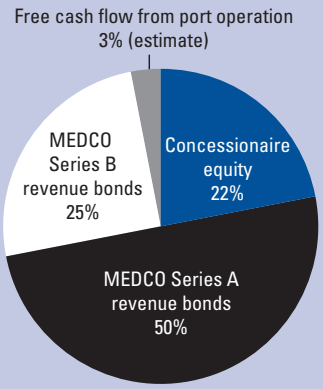
LONG-TERM REVENUE SHARING ARRANGEMENT

Arrangements can be put in place to ensure the public authority shares in the future success of a project

Fast facts

Size	US$334 million
Date	November 2009
Location	Seagirt Marine Terminal, Baltimore, Maryland, United States
Type	Economic
Approach	Concession
Phase	Expansion of existing
Market	Developing

Finance



US$334 million

OVERVIEW

The Port of Baltimore project is a 50-year lease and concession signed in November 2009 between the Maryland Port Administration (MPA) and Ports America Chesapeake (PAC) that entails the operation of the Seagirt Marine Terminal at the Port of Baltimore. As part of this arrangement, PAC will construct a 50-foot-deep berth and associated infrastructure, ready for use by the larger vessels that will be able to come through a widened Panama Canal from 2014. As well as an annual rent payment, the concession includes a fee-sharing arrangement whereby the MPA will receive a US$15 fee (indexed) for each container handled over a threshold of 500,000 per annum.

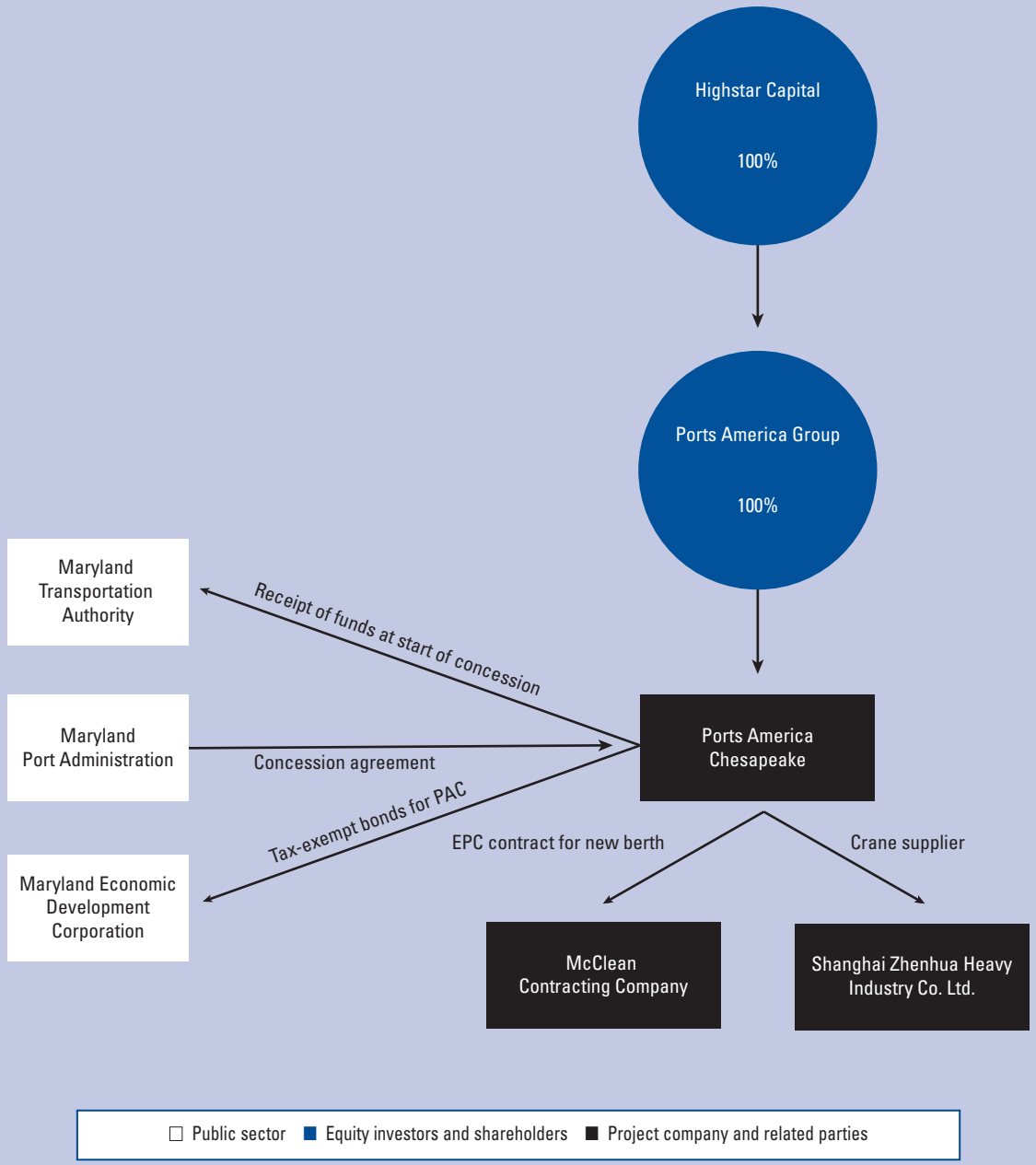
KEY STAKEHOLDERS

- The MPA, as owners of the Seagirt Marine Terminal and the public authority responsible for procuring the project
- The Maryland Transportation Authority (MdTA), as the previous owners of the terminal and the public authority responsible for carrying out certain upgrades to the roads and bridges in Maryland
- PAC, an affiliate of Ports America Group, which is owned by Highstar Capital—a specialist infrastructure fund
- The Maryland Economic Development Corporation (MEDCO), a body created by the State of Maryland to own or develop property for economic development. For this project MEDCO was the conduit to issue approximately US$249 million in revenue bonds on behalf of PAC. MEDCO also facilitated the purchase of the terminal by the MPA from the MdTA.

Port of Baltimore, Seagirt Marine Terminal

LONG-TERM REVENUE SHARING ARRANGEMENT

Structure



Port of Baltimore, Seagirt Marine Terminal

LONG-TERM REVENUE SHARING ARRANGEMENT

FINANCIAL OVERVIEW

The financing of this project was unique as it is one of the first US port concession projects to be financed through the bond market. It was structured so that the private concessionaire could fund its obligations with tax-exempt finance.

A high-level summary of the upfront sources and uses of funds is outlined below.

Source of funding	Amount	Percentage	Uses
Concessionaire equity	US$75 million	22%	US$140 million to the MdTA as the purchase price of the terminal
MEDCO Series A revenue bonds	US$167 million	50%	
MEDCO Series B revenue bonds	US$82 million	25%	
Free cash flow from port operation (estimate)	US$10 million	3%	US$194 million to fund the terminal upgrade
TOTAL	**US$334 million**	**100%**	

- The US$140 million payment to the MdTA will be for investment in roads, tunnels, and bridge facilities in Maryland. This was partly funded with concessionaire equity and partly by Series A Economic Development Revenue Bonds issued by MEDCO.
- The cost of berth expansion (approximately US$105 million) will be principally funded from the proceeds of Series B Economic Development Revenue Bonds issued by MEDCO, the balance of the concessionaire equity, and some free cash flow generated by the operations of the terminal.
- PAC is the obligor on the revenue bonds, which are secured against PAC's interest in the concession and its assets.
- Moreover, PAC expects to invest a further US$500 million over the life of the concession to maintain and upgrade the terminal as necessary. This investment is forecast to come from free cash flow from the operation of the terminal.

KEY CONTRACTUAL FEATURES

- PAC will lease the 200-acre Seagirt Marine Terminal for a 50-year period, and will make an annual payment to the MPA.
- PAC will construct a 50-foot berth in the Port of Baltimore and will also invest in cranes and other infrastructure at the port.
- PAC will have full control over the operations of the terminal under the terms of the lease and concession, but the MPA will continue to own it.
- The state will receive a US$15 fee for every container after the first 500,000 moved through the port annually. This fee will be adjusted for inflation, and is projected to provide over US$450 million in future value to the MPA and the State of Maryland.
- Ports America will give the port an annual rent payment of US$3.2 million, adjusted for inflation.

KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

- The need to increase the competitiveness of the Port of Baltimore: The construction of 50-foot berths would enable the larger ships traversing the Panama Canal to dock, bring additional business to the port and help to secure jobs at the port. Without this private funding, the port would see business opportunities shift to other US East Coast ports, such as the Norfolk Port, which already has 50-foot berths.
- The MdTA will reinvest funds as part of a capital program. This will include upgrades to I-95, the US 40 Hatem Bridge, and the US 50/301 Bay Bridge.

Port of Baltimore, Seagirt Marine Terminal

LONG-TERM REVENUE SHARING ARRANGEMENT

LESSONS LEARNED

- The concession has been structured so that the public authorities benefit not only from an upfront receipt but will also share in the future success of the port.
- The financing arrangements were structured to ensure that the financing risk sat with the concessionaire yet the project could still benefit from tax-exempt debt rather than using commercial bank debt.

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Chicago Skyway

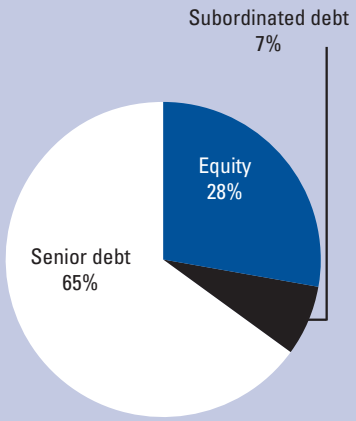
LONG-TERM CONCESSION OF A REAL TOLL ROAD

The effective privatization of a real toll road can generate significant upfront payments for the public authority

Fast facts

Size	US$1.83 billion
Date	January 2005
Location	Chicago, Illinois, United States
Type	Economic
Approach	Concession
Phase	Existing and established
Market	Developing

Finance



US$1.83 billion

OVERVIEW

The Chicago Skyway Bridge is a 7.8-mile real toll road built in 1958 (and extensively reconstructed in 2001–04) to connect the Dan Ryan Expressway to the Indiana Toll Road. Up until the time of the transaction the road was operated and maintained by the City of Chicago. Then, in January 2005, the City of Chicago entered into a 99-year operate-and-maintain concession with the Skyway Concession Company (SCC). The contract was awarded in October 2004 and the lease commenced in January 2005. The structure of the concession effectively meant that the road was privatized, and the SCC assumed responsibility for all operations and maintenance of the Skyway, including the right to all toll and other concession revenue. Upon entering the concession, the SCC paid the City of Chicago US$1.83 billion (the US$1.82 billion bid adjusted for inflation). By August 2005 the transaction was refinanced, creating a total finance package of US$2.15 billion.

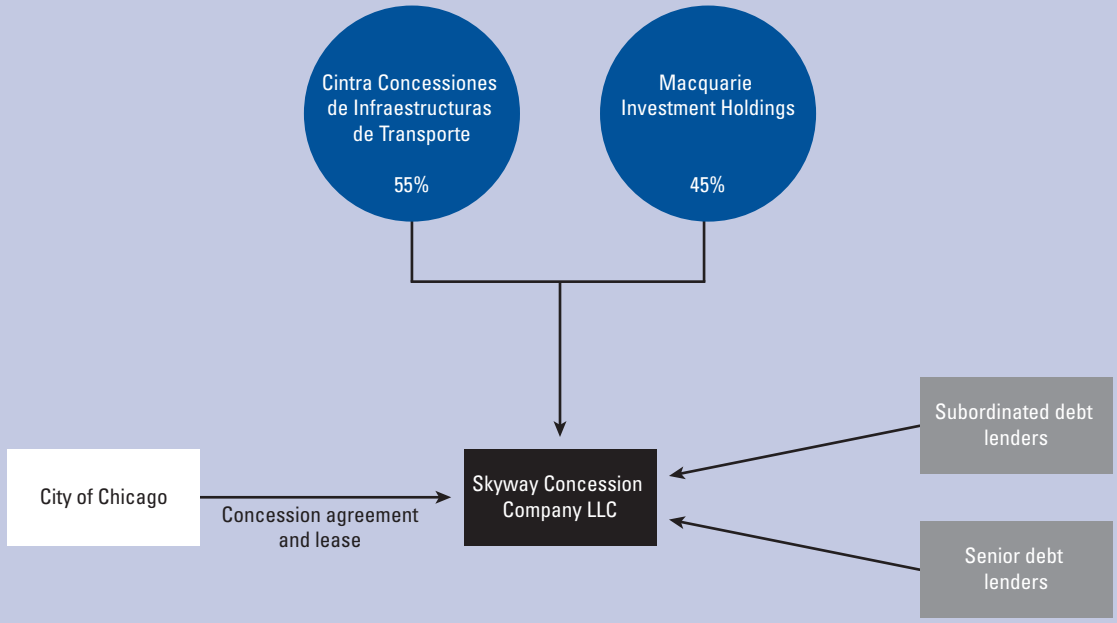
KEY STAKEHOLDERS

- The City of Chicago had lead responsibility to procure the project and managed the competitive process to let the concession.
- The SCC is a private company owned by the Spanish Cintra Concessiones de Infraestructuras de Transporte (55 percent) and by the Australian Macquarie Investment Holdings (45 percent), both of which have been active investors in infrastructure projects.

Chicago Skyway

LONG-TERM CONCESSION OF A REAL TOLL ROAD

Structure



☐ Public sector ■ Equity investors and shareholders ■ Project company ■ Debt providers

Chicago Skyway

LONG-TERM CONCESSION OF A REAL TOLL ROAD

FINANCIAL OVERVIEW

The financing put in place at the time of the concession award in January 2005 was soon refinanced in August 2005; these two financing structures are summarized below.

Source of funding	January 2005	August 2005
Concessionaire equity	US$1.00 billion (45.5%)	US$0.60 billion (28%)
Concessionaire raised subordinated debt	—	US$0.15 billion (7%)
Concessionaire raised senior debt	US$1.19 billion (54.5%)	US$1.40 billion (65%)
TOTAL	US$2.19 billion	US$2.15 billion (100%)

Note: Amounts are approximate.

The original senior loan was a nine-year loan underwritten by a group of European banks. When the SCC refinanced, US$1.4 billion of AAA-rated bonds were issued and US$150 million of subordinated debt was arranged. This refinancing enabled the SCC's shareholders to recover approximately US$400 million of their original investment.

KEY CONTRACTUAL FEATURES

- The SCC is responsible for all operating and maintenance costs of the Skyway, and has the right to all toll and concession revenue. The concession agreement sets out the required operating standards.
- The concession agreement limits the amount and level of toll increases the SCC can make, although cumulatively, if the maximum increases are implemented, the rise in toll charges could be significant. From 2008 through 2017, any increase is limited to a maximum amount of 7.9 percent per year; in the remaining 86 years, the SCC can adjust tolls by the greater of (1) 2 percent per year, (2) inflation, or (3) the increase in GDP per capita.
- The concession agreement places no restrictions on the public authorities constructing competing toll-free highways (such non-compete clauses are often a feature of real toll concessions).
- There is no revenue-sharing provision between the SCC and the City of Chicago.
- There are provisions to ensure that the road is maintained during the final 10 years of the concession prior to its being handed back to the City.

KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

There appear to have been three main drivers for this project:

- **Financial:** The main driver appears to have been the desire for asset maximization by the City of Chicago and the opportunity to monetize an existing infrastructure asset to help address budget deficits, although the project does remove future revenue for the City from the road. The proceeds from the project were used as follows:

Use of proceeds	Amount
Refund outstanding Skyway bond principal and interest	US$453 million
Retire a proportion of outstanding General Obligation debt	US$392 million
Permanent operating budget rainy day fund	US$500 million
Eight-year capital budget and operating budget stabilization fund	US$475 million
TOTAL	US$1,820 million

Source: Crain's Chicago Business, November 2004.

Upon completion of these disbursements, Moody's upgraded the City's overall bond rating a notch to Aa3.

—When the City started the competitive process in 2004, they knew that the road was in good condition, there was an established track record of traffic volume, and a long concession period was on offer. All these factors were likely to attract significant interest from private investors.

—The three bids received in October 2004 ranged from an upfront payment of US$505

Chicago Skyway

LONG-TERM CONCESSION OF A REAL TOLL ROAD

million to the US$1.82 billion bid by the SCC.

- **Operational:** The project entailed the divestiture of an asset that the City regarded as non-core and was underpinned by the belief that an experienced private-sector operator would run the toll road more efficiently than the City could. One of the first things the SCC did was to install automatic tolling systems.

- **Political:** The number of union workers working on the toll road was small (about 100), therefore there was little union protest as these workers were mostly retained or relocated to other city departments. Also, the potential toll-rate increase backlash would be geared more toward the private-sector operators than toward the incumbent political leaders. As a result, the potential political opposition has been minimal.

LESSONS LEARNED

- The project demonstrates that public authorities can receive significant revenues from the monetization of its assets, but to maximize revenue and mitigate public opposition, the choice of asset to be monetized is important. The Chicago Skyway was an existing, well-maintained asset with established traffic patterns, yet it was a non-core asset for the City, users had alternative routes available to them, and only a small workforce was affected by the changes.

- The receipts from some monetizations of assets are difficult to predict. There was a difference of more than US$1.3 billion among the three bids for this project.

- It is probably too early to conclude whether or not this project will be a long-term commercial success because, as with any real toll road, the ability to continue to increase tolls and maintain traffic is unpredictable.

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Doraleh Container Terminal

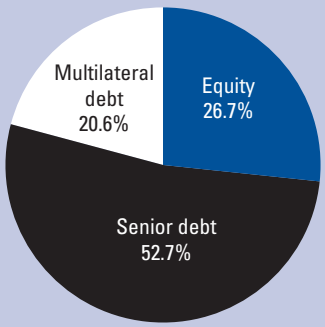
MULTILATERAL SUPPORT BUILDING

Multilateral support may be critical to attracting private finance for some national/regional infrastructure because it mitigates some of the financial and economic risks

Fast facts

Size	US$499 million
Date	2006
Location	Doraleh, Djibouti
Type	Economic
Approach	Concession
Phase	New
Market	Underdeveloped

Finance



US$499 million

OVERVIEW

The Doraleh Container Terminal project encompasses US$499 million in financing that includes a US$263 million Islamic-compliant financing piece as well as a US$103 million multilateral loan. The Doraleh Container Terminal S.A. (DCT) is a joint venture vehicle between the Djibouti Port Authority and DP World Djibouti. The concession commenced in October 2006.

The DCT has a mandate for land reclamation as well as for the development, financing, design, construction, management, operation, and maintenance of the port. The DCT is located 11 kilometers from the existing Djibouti port facilities and is four times larger.

Construction began in November 2006. Financial close for this project was reached in December 2007 for the Islamic tranche, and in December 2009 for the conventional tranche—through the African Development Bank (AfDB) and PROPARCO.

DP World Djibouti has management control of the project company. Project operations commenced in February 2009 and were organized in two phases: the first phase would have six super cranes and create a capacity of 1.5 million twenty-foot equivalent container units (TEUs); the second phase would seek to double this capacity.

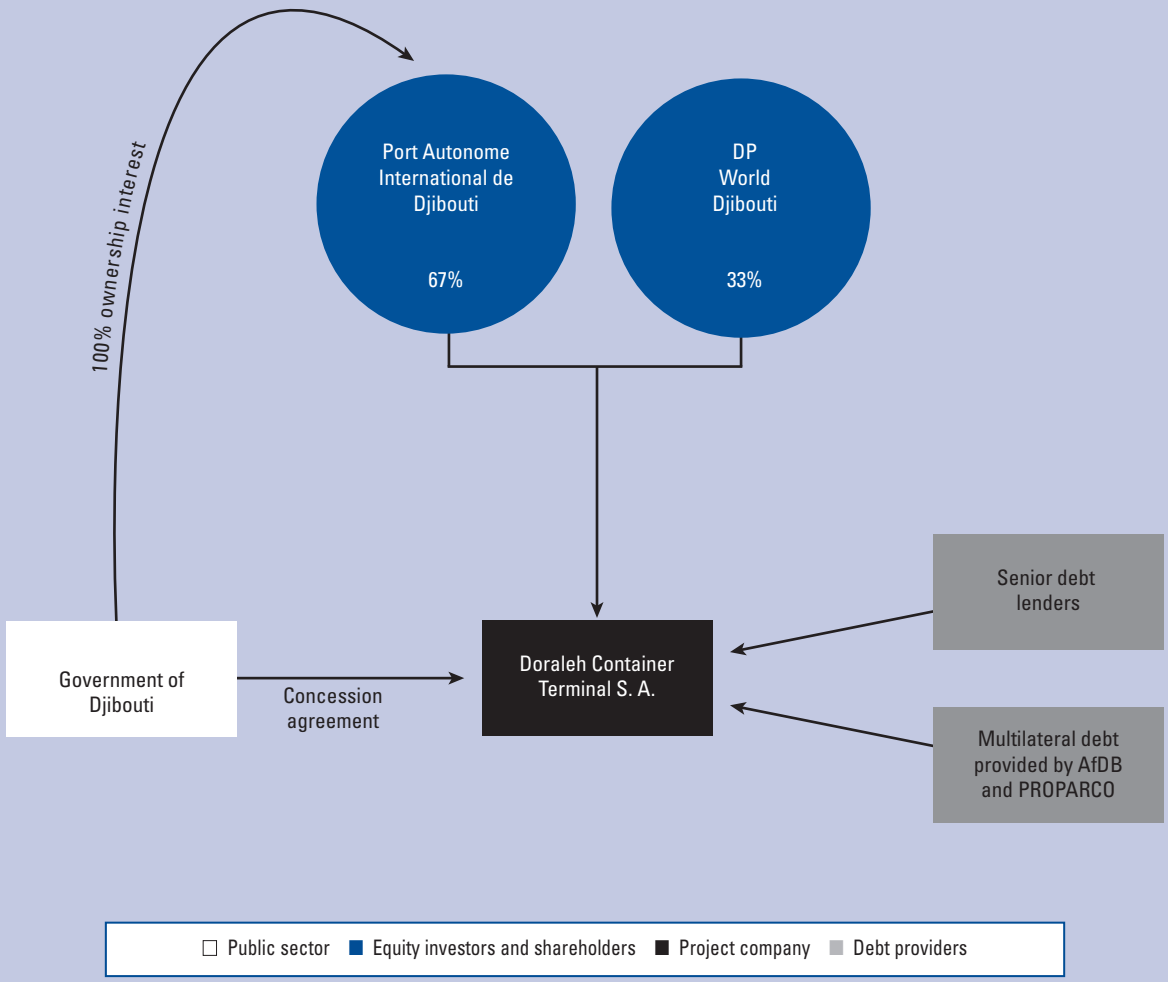
KEY STAKEHOLDERS

- Port Autonome International de Djibouti (the Djibouti Port Authority)—a public-sector party that is 100 percent government owned; this authority owns 67 percent of the Doraleh Container Terminal.
- DP World Djibouti—a subsidiary of the DP World of the United Arab Emirates, which is one of the largest marine terminal operators in the world with 49 terminals across 31 countries; DP World Djibouti owns 33 percent of the DCT, and will operate the terminal.
- The AfDB

Doraleh Container Terminal

MULTILATERAL SUPPORT BUILDING

Structure



Doraleh Container Terminal

MULTILATERAL SUPPORT BUILDING

- The World Bank Group's Multilateral Investment Guarantee Agency (MIGA)
- PROPARCO—a development finance institution that is partly owned by the Agence Française de Développement (AFD) and partly by private shareholders

A summary of the main project parties and contracts is shown in Figure 1.

FINANCIAL OVERVIEW

The 10-year, US$263 million, Islamic-compliant senior debt facility was arranged by Standard Chartered Bank, Dubai Islamic Bank, and WestLB AG. This debt is backed by a US$427 million, 99 percent political risk insurance policy from MIGA. The MIGA guarantee is greater than the tranche that it covers because it includes a termination and compensation package from the Djibouti government. The AfDB provided senior loans amounting to US$80 million.

Financing type	Source of funding	Amount	Percentage
SENIOR DEBT			**52.7%**
	Dubai Islamic Bank	US$263 million	
	Standard Chartered Bank		
	WestLB AG		
MULTILATERAL DEBT			**20.6%**
	African Development Bank	US$80million	
	PROPARCO	US$23 million	
SHAREHOLDERS' EQUITY			**26.7%**
	DP World Djibouti	US$44 million	
	Port Autonome de Djibouti	US$89 million	
TOTAL		**US$499 million**	**100.0%**

The MIGA guarantee was obtained in order to cover four key risks: transfer restriction, expropriation, war and civil disturbance, and breach of contract. MIGA's participation in the transaction helped mitigate perceived political risks for the banks and enabled the project sponsors to raise medium-term, cross-border project financing.

KEY CONTRACTUAL FEATURES

- The DCT is responsible for land reclamation, as well as the development, financing, design, construction, management, operation, and maintenance of the port.
- DP World Djibouti has management control of the project company.
- The government of Djibouti is entitled to an annual management fee and is prohibited from developing a competing container terminal.
- The DCT has the option to employ existing employees at the Djibouti port.
- The DCT is exempt from taxation.

KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

- To improve container facilities in Djibouti in order to increase port traffic and open up new opportunities for investment and growth, including breaking the country's reliance on trade with Ethiopia for its economic growth
- To establish Djibouti as a gateway for Common Market for Eastern and Southern Africa (COMESA) members, and subsequently to promote regional integration through trade development
- To capitalize on Djibouti's highly strategic location along the east-west African shipping lanes
- To benefit from the transfer of management expertise and technology and to increase employment and invigorate the local economy; during the construction phase, it is expected that approximately 350–500 local workers will be employed; on completion, the port will employ about 670 full-time workers.

