

Agenda

Advancing economics in business

From sleeping giant to fast-moving asset: six challenges for infrastructure investment

The development of the market for infrastructure assets over recent years has been unquestionably impressive, but this success is accompanied by critical challenges concerning asset differentiation, the ramifications of public sentiment and public sector involvement, deficit in supply, contractual incompleteness, consequences of leverage, and the growth of emerging markets. Do these represent the six big challenges for infrastructure investments going forward?

A decade or two ago, infrastructure was perceived by the investor community as a rather unexciting, low-value-added, limited growth, and low-margin asset class (if considered a separate asset class at all). It was dominated by the public sector, and potentially not even particularly differentiated from other assets in the respective industries that required infrastructure investments—pipelines were considered part of the energy sector, and toll roads part of the transport sector. However, recent years (and the current market turmoil) have brought a sea change in investors' interest and attitude. There is now a growing recognition of infrastructure as a separate asset class, spanning a number of facilities and services. These infrastructure assets are also increasingly recognised as mainstream investments, an essential component of a balanced portfolio.

This growing interest of private investors in infrastructure developed from the 'traditional' sectors (such as transport, water, energy and telecoms networks), into commercial or 'non-essential' infrastructure (such as car parks), and into the newly emerging 'public' asset classes (such as roads or hospitals). Alongside investors' focus came infrastructure-focused funds, which have rapidly become the key, active capital providers to the sector as they have grown exponentially over recent years. In 2006, the expenditure of infrastructure funds on acquisitions was estimated at over \$145 billion worldwide, representing a growth of 180% since 2000.¹ Moreover, an additional \$150 billion remained in unallocated funds, reflecting considerable excess demand and investor optimism in this asset class.²

Recent trends suggest that the robust growth of private investments in infrastructure is likely to continue. There

are several factors that might contribute to this. First, demand for private funds should be boosted by demand for infrastructure in general. Infrastructure development in emerging markets is likely to continue in line with, or above, GDP growth, as infrastructure often lags behind economic development. In Europe, commissions of infrastructure assets directly from Central and Eastern European governments are likely to accelerate alongside privatisations.³ The ageing asset base in developed markets necessitates increasing private sector involvement in light of stretched public budgets. In addition, as demand for infrastructure exposure continues to grow, investors are likely to look to new types of infrastructure assets when considering investment opportunities in the sector. Finally, new levels of market volatility observed recently make infrastructure assets appear more attractive in the eyes of some investors.

The overall development of the market for infrastructure assets, as well as the financial sums involved, have been impressive, but this success has been accompanied by the emergence of some important challenges. If you are a happy infrastructure investor, and you are ready to sit back and enjoy, at a price, a stable flow of cash, as others ride the ups and downs of economic and financial markets over the next 30 years, you might want to consider the following six questions.

The challenges

- **How to differentiate infrastructure assets?** The frontiers of core infrastructure are not well defined and assets with different risk profiles are often put together in the same risk baskets. Yet the common application of a simple definition of infrastructure masks considerable variation in the financial and business

profiles of such assets. This poses the first important challenge: how should investors classify and view different infrastructure assets? Is there a 'true' infrastructure asset class with a unique financial and risk profile, given the growing differentiation of infrastructure assets?

