

# Evaluating infrastructure from a property perspective: the case for a diversified real asset allocation

## Infrastructure research note

30 November 2009

- The search for alternative asset classes has continued in the aftermath of the global financial crisis. What the crisis has highlighted, however, is that not all alternatives perform equally, prompting many investors to adopt a more discerning approach with regard to investing in alternatives.
- Direct property has assumed an important role in investor portfolios. Direct infrastructure - a similar but nascent asset class - has emerged in recent years as a popular complement to property within the real asset space. This paper looks at the merits of including infrastructure in a portfolio complementing property as well as traditional asset classes.
- Like property, infrastructure returns exhibit low correlations to traditional asset class returns. Importantly, however, infrastructure returns have a low correlation to property returns, suggesting that adding infrastructure to a portfolio provides useful diversification benefits.
- Following the global financial crisis, investors are now adopting more robust risk frameworks incorporating qualitative factors in addition to the traditional metrics of return, volatility and correlation.
- A key consideration for investors is that the heterogeneity of the infrastructure asset class allows greater risk-return outcomes and portfolio construction possibilities than indicated at the aggregate asset level.
- These and other qualitative factors, when added to the quantitative factors considered, present a compelling case for a diversified real asset allocation.

Introduction

Even prior to the ubiquitous global financial crisis, institutional investors have either implemented or considered the diversification of their portfolios beyond the traditional asset classes of equities and bonds into a range of alternative asset classes. What the crisis highlighted, however, is that not all alternatives perform equally, prompting many investors to adopt a more judicious approach with regard to investing in these new asset classes.

Real assets such as property and infrastructure have garnered considerable attention in this environment, with their relative stability contrasted against the more volatile performance of listed markets, as well as other alternatives such as hedge funds. This paper compares the two real asset classes, focusing on infrastructure. While property is well established worldwide as the third major asset class after fixed income and equities, infrastructure, which shares many common characteristics with property, is at an earlier stage of development as an asset class.

This is borne out by Figure 1, which reveals that infrastructure funds under management (FUM) is dwarfed by property FUM among the largest asset managers. A point that further underscores the sector's relative immaturity is that a significant proportion of infrastructure FUM is housed under other asset class allocations, such as private equity, real asset or property allocations. Data provider Preqin estimates this percentage to be as high as 47%.<sup>1</sup>

Figure 1: Global property versus infrastructure FUM\*



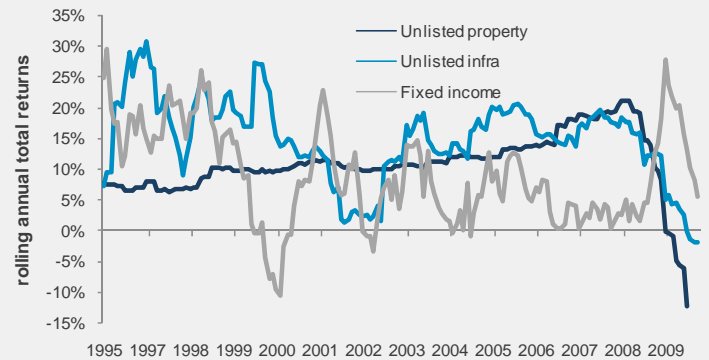
As investors seek to diversify, many who are familiar with property are considering infrastructure as a useful addition to their portfolios. We explore the case for including infrastructure within a balanced investment portfolio alongside property. The paper begins by evaluating the asset class using traditional quantitative performance metrics such as return, volatility and correlation. It then augments this approach by incorporating qualitative factors which strengthen the case for a more diversified real asset allocation.

Quantitative factors

Unlisted infrastructure returns

Like most other asset classes, unlisted infrastructure returns suffered in the recent market downturn, with Australian unlisted infrastructure funds posting an average annual return of -2% as at September 2009. However, as Figure 2 reveals, this compares favourably to the -13% return for Australian unlisted property over the same period, highlighting infrastructure's more defensive nature.

Figure 2: Australia – returns across selected asset classes  
Monthly data to September 2009



Source: Mercer, UBS and CFS Research

Infrastructure assets and their associated revenue streams are often noted for their relative stability – a feature that one would expect to be reflected in unlisted infrastructure investment returns. As can be seen, this is not necessarily the case in the Australian market, where infrastructure returns have historically been more volatile than property returns. This somewhat counterintuitive result can be attributed to a number of factors, including:

- The relative immaturity of the infrastructure sector, with only two funds represented in the Mercer unlisted infrastructure index until July 2000, and three funds until October 2003. As the sector has matured, with more funds incorporated in the index, return volatility has become more comparable to the Mercer unlisted property series, which contains as many as 14 funds.
- The unlisted infrastructure funds have a significant proportion of offshore assets – as an example, one of CFS GAM's funds included in the index has a weighting of 77% to offshore assets. By contrast, the constituent unlisted property funds have virtually no exposure to offshore assets.
- The higher gearing levels in unlisted infrastructure. According to Mercer, gearing in unlisted investments range from 50% for higher-risk sectors such as airports, to 90% for lower-risk social infrastructure.<sup>2</sup> Gearing levels for the constituent property funds, on the other hand, are lower; ranging from 8% to 45%.<sup>3</sup>

<sup>2</sup> Timotijevic, D. *Gearing and financing of infrastructure assets*. Mercer Investment Consulting, Oct 2007.