Doraleh Container Terminal

MULTILATERAL SUPPORT BUILDING

LESSONS LEARNED

- Multilateral support from institutions such as MIGA and the AfDB is critical to attracting private finance in regional infrastructure because they mitigate some of the financial and economic risks that underlie such transactions.
- It is essential to have adequate financing at the onset of projects in order to prevent financing gaps that would otherwise appear once the project has started.
- It is challenging to involve conventional financing facilities with Sharia-compliant Islamic facilities because of the difference in financing terms.

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Port of Miami Tunnel

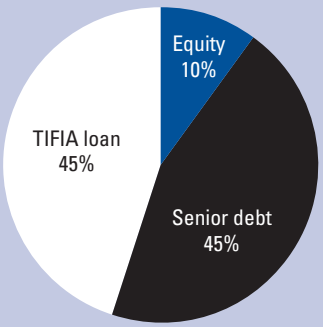
PUBLIC-PRIVATE PARTNERSHIP FOR A TECHNICALLY CHALLENGING PROJECT

The choice of procurement approach for a technically challenging project is as important as that for a financially challenging one

Fast facts

Size	US$760 million
Date	October 15, 2009
Location	Miami, Florida, United States
Type	Economic
Approach	Public-private partnership
Phase	New
Market	Developing

Finance



US$760 million

OVERVIEW

This project entailed an approximately 35-year public-private partnership (P3) contract between the Florida Department of Transportation (FDOT) and the Miami Access Tunnel consortium (MAT) to design, build, finance, maintain, and operate approximately three miles of tunnel and upgrade a linked causeway and feeder roads. Financial close for the project was reached on October 15, 2009. The project is intended to improve port access by diverting port traffic from city streets, thereby relieving congestion in downtown streets. Construction is expected to commence by mid-2010 and operations are expected to commence in 2014.

The tunneling is technically challenging, and one of the aims of FDOT's procurement strategy was to attract overseas contractors with the necessary technical experience.

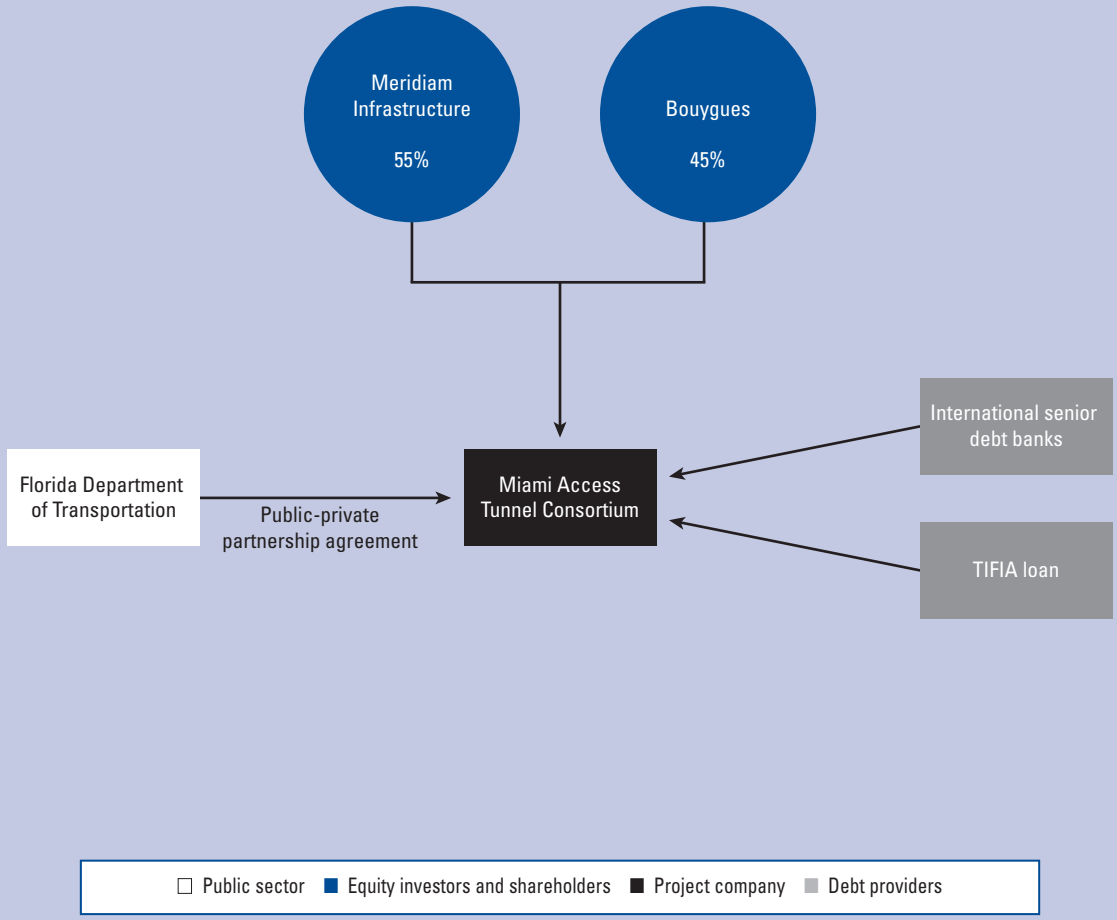
KEY STAKEHOLDERS

- FDOT led the procurement with additional federal government funding provided through the Transportation Infrastructure Finance and Innovation Act (TIFIA), managed by the US Department of Transportation (US DOT).
- The shareholders of the private-sector concessionaire are Meridiam Infrastructure (90 percent), a specialist infrastructure fund; and Bouygues Public Travaux (10 percent), a subsidiary of Bouygues Construction. Bouygues will also carry out the project construction.

Port of Miami Tunnel

PUBLIC-PRIVATE PARTNERSHIP FOR A TECHNICALLY CHALLENGING PROJECT

Structure



Port of Miami Tunnel

PUBLIC-PRIVATE PARTNERSHIP FOR A TECHNICALLY CHALLENGING PROJECT

FINANCIAL OVERVIEW

- The financial structure is summarized in the table below:

Source	Amount	Percentage
Equity	US$80 million	10%
Senior debt	US$340 million	45%
TIFIA loan	US$340 million	45%
TOTAL	**US$760 million**	**100%**

- Senior debt funding was arranged by a group of 10 international banks. The loan is split into two tranches: US$310 million is a six-year loan, and US$30 million is a five- to six-year term depending on when the first availability payment is received.

KEY CONTRACTUAL FEATURES

- The contract is based on FDOT making milestone payments at various stages of the project's development (totaling US$100 million) and a final acceptance payment of US$350 million once construction is complete. FDOT will also provide an availability payment to MAT subject to the assets being available and operated and maintained to a pre-defined condition established by FDOT. The maximum availability amount is US$32.5 million annually.

KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

- This project was first considered nearly 20 years ago, and has had many different designs and approaches put forward over the years. It was always known that whatever solution was picked, it would be technically challenging. As a result, public authorities were keen to transfer this design and construction risk to another party, and a public-private partnership approach offered them the route to do so and also to attract bidders with the relevant tunneling experience from around the globe.

LESSONS LEARNED

- This project demonstrates that complex construction projects can attract private finance, including investment from an infrastructure fund.
- The project also shows the importance of getting the right contract approach—one that reflects the project specific risks and issues. When this happens, private sources will be willing to provide finance.

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Florida I-595 Road Project

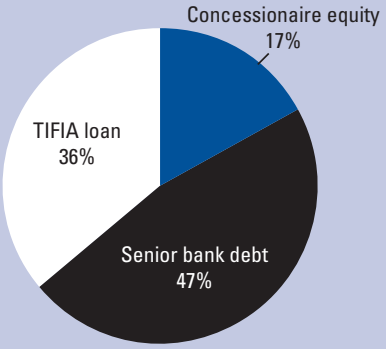
ARRANGING FINANCING DURING AN ECONOMIC CRISIS

Willingness to redistribute credit risk across parties can help bring projects to financial close

Fast facts

Size	US$1.674 billion
Date	March 2009
Location	Broward County, Florida, United States
Type	Economic
Approach	Public private partnership
Phase	Existing and established
Market	Developing

Finance



US$1.674 billion

OVERVIEW

The US$1.674 billion public-private partnership (P3) project encompasses the reconstruction, widening, and resurfacing of the 10.5-mile I-595 road corridor under a 35-year design, build, finance, operate, and maintenance concession in Florida. Financing for the project was complex and severely affected by the global economic crisis in 2008, but the concession was awarded in March 2009 to ACS Infrastructure Development. Construction of the improvements is expected to be completed in spring 2014.

KEY STAKEHOLDERS

- The Florida Department of Transportation (FDOT) led the procurement with additional federal government funding provided through the Transportation Infrastructure Finance and Innovation Act (TIFIA) managed by the US Department of Transportation (US DOT).
- The private-sector concessionaire is wholly owned by ACS Infrastructure Development, a subsidiary of Grupo ACS. Dragados USA, a subsidiary of Dragados A.S., is the design-build contractor.

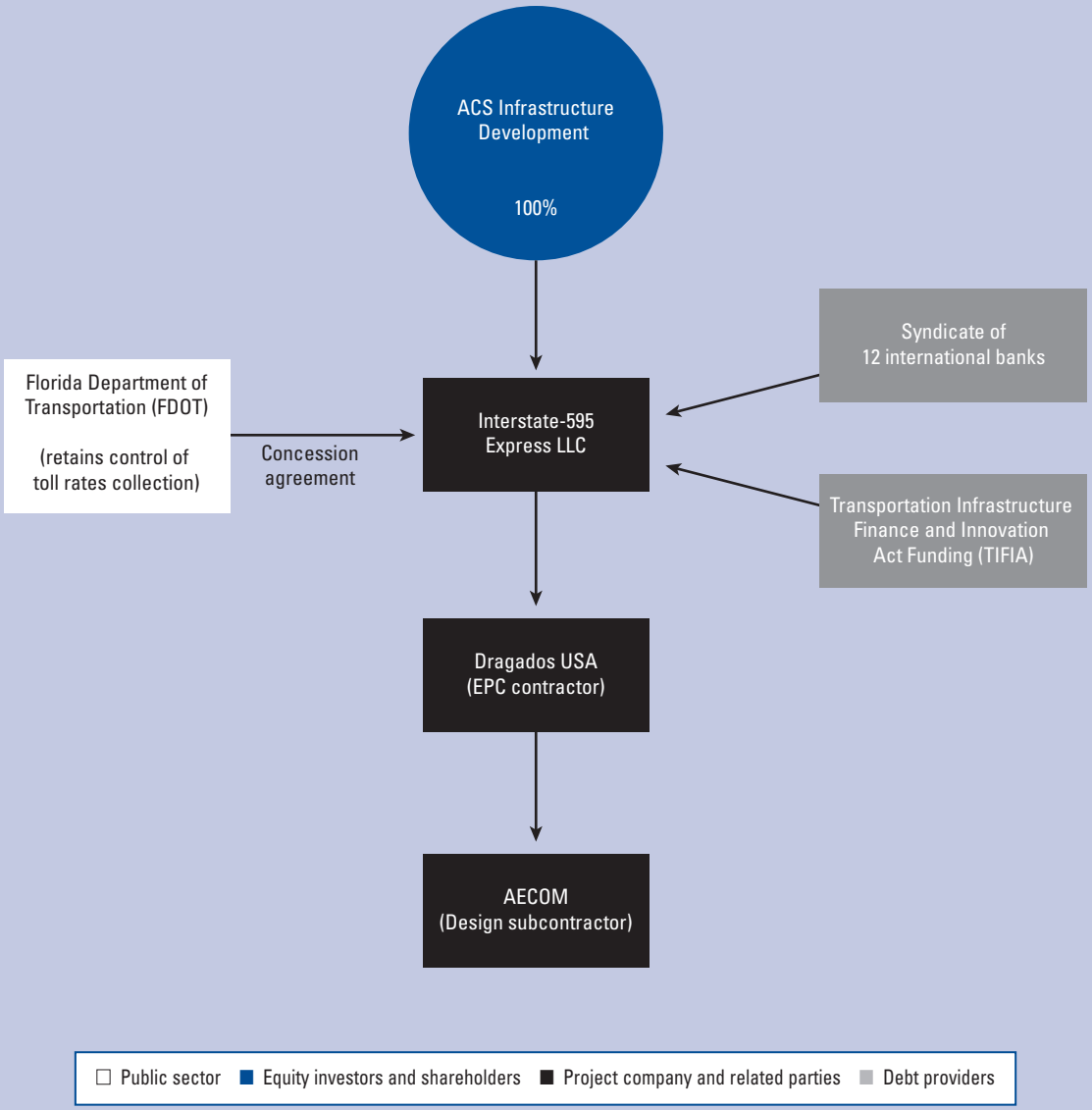
FINANCIAL OVERVIEW

The financing structure for the project was a combination of commercial debt and a loan. Originally, it was anticipated that much of the funding would come through issues of private activity bonds (PABs). To encourage this, FDOT obtained approval from US DOT for a provisional allocation of US$2 billion. Nonetheless, private financing was all arranged in the senior debt bank market, with the balance provided by a TIFIA loan.

Florida I-595 Road Project

ARRANGING FINANCING DURING AN ECONOMIC CRISIS

Structure



Florida I-595 Road Project

ARRANGING FINANCING DURING AN ECONOMIC CRISIS

Source of funding	Amount	Percentage
Concessionaire equity	US$290 million	17%
Senior bank debt		47%
	Tier 1: US$525 million	
	Tier 2: US$256 million	
TIFIA loan	US$603 million	36%
TOTAL	**US$1,674 million**	**100%**

Senior bank debt was split into two tranches of short-term debt, one with a term of 9.5 years and the other with a term of 10 years.

KEY CONTRACTUAL FEATURES

- This project is based on availability payments being made to ACS by FDOT for making the highway available for use and maintaining it to a required standard. FDOT retains the revenue risk and will control toll rates and toll collection on the corridor, while the ACS consortium will focus on delivering the requested services for both toll and non-toll lanes.

- The ACS consortium will be awarded a lump-sum payment of US$685 million once construction is completed in 2014. ACS will then receive an annual, inflation-adjusted availability payment of US$65.9 million for the remainder of the concession's life.

- ACS's main risk is that it performs to the required levels and that FDOT will honor its payment obligations.

- Such a contractual approach is seen as less risky by senior debt providers and helps facilitate the raising of sufficient private finance.

KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

Expansion of I-595

- In 1992, Hurricane Andrew triggered a large number of residents in Miami-Dade County to relocate to neighboring Broward County, increasing the latter's population by approximately 200,000 in just two years after the storm. As a consequence, Broward's I-595 expressway became congested far ahead of forecasts made by FDOT. The goal of the expansion was to increase throughput of vehicles in the I-595 corridor.

Private financing

- Traditional pay-as-you-go arrangement for financing infrastructure projects in Florida meant that construction phases for I-595 would occur only as public funding became available. Given the high cost of the I-595 project at more than US$1.5 billion, pay-as-you-go would result in a 20-year construction period—not ideal given the severity of congestion in its present state. Awarding the concession to a private partner was viewed as a faster alternative.

- During evaluation of the final bids for concession in October 2008, Lehman Brothers went bankrupt, precipitating a major disruption in the commercial lending market, making the PABs prohibitively expensive. This prompted ACS to revise their financing plan and negotiate consequential factors, such as refinancing risk. As detailed above, debt financing is based on two tranches of mini perms. The two tranches reflect the two tranches of revenue that FDOT pays. Although the cost of the commercial debt increased during bidding, the cost of the TIFIA loans fell (they are linked to the US Treasury rate), and so the maximum amount of TIFIA loans was used. The commercial banks required additional equity as well.

Florida I-595 Road Project

ARRANGING FINANCING DURING AN ECONOMIC CRISIS

- ACS was able to deliver European banks as participants in a syndicate loan. These banks would not typically lend in the United States.

LESSONS LEARNED

- **Flexibility in payment structure:** FDOT's adoption of availability payments scheme allowed the department to lower the credit risk of the I-595 project to the concessionaire. This project was able to target a completion date approximately 15 years earlier than it would have under a publically financed approach.

- **Availability of public funding:** TIFIA's countercyclical lending policies meant that long-term financing for the project was available at affordable interest rates. The TIFIA loan stabilized the project's cost of capital enough to prompt the syndicate of banks to lend the remaining sum, enabling ACS to switch from the bond market to the more affordable bank market.

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The Canada Line

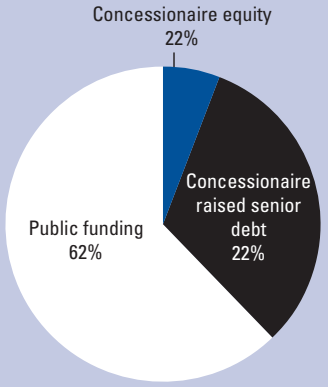
COMBINING PUBLIC AND PRIVATE FINANCE

A combination of both public and private financing is complex but can be made to work

Fast facts

Size	C$1.9 billion
Date	2005
Location	Vancouver, British Columbia, Canada
Type	Economic
Approach	Concession
Phase	New
Market	Developed

Finance



C$1.9 billion

OVERVIEW

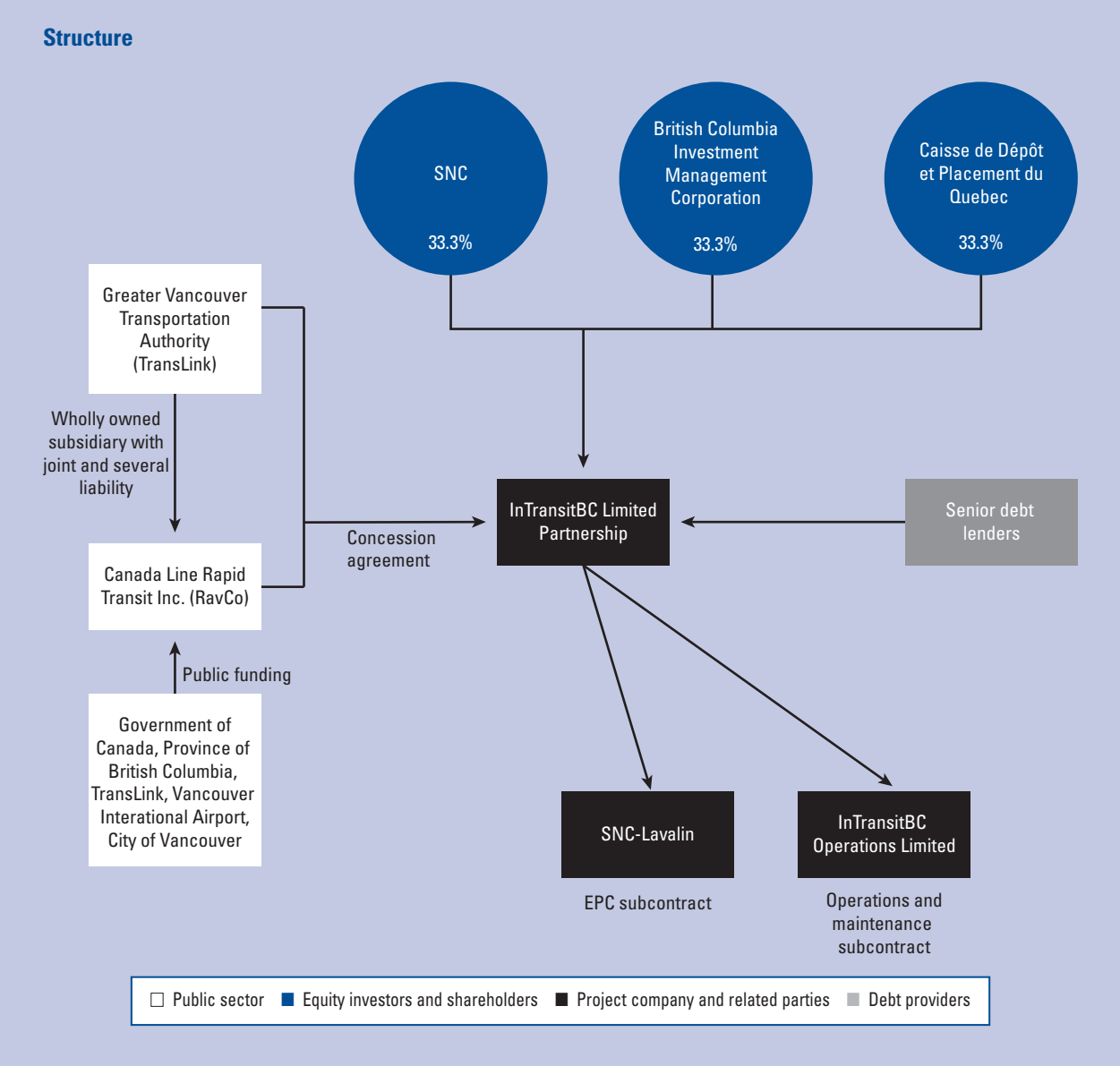
The Richmond-Airport-Vancouver (RAV) Link project, currently renamed the Canada Line, involved the development of a light rail line under a 35-year design, build, finance, operate, and maintain (DBFOM) scheme. The Canada Line connects central Richmond, the Vancouver International Airport, and Waterfront Station in downtown Vancouver where passengers can transfer to other light rail transit lines in the city. The project value was C$1.9 billion and reached financial close in 2005; it was completed ahead of schedule and on budget in August 2009, in time for the 2010 Winter Olympics. It is 19 kilometers long, with 16 new stations, and is aimed at improving current travel times on the city's northwest corridor.

KEY STAKEHOLDERS

- The Transport Authority for Greater Vancouver (known as TransLink) had lead responsibility to procure this project and set up a wholly owned subsidiary, Canada Line Rapid Transit Inc. (RavCo), to act as its project manager.
- The Government of Canada, the Province of British Columbia, the City of Vancouver, and the Vancouver International Airport Authority provided public funding for the project.
- InTransitBC—the concessionaire is a special-purpose company owned by SNC-Lavalin (SNC), a Canadian engineering company—together with two Canadian public pension funds, namely the British Columbia Investment Management Corporation and Caisse de Dépôt et Placement du Quebec.

The Canada Line

COMBINING PUBLIC AND PRIVATE FINANCE



The Canada Line

COMBINING PUBLIC AND PRIVATE FINANCE

FINANCIAL OVERVIEW

- The financing structure for this project was unusual because it involved contributions from public and private sources. It is difficult to detail the precise contributions from each party as most of the public funds were invested during the construction period, resulting in an inflation effect. There have also been agreed-upon changes. However, in broad terms, the total project costs of C$1.9 billion (2005) were funded by:

Source of funding	Amount	Percentage
Concessionaire equity	C$120 million	6%
Concessionaire raised senior debt	C$600 million	32%
Public funding	C$1,180 million	62%
TOTAL	C$1,900 million	100%

- The commercial senior debt had a term of 28 years. The debt was underwritten by three international banks and ultimately syndicated to a further 14 international and Canadian banks.

KEY CONTRACTUAL FEATURES

- Under the terms of the concession agreement, InTransitBC was to design, build, partly finance, operate, and maintain the line, including the light rail rolling stock.

- TransLink retained ownership of the line and control of the fares. It is also responsible for maintaining safety standards and ensuring that the private partners comply with performance standards. They pay InTransitBC from collected fares and other revenue sources based on availability, quality, and ridership of Canada Line. These payments are sized to reflect InTransitBC's forecast financing and operational and maintenance costs based on a forecast of ridership. The contract provides for these costs to be adjusted periodically to reflect actual ridership.

- InTransitBC took on the design and build risk of the line and, in turn, contracted with SNC under a fixed-price, date-certain engineering, procurement, and construction (EPC) contract to deliver these works.

- The Concession Agreement included a detailed construction program and some 1,000 milestone events in the construction program. Achievement of these events triggered pre-agreed contributions of the public funds.

KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

There appear to be a number of drivers for TransLink to partner with the private sector:

- The need to find a private-sector partner with relevant design, construction, and commissioning expertise who could present a cost-competitive proposal and is able to contract on a fixed-price, date-certain basis. This was important as the construction phase was technically challenging, involving both elevated sections and tunneling.

- The need to partner with a private-sector party with light rail operational experience.

While these factors are not necessarily financial drivers, the significant contribution of equity at C$120 million by the concessionaire, together with its ability to raise commercial debt, represented almost 40 percent of the project's financing needs.

TransLink also had to demonstrate at each stage of the procurement that the public-private partnership represented better value for money over the whole life of the concession than the public-only solution.

The mix of public and private finance created some contractual complexities, in particular:

- **Public-sector contributions:** The majority of these contributions were planned to be made during the construction period subject to achieving predetermined milestones. The concessionaire did not want the risk of disputes between TransLink and their

The Canada Line

COMBINING PUBLIC AND PRIVATE FINANCE

advisors as to whether the milestones were met or not. The solution to this was the appointment of a single engineering consultant on whom all parties would rely.

- **Intercreditor:** Given the number of funding sources, there needed to be detailed agreements describing each funder's obligations and rights in situations such as non-payment by another party, and how the lenders ranked in order of seniority.

- **Accessing international banking markets:** The contracts, in particular the financing agreements, needed to reflect the fact that commercial debt was being provided mainly by non-domestic banks. A particular area of focus was tax management.

LESSONS LEARNED

- Mixed public and private funding sources create complex inter-relationships, but this project demonstrates that workable solutions can be found.