- **What are the ramifications of public sentiment and public sector involvement?** Risks related to infrastructure investments go beyond pure commercial and operational risks, given the critical role that infrastructure plays in society at large. The importance of the political, regulatory, and public opinion aspects of infrastructure investments is often underestimated and rarely properly assessed. This raises important questions about business–government relations in this sector: how does the public scrutiny affect infrastructure development? Can it contribute to the value of investments, or does it necessarily create additional uncertainty? How can it be properly accounted for? Can the private investor mitigate the 'public' risk?
- **How to address the deficit in supply and excess demand?** On the one hand, the dominant position of the public sector in infrastructure development, combined with significant risks at the development stage, means that there is a deficit in the supply of infrastructure assets from the private investor perspective. On the other hand, growing demand from different types of investor (eg, pension funds) contributes to the supply–demand mismatch. This poses one of the most critical challenges for investors: how can this deficit be remedied in order to match supply and demand, and does it affect the pricing signals observed in the market?
- **How to manage contract incompleteness and renegotiation?** Investments in infrastructure are often based on long-term operational and financial contracts. Due to the nature of the assets, the governing contracts must remain applicable and have consequences over a relatively long period of time. At the same time, long-term contracts tend to be highly 'incomplete', as they cannot take into account significant uncertainty implied by the required length of the investment. This, combined with limited flexibility of infrastructure assets, poses a significant challenge from the investor's perspective: how can the inherent contract incompleteness be addressed?
- **Are the emerging markets a different asset class?** Emerging markets might pose the greatest challenge of all to infrastructure investments. The rapid development of emerging markets over recent years suggests that the global demand for physical infrastructure has increased significantly. At the same

time, emerging markets pose a slightly different set of challenges than developed markets in this context, despite the increasingly similar nature of the assets. This has sometimes been interpreted as implying that emerging markets present greater risks, but the risks are often merely different in nature. The critical question to investors is what actually differentiates infrastructure investments in developed and developing markets, and what lessons from developed markets could be applied to emerging markets' infrastructure?

- **Who benefits from financial leverage?** Fixed infrastructure projects based on long-lived assets are often associated with stable cash flows, and are therefore regarded as well suited to debt financing in terms of the latter's contribution to overall capital. This has been reflected in recent years in significant increases in gearing of infrastructure investments. However, since leverage is the primary driver of financial risk, it is clear that debt adds to the costs of financial distress, which might be shared, implicitly or explicitly, between the public and private sectors. This raises a fundamental question about the allocation of financial risks.

Importance of asset differentiation

The scope of the infrastructure assets class is evolving rapidly in line with growing global demand and recognition of the potential that private capital brings to different sectors. While infrastructure assets are readily recognisable simply as large pieces of fixed infrastructure, the business and financial nature of this asset class reveals important variations.

The core infrastructure assets include traditional utilities, delivering essential, often regulated, public services. Another important group could be described as commercial, 'non-essential' infrastructure, such as toll roads and car parks. Since the public attention and political importance of this second group tends to be more limited than that associated with traditional utilities, the 'non-essentials' are not typically subject to the same intensity of regulation and/or public scrutiny as the essential assets. This has important implications for value and risk.

More generally, the characteristics frequently associated with more traditional infrastructure assets include some form of a monopoly position and price-inelastic user demand (ie, diminished market risk), essentiality, capital intensity, long useful life, and stable cash flows (typically with some growth opportunities). However, it is not clear whether these particular characteristics represent the list of the ultimate determinants of the risk–return trade-off for infrastructure investments. For example, the length of

the concession or a licence, or the importance of land as an input, might be seen as equally critical.

As the infrastructure asset class broadens and becomes even more diverse, there is a growing need to identify the critical characteristics that distinguish it from the fixed assets in any industry, and to specify which factors critically differentiate the assets within this class.

Addressing the supply deficit

There is a broad consensus among market participants that the global demand for infrastructure investment opportunities is not being met by supply, and that this might have important implications for observed market prices and valuations. Table 1 presents some of the recently observed valuations for this asset class. The reported EBITDA (earnings before interest, tax, depreciation and amortisation) multiples are particularly high by historical standards—for example, it would not be atypical to observe EBITDA multiples for traditional infrastructure assets of around 7 at the beginning of this decade.

In fact, the gap is driven by both the restrictions on the supply side and the fast-growing demand. On the demand side, the growth of long-term investment funds, the reform of public pensions, and investors' appetite for relatively stable cash flows (in the presence of significant spikes of volatility in financial markets in recent years)

means that there are typically multiple bidders for any major asset that comes to the market.

Although considerable risks associated with large infrastructure projects during the construction and development phase often imply that the private sector is keen to become involved only after the asset becomes operational, the recent growth of development funds is changing the situation.