<sup>3</sup> Mercer/IPD Australian Pooled Property Fund Index results, Sep 2009.

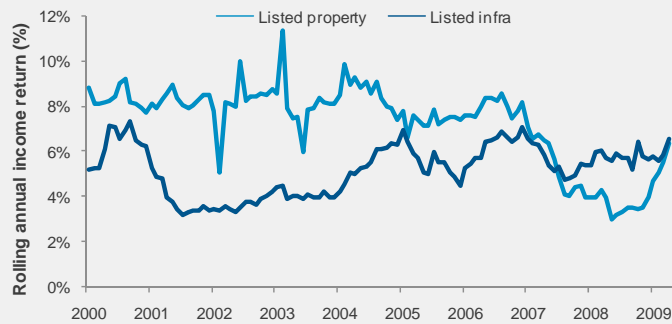
<sup>1</sup> Preqin. *Infrastructure Spotlight*, July 2009.

As a result of the higher gearing in infrastructure, investment returns exhibit some correlation to fixed income returns, again evidenced in Figure 2.

**Income oriented returns**

Like property, infrastructure is often considered attractive due to the stable yields offered. Using listed data as a proxy, Figure 3 suggests that infrastructure yields have historically been more stable than property.

**Figure 3: Australia listed infrastructure and property yields**  
Monthly data to September 2009



Source: UBS, Bloomberg and CFS Research

**Correlations**

One of the disappointing aspects of investment performance across some alternative asset classes during the financial crisis was their failure to provide sufficient diversification from listed equity market volatility. Although not immune from the effects of the crisis, unlisted property and infrastructure have offered greater stability than equities, in particular.

As Table 1 reveals, over the 10 years to September 2009 the correlation between unlisted infrastructure and equities was low, albeit not as low as that between unlisted property and equities. Importantly, the correlation between unlisted infrastructure and unlisted property (0.5) was also sufficiently low to suggest that the addition of infrastructure to a portfolio already containing equities, fixed income and property exposure provides useful diversification benefits.

**Table 1: Australian asset class correlation matrix**

10 years to September 2009						
	Equities	Fixed Income	Unlisted prop	Listed prop	Listed infra	Unlisted infra
Equities	1	-0.23	0.00	0.62	0.51	0.10
Fixed income		1	-0.09	-0.01	0.12	0.06
Unlisted prop			1	0.04	0.03	0.50
Listed prop				1	0.49	0.10
Listed infra					1	0.26
Unlisted infra						1

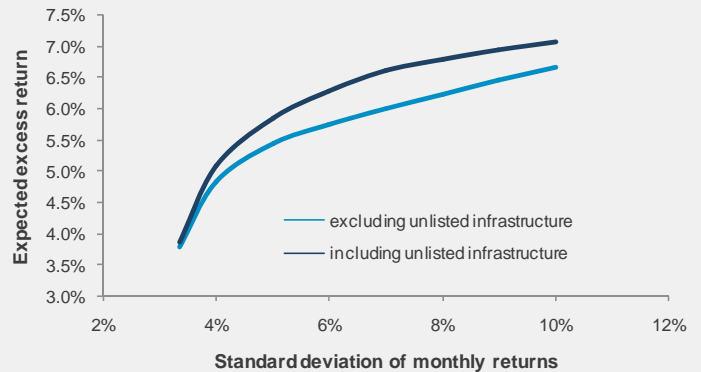
Source: IRESS, Mercers, MSCI, JP Morgan and CFS Research

Table 1 also indicates that listed and unlisted infrastructure behave somewhat differently, as evidenced by the low correlation (0.26) between the two asset classes. Part of the explanation here is the more infrequent appraisal-based valuation methodology used in valuing unlisted assets, which imparts a 'smoothed' profile to unlisted asset returns.

**Portfolio construction**

To further demonstrate the benefits of adding unlisted infrastructure to a portfolio, we performed a simple mean-variance optimisation exercise based on historical returns for six Australian asset classes: equities, fixed income, listed property, listed infrastructure, unlisted property and unlisted infrastructure. From the results, presented in Figure 4, it is clear that a portfolio with exposure to unlisted infrastructure offers superior risk-reward outcomes over a portfolio without unlisted infrastructure, providing around 50 basis points of additional excess return for most levels of risk.

**Figure 4: Australian portfolio efficient frontiers**  
Monthly data for the ten years ending September 2009



Source: Bloomberg, Mercer, UBS and CFS Research

**Qualitative factors**

**Motivation**

The experience of the global financial crisis, where hitherto uncorrelated asset classes became almost instantly synchronised, has prompted institutional investors worldwide to rethink their strategies.