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BrisConnections

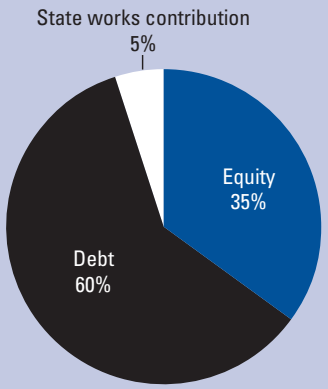
A CAUTIONARY TALE OF RETAIL INVESTMENT IN INFRASTRUCTURE

Retail investors in infrastructure need to completely understand the transaction risks and rewards

Fast facts

Size	$A 4.9 billion
Date	May 19, 2008
Location	Brisbane, Queensland, Australia
Type	Economic
Approach	Concession
Phase	New
Market	Developed

Finance



$A 4.9 billion

OVERVIEW

Under a public-private partnership with the Queensland government, BrisConnections was contracted to design, construct, operate, maintain, and finance the Airport Link for a period of 45 years. The concession was awarded on May 19, 2008. The project involves the construction of the Airport Link, the Northern Busway as well as the upgrade of the Airport Roundabout. The Airport Link will be a 6.7-kilometer multi-lane electronic free-flow toll road with dual 5.7-kilometer tunnels. The total cost for the three sections is expected to be $A 4.9 billion. The project is scheduled for completion by mid 2012.

The challenges with this project do not concern the road itself but rather the financing structure and investor class.

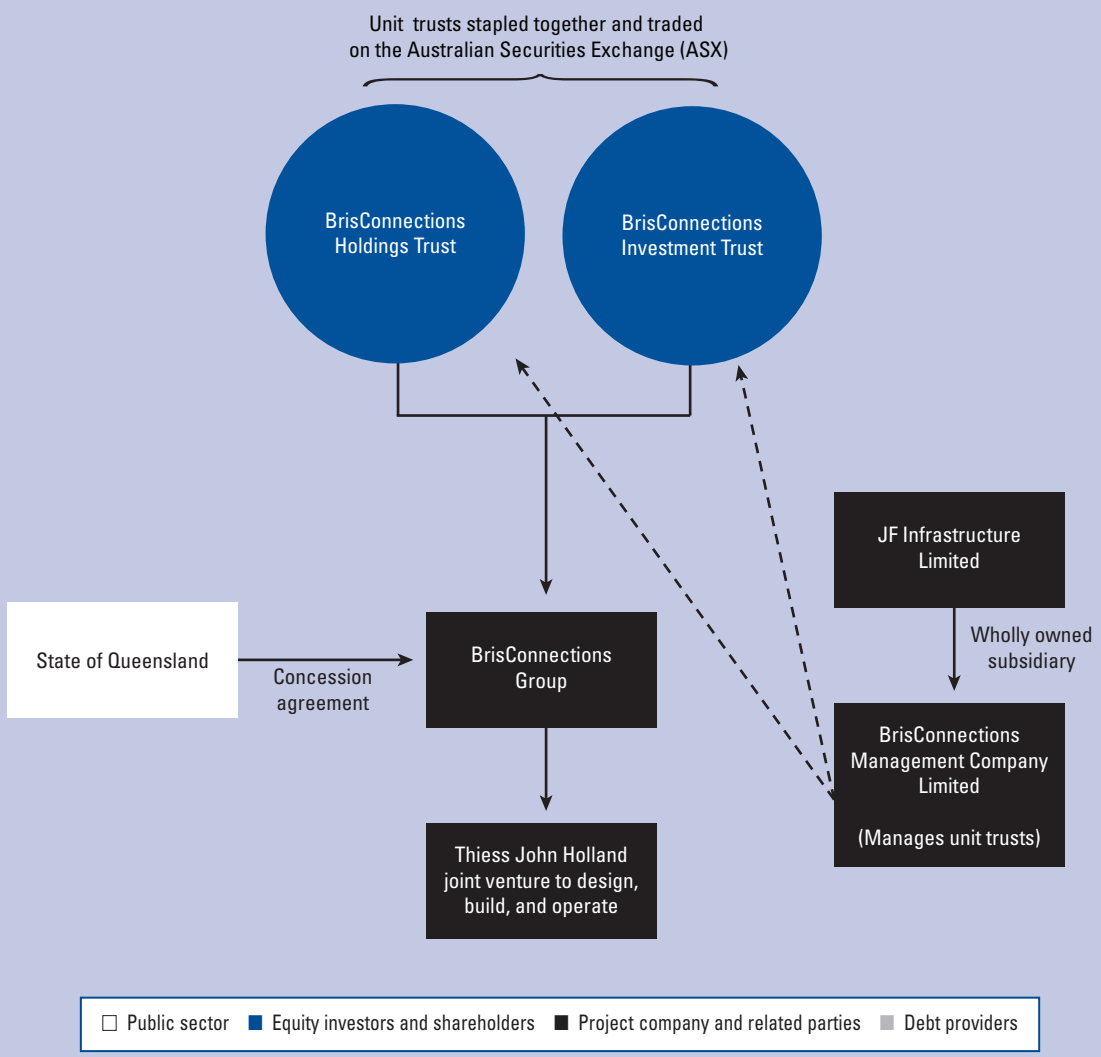
KEY STAKEHOLDERS

- The Brisbane City Council, which led the procurement of the project
- BrisConnections and its investors
- Thiess John Holland, which is a joint venture between Thiess and the John Holland Group that has been contracted to design and construct the projects, as well as to operate and maintain the toll road upon completion

BrisConnections

A CAUTIONARY TALE OF RETAIL INVESTMENT IN INFRASTRUCTURE

Structure



BrisConnections

A CAUTIONARY TALE OF RETAIL INVESTMENT IN INFRASTRUCTURE

FINANCIAL OVERVIEW

The financing arrangements are the focus of this case study. The table below provides a summary of the main components of the financing. This is followed by commentary on the equity raising.

Source of funding	Amount	Percentage
Equity raised through an initial public offering (IPO)	$A 1,170 million	24%
Equity from a distribution reinvestment plan	$A 345 million	7%
Deferred equity	$A 200 million	4%
Bank debt	$A 2,928 million	60%
State works contribution	$A 267 million	5%
TOTAL	**$A 4,910 million**	**100%**

- At the time of contract signature in March 2008, the equity private financing was fully underwritten by Macquarie Capital Advisors and Deutsche Bank.
- The state government was to contribute a total of $A 1.5 billion.
- In July 2008, the BrisConnections completed an IPO with an upfront subscription of $A 1 per unit (in the two stapled unit trusts). At the time of the IPO, 12 percent of investors was retail. The structure of this offering also required investors to make two further subscriptions—of $A 1 per unit held in 2009 and 2010—both of which were underwritten by Macquarie and Deutsche. A timeline of these events is shown in Figure 1.
- However, shortly after the IPO the stock price collapsed, at times trading at less than a tenth of a cent, and a significant number of retail investors bought significant holdings in the company apparently unaware of the future financial commitments. One individual retail investor held 13 percent of the company.
- The underwriting banks stood by their commitments and are now majority shareholders.

LESSON LEARNED

- **The need for transparency:** In achieving funding for the project, investors bought BrisConnections shares on the market for less than 1 cent each, without realizing that they would be obligated to pay $A 1 per share. This has unsettled current and potential investors in BrisConnections.
- **The need for objective projections:** The project did not elaborate on any worst-case scenarios, such as if traffic falls below the anticipated average. This creates an optimistic but unrealistic assessment of the project's prospects.
- Complex financial structures and difficulties experienced by toll roads around Australia (such as the Cross City Tunnel) have negatively impacted investors in toll roads (see the Case Study on the Cross City Tunnel).

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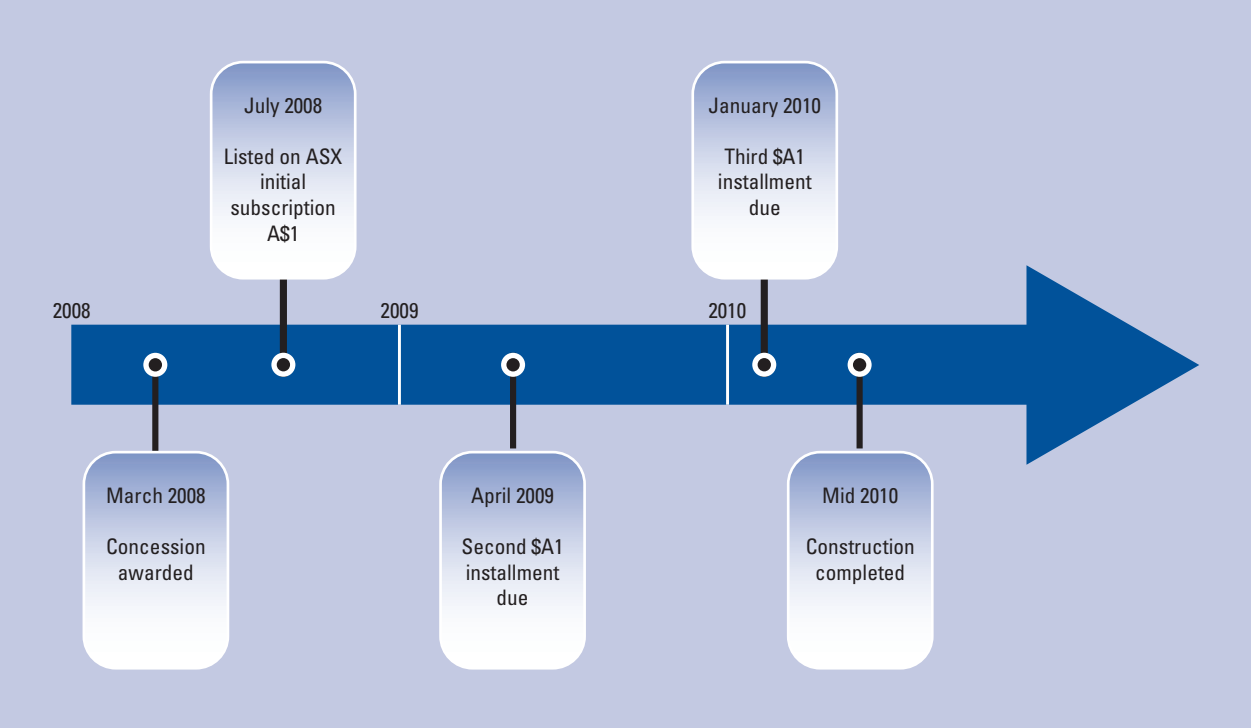
BrisConnections

A CAUTIONARY TALE OF RETAIL INVESTMENT IN INFRASTRUCTURE

Figure 1: BrisConnections: Timeline of events



Appendices

Appendix A

An Infrastructure Primer

APPENDIX A.1

Sources of Debt and Equity

As highlighted in Chapter 1.1, estimates suggest that annual investment in infrastructure needs to be around 5 percent of global GDP or US$ 3 trillion per annum. Currently only US$ 1 trillion per annum of private funding is going into infrastructure. Hence, US$ 2 trillion per annum is needed to fund the infrastructure financing gap.

From a financing perspective, infrastructure opportunities are usually capital intensive, there is a tangible asset to operate and maintain, and the asset is expected to generate cash over the long term. Infrastructure opportunities are classified according to various categories including type of project or enterprise, contractual approach, phase of asset development and stage of market development.

Both equity and debt can be used to finance infrastructure projects. While evaluating the financing of infrastructure projects, careful consideration needs to be given to risk and uncertainty.

Appendix A of this *Report* aims to provide a "primer" on the infrastructure finance market for those who may be less familiar with it. It offers an overview of different sources of finance (both debt and equity) and how finance providers assess infrastructure opportunities. Such assessments include an analysis of risk, how returns are measured, the role of financing enablers such as multilateral banks and export credit agencies, and a summary of some different contractual approaches. This chapter introduces the concept of capital structure and leverage, cash flow analysis, and the options for the contractual approach.

There are many different sources of debt and equity and different routes to market for investors

Using the term *private finance* can gloss over the fact that there are many different types of equity and debt private finance that might be lent or invested in infrastructure. The next chapter will describe each of these sources in more detail. Figure 1 is a high-level summary of the sources.

Table 1 seeks to describe the different routes available to different classes of investors who are interested in investing in infrastructure. For example, some private pension funds invest in both the equity and debt

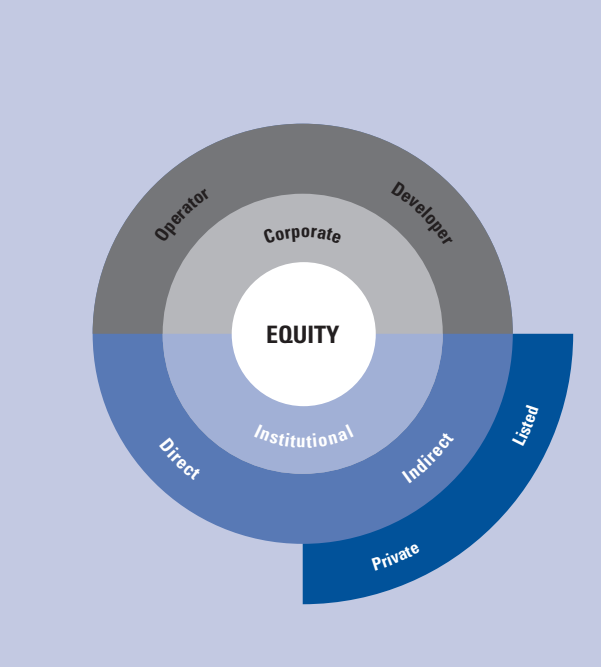
Table 1: Routes available for investment in infrastructure

	Debt			Equity		
Investor type	Public capital mkts	Muni bond mkts	Private placement	Direct	Listed fund	Private fund
Corporations	●	●		●		
High net worth individuals	●	●			●	●
Insurers	●	●	●		●	●
Private pension funds	●	●	●	◗	●	●
Public bodies	●					●
Public pension funds	●	●	●	◗	●	●

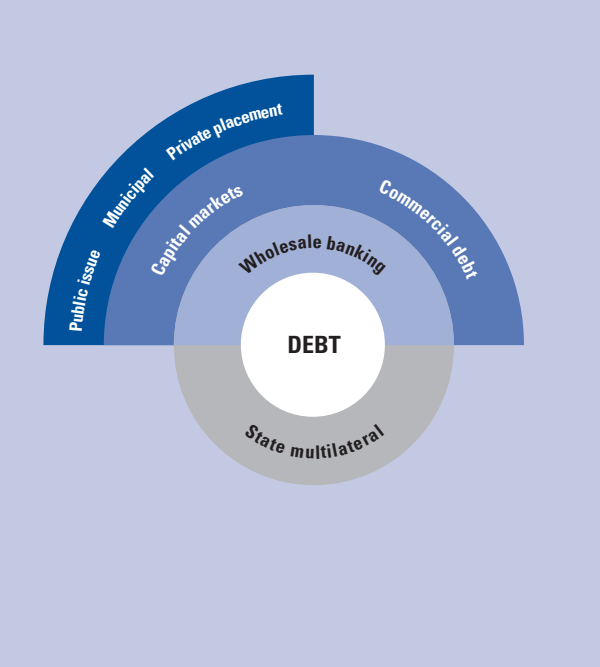
Note: ◗ = some evidence; ● = established route.

Figure 1: Sources of debt and equity

1a: Equity



1b: Debt



elements of infrastructure projects by buying bonds or investing in infrastructure funds. There is also evidence that some pension funds are now investing directly in assets and enterprises.[1]

Before surveying the sources of private finance in detail in later chapters, we review here the main principles that underpin the capital and contractual structures used for infrastructure projects. This introduction will describe:

- what a typical capital structure might be, including a brief commentary on the theory of what drives that structure;
- the dynamics of a typical asset or enterprise cash flow and priority of payments; and
- what a transaction contractual structure may look like for the four approaches we have identified—that is, partnership, concession, privatization, and licensing arrangement.

The capital structure reflects not only the risks and opportunities in a market but also external factors such as tax policy

The capital structure is the relationship between debt (and classes of debt) and equity, often referred to as *leverage* or *gearing*.

It was Modigliani and Miller who described the proposition that a firm cannot change the total value of its securities just by splitting its cash flows into different streams;[2] although the split does affect the returns each investor class may expect to receive, the total value of the enterprise is unchanged. This concept is very simply illustrated in Figure 2. The complication is that the proposition assumes that decisions are being made in perfect capital markets.

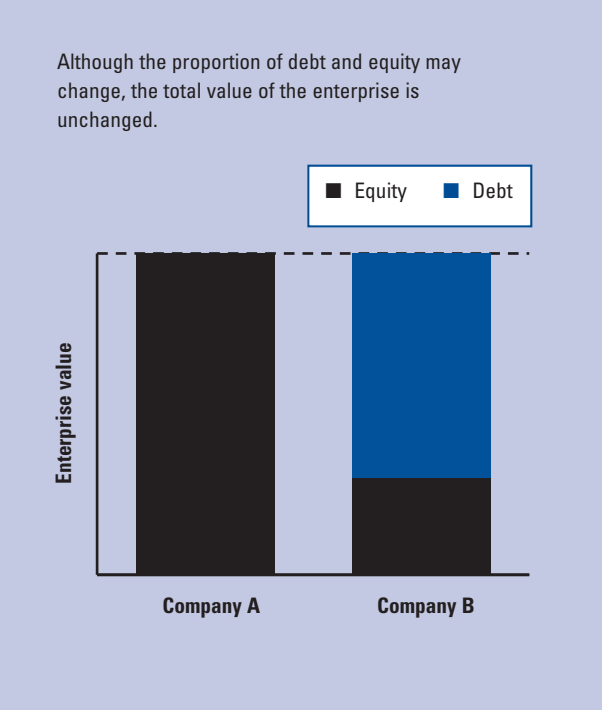
Further works, such as that by Brealey and Myers,[3] have highlighted the imperfections that can affect capital structure. Examples of these limitations include taxes, the cost of financial distress and bankruptcy, and the cost of making and enforcing complicated debt contracts.

The impact of taxation policy is of particular importance and needs to be considered carefully for each tax regime under which an investment is being made. For example, under some tax regimes, interest expense is tax deductible and thus reduces the amount of tax paid at the company level. This can encourage more debt and thus higher leverage, without changing any other factors relating to the enterprise. However, for the purposes of this *Report,* we do not consider or comment on the specific impact of taxation policy.

The capital structure or leverage can affect the overall enterprise value and the risk-reward proposition of the different types of cash flow. Some examples are:

- The level of return that each investor class expects to receive will reflect the level of risk that the

Figure 2: Effect of capital structure on overall value



investors in that class are prepared to take, partly in relation to other investors in the same transaction and partly in relation to the risk and rewards of alternative or competing investment options.

- A highly leveraged enterprise may be regarded as carrying higher risk than one with less debt. This is because debt costs are not discretionary, and failure to meet those costs may ultimately lead to a loan default, which in turn could lead to the demise of the enterprise. However, equity payments or dividends are discretionary. Clearly the ability to pay debt costs is closely linked to having the revenue to make those payments (alongside controlling other operating costs).

However, we cannot say that "high leverage" is bad and "low leverage" is good without first understanding the dynamics of the particular enterprise or sector we are reviewing, taking into account both the nature and predictability of revenue and costs. Indeed, the question as to whether leverage is random across industries must be asked. Figure 3 shows some leverage amounts for a variety of enterprise sectors and some infrastructure-specific ventures. That companies operating within the same industry group have similar leverage should be expected, as they will be operating under similar conditions and risks—for example, predictability of revenues, business cycles, capital investment requirements, and opportunities for growth.

In certain sectors, such as media, leverage is typically below 40 percent but in the public-private partnership (PPP) sector it may be more than 90 percent. The main reasons for this are the difference in the risk profiles between the two sectors, their respective equity investors' appetite for risk, and their ability to repay debt. The high leverage of a typical PPP transaction reflects the perceived low risk of long-term contracted revenues, often with a sovereign counterparty, fixed costs, and detailed contractual arrangements.

Figure 3 is also a snapshot in time, [4] as the analysis is primarily based on information for the period between 2007 and 2009, inclusive. What is interesting is how leverage can change and why. For example, the current shortage of capital is lowering the debt amount and increasing the equity requirement across many industries, but this is happening without regard to the actual performance of an individual asset or market sector.

The capital structure will help determine the cost of the transaction

There are two main reasons why the capital structure is important. First, understanding the likely leverage will give an indication of the amount of debt and equity that may be needed to finance an infrastructure opportunity. Second, knowing the likely proportion of debt to equity will help determine the cost of the transaction because equity carries more risk than debt and is also a more expensive form of finance.

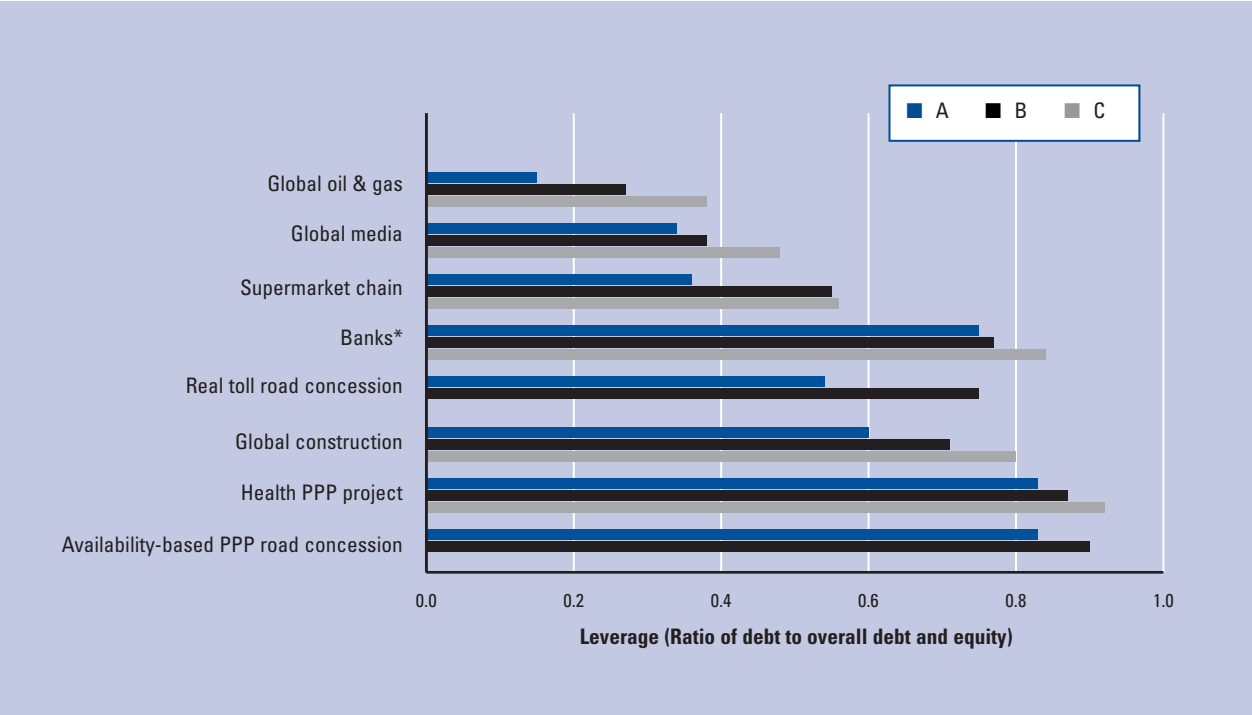
Any assessment of an infrastructure opportunity will include an analysis of the sources and uses of cash over the whole investment period

A focus on cash flows and the ability of the infrastructure asset or enterprise to generate cash are two key elements that define the infrastructure investment proposition. The cash can come in many forms, but in every case there is a link between the availability/performance of the infrastructure and the receipt of the funds. Examples of sources of cash are:

- individual user-based payments—for example, tolls or "fare box" payments and utility charges;
- access charges—such as those for airports, ports, and railways;
- public authority payments—for example, shadow tolls, grants and/or subsidies; and
- off-take fees—such as those for power generation.

Often these payments are regulated, so there is a limit on their amount.

Figure 3: Leverage across a variety of industry and infrastructure sectors



* All three banks are based in the same country.

This focus on cash flow means that any analysis of an infrastructure investment proposition will consider three elements:

- revenue,
- operating costs (and capital costs if applicable), and
- debt costs.

Further, if the asset is operated under a concession contract (i.e. under a finite operation period), debt may not be available for parts of the concession period. So, once the debt is repaid, the free cash flow will be revenue less operating costs only, i.e.

free cash flow = revenue less debt service less operating costs

Given that infrastructure is a long-term proposition, potential private finance investors and lenders will focus on the predictability of each of the elements of free cash flow and how those elements might change over time or due to circumstances. This analysis will help to define not only the capital structure but also some of the approaches to contract.