On the supply side, there are a number of drivers of the limited availability of investment targets. First, since the Second World War and the wave of nationalisations, states have assumed a significantly greater role in the development of public infrastructure. In Europe, this process has begun to reverse only recently, with privatisations and private concessions to operate infrastructure-based projects. Apart from the UK, and some examples across Europe in sectors such as energy, this process is still typically in its early phase and infrastructure assets remain largely in the domain of the public sector. In addition, intense regulation and a complex system of concessions that are not always transparent mean that the process of obtaining state approval for infrastructure projects can remain lengthy, complex, and therefore costly.

Moreover, few infrastructure assets are actively traded. Since most are held privately, there is limited availability

Table 1 EBITDA multiples and P/E ratios for selected infrastructure assets

Regulated		
	Transaction EBITDA multiples	P/E ratio (08/04/08)
Southern Water plc (2007)	9.2	n/a
Scottish Power plc (2006)	13.3	n/a
Bristol Water Group plc (2006)	10.4	n/a
BAA Ltd (2006)	16.1	n/a
Average	12.3	n/a
	Trading EBITDA multiples	P/E ratio (08/04/08)
National Grid plc	15.0	13.1
Kelda Group plc	11.2	16.6
United Utilities	10.2	11.4
Scottish & Southern Energy	10.4	11.3
Average	11.7	13.1
Non-regulated		
	Trading EBITDA multiples	P/E ratio (08/04/08)
Zurich Airport	9.2	19.9
Auckland Airport	15.0	31.6
Suez	10.3	14.3
Autoroutes Paris–Rhine–Rhône	12.8	24.3
Average	11.9	22.5

Notes: P/E ratio, price to earnings ratio. Estimated EBITDA multiples might be significantly influenced by annual depreciation.
Source: Bloomberg, Datastream and Oxera analysis.

of liquid investments and little price transparency. Limited availability has been further exacerbated by the trend to take large, existing infrastructure companies private. The long-term investment outlook and significant transaction costs further contribute to the limited flow of deals to the market.

This would mean that the critical objective is to get more assets on the market. However, encouraging sales and originating and developing such assets remains a significant challenge.

The public sector may have an important role to play in this respect by recognising that it often lacks the human capital and know-how to plan, develop, and manage complex infrastructure projects. Arguably, this is already recognised (in part) by the public sector's interest in further involvement of the private sector in the development of assets that are typically regarded as public goods, or that are associated with significant public benefits, such as hospitals. Similarly, the private sector is already playing an important role in clarifying which risks are allocated to which party. Nonetheless, significant progress on all of the fronts mentioned above is likely to be required in order to address the existing imbalance.

Managing public sentiment and public sector interventions

Any detailed assessment of public and regulatory risks and related sources of value for a particular asset is necessarily going to be complex. While commercial and business risks can often be expressed more easily (although not necessarily more precisely) in quantitative terms, regulatory and political risks, as well as the potential impact of business–government relations on value, are intrinsically difficult to quantify. It is even more difficult to accurately capture the implications of a potential change in public sentiment towards a vital piece of national infrastructure.

There is a potential trade-off between the risks associated with public scrutiny and the value drivers for regulated assets. With respect to key public assets that are in private hands, regulation often confers a degree of certainty on investors, but limits their discretion, not only in terms of pricing, but also in terms of asset development and management. For example, there might be a political necessity to develop some critical infrastructure as well as to support it in the case of operational, financial or business failure on account of its strategic value. To some extent, the price control mechanisms for regulated assets share these risks and value drivers between customers and government.

At the same time, there are a number of risks resulting from the regulated status and the recognition of a vital, national asset. These include potential changes in the critical aspects of the regulatory regime after the end of the regulatory period and changes in public sentiment. A number of UK regulators have recently expressed concerns at both the quality of customer service and the considerable premiums over the regulatory asset base that investors appear to be willing to pay for key infrastructure projects; significant changes to allowed rates of return have followed in some sectors. This results in one of the most important challenges to investors: how to analyse and manage the public aspect of infrastructure investments?