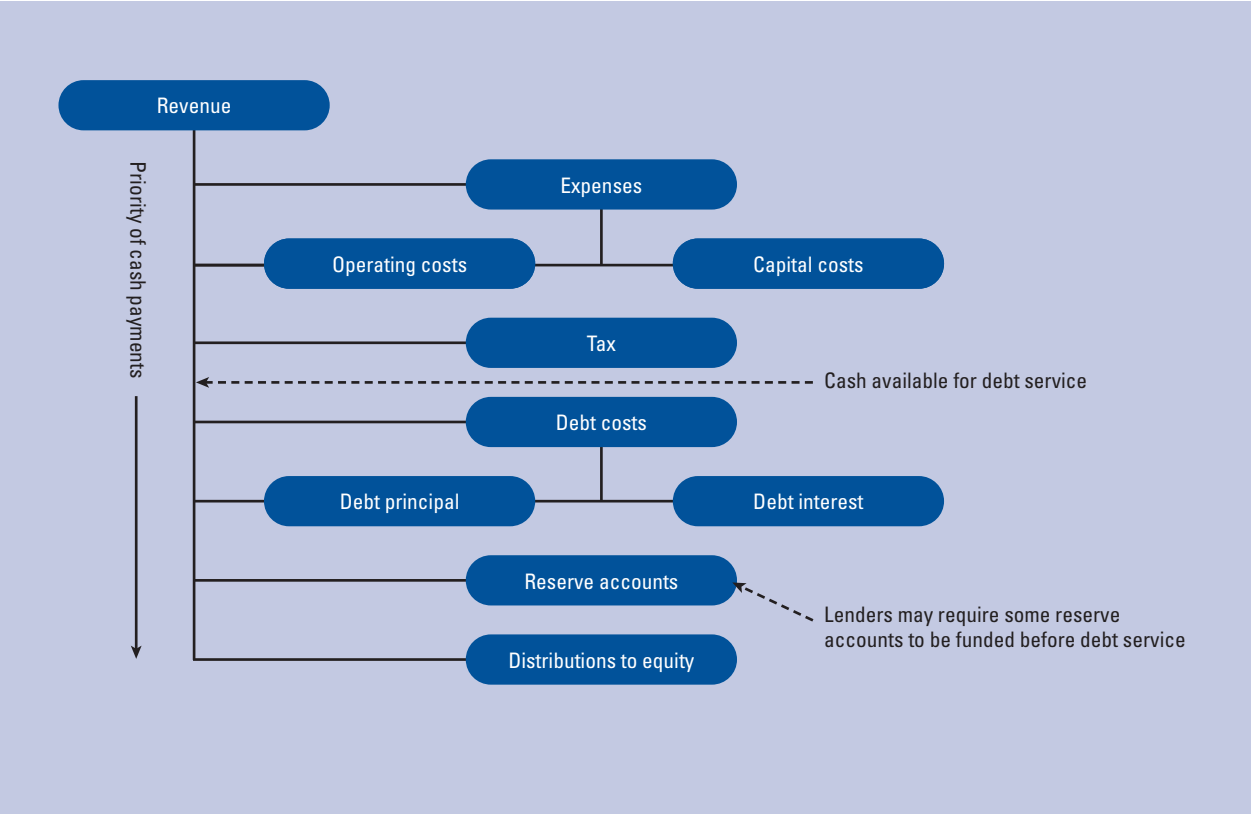
Although we highlighted some of the challenges of forecasting revenue and operating costs in Chapter 1.3, it is worth mentioning here that private financiers will not look at the different cash flow elements in isolation. Rather it is the relationship between them that is important. For example, if the revenue stream is subject to variation such as seasonality or is linked to GDP in some way, then private investors will prefer the operating costs to also be variable so that they can flex those costs to reflect seasonal adjustments or the impact of GDP. A proposition that has variable revenue but a high proportion of fixed operating costs is vulnerable in revenue downturns (since the free cash flow will decrease, or even become negative). More equity (or less leverage) may be needed to provide some cushion for times when revenue is constrained.

Private finance investors and lenders will focus on both the predictability of cash flows and priority of payments of financial instruments

As with any corporate proposition, expenses and taxes are high in the order of payments and debt ranks above any payments to equity.

Figure 4 shows that, for infrastructure projects, a range of reserve accounts may often be required. These reserves may be for major maintenance of the asset or to deal with changes in law. The requirement for these reserves will come from the lenders and are an additional cost of private finance.

Figure 4: Priority of cash payments



There are many ways public and private parties may organize themselves

There is no fixed way the public- and private-sector parties organize themselves and contribute to an opportunity, but there are some framing principles. Figure 5 provides a high-level summary of how the public and private parties might come together for an infrastructure project.

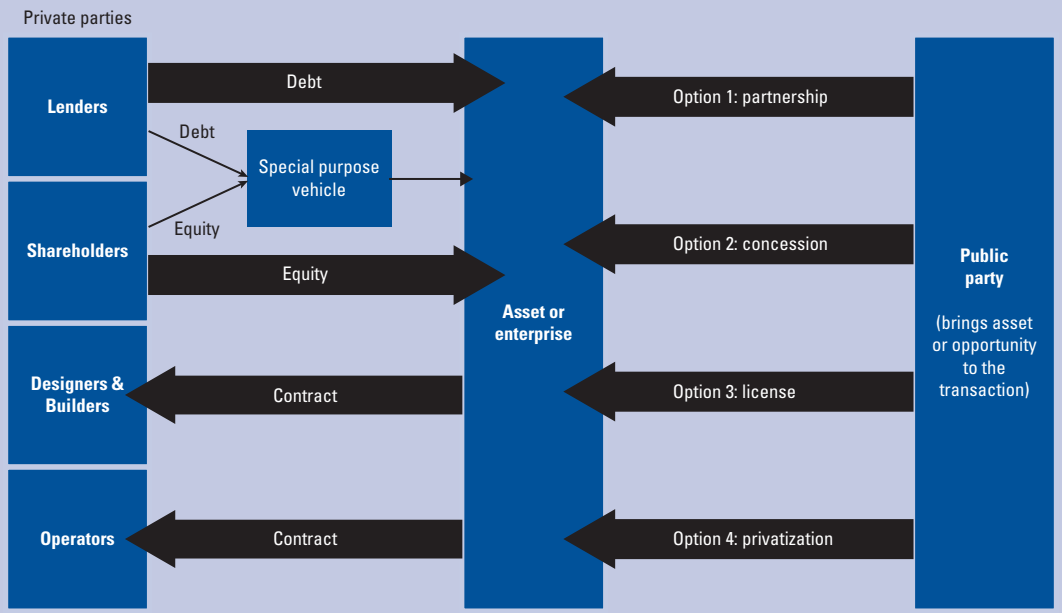
On the private-sector side, the shareholder(s) may channel their investment into a special company whose sole purpose would be to develop or operate the infrastructure. Or the asset/enterprise may be a subsidiary of their existing business.

The subsidiary route is really only a possibility if there is a single shareholder and limited debt requirements that can be provided under more general corporate facilities. If there are multiple shareholders and significant debt requirements, then there is usually a desire to ring-fence the debt and equity to the individual asset/infrastructure—hence the common use of the special company.

Also on the private-sector side, there may well be ancillary subcontracts to build an asset and/or provide services. But there are also many examples of the employees or services being provided by the asset company.

On the public-sector side, four main contracting options are described at the right side of Figure 5. In each of these cases the public sector will bring to the transaction either an existing infrastructure asset or an opportunity to develop one. In the case of a partnership, they will also contribute some equity to the enterprise. There may also be some regulatory framework associated with the contractual arrangement, in particular where the approach is to privatize or license the infrastructure.

Figure 5: Illustration of how public and private parties may collaborate for an infrastructure project



TAKE-AWAYS

Capital structure

- The amount of debt and equity invested in an enterprise is not random but is a combination of the risk of an individual opportunity/project and that of competing investment opportunities, along with the impact of market imperfections such as tax policy and cost of bankruptcy.
- Understanding the likely leverage will help determine both the cost and the amount of debt and equity needed to fund an opportunity.
- Some infrastructure financing is based on highly leveraged transactions.

Cash flow

- Infrastructure is a cash-driven market.
- Private financiers' analysis of a potential opportunity will focus on the relationship between revenue and costs.

Priority of payments

- Priority of payments is no different from other corporate opportunities, but may include some additional mechanisms to protect the debt stake.

Contractual structure

- There is no fixed contractual approach, but most will be a variant of public and private options for collaboration (see Figure 5).

Notes

1 There are a number of examples of such direct investments. Although we have not compiled a complete list of such investments, examples include the Ontario Teachers' Pension Plan's stake in airports and container ports (see OTPP 2010); the Canada Pension Plan Investment Board also has stakes in a wide range of infrastructure, including energy distribution and water (see CPP 2010).

2 Modigliani and Miller 1958.

3 Brealey and Myers 2003.

4 This analysis is primarily based on levels of total debt and shareholder equity reported in annual accounts of representative companies in each industry sector, primarily in the years 2007, 2008, and 2009.

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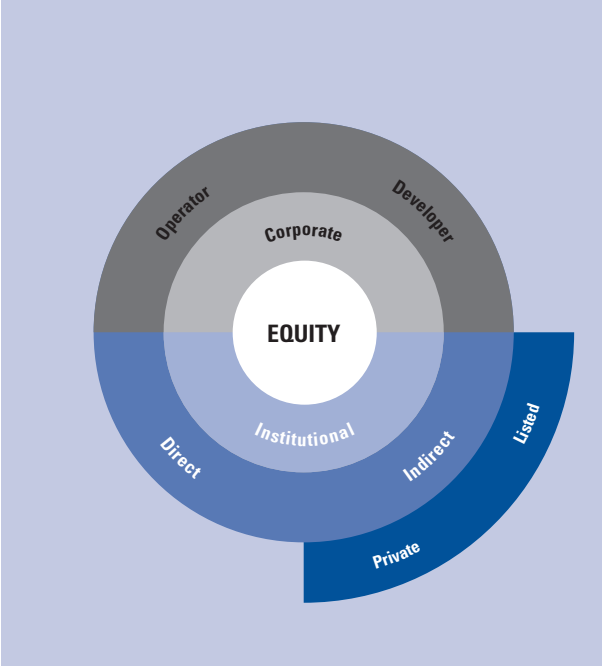
APPENDIX A.2

A Source of Private Finance: Equity

As described in Appendix A.1, most infrastructure assets or enterprises will be partly funded by equity (see Figure 1). The two main sources of equity are usually described as corporate or institutional. The pertinent features of these sources are described in this chapter. This chapter also provides information on the kinds of returns that equity investors seek and how these returns are measured by considering the net present value (NPV) vs. the internal rate of return (IRR).

Understanding the dynamics of the infrastructure equity market is important because it is usually the equity investors who will lead the private finance engagement in an infrastructure opportunity.

Figure 1: Sources of equity



Corporate equity is an important source of private finance for infrastructure, but it may have different investment drivers than institutional equity

Although much of the focus on potential sources of funding is on commercial debt and institutional equity, there remains an important role for corporate equity. Corporate equity is typically provided by companies that will have a deliverer role in the project. Deliverer roles include, among others, those of developer, construction contractor, and facilities operator. Corporate equity has funded numerous projects and enterprises in a market's early stage of development, particularly when the sector is in its new and innovative phase.

For some companies, this investment is very much an ancillary activity and a means to an end—it is a way of securing the "prize" of a significant contract for the company's core activity. In such a case, the company needs to consider its interest in the transaction should

that role come to an end (say, when construction has been completed). The company also needs to consider how the contractual structure deals with any potential conflicts between its roles as an investor and as a contractor.

For other companies, corporate equity has come to form a main part of their core business. The development of Ferrovial over the last half century illustrates this relation between the investment activity and the core business of a company (Table 1).

Institutional equity comes from a diverse range of sources and invests in a wide range of infrastructure

For the purposes of this *Report,* the term *institutional equity* refers to the capital raised from institutional investors and, very occasionally, from some high net worth individuals. Figure 2 illustrates this diversity of investors in infrastructure funds.

A lot of institutional equity has been committed to or invested in infrastructure funds, although there are also examples of institutional equity investing directly in assets. For example, in the United Kingdom, lending banks such as the Royal Bank of Scotland and Barclays invested equity in the United Kingdom's Private Finance Initiative (PFI) projects. Further, there is increasing evidence that other sources of institutional equity—for example, some pension funds and sovereign wealth funds—are also looking to invest directly in infrastructure projects. It is notable that the skills, risk, and aims for these types of investment are different from those of the fund route.

If the route to direct investment is through an intermediary fund, then funds can either be listed (i.e., publicly traded on stock exchanges) or unlisted (equity that is not publicly traded). Many funds are based on a limited partnership model (see Figure 3).

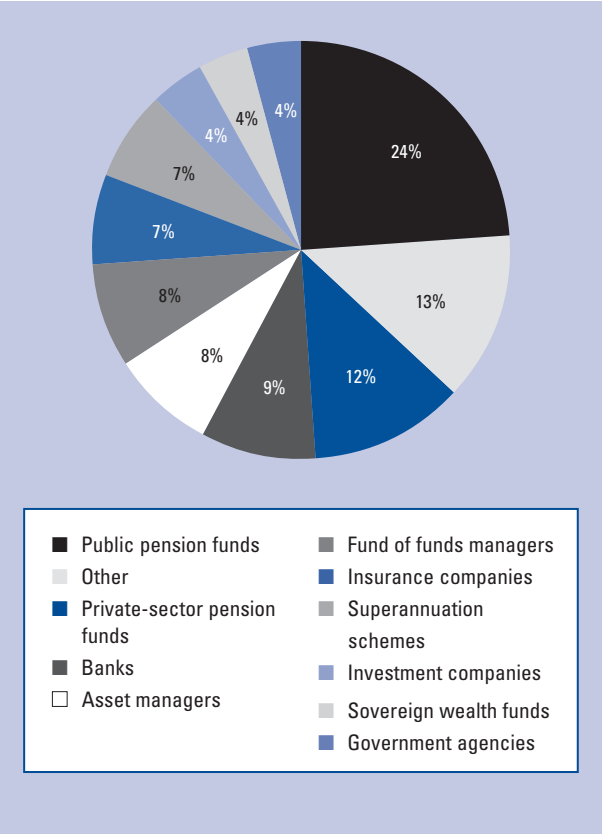
When funds are being raised, the fund sponsor will describe the planned scope of the fund. For example, some funds—such as an airports fund or an established-project-only fund—are focused on a particular sector, geographic area, or asset. Others have a more general approach and seek investment opportunities that meet the characteristics of the broader definition of *infrastructure* outlined in Chapter 1.1. This definition considers infrastructure to be a group of capital-intensive projects that develop and operate tangible assets with the purpose of generating a long-term cash flow. The diversity of infrastructure investments is significant, although those in energy, transport, water, and renewables seem to be the most sought after, as illustrated in Figure 4.

Table 1: Development of Ferrovial in Spain

Years	Action
1950s	Founded as a construction company with a focus on major infrastructure projects in Spain—for example, railway building.
1960s	Expands business outside Spain but with a continued focus on major infrastructure. At the end of the decade, the company starts to expand into real estate development and invests in its first road concession in Spain.
1970s	Continues to expand the construction business by geography and sectors. Invests in a second road concession in Spain.
1980s	Invests in a third road concession in Spain. Constructs many projects linked to the 1992 Barcelona Olympics.
1990s	Restructures to create a separate construction company (Ferrovial Agroman) and concession company (Cintra). Invests in its first airport concession and telephone operator; develops asset operational activities, including waste and facilities management.
2000 to present	Continues investment in concessions; acquires Amey, a company active in the United Kingdom's social infrastructure market; and BAA, the management company operating seven UK airports, including London Heathrow. Invests in infrastructure including the Chicago Skyway project, the Canadian ETR 407 road, and the Indiana toll road. In October 2009, Cintra merged with Ferrovial.

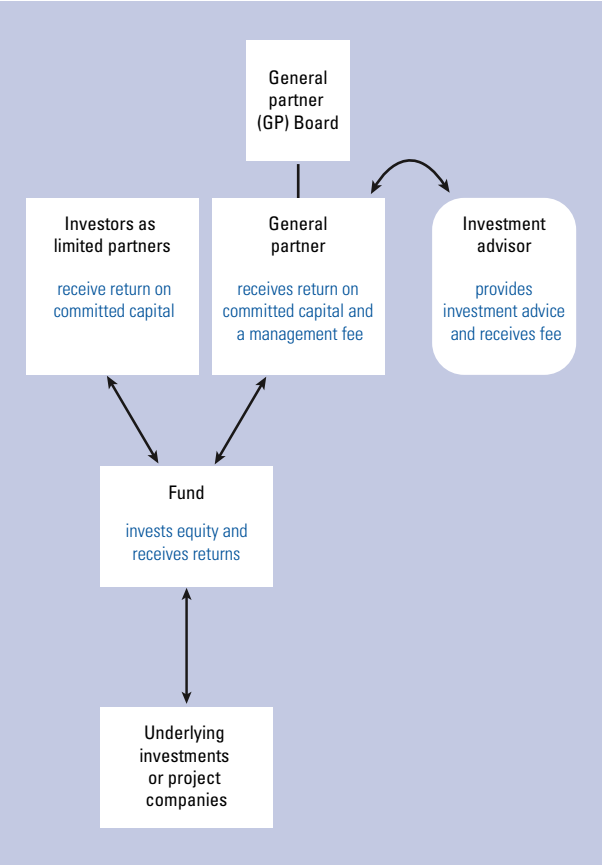
Source: World Economic Forum interpretation of information from Grupo Ferrovial History, available at http://www.ferrovial.com/en/index.asp?MP=14&MS=241&MN=2.
Note: The Infrastructure/concessions business contributes approximately 70 percent of either the group's earnings before interest and tax or the balance sheet assets profit in the year ending December 2008.

Figure 2: Infrastructure investors by firm type



Source: Prequin, 2009.
Note: The figure shows number of institutions investing in infrastructure (rather than the amounts invested).

Figure 3: Limited partnership model



Source: World Economic Forum analysis.

Infrastructure may provide portfolio diversification for investors and returns that match liabilities

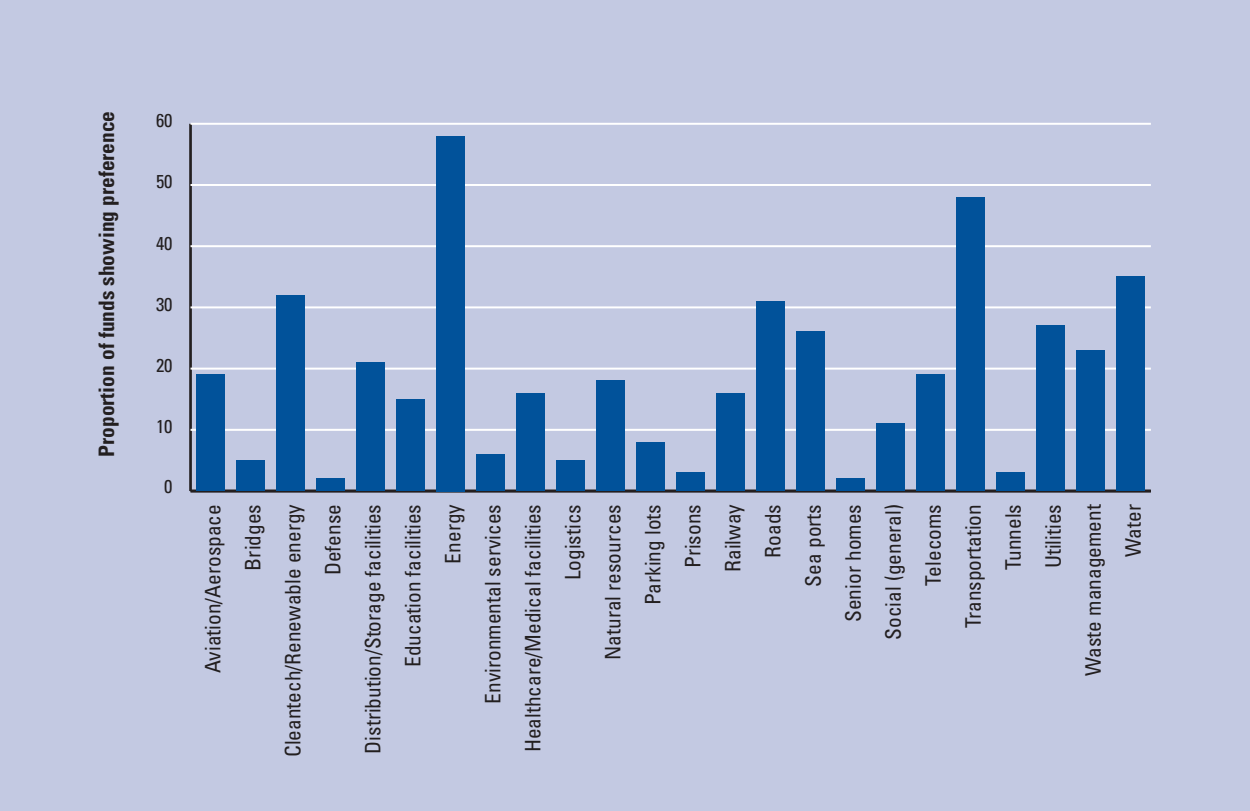
Although we are dedicating an entire report to the topic, infrastructure finance is a very small part of the broader financial market. So what does it offer institutional investors? As described in Chapter 1.1, infrastructure opportunities offer long-term, often highly predictable or stable returns. Thus infrastructure finance is attractive to institutional investors because it can offer:

- sector- and time-horizon diversification within their portfolios, and/or
- returns suitable for their risk profile.

The extent of portfolio diversification that infrastructure investment can offer is open to challenge and will depend on its type. For example, the performance and investment returns of some types of infrastructure—such as airport and ports—can be closely correlated to national economic performance.

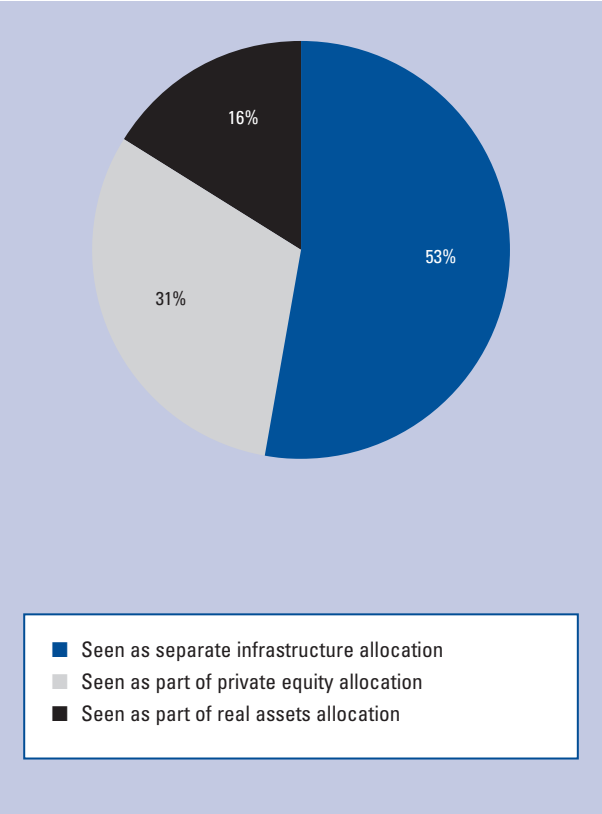
The risk profile of infrastructure is particularly pertinent to pension funds. Infrastructure offers pension funds an alternative to government bonds or treasuries, by providing one of the few other opportunities for long-term investing.

Figure 4: Infrastructure fundraising by asset type preferences: January 2007–June 2009



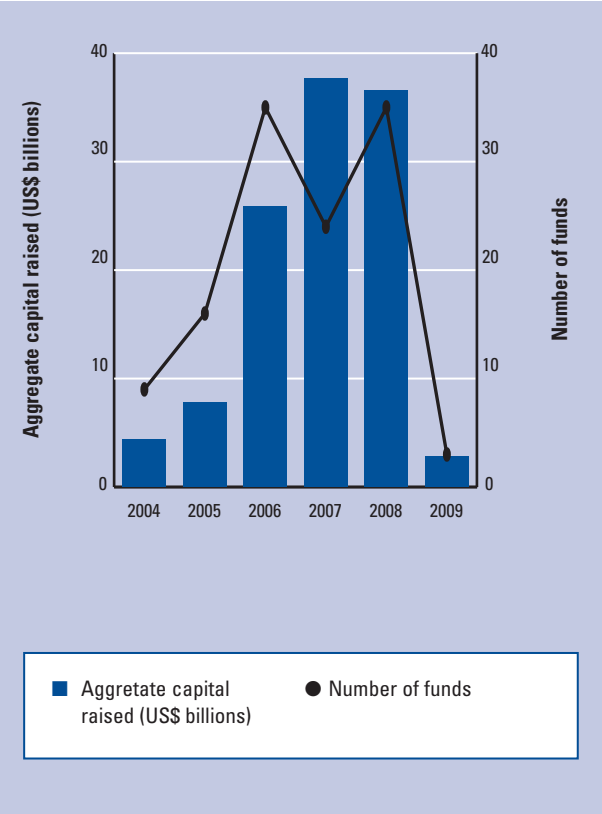
Source: Preqin, 2009.

Figure 5: Distribution of infrastructure investors by source of infrastructure allocation



Source: Preqin, 2009.
Note: The split is determined by number of investors sampled.

Figure 6: Infrastructure fundraising, 2004–09 (first half)



Source: Based on data from Preqin, 2009.

The money available to invest in infrastructure has increased significantly in recent years, but investors differ in how they classify investments

Until recently, an institutional investor's allocation of equity to infrastructure was part of its allocation to alternative investment markets. This often fell within the allocation for real estate within the alternative investment category. Consequently, infrastructure was a niche within a niche. This meant that little, if any, available investment went to infrastructure. But this has changed in recent years, and for an increasing number of institutional investors infrastructure now has its own allocation within their portfolio. The proportion of allocations is illustrated in Figure 5.

The growth in infrastructure funds is illustrated by Figure 6, which shows that over the past five years from 2004 to 2008, an aggregate of US$115.2 billion was raised by 122 funds.

Although fund sizes vary greatly by geography, as shown in Figure 7, what is notable about this graph is the emergence of the *mega fund,* with more than US$1 billion to invest. The mega fund phenomenon began in the United States in 2006 and followed into Europe.

Despite the global economic crisis in 2008–09, fundraising has continued. For example, in October 2009, Actis, a global private equity fund focused on emerging markets, closed a US$750 million fund-raising for investment in infrastructure across emerging markets.[1] While funds raised in 2009 are significantly less than those raised in 2008, the number of funds seeking investors has actually increased in 2009 compared to 2008—see Figure 8.

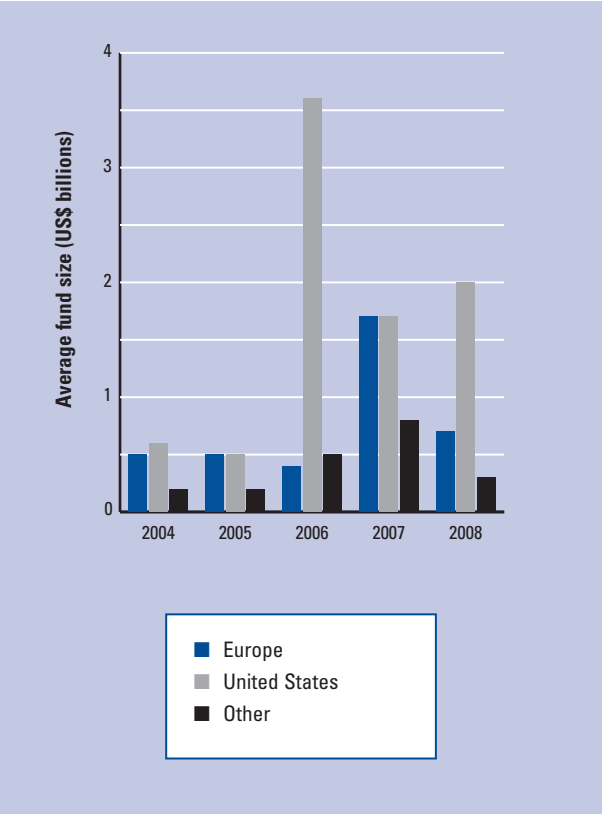
It is startling is that over 70 percent of these funds are being launched by first-time infrastructure fund managers, as shown in Figure 9. This figure is probably an indication that, although private finance has been investing in infrastructure for many years, the emergence of institutional equity is relatively new and still undergoing growing pains.

The infrastructure fund market offers a range of approaches to the market

While there are clearly many complexities of the infrastructure fund sector that could fill numerous academic publications, we have picked out some of the various approaches and features that are most commonly discussed, namely:

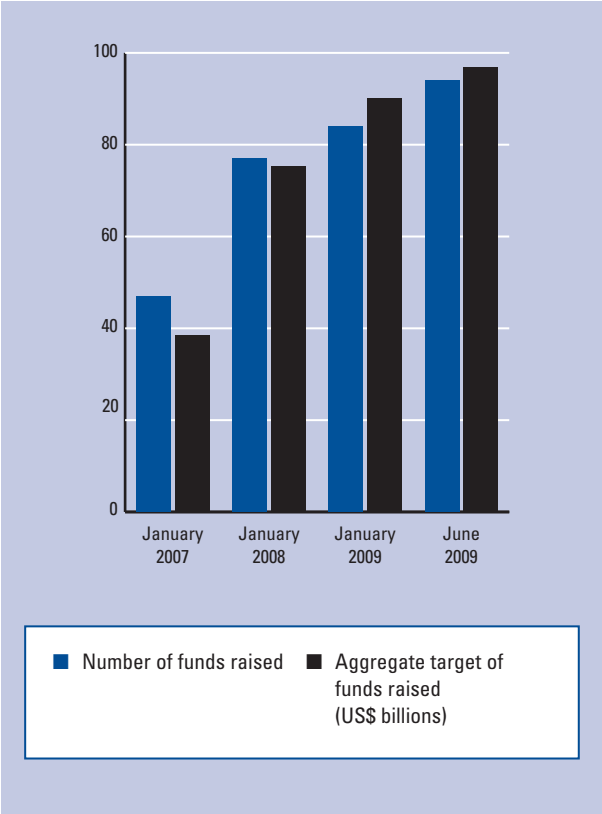
- listed vs. unlisted funds,

Figure 7: Average fund size by region, 2004–08



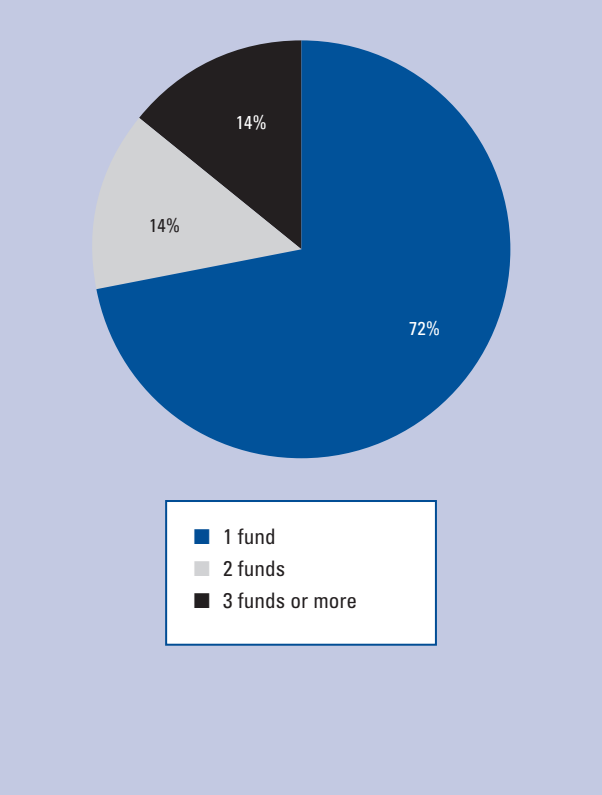
Source: Preqin, 2009.

Figure 8: Growth of infrastructure funds launched from January 2007 to June 2009



Source: Preqin, 2009.

Figure 9: Unlisted fund managers by number of funds launched



Source: Preqin, 2009.

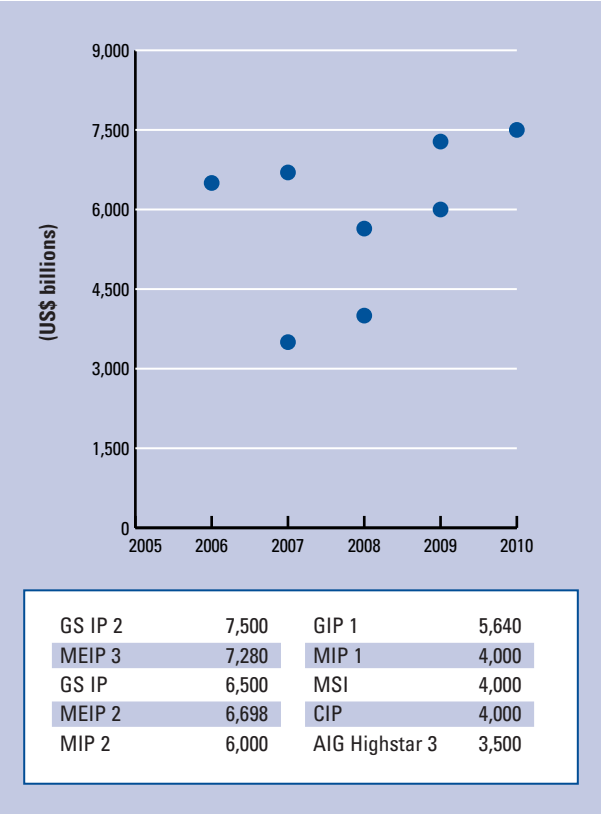
- open-ended vs. close-ended funds,
- primary vs. secondary or follow-on funds,
- seed assets, and
- leverage or gearing of a fund.

The listed vs. unlisted fund approach

The majority of specialized infrastructure funds, including all those in the top 10, are unlisted (see Figure 10). Debate continues on the advantages and disadvantages, briefly summarized in Table 2, of each approach. The emergence of listed funds has been focused in only a few countries: 88 percent of listed funds in 2009 were managed out of Australia, Canada, the United Kingdom, or the United States, as seen in Figure 11.

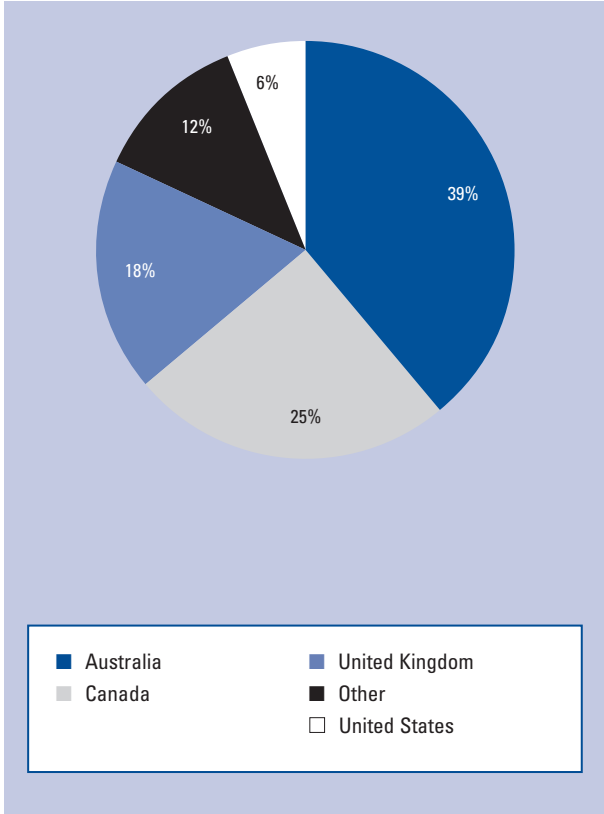
It is worth noting that the impact of the credit crunch has been markedly different for listed and unlisted funds. The unlisted funds have largely continued activity as before, although they have had to deal with the consequential impact on their underlying investments. The listed funds, however, have had to deal with the twin effects of their general fall in share prices (given their correlation to stock market performance) and, where the fund is corporate-sponsored, the issue of any particular pressure on that company's share price. This is illustrated in Figure 12, which compares the per-

Figure 10: Ten largest infrastructure funds, March 2009



Note: Years refer to the year the fund was set up. Based on currency valuations in March, 2009; euro to US dollar exchange rate of 1.456. GS IP 2 = GS Infrastructure Partners II; MEIP 3= Macquarie European Infrastructure Partners III; GS IP = GS Infrastructure Partners; MEIP 2 = Macquarie European Infrastructure Partners II; MIP 2 = Macquarie Infrastructure Partners II' GIP 1 = Global Infrastructure Partners I; MIP 1 = Macquarie Infrastructure Partners I; MSI = Morgan Stanley Infrastructure; CIP = Citi Infrastructure Partners; AIG Highstar 3 = AIG Highstar Capital III.

Figure 11: Listed fund market by fund manager location, 2009



Source: Preqin, 2009.

formance of Australian listed infrastructure funds to the Australian Securities Exchange (ASX). Since the crash in 2008, some infrastructure shares have recovered to track the ASX, but others remain well below this level. There is some speculation that the collapse of the Australian investment and advisory company Babcock & Brown and the difficulties faced by some the other listed funds in Australia in 2008 has cast a shadow on the listed fund model. There is also a question as to whether this is primarily an Australian market issue or a signal of a general move away from the listed approach.

Table 2: Summary of characteristics of listed and unlisted funds

Listed funds	Unlisted funds
• Provide liquidity for investment as they are publicly traded	• Illiquid investment
• May provide overall investment diversification	• Potential lack of diversification
• Can give rise to value volatility as correlation to other asset classes as continuous mark-to-market	• Low correlation of performance to other asset classes
• More accessible and quicker to access by investors	• Limited opportunities to enter the market

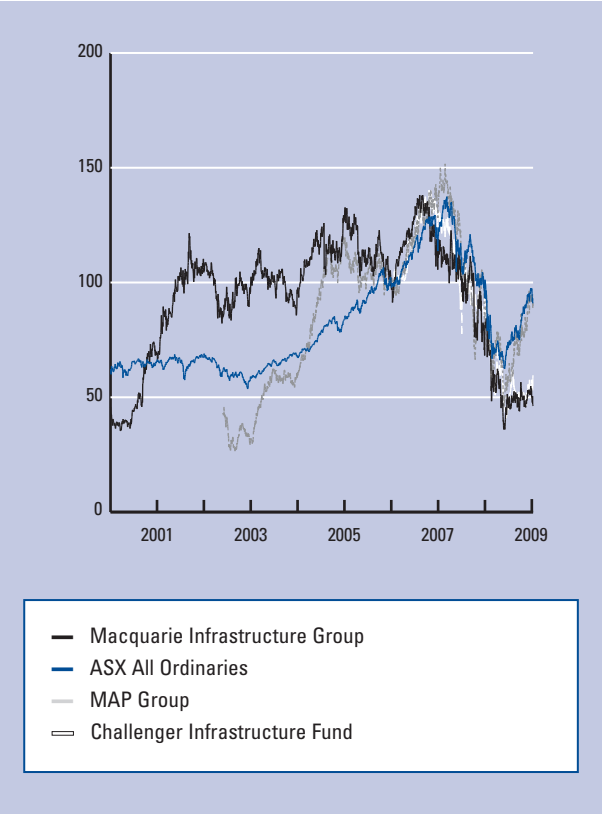
Open-ended vs. close-ended funds

Funds can be structured as either open-ended or close-ended. Open-ended funds provide investors with the opportunity, but not necessarily the obligation, to increase their commitment or investment in the fund over time. Close-ended funds have a set, specified size and life. A significant number of unlisted infrastructure funds that have been set up in the past 3 years have been structured as close-ended funds with a total fund life of around 10 years; an illustrative fund life is shown in Figure 13. Some of consequences of this private equity approach are discussed in more detail in Chapter 3.3.

Primary vs. secondary (follow-on) funds

As is indicated above, many established infrastructure funds have a relatively short life, at circa 10 years, com-

Figure 12: Performance of Australian listed infrastructure funds vs. the Australian stock market

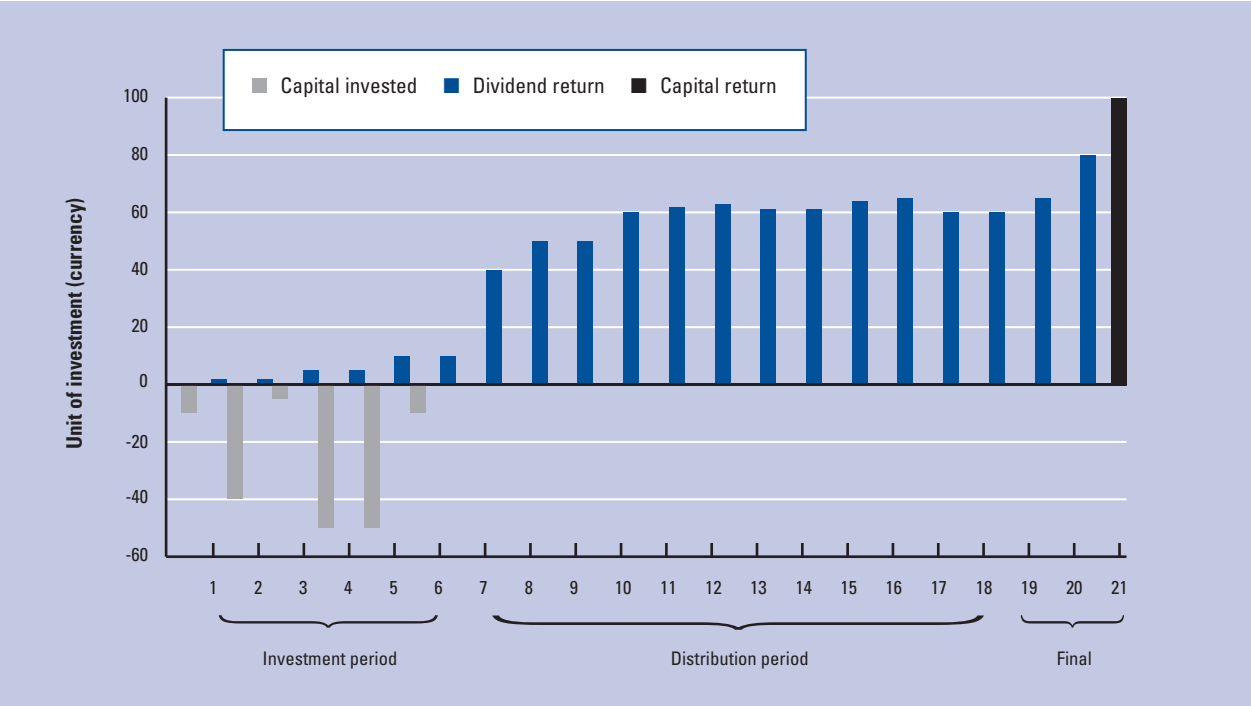


Source: Thomson Reuters Datastream, available at http://extranet.datastream.com//LOGON.ASPX?URL=http://extranet.datastream.com/index.htm (accessed November 5, 2009).
Note: The raw data have been rebased to 100 on August 8, 2006, the listing date of the Challenger Infrastructure Fund.

pared to the potential asset life or contract/concession period of the infrastructure that may be 25 or more years. At the end of the fund life, investors may opt to crystallize their investment and exit the fund or they may choose to invest in a follow-on or secondary fund. Because so many funds have been established in the last 3–5 years, there is little empirical evidence for what the trend might be, although to date those funds that have reached their terminal date have been rolled into a follow-on fund.

The term *secondary fund* can also be applied to funds where the original or primary fund focused on new projects with investors who take the risk of the development or construction of the project/asset. These investors are focused on a capital gain from an increase in value of the asset once it is fully operational, rather than on the long-term cash flow that the asset might generate. Once the projects or assets become fully operational, the risk profile changes and the return to investors is cash generated from the project. This change in project risk profile can therefore be an opportunity for the original fund to close and the assets to be acquired by a secondary fund, supported by investors attracted by the long-term yield.

Figure 13: Simplified fund return profile

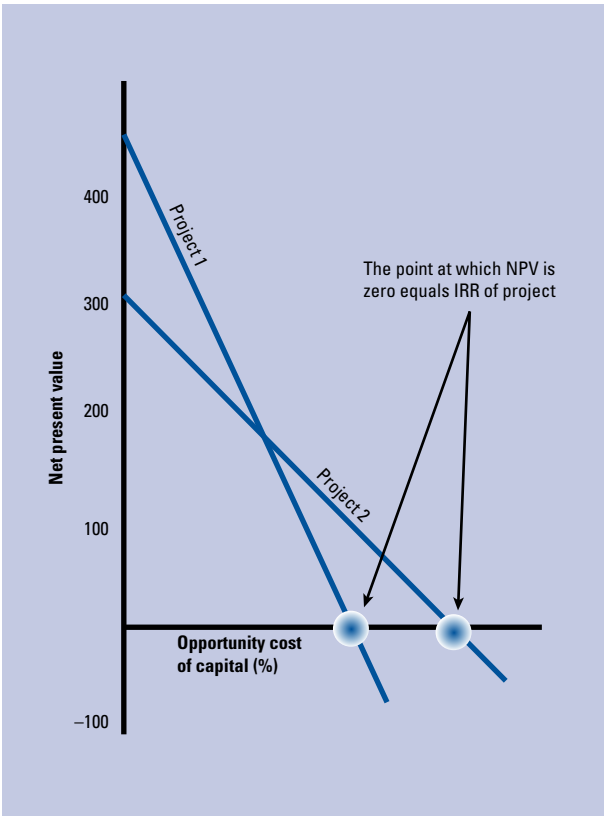


Source: World Economic Analysis, illustrative.

Table 2: Overview of characteristics of seeded and unseeded funds

Seeded funds	Unseeded funds
• The fund will have knowledge of the seeded part of portfolio and will have an actual performance to forecast.	• If the fund is being built up through acquisition of non-operational assets, there will be a lag between the investment date and any return on investment.
• Assets may include revenue-generating investments, which means investors can get a day-1 return on their investment.	• There is a risk that appropriate assets will not be acquired and the fund will not invest its committed funds, which in turn means cash is held and the investors' commitment does not attain the yield forecast.
• The fund management team has a demonstrable track record of investing and managing assets.	• There is a risk and cost to the bidding process.
	• Unseeded funds have the ability to influence the transaction structure of investments.

Figure 14: Net present value (NPV) vs. internal rate of return (IRR)



Source: World Economic Forum, based on *Investopedia*, available at http://www.investodedia.com/study-guide/cfa-exam/level-1/corporate-finance/cfa11.asp.

Seed assets

Another variation is whether, on set up, the fund already has some assets to immediately transfer (or seed) into it or not. Most primary funds (and all of those in the top 10 listed in Figure 10) are not seeded. But secondary funds, by their nature, are seeded. A fund that is initially seeded may not be closed. However, it may seek additional investments. Table 2 provides a brief overview of the main features of seeded and unseeded funds. If a fund is only partially seeded, some of the unseeded fund risks remain.

Increasing leverage on funds introduces risk

Some funds will attempt to optimize their value for investors by financially engineering the fund's capital structure. The most common approach is to replace some of the fund's equity with cheaper bank debt. However, increasing a fund's leverage also increases its risks to equity. Therefore, while determining the level of leverage, the fund needs to strike a balance between risk and reward for the equity investors.

One of the significant risks with the leverage approach occurs when the debt term is shorter than the fund term. This introduces a refinancing risk to the fund that did not previously exist (the refinancing risk is the amount of debt or cost that differs from the original amounts). Undoubtedly, there are leveraged funds that, in the current financial market, will not be able to refinance the leverage debt on the same terms; these funds may face the possibility of equity calls to re-leverage.

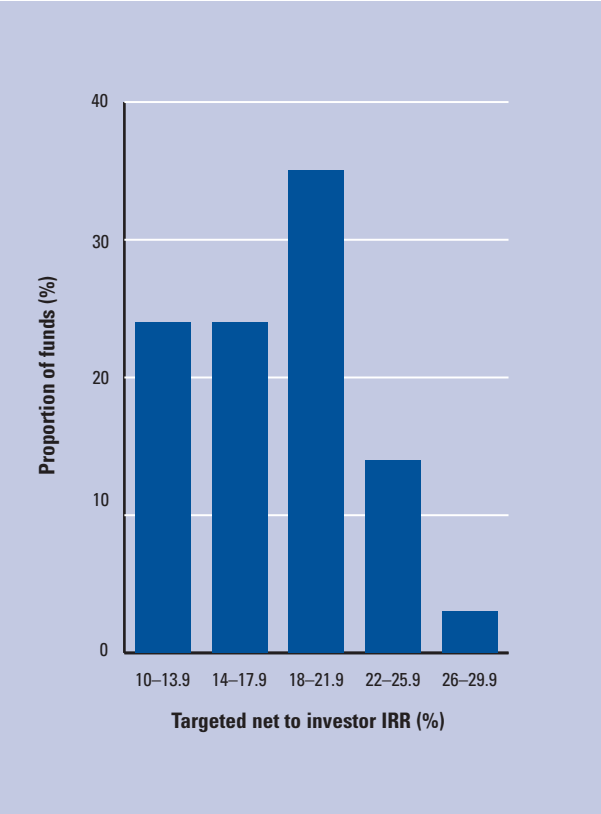
Throughout this *Report,* references are made to the returns an investor might seek and the risk-return relationships. The following section summarizes how investors measure their returns and the decision-making process that underlies the decision of whether or not to invest.

The theory: How to measure return: Net present value vs. internal rate of return

When considering a new investment opportunity, investors need to be able to have some way to appraise the opportunity—to make the investment decision that will add value and not destroy it for them. The methodology used for this investment appraisal needs to be something that (1) can be applied consistently over time to measure how value changes and (2) allows meaningful comparison between opportunities. The choice is usually between an NPV and an IRR analysis (see Tables 3 and 4). The relationship between the NPV and IRR is shown in Figure 14.

Both of these approaches seek to value a series of cash flows that makes them appropriate for infrastructure opportunities that are all about generating cash from an asset. This analysis does not help to assess profit. Appreciating the principles of each approach is impor-

Figure 15: Distribution of internal rates of return (IRRs) targeted by fund or investment vehicle



Source: Preqin, 2009.
Note: The IRR is targeted by fund or investment vehicle.

tant because an NPV approach might suggest that one particular opportunity is better than another, whereas an IRR analysis might suggest otherwise.

Determining the risk-adjusted return for an investment is complex, but there are some market precedents

As we have already indicated, investors will allocate only a small proportion of their funds to infrastructure. So, when presented with two different opportunities, how do they decide which one to invest in? Their analysis would need to take into account the value created, the alternative opportunities, the market dynamics, the risk-reward proposition, and the scale of the opportunity.

First, any investment should be value creating. So whether NPV or IRR is used, the results should be positive.

Second, the return should be in line with, or better than, the returns offered by an equivalent-risk investment. Investors may analyze comparable-risk investments to provide a benchmark. However, it is challenging to identify equivalent-risk investments because the risk-reward spectrum is not always easily observable. They may also use complex models such as the Capital Asset Pricing Model (CAPM), which can calculate the theoretical required return of an asset.

Third, any investor must compete with others and so may need to adjust the desired return to make investments. For example, if an investor overstates the return he requires for taking the opportunity risk, another investor will beat him to the investment.

In this way, as in any other market, required return levels are likely to emerge where the market prices each point on the risk spectrum. All parts of the market, including infrastructure, show that pricing can be cyclical, with periods of high prices or asset bubbles. Infrastructure funds also target a range of returns, and evidence suggests that for unlisted funds this ranges from 10 to 30 percent on an IRR basis, as seen in Figure 15.

Different investors will seek different levels of return and have different aspirations for where their return should come from. Sources of return include regular income, yield from the investment, and capital appreciation through future sale of their stake in the asset. Such differences will affect the choice of investment. For example, if a regular income is important, then investment in existing and established assets is going to be favored. If capital growth is the aim, developing new infrastructure may be preferable and once the investment reaches an established level of performance it can be sold.

Table 3: Net present value (NPV) characteristics

- The basic premise of the NPV calculation is to accept investments with a positive NPV when cash flows are discounted at the opportunity cost of capital.
- Underpinning this premise are three principles:
  — A unit of value today is better to have than a unit of value tomorrow because the future is uncertain
  — Some opportunities will be safer or less risky than others
  — The market is competitive
- The NPV approach allows someone to give an uncertain future cash flow a value today

The calculation discounts the investment's expected future cash flows at the opportunity cost of capital (the discount rate). The opportunity cost is the return an investor forfeits by investing in this opportunity instead of another opportunity of equivalent or comparable risk.