Mitigating and managing contractual incompleteness

Infrastructure assets are often built, developed and financed on the basis of a detailed, private operating contract, concession, or licence, accompanied by complex regulatory policy. The set of contractual agreements is often equally critical for the new as well as the existing assets. In practice, the initial operating contract might determine the business opportunities that will be available to the owner during the operational phase.

Due to the nature of the infrastructure assets, the governing contracts and terms of use must, in some form, remain applicable over a long period of time (often over the lifetime of the asset) in order for the funds to be committed up front. The challenge is that long-term contracts tend to be highly incomplete, as they cannot take into account all eventualities that might arise in the future, and must account for the uncertainty of market outcomes.

The question that arises, therefore, is how can the market address the inherent incompleteness of the operating and financial contracts associated with the development and investment in infrastructure projects, given the capital investment that is heavily concentrated at the beginning of the asset life?

One critical question that stakeholders need to address in this context is: how complete is the optimal contract that might be developed for a given asset? How incomplete is the available contract? These are complex and multi-dimensional questions. For long-term assets, contract renegotiation is not uncommon, but costly. Moreover, the ex ante contract is likely to define the ex post bargaining position and cash-flow rights of different parties. Most critically, it will often specify which party will retain control when the unknown happens. The

challenge facing investors is to manage and mitigate this inherent contractual incompleteness.

Recognition of emerging markets

The traditional division between developed and developing markets is changing, not least in the infrastructure sector. The critical pieces of fixed infrastructure are now typically very similar in their nature and sophistication, regardless of whether they are built in China, Australia, Spain or Poland.

The rapid development of some of the key emerging markets over recent years—most prominently China and India—suggests that the demand for infrastructure has increased significantly. Yet the emerging markets pose a slightly different set of challenges to those of the developed markets. The risks are often different in nature—eg, concessions might be longer and more profitable, but the property rights less certain. This raises a critical question to investors: how to balance familiar risk considerations, such as operational risks, with the unfamiliar ones, such as limited property rights? Investors are also facing a dilemma concerning the composition of their investment portfolios, given the growing share of emerging markets in the overall supply of infrastructure assets.

Financing infrastructure assets

Fixed infrastructure projects based on long-lived assets are often associated with broadly stable cash flows and are therefore well suited to debt financing. This has been reflected in recent significant increases in gearing of

infrastructure investments. Infrastructure projects are now among the most highly leveraged real assets, with gearing levels sometimes comparable with those of the financial sector.

This might be efficient, but since leverage is the primary driver of financial risk, it is clear that higher levels of leverage increase the costs and likelihood of financial distress. The public costs of the potential financial distress of private infrastructure companies can be significant. From the public perspective, this remains a critical challenge when considering a transfer of infrastructure assets into private hands. From the private sector perspective, it could imply some form of state or regulatory intervention to prevent the high levels of gearing that might nevertheless be efficient from the company's perspective.

The ongoing global financial turmoil might also have an impact on the availability and cost of raising debt finance for infrastructure assets. On the one hand, the consequences of a prolonged period of credit turmoil may be more severe for companies with high leverage. On the other hand, investors' perception of the infrastructure asset class as a 'safe haven' of stability suggests that the supply and demand factors (as opposed to the underlying economic fundamentals) might drive valuations. This underscores an important challenge for the financing of this asset class—striking a balance between the maximum benefits of leverage, the public costs of financial distress that might trigger some form of intervention, and the retention of the favourable perception of it being an asset class with low business risk.

¹ Standard & Poor's (2006), 'The Amazing Growth of Global Infrastructure Funds: Too Good to be True?', November 30th.

² Unallocated funds as of November 2007. PricewaterhouseCoopers (2007), 'Mergers and Acquisitions in the European Infrastructure Market', November, p. 1.

³ PricewaterhouseCoopers (2007), op. cit.

If you have any questions regarding the issues raised in this article, please contact the editor, Derek Holt: tel +44 (0) 1865 253 000 or email d_holt@oxera.com

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