Advantages of approach	Disadvantages or common pitfalls
Market competition should mean that return levels are likely to emerge for different risk propositions.	Need to understand the forecast cash flows and the risks to which these cash flows are exposed.
NPV calculation gives a value for the whole period of the investment and so will not fluctuate over time.	Deciding the discount rate is complex and assumes there are efficient capital markets and all investors assess risks and returns the same way.
NPV calculation can be used to measure a return when capital is rationed.	NPV calculation assumes that the risk to the cash flows is steady over the period being measured.
	Need to ensure both the forecast cash flows and discount rate approach other factors such as inflation and tax on a consistent basis.

Table 4: Internal rate of return (IRR) characteristics

- The basis premise of the IRR calculation is to accept the investment if the opportunity cost of capital of the relevant investment is less than the investment's IRR.
- The calculation finds the annual discount rate that, when applied to a cash flow, calculates an NPV of zero.

Advantages of approach	Disadvantages or common pitfalls
IRR can be used where cash flows are irregular and the single discount rate approach used in an NPV analysis is not appropriate.	Because this is an annual measure, opportunities that have higher cash flows in early years may appear to be a better proposition. However, this assumes the money can be reinvested at the same rate in later years, thus it can be unreliable if capital is rationed.
	The result of the IRR calculation can be difficult to interpret if there are fluctuations between positive and negative cash flows other than the original investment

TAKE-AWAYS

Corporate equity

- Corporate equity has historically been a significant source of private finance for infrastructure.
- Corporate equity is an important source of capital for the early development of a market, and is likely to be so in the future.
- The drivers for an investment and a target return can vary significantly between corporate investors.
- Effective management of conflicts between the deliverer and investor roles must be carefully considered.

Institutional equity

- There is a wide range of institutional investors that consider infrastructure—such as public and private pension funds and insurance companies—offer portfolio diversification; potentially returns on these investments match their liabilities.
- The majority of institutional equity is invested through listed or unlisted funds.
- There has been a significant increase in funds raised over the past 10 years, and fundraising has continued despite the recent global economic crisis.
- There are many routes for institutional equity to invest in infrastructure. These routes offer a range of risks and rewards, and the selected route depends on the investment profile sought.

Returns

- It is necessary to fully understand the method used to measure return in order to ensure that this preferred method is in line with investment performance indicators.
- Comparing investment opportunities is as much an art as a science, and competition to invest can drive up prices, thereby driving down returns.
- Investors will have different return expectations, ranging from regular income to capital growth.

Note

1 See the Actis website, available at http://www.act.is/ (accessed February 2010).

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APPENDIX A.3

A Source of Private Finance: Debt

This chapter seeks to describe some of the different sources of debt and their key features. We identify and discuss two main sources of debt: 1) wholesale banking and 2) states or multinationals. The chapter then considers two other areas: the junior debt market and monoline guarantors. Multinationals are considered in greater depth in Appendix A.4.

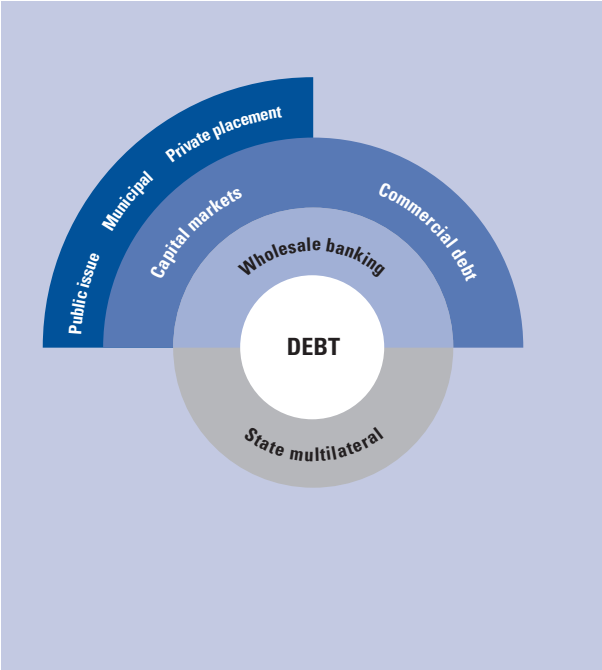
Wholesale banking provides two sources of debt funding: commercial bank debt and capital markets

There are primarily two sources of debt funding in the wholesale banking markets:

- commercial bank debt, and
- capital markets.

Over the past 10 years, around US$1.3 billion of funding for infrastructure has been provided through wholesale banking,[1] with the majority—some 88 percent—coming through the commercial bank route. This is illustrated in Figure 1.

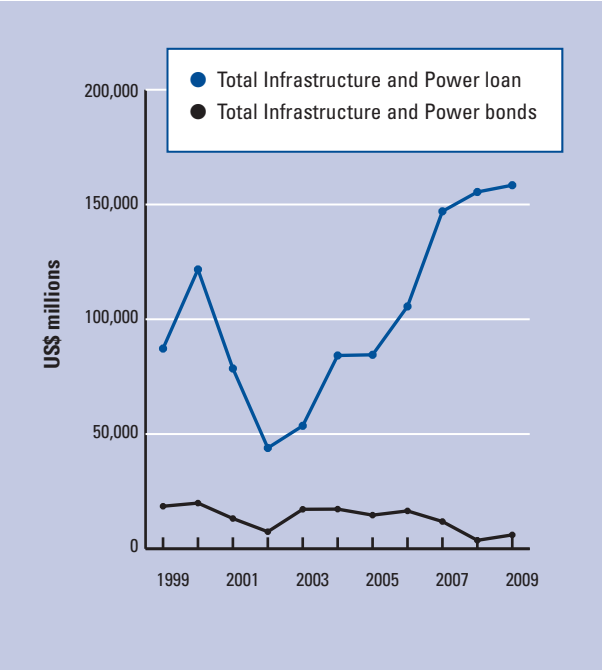
Figure 1: Sources of debt



Since 2002, the relative prevalence of commercial loans vs. market-issued bonds has changed, with loans providing an increasing share of funding (Figure 2). The key characteristics of these two sources of debt are discussed in the following pages.

The financing structure for infrastructure will often change during the life of an asset as its risk profile changes. For example, commercial debt may be used to finance the construction of an asset, but once the asset is operational, the debt may be refinanced in the capital markets.

Figure 2: Infrastructure and Power global loans and bonds, 1999–2009



Source: Dealogic (accessed March 4, 2010).

Commercial debt providers' interest in and approach to market is varied but follows some basic principles

The following is a summary of commercial banks' interest in the infrastructure markets, the potential depth of their involvement, the timing and role that they may take, and the pricing of the debt. A major source of funding for infrastructure projects is the commercial bank debt market, which is often referred to as *senior debt,* as it ranks highest in the priority of payments. Historically, banks have been attracted to this sector for a number of reasons, including:

- The infrastructure sector may give the bank an ability to match its long-term liabilities, such as mortgages or pensions, with a long-term asset.
- It gives diversity to the bank's loan book.
- Depending on the contractual structure, the sector can potentially provide an alternative to government-issued bonds (i.e., gilts or treasuries).

There is evidence that the highly structured nature of some types of infrastructure investments can mean that the debt is relatively low-risk when compared with other fixed-income alternatives. This will mean, however, that the risk has been transferred to junior debt and equity—not that it has disappeared altogether.

Over the next few pages, we will describe some of the key features of the commercial debt markets, including:

- the amount of debt,
- timing—when to involve banks,
- organization of banks, including syndicated and club deals,
- pricing,
- mini-perms, and
- terms of lending.

The amount of debt will depend on the structure and risk allocation of the opportunity

As illustrated in Appendix A.1, the funding provided by commercial lenders may be as high as 90 percent of the total funding required for the project. The potential risk of such high exposure to project performance means that the banks will be closely involved in the transaction. They will need to not only negotiate the terms and price of loans, but also understand the commercial proposition and the circumstances that could result in them not being repaid. The banks' due diligence can bring rigor to the transaction analysis and reassure the public authorities about the robustness of the private-sector proposal.

The point at which banks are introduced to transactions will vary

There is often some debate about when to involve banks in the transaction process; there can be significant variation in this. Some equity investors are confident in the approach and requirements of lenders, particularly when an established model or process is being followed. These investors may be comfortable with advancing a transaction themselves and bringing in lenders close to the time the funding is required or even after the transaction is closed. Typically, either of these approaches may be observed when the transaction is being made in a developed market, sector, or region, where there are benign or stable banking conditions and strong interest in the opportunity is anticipated from lenders.

In most other circumstances, equity investors will probably want to involve banks much earlier in the process to ensure that they negotiate a transaction to which the banks will lend.

It is notable that, in the current financial environment, some transactions are progressing as equity-only transactions because debt is either unavailable or too expensive to obtain. In these circumstances, equity investors anticipate a future improvement in the financial markets and will look to arrange the bank debt when that occurs. An interesting development in this approach is the Chicago Parking Meter acquisition, where the Morgan Stanley–led consortium put in place a long-term forward-starting interest rate swap. This was based on a notional amount of debt despite there being no debt in place at the time of the transaction.[2] This approach means that the transaction can proceed even

during turbulent times for financing, but it is not a risk-free approach.

The public-sector party involved in a transaction may be concerned about the timing of bank involvement. This is especially true in an underdeveloped market or when there is something novel or unusual in the proposition as the public sector wants to keep transaction cost to a minimum.

How banks work together will depend on whether or not they intend to arrange, underwrite, and syndicate

For many infrastructure projects, there will be one bank or a small group of banks (usually referred to as the *arranger* or *lead arrangers*) that will negotiate the lending terms. These banks may also underwrite or provide in full the total amount of lending required. However, even when the amount of funding is fully underwritten, banks will usually want to distribute parts of the lending (commonly referred to as *sell down* or *syndicate*) to other banks. In this way the banks can limit their exposure to any one transaction and spread their lending capacity and risk across a range of opportunities. In the infrastructure market, the final amount (or *final hold*) any one bank will want to hold can vary significantly by sector, market, and geographic place, but it is unlikely to be more than US$150 million.

The sell-down or syndication process will typically take place shortly after a transaction has been concluded. In many respects, the process is a risk that sits firmly with the private-sector parties. However, in some circumstances the public sector may have an interest in this process. This occurs when the equity investor retains some risk that—should the arranger bank(s) not achieve their target final hold amount—the lenders may require a change in their loan pricing or fees (to make the proposition more attractive to other banks) or in the loan structure. Such changes may reduce the potential level of return for equity investors and also reduce any contingency in the project. Both reductions might have the effect of weakening the ability or desire of the equity investors to deal with deterioration of the transaction economics or to deal with the unexpected. This is of particular concern when the project revenue is fixed and any additional costs cannot be passed on to users.

We have just described the "arrange and syndicate" process common to many bank-financed transactions prior to the 2008–09 banking collapse. During and after this banking crisis, very little infrastructure-related debt has been arranged on a syndication basis. Instead a "club bank" approach (a type of "arrange-and-hold" approach) has been used. In this approach, a number of banks need to collectively arrange the debt so each bank is prepared to arrange and hold a fixed proportion of the collective debt—a proposition that can be extremely complicated to implement. However, when taking this approach, the amount each bank will arrange and hold will be less than the amount they would have been prepared to underwrite and syndicate. There are two issues with the club bank approach for borrowers:

- First, large loans will need many banks to come together. So, if the maximum amount a bank will arrange and hold is between US$75 million and US$150 million, then a US$750 loan will need between 5 and 10 banks. With an arrange-and-syndicate approach, only 2 or 3 banks would have been sufficient.

- Second, working with such a large group of arranging banks means that the negotiation of the facilities could be complex and time-consuming. Also, terms may need to come down to the lowest common denominator in order to reach a deal.

The reason for the move to club deals has come about primarily because individual banks lack confidence in other banks' appetite for syndicated debt, the terms and pricing that those other banks may demand, and the interbank risk being taken.

The pricing of commercial bank debt has a variable element that may change over time

As with equity investors, banks need to consider the opportunity cost of the capital for the loan they are making, a consideration reflected in the interest rate charged to the borrower.

One of the issues with the bank's pricing is that the interbank rate is a variable rate, so the borrower is exposed to this variable risk over the long term of the loan. While this is a risk that all borrowers have to manage, because of the often long-term nature of infrastructure borrowing and potentially fixed revenue, the issue can be particularly acute for the infrastructure sector.

Many borrowers will therefore seek to "fix" this risk by using interest rate swap instruments, usually with one or more of the arranger banks. As with the syndication risk, the result of fixing this risk remains with the private-sector parties. However, if the public sector is fixing concession payments to reflect a fixed interest rate or is retaining any liabilities to pay compensation that includes the cost of breaking any swap instruments (which can be significant), the public-sector entities will need to understand the terms of the swap and their potential risks.

The pricing of bank debt described above is the type most commonly offered, but occasionally banks will offer a fixed price debt. This means that, rather than the borrower managing the interest rate risk, the bank manages this risk itself.

Mini perm debt although increasingly prevalent, introduces a new set of risks

An increasingly prevalent feature of the commercial debt markets for infrastructure is a move by banks away from offering long-term loans (20+ years) to offering mini perm products.

The main feature of these mini perms is that the loan period will be for a shorter term (say, 7 to 10 years), often to cover a construction period and a short period of operations. There are two products (hard and soft mini perms) offered under the mini perm umbrella (see Table 1).

Because repaying the debt fully in the shorter term of the mini perm is unlikely to be feasible—the user or contract charges would be much higher—the use of mini perms creates new risks for borrowers that they may also attempt to pass back or share with public authorities. These risks may include:

- **Refinancing risks:** The borrower will have to refinance a hard mini perm and will almost certainly want to refinance a soft mini perm. So, the borrower will face the risk that banks or capital markets may not offer better terms in the future. If the terms are not better in the future, the borrower may incur increased costs with no ability to pass these on to the public authority or users. Future financing is particularly critical when a contract is being bid for a fixed fee over a long-term interest rate.

- **Uncertain hedging strategy:** Because the future debt profile is not known, it is difficult to establish an effective interest rate hedge at the outset.

- **Soft mini perm margin costs:** For many PPP-type contracts, a fixed fee is calculated for the long-term concession period at the outset of the contract. If mini perm financing is being proposed, the following assumptions need to be considered to calculate the fixed fee:

  —what are the long-term interest costs,

  —what are the long-term margin costs, and

  —who benefits if the transaction is refinanced on better terms than the forecast?

The recent dominance of the mini perm type structure may point to a shift away from the assumption that long-term bank debt is put in place for projects at the outset and a shift towards the approach of arranging bank debt for a construction period (if there is one) and, once an asset is operational, refinancing this debt through the capital markets.

Lenders will negotiate detailed credit agreements

The interest rate charged is not the only concern of the banks. The loan contract (commonly known as the *credit* or *facilities agreement*) will also deal with other issues, such as:

- the amount being lent and its associated costs, including bank fees;

- the requirements of the borrower—things the borrower must do (positive covenants) and must not do (negative covenants);

- information that must be provided by the borrower and confirmed at the outset and in the future (representations and warranties);

- financial performance—what are the financial tests and what happens if they are not achieved; and

- what happens when things go wrong and the loan is in default.

Dealing with what happens when things go wrong or are not as expected is a major concern for lenders. This is also evidenced by the lenders' interest in the extent of their ability to take control of the asset or enterprise (to "step in") should there be a (potential) default on their loans—this is their security package. Security might be taken either on physical assets or on contracts such as the concession agreement or licence that would give the lenders the same rights and obligations that the borrower had.

Public-sector parties need to understand financing arrangements to appreciate the costs, robustness and sustainability of proposals

Arranging financing is a private-sector risk, but the public sector should also understand the cost and terms. Such circumstances may apply in the following situations, among others:

- If the cost of debt is part of any charges paid by the public authority, that authority will want assurance that these costs reflect the current market—by benchmarking with comparable transactions. Factors that will be considered are how those costs may vary over time, and whether such changes will affect the charge.

- If the financing proposed is novel, or outside expected parameters, then the public authority will want to understand its deliverability and robustness.

- In partnership and concession-type transactions, the rights of the financiers under default and termina-

Table 1: Comparison of hard and soft mini perms

Hard mini perm	Soft mini perm
• Short legal maturity	• Longer legal maturity date (20+ years)
• Few, if any, loan principal payments scheduled, so much of the loan can be outstanding at its maturity date	• Annuity-style repayment arrangement over the legal maturity term
• Borrower must refinance by maturity date	• Refinancing "forced" by significant step-up of the loan margins over the legal maturity term
• Failure to refinance may result in default	• Failure to complete refinancing will not result in default, but—in addition to the higher cost of borrowing—the lenders may prevent any or some payment of dividends and instead compel this cash to be used to repay debt, thereby accelerating the loan payment.

tion circumstances need to be understood by all parties, especially if the authority has obligations to ensure the continued operation of the facility or to pay compensation to the financiers.

- Depending on the obligation of the authority to the debt providers, the authority may want the right to approve any changes to the financing. This is important for any infrastructure transaction where it is highly likely that the financing will change as the project or enterprise moves through its life cycle.

There are circumstances where debt may be stapled

Stapled debt usually means that the vendor provides or arranges the debt for bidders. This is not commonly offered in the infrastructure sector, but it was offered on the 2009 sale of Gatwick Airport.[3] Stapled debt is currently being offered for the sale of EdF's UK power networks,[4] and is anticipated to be offered for the sale of HSBC Rail.[5]

When debt is linked or stapled to the borrower, anyone acquiring the borrower will need to refinance the debt on acquisition.

There are also circumstances where different tranches of funding are stapled together so that one cannot be refinanced or disposed of separately from the other. This most commonly occurs when equity investments—for example, share capital and loan notes—are stapled together.

Debt markets are now facing additional problems that stem from the current financial crisis

The global economic crisis that began in 2007 was triggered by a banking crisis that created three main problems in the infrastructure finance markets:

- Virtually no capital markets issuance have taken place other than for some utilities and US municipal bonds.

- Banks have become capital-constrained. Since the onset of the crisis, there is less money to lend (through a combination of repairing balance sheets and increasing capital adequacy requirements). This means that competition between different lending options is intense and often long-term, relatively cheap lending to infrastructure is unattractive when compared with short-term, higher-priced corporate lending.

- Banks have become liquidity-constrained. The period over which banks manage their funding has considerably shortened, which exacerbates the mismatch banks have between lending long while borrowing over the short term to fund themselves.

However, the impact of these factors has varied significantly among different banks. Some institutions were able to offer only hard mini perm–style loans; others continued to lend long. But, it is unclear whether this remains a long-term strategy or a move to try to preserve the market.

Bond issuance through the capital markets offers an alternative to commercial bank debt

The following is a summary of the types of issuance, the pricing, and the way in which capital markets are accessed.

A *bond* is an investment security issued to the capital markets by an entity that requires cash today in exchange for the offer of a promised set of future payments. This is usually structured as a regular coupon payment (equivalent to bank interest) and a repayment of the principal amount. It is essentially an "I owe you." Bonds are commonly issued by corporate entities and governments. Clearly, the value of the promise depends on the creditworthiness of the entity issuing the bond. Corporate entities issue bonds as an alternative to bank lending to finance their activities.

Bonds will commonly be listed on a stock exchange so that they can be freely traded and held by anybody. This provides the benefit to the issuer of ensuring access to as many investors as possible when attempting to raise large amounts of cash.

Over the next few pages, we will describe some of the key features of the capital markets, including:

Table 2: Summary of rating levels

Agency				
S&P rating	Moody's rating	Fitch rating	Broad definition	Grade
AAA	Aaa	AAA	Highest rating. Minimum credit risk, highest credit quality, and capacity to meet financial obligations is extremely strong.	Investment grade
AA	Aa	AA	Still very high quality credit with low credit risk; capacity to meet financial obligations is still strong.	
A	A	A	High-quality credit; capacity to meet financial obligations is still strong but is susceptible to adverse changes.	
BBB	Baa	BBB	Good-quality credit but adverse change is likely to lead to weakened position.	
BBB-	Baa3	BBB-	Moderate-quality credit and may possess certain speculative characteristics.	
BB, B, All Cs	Ba, B, All Cs	BB, B, All Cs	Speculative characteristics about the credit risk.	Sub-investment grade
D	D	RD, D	Payment default.	

Source: Author's interpretation of rating definitions from agency websites: Moody's, available at http://www.moodys.com/cust/default.asp; Standard & Poor's, available at http://www.standardandpoors.com/home/en/us; and Fitch Ratings, available at http://www.fitchratings.com/index_fitchratings.cfm.

Note: The focus of the agencies' definitions is on the ability or likelihood of the obligor (person or entity who has obligation to repay debt) to meet their obligations and what protection there is in the event of bankruptcy. This summary shows the main ratings only. There are interim steps (or notches) between these main ratings that are indicated either by a number (1, 2, or 3) or a negative or positive sign. For example, there may be an S&P AA+, AA, and AA– or Moody's Aa1, Aa2, or Aa3.

- credit ratings,
- pricing,
- fixed or index-linked bonds,
- private placement, and
- the process of arranging the finance.

Credit rating is required for most bonds issuances

One key characteristic of a bond is that it will almost always require a credit rating. A bond is often issued to investors who may not have the skills and knowledge to fully understand the risks inherent in that investment. A credit rating provides an independent assessment from which the expected return on that investment can be benchmarked.

There are a number of agencies that will publish credit ratings; the most commonly consulted are Fitch, Moody's, and Standard and Poor's (S&P). Each agency will have its own methodologies for measuring risk, which are readily available on their websites. The rating provides a view on the likelihood that the "promise" will be broken—that is, that the issuer will default. A summary of the key rating levels for these three agencies is shown in Table 2.

The pricing of bonds is partially based on the characteristics of a predefined benchmark bond

There are two main parts to pricing bonds at their issue:

- the yield to maturity on a benchmark bond, and
- the issue spread.

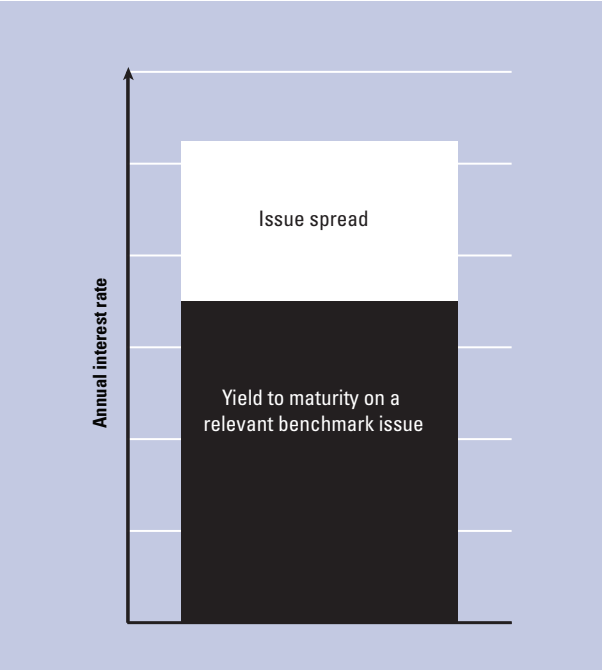
The *yield to maturity* is the promised yield (the internal rate of return, or IRR) on the bond if purchased at the current price and then held to its maturity. Because the price of a bond may fluctuate over time, this yield to maturity may fluctuate and so it represents a point-in-time market observation. The benchmark bond is the proxy for a risk-free investment with an equivalent yield to maturity. And, although you cannot say that any investment is absolutely risk-free, the convention is that government issuances, particularly in developed economies, are considered to be risk-free. For example, UK gilt-edged securities (gilts) and US Treasury bonds are generally considered to have zero risk because it is highly unlikely that either government would default on payment. Moreover, these bonds are easily traded (or highly liquid) in a transparent manner. Therefore they provide a common point to which all investors can relate.

However, given that governments issue many securities, the key question is how to decide which government security would be the best to consider as a benchmark for a particular upcoming bond issue.

Investors will want to identify a government issue that has a relationship between change in value and yield to maturity similar to the proposed project bond. The coefficient that captures this relationship is known as the *modified duration;* this can be calculated with reference to standard formulas and models.

The *coupon* or *issue spread* is a risk premium that an investor will require for accepting the risk specific to an

Figure 3: Components of an annual interest rate for a bond



Source: PricewaterhouseCoopers 2006, internal training material.

individual issue. The components of the annual interest rate or coupon for a bond can be seen in Figure 3.

There may be an additional cost for a monoline guarantee; this product is covered later in this chapter.

Bonds may be fixed rate or index linked

Conventional bonds will be issued with a fixed coupon rate so there are known payments to be made by the borrower to the investor. Fixed coupon bonds represent the majority of bonds issued. Some issuance is index linked, so that the borrower's payments change in line with the chosen index—often a consumer price index. For many institutional investors, this can be attractive because their liabilities may also be index linked, so these bonds create a better match between payments received from the bond and its liabilities.

Some bonds are placed privately

A private placement can be tailored a little more easily to the specifications of one investor. These placements do not usually exceed about US$150 million, as a single investor is unlikely to have the appetite to take on much more risk with one borrower. For anything larger than US$150 million, the issuer is likely to be better off incurring the additional costs of listing in order to reap the benefits of accessing a wider market.

The process of arranging bond finance is different from arranging commercial bank debt

A notable difference between commercial debt and capital markets is the process of arranging the finance. Negotiations with commercial debt providers do not follow a prescribed or regulated procedure. This has the benefit of being more flexible, but can mean that there will be some uncertainty about when negotiations will be completed, and—until the documents are signed—there remains a risk that the lenders could introduce new conditions to the loan, or indeed, on rare occasions, even walk away.

The process for launching a public bond is much more prescriptive and is regulated by the relevant market authority. The main steps in the process are shown in Figure 4.

In deciding the best debt source, a number of factors need to be considered

The choice of employing commercial bank debt or capital market to fund infrastructure needs to take into account a number of factors. These factors include the amount of debt to be raised, its term, its risk profile, and the nature of cash flows expected from the infrastructure (see Table 3).

Municipal bonds comprise a large part of the private finance for US state and local governments

Although the municipal bond market is not unique to the United States, it does represent a major source of private finance for state and local government. The following is a brief overview of the municipal bond market and the types of bonds that may be issued. This summary does not attempt to substitute for the complex rules, set by the US Internal Revenue Service (IRS), that govern this market.[6]

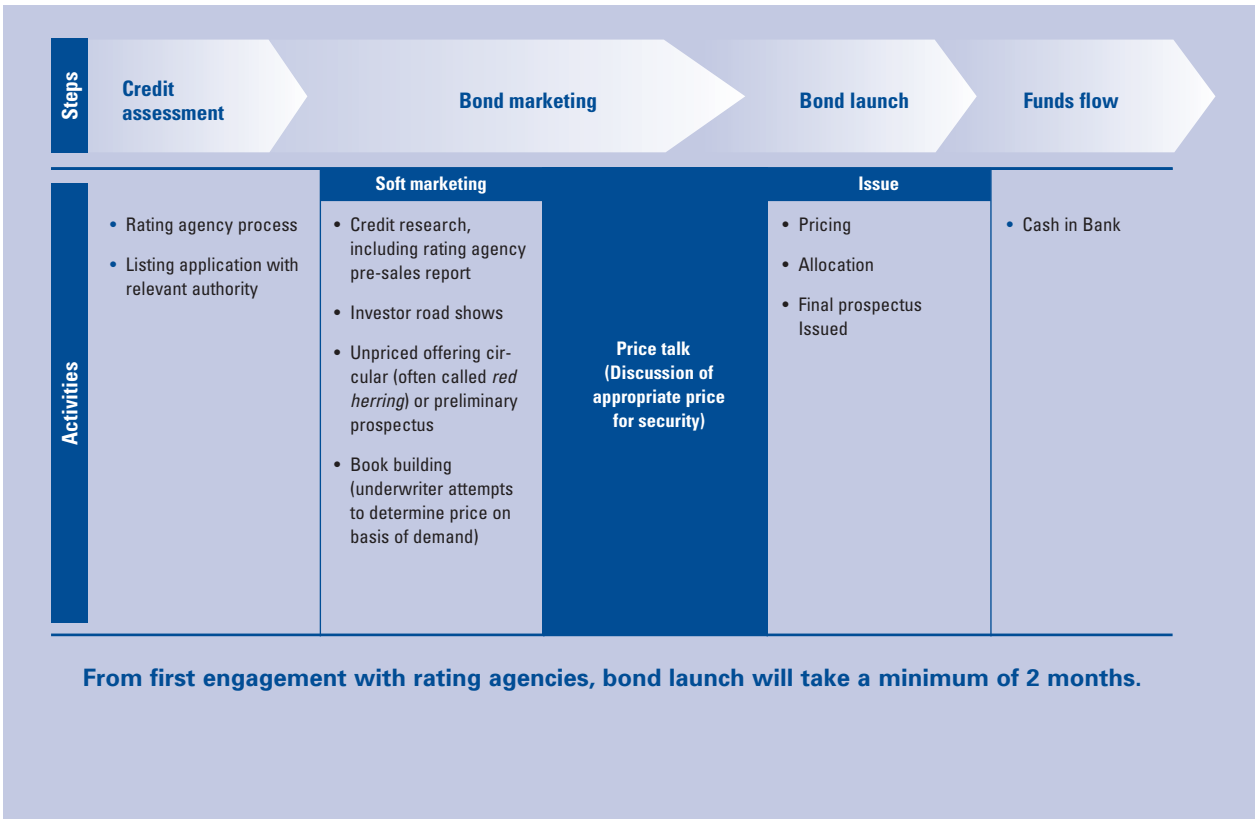
The market is not new: municipalities started to issue bonds to fund capital developments, such as railways, in the early 1800s. Nowadays the key driver for the market is the fact that the interest paid to bondholders is exempt from federal and state income tax. The investor universe is primarily retail investors: individuals investing either directly or through mutual funds.

Types of municipal bonds

With regard to the funding of infrastructure, there are two sorts of bonds that could be used:

- **Government bonds:** The proceeds of these bonds are used to finance the building, operation, and maintenance of public infrastructure used by the issuing party or another government party. Examples of such infrastructure include roads, schools, libraries, and fire stations.

Figure 4: Steps in launching a public bond



- **Qualified private activity bonds (QPABs):** The proceeds of these bonds must go to capital expenditure, so they may be used either to fund new infrastructure or to upgrade or refurbish existing infrastructure.

Government bonds

There are three main types of government bonds issued. Each type reflects the source and security of monies used to repay them, as follows:

- **General obligation bonds:** These bonds are issued against the general taxing powers of the issuing authority. The bondholders do not have security against an individual facility.

- **Revenue bonds:** These bonds are issued against revenues received from the operation of an individual infrastructure asset—for example, a toll road. The bondholders are likely to have security over the individual facility.

- **Special assessment bonds:** These bonds might be issued to fund infrastructure in a specific area that will be a catalyst for commercial development in that area. To reflect the public funding, there might be a specific tax on the subsequent commercial development to repay the bonds.

There are a number of variations on these main types of bonds, each of which deals with state-specific issues. For example, some bond variations address laws limiting the issue of debt. Other variations include bonds that make available different ways to provide for public infrastructure, such as the leasing of buildings and equipment, and bonds that are used for short-term funding needs.

Qualified private activity bonds

The QPABs are bonds where the user of the proceeds is a nongovernmental body. In the United States, in order to qualify for the tax-exempt status of government bonds, the activities on which the proceeds are spent must be specifically authorized by Congress and meet the IRS tests.

For many years, these bonds have been authorized to finance some infrastructure—such as water treatment and port development—but it was not until 2005 that the exemption was extended to encompass surface transportation, including roads and bridges.

These bonds are technically issued by a conduit vehicle, but the investor credit risk resides with the underlying private entity.

Historically, interest earned on QPABs has fallen within the United States' alternative minimum tax (AMT) rules. These rules, in effect, put a floor on the amount of tax deductions an individual can claim.

However, recent tax rule changes have removed QPABs from the AMT rules, making them a more attractive investment option. These bonds have also sought to create a more diverse investor base to attract sovereign and foreign investors.

Build America Bonds

The Build America Bonds program is a recent variation of municipal type bonds. Under the American Recovery and Reinvestment Act of 2009, state and local governments that, in the period 2009 and 2010, could have issued municipal bonds to fund capital expenditure can instead issue Build America Bonds. If Build America Bonds are issued, the issuing authority will receive a direct federal subsidy payment equal to 35 percent of the total coupon interest paid to investors.[7]

Municipal market: Size and pricing

It is estimated that municipal bond issuance in the United States was about US$425 billion in 2007.[8] This fell by about 9 percent in 2008, to US$385 billion. By November 2009, issuance was about 9 percent below the 2008 level (see Figure 5).

There has also recently been a considerable increase in the price of bonds. Historically, the difference in spread between an AAA-rated bond and a BBB-rated bond was around 50 basis points, but this difference has now increased fourfold, to around 200 basis points.

Rating of municipal bonds

There is no legal requirement to rate these bonds, but there is a market expectation that they will be rated to demonstrate that they are investment grade. So most (but not all) are rated, by the same agencies that rate other bonds.

The role of monoline insurers

The monoline business that became prevalent across global infrastructure bond issuance developed out of the US municipal bond market. Prior to the recent economic turmoil, an estimated 30 percent of municipal issuance had a guarantee from a monoline insurer (see the next section for a discussion of the monoline product). However, the use of monoline insurance was not spread evenly across the market but was focused on smaller issuances, smaller states, or smaller issuing entities where investors relied on the due diligence performed by the monolines rather than their own.

The fact that only about 30 percent of the market relied on the monoline guarantee has meant that the limited monoline offering available now has not led to an overall collapse of municipal bond issuance. Instead, the limited monoline offering has made issuance much more difficult for the smaller issues.

Table 3: Factors determining the choice of wholesale debt

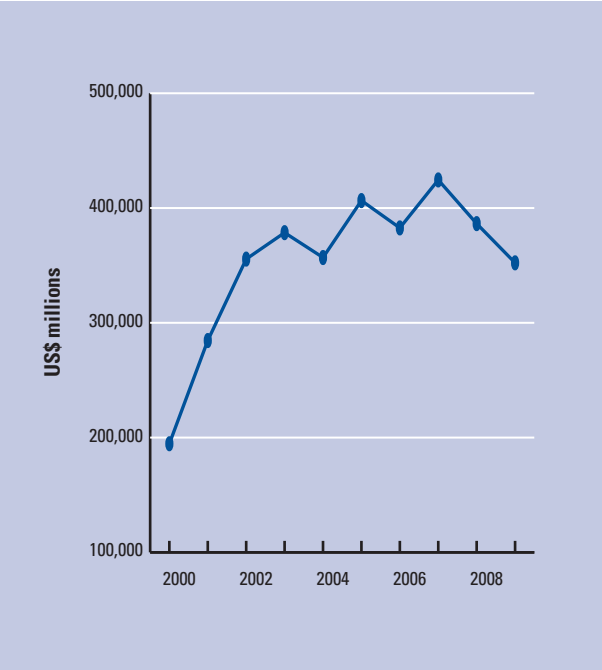
Factor	Consideration
Size	• Commercial debt has no minimum size; transaction costs are the constraining factor. But there will be a market capacity for any one project or transaction. This is currently around US$2 billion, but will vary substantially by market, sector, and geography.
	• Public bonds are typical for issuance greater than US$100 million.
	• Private placements are typical for issuance less than US$100 million.
	• Capacity in index-linked market is variable, so this is best considered on a transaction-by-transaction basis.
Term of required debt	• Banks reluctant to lend beyond 25–30 years and in current market significant lending is now at 5–10 years.
	• Bonds continue to offer much longer tenors.
Risk profile	• Can you achieve investment grade (BBB–)? If not, the bond market is not an option.
Nature of cash flows	• The bond market is better suited to stable cash profiles, since the product is less flexible.
	• Bank market loans can be more flexible and thus easier to change, and so can be better suited to new, start-up businesses.

Monoline insurers play an important role for infrastructure transactions by providing a guarantee for the bond holders

Guaranteed bonds are issued with a guarantee policy from a monoline insurer, which will have a very strong AAA credit rating. This guarantee is sometimes referred to as a *wrap* because the guarantee effectively wraps the underlying project credit rating to give it an AAA rating. The policy pays out to the investors if the issuer fails to make a scheduled coupon or principal payment. In this contract structure, therefore, the monoline insurer is the primary risk taker; the investors are exposed to the issuer only if, for some reason, the monoline insurer itself does not have the ability to pay out under the policy when called. For providing this guarantee, monolines will charge an upfront and annual fee.

Why bother issuing a bond with the benefit of such a policy? The reason is that many infrastructure projects would otherwise often have a rating of around a BBB and be exposed to the asssociated risks. Although this is

Figure 5: Value of municipal bond new issues, 2000–09



Source: Thomson Reuters, Global Public Finance database (accessed November 13, 2009).

Table 4: Credit ratings of monolines, November 2007 and August 2009

	S&P financial strength rating	
Monoline	November 2007	August 2009
Ambac Assurance Corp	AAA stable	CC
Assured Guaranty Corp	AAA stable	AAA negative
Financial Guaranty Insurance Co (FGIC)	AAA stable	Rating withdrawn in April 2009
Financial Security Assurance Inc (FSA)	AAA stable	AAA negative (acquired by Assured)
MBIA Insurance Corp	AAA stable	BBB (internally structured)
XL Capital Assurance Inc	AAA stable	A negative

Source: Ratings from company websites: Ambac, available at http://www.ambac.com/; Assured Guaranty, available at http://www.assuredguaranty.com/; Financial Guaranty Insurance Co., available at http://www.fgic.com/; MBIA Inc., available at http://www.mbia.com/; XL Capital Assurance, available at http://www.xlcapital.com/xlc/xlc/xls.jsp (all accessed September 2009). World Economic Forum analysis.

still investment grade, it is not sufficient to attract many investors. Issuing a bond with a guarantee increases the institutional appetite for that issue because it expands the range of institutions able to invest; this in turn should bring down the pricing of the bond at issue. Monoline providers also undertake detailed due diligence on a transaction and participate in the negotiation of the transaction's contracts, a role that many bond investors believed was a benefit to the project and de-risked their investment, further increasing institutional appetite.

Additionally, the fee paid to the monolines was less than the coupon that would likely be required by investors to buy the "unwrapped" low investment grade issue. The monoline guarantee is not only available for capital markets but is also used to guarantee some commercial debt.

Given the cost associated with the monoline guarantee, there is a need to analyze its cost benefit (which will come because investors will require a lower return or coupon) vs. that of an unwrapped issue.

One of the consequences of the current economic crisis and the monolines' involvement in guaranteeing mortgage-backed securities and collateralized debt obligations has been a significant change in the position of the monolines' ratings. As can be seen in Table 4, in late 2007 there were six AAA-rated monoline insurers, but by August 2009 there was only one: Assured Guaranty (which also now owns FSA). And even Assured Guaranty was on "negative watch," which means the rating agencies are leaning more toward assessing their position as deteriorating than as stable or improving.

This decline in the strength of the monoline ratings has had three main impacts:

- There has been a marked deterioration of the risk profile of *existing* projects. This has translated to significantly increased project coupons—investors coming into the transaction now would expect a higher return because they are putting little, if any, value to the monoline guarantee. This does not have an impact on the underlying project company but it does indicate where the market might be in terms of new projects.

- Some existing projects will have provisions in their financing documents that mean the project company has to pay an increased cost to a lender if the monoline's rating drops. This is most likely to occur where the monoline has guaranteed senior debt—for example, funds lent by the European Investment Bank.

- Overall loss of investor confidence in the value of the monolines' guarantee, even if they have retained their AAA rating, has meant that this funding structure is currently not a realistic option for bond issues. This has, in effect, closed much of the bond market to infrastructure-related issues other than those issues that can achieve ratings attractive to a sufficient part of the market in their own right.

Currently the benchmark seems to be a rating of at least A.

There are other types of commercial bank debt that might feature in the financing solution

So far the focus on commercial debt has been the senior debt, but in infrastructure financing there may be other tranches of debt that have a lower priority than the senior debt and that may also be unsecured. The two most common tranches are:

Mezzanine debt

Mezzanine debt is commonly structured as *junior senior debt*—that is, the terms of the facilities agreement will be similar to those of the senior debt, but recognize that the mezzanine debt is lower in the priority of payment covenants. This is especially the case for any of the lenders' financial tests, which will need to reflect this lower priority.

Since this is junior debt, it is at a higher risk of default and so the risk premium or margin is higher—typically from 2 to 4 percent higher—than the senior tranche. Mezzanine debt often fills a gap in a financial structure when the amount of senior debt available is insufficient. This debt has so far not been a common feature in infrastructure lending but it may come to the fore now.

Subordinated debt

Another common form of debt is *subordinated debt*. This is debt that is subordinated to equity. In many ways the "debt" label is misleading, because its structure is often more akin to equity than to debt, and it is often in the form of loan notes or, sometimes, preference shares.

Notes

1 This information has been sourced from Dealogic's database. The Dealogic infrastructure sector group includes the following sectors: Airports, Bridges, Defence, Education, Govt Buildings, Hospital, Other, Police, Port, Rail Infrastructure, Road, Telecom, Tunnel, Urban Railways (including Light Rail and Mass Rail transit), Waste and Water & Sewerage. We have also included information on the Energy/Power sectors, including renewable sources, in the data. The financing type includes project finance, privatization, and acquisition finance as well as refinancing.

2 Allison 2009.

3 Bowman 2009.

4 Du Chenne 2010.

TAKE-AWAYS

Commercial debt

- Commercial debt markets are currently in a state of flux, but the underlying principles of how they approach and price infrastructure opportunities remain the same.
- When to bring banks into a transaction, how they will organize themselves, and how they will price the debt and set the terms of the lending will vary from transaction to transaction, but some basic principles remain steady—such as how debt is priced.
- In a number of circumstances, public authorities should understand the terms of the debt, not solely because of pricing but also to ensure full understanding of deliverability and robustness of the debt as well as their liabilities and obligations.

The municipal bond market in the United States

- The municipal bond market in the United States shows how government policies—in this case tax policy—can drive the funding options for infrastructure and the potential use of private finance.

Capital markets

- The process of issuing bonds through the capital markets is more structured and regulated than the process of arranging commercial bank debt.
- Most bonds are issued on public markets, although some are offered as private placements.
- The way debt is priced and brought to investors in capital markets is different than it is in commercial debt markets; for example, capital markets have credit-rating requirements.
- The capital market is currently a limited option for infrastructure because of external failures such as the downfall of the monolines (see the last section of this chapter).

(cont'd.)

TAKE-AWAYS *(Cont'd.)*

Monoline insurance

- The collapse of the monoline business model has impacted both existing and future transactions.
- The infrastructure sector has been hit hard because by nature infrastructure bonds are low investment grade, which attracts fewer potential investors than higher-rated opportunities.

Other debt

- There are other sources of debt that may sit between the senior debt and equity. Its structure and pricing will depend on the risk it is taking, including elements such as where it sits in the repayment priority.

5 InfraNews 2010.

6 IRS, "Tax Exempt Bonds, Forms, Publications and Training Materials." Available at http://www.irs.gov/taxexemptbond/article/0,,id=132043,00.html (accessed February 2010).

7 IRS 2009. This notice is available at http://www.irs.gov/newsroom/article/0,,id=206037,00.html.

8 Analysis is from Thomson Reuters, Global Public Finance database (accessed November 13, 2009).

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APPENDIX A.4

Multilateral Lending and Other Enablers

We have seen how debt and equity sourced from the wholesale bank markets play important roles in providing finance for different infrastructure projects. But there are other sources of lending that provide an important addition to the collection of funding sources.

Multilateral financing institutions play a vital role in the development of infrastructure

Across the globe there are a number of multilateral institutions (MLIs) that can generally be subdivided into to multilateral development banks (MDBs) and multilateral financial institutions (MFIs).[1] Both of these groups of institutions play a vital role not only in the funding of infrastructure but also in providing transaction know-how and support to develop infrastructure programs and deliver projects. Although, because of terminology, these institutions are often grouped together, they each have their own specific treaty bases, visions, and priorities.

If you were to map the member states of these organizations, you would find significant overlap. For example, Spain is a member of all the MDBs—although it is classified as a non-borrowing member of the Inter-American Development Bank (IADB) and a non-regional member of the African Development Bank (AfDB). This multi-organizational membership can be replicated for the MFIs as well (see Figure 1). There are also a number of subregional organizations that are not detailed in the figure.

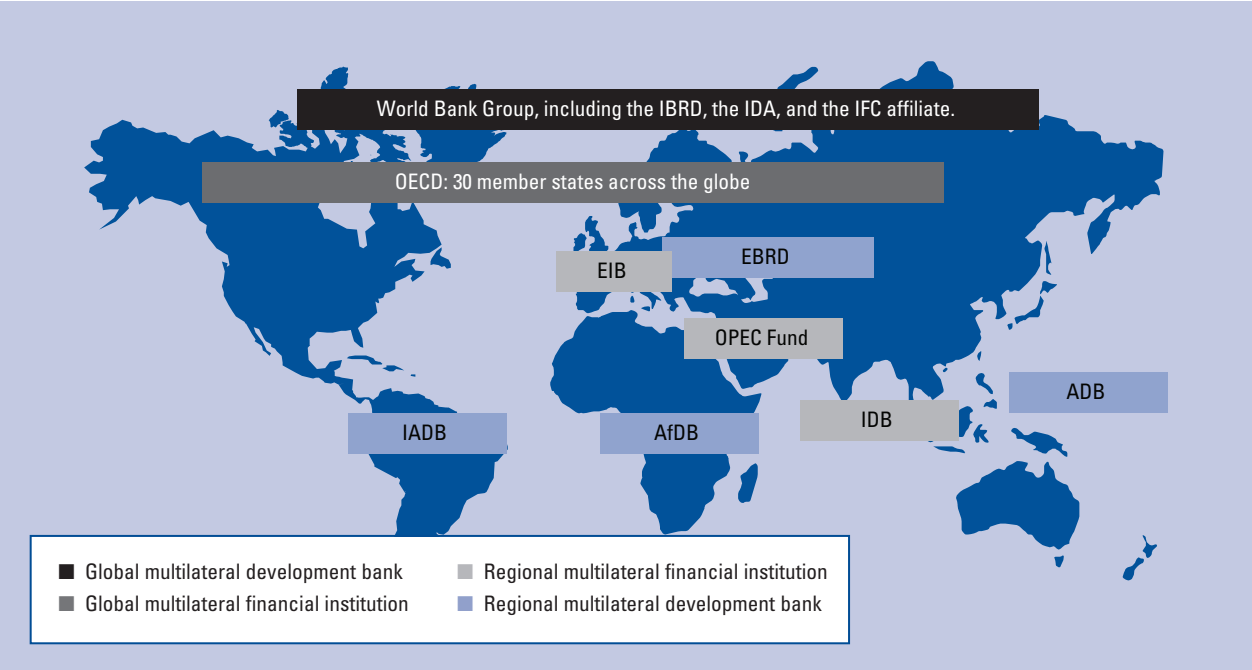
It is estimated that, in 2009, multilateral loans and guarantees to infrastructure projects in developing countries represented approximately US$20.4 billion;[2] approximately US$6.5 billion in loans and guarantees went to projects in developed countries. This US$6.5 billion was dominated by direct lending by the European Investment Bank (EIB). This lending largely reflects the support that the EIB gave to many public-private partnership (PPP)–type transactions affected by the hiatus in the long-term commercial debt markets.

In both cases, the majority of facilities are direct project loans rather than guarantees. These figures include lending from both MDBs and export credit agencies (ECAs).[3] The top 10 developing-country debtors are shown in Table 1. The total debt amount shown in the table includes private finance as well as multilateral debt.

MLIs typically have an AAA credit rating (see Appendix A.3) because the rating agencies' methodologies are largely based on the ratings of the state or sovereign donors. The agencies also adjust their ratings according to whether or not contributions have historically been made on a timely basis. They also consider how much of a buffer is available in the MLI's budget should a proportion of contributions be delayed.

An MLI's support for the funding of infrastructure often takes the form of facilitating private-sector investment, including direct investment in a private-sector provider, loans and/or guarantees alongside private

Figure 1: Geographic spread of multilateral institutions



Note: ADB = Asian Development Bank; AfDB = African Development Bank; EBRD = European Bank for Reconstruction and Development; EIB = European Investment Bank; IADB = Inter-American Development Bank; IBRD = International Bank of Reconstruction and Development; IDA = International Development Association; IDB = Islamic Development Bank; IFC = International Finance Corporation (World Bank Group affiliate); and OECD = Organisation for Economic Co-operation and Development.

finance, or helping to facilitate a market, such as through providing loan facilities in the local currency. Thus, MLIs are able to support both the capacity and affordability of private finance.

The way MLIs assist with building the capacity of a market can be twofold:

- to lend alongside commercial banks where there is simply a shortage of commercial loans available for the project or enterprise—thus filling the gap; and
- to support the development of otherwise undeveloped markets for private finance.

The aim—to develop local financial markets—can be reached in many ways. Often the immediate goal can be to strengthen a state's institutions and organizational capability. Building this capacity might also include the development of individual infrastructure propositions or programs overall to the point where they are financeable.

MLIs can assist with the affordability of projects because of their ability to provide long-term funding below the cost charged by commercial institutions. This is in part because the MLIs' cost of funding is lower than that of commercial banks (given their AAA ratings), but also because the objectives for their investment are not solely measured in terms of the return achieved. An example is the EIB's lending to PPP infrastructure projects where their risk margins for long-term debt when an asset is operational were, in October 2009, between 70 and 150 basis points, whereas commercial banks' margins were between 300 and 350 basis points. This difference can represent a significant long-term saving for a project over its whole life.

There are circumstances where both public and private finance will be needed

The following is a short summary of some of the areas where governments can support private finance in infra-

Table 1: Multilateral lending by country: Top 10 in 2009

Country	Total debt (US$ millions)	Multilateral institution debt (US$ millions)
Papua New Guinea	10,250	9,238
Brazil	5,212	2,377
Chile	2,555	1,755
Bahrain	1,650	1,180
United Arab Emirates	2,200	1,179
Turkey	1,252	802
Jordan	795	795
Mexico	705	529
Saudi Arabia	1,900	490
Slovakia	1,388	359
TOTAL	**27,907**	**18,704**

Source: Taken from the PFI 2009 League Tables in PFI, 2010.
Note: This lending was dominated by an LNG project in Papua New Guinea.

structure in addition to any support available from MLIs. Issues related more to policy and approach are covered in Chapter 3.6. Instead, this section focuses on instances where states might be contributing directly to financing alongside private finance or where they can provide direct contractual provisions that facilitate private finance.

As with the MLIs, the government's primary role concerns market capacity and affordability. The main routes for this support are:

- co-lending or lending alongside commercial banks on the same terms as the commercial banks;
- underpinning a proportion of the commercial debt by providing guarantees on the repayment of debt should the project or enterprise fail; and
- contributing to the costs (typically these are capital costs of new assets) through indirect investment such as the provision of land or direct financial contributions such as grants.

During the current credit crisis there have been a number of examples where governments have stepped up their direct support. An example is the UK government's Treasury Infrastructure Finance Unit (see Case in Point 1).[4] Although the UK government has made a number of direct loans since the establishment of this unit, there is anecdotal evidence that just the availability of this funding has given commercial lenders confidence in the government's support for private finance initiative (PFI) projects, and so they have been able to provide all of the financing needed.

Case in Point 1: The United Kingdom's Treasury Infrastructure Finance Unit

In response to the difficulties in the financial markets, in March 2009 the UK government announced proposals to support the provision of private finance to public-private partnership–type projects. At the heart of this initiative was preparedness by government to supplement private-sector lending, where it is available on acceptable terms but insufficient amounts, to maintain the delivery of a pipeline of infrastructure projects. In some circumstances the government will provide 100 percent of the required finance.

The government loans would be on terms similar to those of the commercial lenders and would rank equally to commercial lenders.

This support is intended to be temporary and reversible, with the government loans to be sold to the private sector once the markets have recovered.

There is some evidence that just the existence of this government support gave commercial lenders sufficient confidence that projects would reach financial close (when the financing documents are signed) and that this could be done without the actual government loans.

There are other enablers, such as export credit agencies

In addition to the direct sources of debt and equity, there are other important entities that we have referred to as *enablers*. These enablers can provide some form of financial assurance—whether in the form of a guarantee, an insurance policy, or other contractual support—in order to help a private investment to get off the ground. These enablers include export credit agencies.

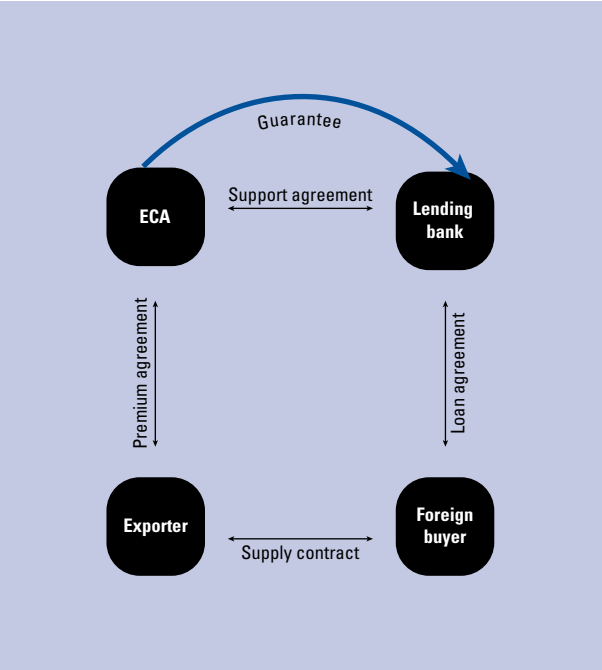
Export credit agencies, known in trade finance as ECAs, are most often publicly-owned (government-owned) institutions that act as intermediaries between national governments and exporters to issue export financing. In particular, the ECAs provide assistance to the country's exporters to do business overseas. Most industrialized nations have at least one ECA, which is usually an official or quasi-official branch of the government. Generally, the ECAs focus on increasing exports, promoting domestic economic development, and helping small- and medium-sized enterprises (SMEs) that lack access to the capital markets.

ECA financing can take the form of credits (financial support) or credit insurance and guarantees or both, depending on the mandate the ECA has been given by its government. The ECAs can also offer credit or cover on their own account. This does not differ from normal banking activities. In a similar vein, the ECAs are unlikely to provide 100 percent of the loan amounts; they may also require a credit rating.

The ECAs frequently work together with multilateral institutions and commercial banks to provide credits, guarantees, and insurance and to encourage lending by taking on part of the risk inherent in a deal. Therefore, the use of export credits has tended to decrease whenever lenders have been willing to assume risk without them (for example, in the first part of the 1990s) and to increase when perceived risk has increased (for example, after the Asian crisis of 1997). The ECAs can also sign cooperation agreements with other ECAs in the common case when exports from more than one country are involved. In this situation, one ECA is usually designated as a "leader" who provides the total cover or finance, with the other ECAs involved reinsuring their shares of the risk.

Because of the complexities involved in bringing in another party to the project and also because of the relatively high premiums charged by the ECAs (in lieu of a

Figure 2: Simplified ECA transaction structure



Source: PricewaterhouseCoopers, 2009, internal note.

TAKE-AWAYS

Multilateral and state support

- Multilateral bank support is not just about providing finance but includes facilitating the use of private finance and capacity building.
- State support for private finance may come in a variety of ways, from direct lending to provide guarantees. This is discussed in more detail in Chapter 3c.6.

Other enablers

- Export credit agencies may be a source of support for some infrastructure-related transactions, particularly those involving the export of equipment such as trains.

loan margin) to reflect the relevant sovereign, corporate, or project risk, ECA loan financing for an infrastructure project is usually attractive only when commercial lenders are unwilling to provide the requisite financing. In addition, the ECAs primarily support exports of equipment, while infrastructure contracts usually incur significant expenses under their construction agreements and often involve local contractors where no export element is involved. For transactions such as high-speed rail, the passenger cars or rolling stock may be candidates for ECA support. On the other hand, ECA financing is provided at low fixed rates and ECA involvement may provide a degree of intangible political support for the project. Some ECAs also provide loans or guarantees that are not linked to an export of equipment from the country concerned.

A simplified transaction structure showing how an ECA might fit into an infrastructure transaction is shown in Figure 2.

Notes

1 In many ways, MDBs and MFIs are very similar organizations, but MDBs are truly global, with a wide membership drawn from many countries providing a wide range of financial support and knowledge building. MFIs have a more limited membership and may have a narrower remit focused more on the financial support for specific types of projects.

2 PFI 2010.

3 ECAs are financial institutions that provide financial support to promote exports from their "home" country. Some ECAs are government-run organizations and some are private companies.

4 See http://www.hm-treasury.gov.uk/ppp_tifu_index.htm.

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PFI (Project Finance International). 2010. "League Tables: Not too Bad—PF in 2009." *PFI Issue 424,* January 13. Thomson Reuters.

APPENDIX A.5

Contractual Approaches

In Chapter 1.1, we described four possible approaches a state might choose when looking to involve private-sector parties and private finance:

- **Partnership:** A contractual approach where both the public and private parties have a shared interest in the risks and benefits of a project.

- **Concession:** A contractual approach where a public party, usually the state, gives a third party the right to use land or property for a specific purpose and for a specific period.

- **License:** A license is awarded where a party, usually the state, gives a third party the right to own or use something.

- **Privatization:** The transfer of assets and/or operations from the public sector to private ownership and management.

There may be many underlying variations to each of these elements—especially the approaches to partnerships and concessions.

The range of contractual approaches to infrastructure can appear to be a complete alphabet soup of acronyms. It is helpful to decipher how to group these acronyms into the four main approaches we have identified, and then how to translate the acronyms to understand the precise contractual approach being described. Figure 1 allocates the most commonly found acronyms to the four types of contracts.

Having sorted the acronyms into the types of the approach into which they fall, we need to decode them. In Figure 2 are the rules for decoding infrastructure project acronyms.

These acronyms can then be translated according to the different activities or roles for each sector during the construction or development phase (Table 1) and operational phase (Table 2).

There is no single definition of a public-private partnership (PPP)

Although only one of many contractual approaches, PPPs seem to attract a disproportionate amount of attention. As with the broader *infrastructure* term, there has been much discourse about the PPP approach to fund infrastructure projects, but again there is no single definition. The term *PPP* is used by some to describe any project or opportunity where both the public and private sectors are parties to the transaction. But this then captures many economic and social infrastructure developments, and such usage ignores the "partnership" aspect of the arrangement. Other schools of thought consider PPPs to be linked to those circumstances where the private sector is providing infrastructure or

Figure 1: Acronyms associated with the four types of contracts

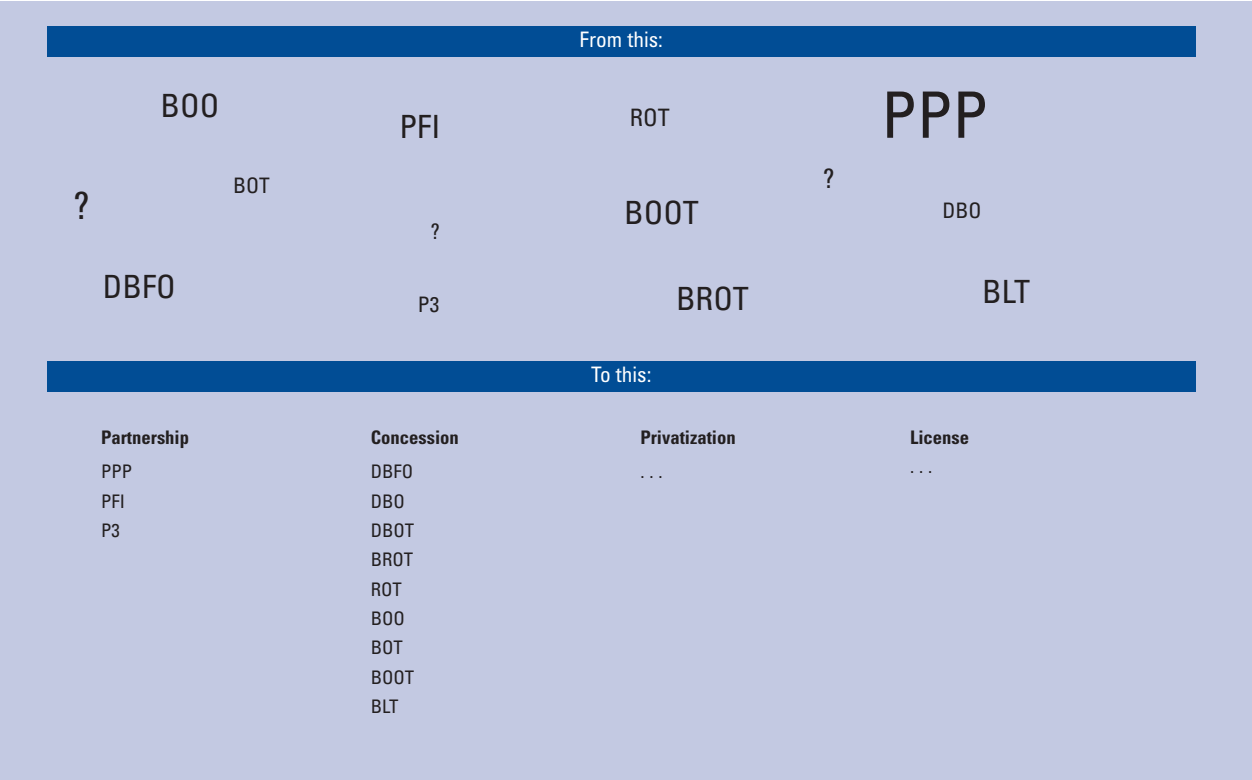

Figure 2: Rules for decoding infrastructure project acronyms

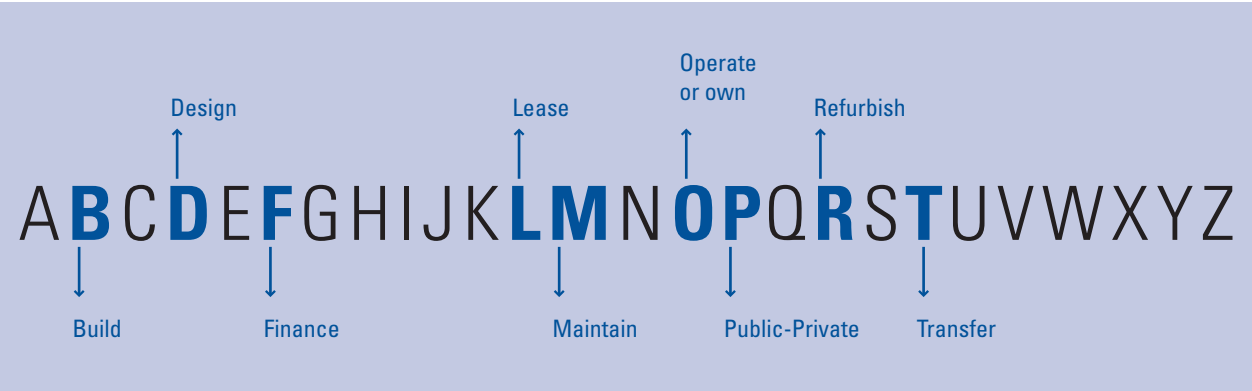

Table 1: Roles for the public and private sectors during the construction or development phase

Public sector can:	Private sector can:	Other possible options for the public sector
Be a partner with a private-sector entity	Be a partner with a public-sector entity and design & build the infrastructure asset	
Let a concession	Be concessionaire to design and build the infrastructure asset Transfer the new asset back to the public sector	Sale and lease-back the asset
Award the license	Be the licensee	
The public sector is unlikely to privatize without existing fully operational assets	N/A	N/A

Table 2: Roles for the public and private sectors during the operational phase

Public sector can:	Private sector can:
Partner with the private sector	Partner, operate and maintain
Let a concession	Be the concessionaire to operate and maintain
Award the license	Be the licensee
Privatize	Become the owner and operator

infrastructure-related services that were traditionally provided by the government—that is, projects that are more focused on social infrastructure, or that involve the transfer of risk from the government to the private sector. Further, some concessions will also be classified as PPPs. Perhaps the PPP term is better used to describe the philosophy behind the approach, capturing such elements as partnerships, risk transfer, and social service, rather than the contractual approach itself.

There are five main elements that a partnership or concession contract will need to capture

Given that these types of contract create a closer relationship between the public and private parties, it is worth thinking about the main elements that the contract needs to capture. There are five main elements:

- **A detailed description of the facility/service required by the public sector.** This is often an output-based description rather than an input-based one. For example, the contract for a road should set out the route, the intersections required, the life of the assets, and so on, but it will not set out the construction method to be used.

- **A detailed description of how the private sector will get paid** for providing the facility or service. The options will range from availability and performance payments, lease payments, shadow tolls,[1] and user-based payments to grants, subsidies, and tariffs.

- **A formalization of the risk allocation** between the public and private sectors in all conceivable situations.

- **A definition of each party's legal rights and obligations.**

- **Provisions for the consequences** of situations where there might be a need to terminate the contract earlier than anticipated.

Note

1 A *shadow toll* occurs where the public authority pays an amount to the private-sector party to reflect usage/demand based on number/type of vehicles using a road. Sometimes this amount is adjusted for other factors such as the availability of the road and the quality of the performance of the operations.

APPENDIX A.6

Risk and Uncertainty

Any discussion of infrastructure and private finance will include reference to risk and whether the proposal presents a manageable risk profile for the provider of private finance.

There is a need to distinguish between risks and uncertainties

In essence, "risk" usually refers to the obstacles to achieving the forecasted return from investment or debt repayment, although there is also a need to consider those risks that might remain with the public-sector party. But to talk just about risk is probably over-simplistic; instead, consideration should be given to identifying both the risks and the uncertainties for a given proposition. There are no precise definitions for these two factors, but for the purposes of this *Report* we will use the following:

- the term *risks* will apply to events that have a measurable probability; and
- the term *uncertainties* will apply to events that are indefinite.

To illustrate the difference between risk and uncertainty, Table 1 shows a possible list of factors that might fall into the risk category and those that might go in the uncertainty category. In the table, the split between risk and uncertainty has been expanded to differentiate between the impact of an event that is variable, where the impact could be positive or negative and vary over time, and the impact that is simply binary—where it either happens or not. In the case of binary events, we have assumed that the impact is negative.

An estimate of the cost of each risk should be made

The focus on risk underpins the financial analysis of a project or opportunity because each risk should be allocated a theoretical cost. In reality, however, this cost is likely to be a range of estimates rather than a point estimate. The simple calculation is shown in the following equation:

$$\text{Expected cost of risk} = \text{probability of risk occurring} \times \text{cost if risk occurs}$$

It is this calculation of the expected cost of risk that makes the discrimination between risk and uncertainty important: it is easier to put a price on risks but can be very difficult, if not impossible, to put a price on uncertainty.

Table 1: Impact of various risks and uncertainties

Factor	Risk		Uncertainty	
	Variable impact: Impact can be positive or negative and can change over time.	Binary impact: Impact happens or it does not. Assumes impact is negative.	Variable impact: Impact can be positive or negative and can change over time.	Binary impact: Impact happens or it does not. Assumes impact is negative.
Technical	• Capital costs differ from those forecast • Operational costs, including maintenance, differ from those forecast • Price of inputs—e.g., feedstock	• Contract effectiveness (the private-sector party is not left with any it thought had been passed on to another party) • Construction completion is late	• Technology performs differently from the way it was forecast	• Technology does not work as expected
Markets	• Revenue risk if linked to performance		• Revenue risk if linked to demand	• *Force majeure*
Performance of obligations under the contract		• Failure to achieve required operational performance		
Financial / Economic	• Cost of debt • Exchange rate • Interest rate • Debt margin (either bank or capital markets) • Inflation/deflation • Cost of insurance		• Availability of debt	• Market failure • Unavailability of insurance
Political consequences			• Political interference	• Change of law, either general or specific to sector • Legal and regulatory enforcement • Expropriation • Political interference • Currency convertibility
Other			• Procurement process: —duration and —competition	• Counterparty failure • Land acquisition • Climate change—e.g., flooding

Minimizing the expected cost of risk is critical to achieving value for money

If the private-sector party is thinking about risk, uncertainties, and their associated costs, then so must the public-sector party. This is because the "price" that the private sector attaches to taking on a particular risk or uncertainty will feed into any value-for-money analysis or comparison of public or private finance. No party can totally eliminate all of the risks and uncertainties. The question is how best to reduce the likelihood of the risk of a particular adverse event occurring and how best to reduce the financial impact if it does occur by addressing the following questions:

- Who is best placed to reduce or mitigate the probability of the event occurring?
- Who is best placed to manage the costs of the event if it does occur?

As many of the uncertain events concern the macro socioeconomic environment, they will most likely sit with the public sector. Key issues go beyond their cost to more fundamental questions about whether the private sector wishes to invest in that environment. For example, if potential investors think that political interference is likely, then they may look to invest elsewhere.

Reducing the probability of the event occurring

The question "Who is best placed to reduce the probability of the event occurring?" should be asked for every aspect of the transaction and should go beyond the headline event. For example, it is likely that the private-sector party is best placed to take the responsibility for the design and construction of any new infrastructure. However, if the infrastructure is being renovated or upgraded, it may be that the public sector is better placed to take the responsibility for the condition of the existing infrastructure, unless the public-sector parties are able to provide extensive information or allow surveys that can be used to establish its current condition.

Managing the event

The second leg of the risk equation is "Who is best placed to manage the costs of the event if it does occur?" In many instances, this will be the same party that is best able to reduce the probability of the risk occurring, but there will be instances where these parties differ. Such circumstances may lead to the conclusion that it is better for the contract parties to share a risk. For example, the occurrence of *force majeure* events—such as fire, flood, sonic boom, or volcanic ash cloud—are beyond the control of the private sector, but private-sector players may be able to adjust their operating service to minimize the impact of these events, in terms of both cost and time, on the infrastructure. So, in this instance, the two parties may wish to share the risk.

When considering both parts of the risk equation, consideration needs to be given to how to mitigate the risk. Some of the options, among others, that might exist include:

- **Contractual option:** Once the allocation of risks has been worked through, the contract must be clear on the respective responsibilities of all parties to ensure that there are no "orphan" risks. This can be an issue not only in the terms of the contract between the public and private parties but also with the private parties' subcontract arrangements. Often, in order to support the allocation of risks, the parties will seek additional guarantees or warranties to back up their obligations. Such guarantees may take the form of supporting the performance of the party and/or giving financial backing should that performance fall short of what is required.
- **Financial option:** The lenders are likely to put conditions on their finance contracts to try to mitigate certain risks. For example, if there is a construction phase, the lender might retain a small percentage of the borrowings to create a small reserve of funds to be released only on the completion of the work. Alternatively, the lender may embed reserve-account mechanisms in the finance documents to deal with variable costs—for example, to deal with major maintenance matters over the life of the asset.
- **Insurance option:** In many instances, risks can be insured against. The main decisions to be made are then whether the insurance represents good value for money or if the party prefers to self-insure; who takes the risk on the premiums changing over time; and who takes the risk on the availability of insurance over time. For example, in the United Kingdom, at times it has been very difficult to insure schools because of the high risk of arson. Also major terrorism events can affect the cost and terms of insurance.
- **Portfolio option:** Whether the risk sits with the public or private sector, consideration should be given to the extent to which individual project/opportunity risks can be mitigated, or possibly accentuated, by a portfolio effect. For example, an equity investor with a global portfolio may be willing to take a degree of political risk with one investment if that risk does not sit with its other investments, because looking at the risk on a portfolio rather than on an individual investment basis lessens the potential impact of the threat. The challenge will, of course, become more of an issue as the predicted risk will mean more specialist

investors who may find they have more systemic risk in their portfolios (see also Chapter 3c.3).

Assessing risk is at the heart of any business, and in this respect infrastructure is no different. Where infrastructure probably differs from mainstream corporate activities is, first, in its reliance on the performance of a single asset to deliver a profit; this creates a need to understand in detail the challenges to achieving the required performance. Second, much infrastructure involves a relationship between public and private parties, whether this relationship is established through partnerships, concessions, regulations, or users.

Investors and lenders will spend much time considering the risks they will accept, based on historical performance, specialist advice, and so on. But they will always struggle to accept some particular events that may be regarded as uncertainties and beyond their ability to control or manage in any way. Given this, it is likely that the public sector, rather than the private one, will need to "own" and manage many of these uncertainties.

Appendix B

List of Acronyms

AAI	Airports Authority of India
ADB	Asian Development Bank
ADBI	Asian Development Bank Institute
ADIA	Abu Dhabi Investment Authority
AFD	Agence Française de Développement
AfDB	African Development Bank
AMT	alternative minimum tax
ASX	Australian Stock Exchange
BNDES	Brazilian Development Bank—O banco nacional do desenvolvimento
BRIC	Brazil, Russia, India, and China
CAPM	Capital Asset Pricing Model
CBD	central business district
CDA	comprehensive development agreement
CDC	Caisse des Dépôts (France)
CIA	Central Intelligence Agency
COMESA	Common Market for Eastern and Southern Africa
CPP	Canada Pension Plan
DBFO	design, build, finance, and operate
DBFOM	design, build, finance, operate, and maintain
DBOT	design, build, operate, and transfer
DBSA	Development Bank of South Africa
DCT	Doraleh Container Terminal S. A.
DIAL	Delhi International Airport Private Limited
EBRD	European Bank for Reconstruction and Development
ECA	export credit agency
EIB	European Investment Bank
EPC	engineering, procurement, and construction
EPCM	engineering, procurement, and construction management
EPEC	European PPP Expertise Centre
ETR	Express Toll Route
EU	European Union
FDOT	Florida Department of Transportation
FY	full year
GDLN	Global Distance Learning Network
GDP	gross domestic product
GoI	Government of India
GPO	Government Printing Office (United States)
IAAI	International Airports Authority of India
IADB	Inter-American Development Bank
ICF	Infrastructure Crisis Facility
IDB	Islamic Development Bank
IDFC PE	Infrastructure Development Finance Company Private Equity
IFC	International Finance Corporation
IFI	International finance institution
IFSL	International Financial Services, London
IIFCL	India Infrastructure Finance Company Limited
IMF	International Monetary Fund
IPO	initial public offering
IRR	internal rate of return
IRS	US Internal Revenue Service
KfW	KwW Bankengruppe (Germany)
LCC	Lekki Concession Company
LNG	liquefied natural gas
MAT	Miami Access Tunnel
MDB	multilateral development bank
MdTA	Maryland Transportation Authority
MEDCO	Maryland Economic Development Corporation
MFI	multilateral financial institutions
MIGA	Multilateral Investment Guarantee Agency (of the World Bank Group)
MLI	multilateral institution
MP3IC	Multilateral Public-Private Partnership in Infrastructure Capacity Development
MPA	Maryland Port Administration
MSEB	Maharashtra State Electricity Board (India)
MTR	Mass Transit Railway Corporation (Hong Kong)
NAA	National Airports Authority (India)
NAO	National Audit Office (United Kingdom)
NPV	net present value
NSE	National Stock Exchange (India)
OECD	Organisation for Economic Co-operation and Development
OFWAT	The Water Services Regulation Authority (United Kingdom)
O&M	operation and maintenance
OTPP	Ontario Teachers' Pension Plan
P3	public-private partnership

PAB	private activity bond
PAC	Ports America Chesapeake
PFI	Private Finance Initiative (United Kingdom)
PFI	Project Finance International
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	public-private partnership
PPS	service provision contracts (the acronym for the Spanish term)
PR	public relations
PROPARCO	Promotion et Participation pour la Coopération économique—The Investment and Promotions Company for Economic Cooperation (France)
PSC	public-sector comparator
PUK	Partnerships UK
PwC	PricewaterhouseCoopers
QPAB	qualified private activity bond
RAV	Richmond-Airport-Vancouver
ROT	rehabilitate, operate, and transfer
S&P	Standard & Poor's
SBI	State Bank of India
SCC	Skyway Concession Company
SCUT	*Sem Custos par os Utilizadores*—No Cost to the Users (Portuguese)
SME	small- and medium-sized enterprise
SMRT	Singapore 's multimodel transport provider
SNC	SNC-Lavalin
SWF	sovereign wealth fund
T&TI	*Tunnels & Tunnelling International*
TEU	twenty-foot equivalent unit
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIFU	The Infrastructure Finance Unit (United Kingdom)
TIGER	Transportation Investment Generating Economic Recovery
TxDOT	Texas Department of Transportation
UNCTAD	United Nations Conference on Trade and Development
US DOT	United States Department of Transportation
VGF	Viability Gap Funding (India)

CURRENCIES

$A	Australian dollar
£	British pound
C$	Canadian dollar
€	euro
RMB	Chinese renminbi
R$	Brazilian real
Rs	Indian rupee
US$	US dollar

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