For example, in 2009 the Alaska Permanent Fund changed its approach to portfolio construction, grouping investments by their risk and return profiles across different economic conditions rather than by traditional asset classes. Consequently, stocks, bonds, real estate, private equity, infrastructure and absolute return strategies were reconfigured into 'company exposures', 'real assets', 'special opportunities', and 'interest rate exposures'. Similarly, the Canada Pension Plan (CPP) Investment Board's total portfolio approach focuses on 'risk/return characteristics of investments rather than traditional asset labels.'

As part of this shift, investors' definition of risk is becoming increasingly multidimensional. The UK-based Universities Superannuation Scheme (USS) monitors regulatory, political, country, administrative, concentration, liquidity and counterparty risk in addition to basic investment risk. Australia's Future Fund provides perhaps the best articulation of this more robust

approach, as evidenced by the following excerpts from its Statement of Investment Policies:

*‘Relying too much on historical return and risk measurements can, in our view, lead to poor investment decision making. While this has its place it must be supported by a wider, qualitative use of economic information about the world.*

*[Investors] should be wary of a classical approach to diversification (volatilities and correlations). Our preferred approach is to seek to understand the exposure of every asset we review to a set of core long-run factors.’*

In addition to the benefits of including infrastructure in a portfolio demonstrated in the previous section, there are a number of qualitative differences between infrastructure and property which add further weight to the case for including infrastructure alongside property in a portfolio. These are important because while optimisation remains a legitimate and powerful tool for investment decision making, it is not without its limitations. We look ‘behind the numbers’ and explore some of the qualitative differences between infrastructure and property in the following discussion.

**Table 2: Infrastructure and property subsectors**

Infrastructure		Property
<ul style="list-style-type: none"> <li>Conventional energy source generation</li> <li>Electricity transmission and distribution</li> <li>Water utilities</li> <li>Ports</li> <li>Rail</li> <li>Social infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Renewable energy generation</li> <li>Gas pipelines</li> <li>Airports</li> <li>Toll roads</li> <li>Communications</li> </ul>	<ul style="list-style-type: none"> <li>Office</li> <li>Retail</li> <li>Industrial</li> <li>Residential</li> <li>Hotels</li> <li>Leisure, health, etc</li> </ul>

Source: CFS Research

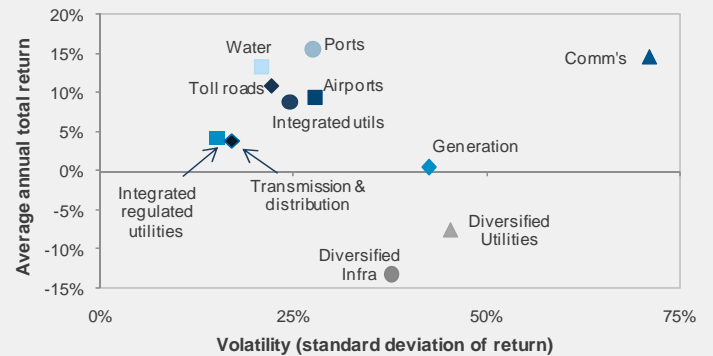
**Heterogeneity of the asset class**

Similar to property, infrastructure is a very heterogeneous asset class, offering different risk-return profiles across a range of subsectors. These subsectors are listed alongside the comparable property subsectors in Table 2.

To further emphasise the diversity of these subsectors, Figure 5 presents the historical performance of the listed infrastructure subsectors, using global data for the ten years ending June 2009. Caution should be exercised when interpreting the results – for example, the diversified infrastructure and diversified utilities subsectors are by far the smallest subsectors, and are each heavily driven by the performance of just one or two key stocks.

In addition to the choice of subsector, investors can choose to focus on certain geographical markets and at what stage of the asset’s life cycle the investment is made (e.g. pre or post-construction stage). Once these factors are taken into account, it becomes apparent that the infrastructure asset class offers considerable diversity. By selecting the appropriate mix of assets, an investor can tailor risk exposure and expected return for a portfolio.

**Figure 5: Listed infrastructure subsector performance**  
Global data for the ten years ending June 2009



Source: UBS and CFS Research

**Different risk exposures**

Certain risk exposures are common to both property and infrastructure. These include economic risk, construction risk, operational risk, and like all asset classes, vulnerability to market sentiment. However, the balance of these risks differs, depending on subsector and asset-specific characteristics. In addition, infrastructure has certain key risk exposures generally not prevalent within the property asset class. The most notable examples of these are:

- **Regulatory risk** – while property faces some forms of regulation, such as development bylaws, regulation tends to have a more profound impact on infrastructure assets throughout their lifecycle. This can vary from light forms of regulation such as price monitoring to heavier forms of regulation, including price controls, allowable rates of return, imposing competition-enhancing corporate structures, and limits on or minimum capex requirements. Broad changes to levels of regulatory support, such as in the renewable energy sector, also fall under this category.
- **Political risk** – given their public, high-profile nature, there is a heightened level of political risk faced by infrastructure asset. Examples of political risk could include the decision by a government to cancel or postpone a privatisation, reversing decisions in the face of opposition from special interest groups or other stakeholders, and adverse policy changes resulting from a change in government.
- **Technological risk** – as a tangible asset infrastructure faces similar risks to property in the form of improvements to building design and structures. However, in addition to these risks, infrastructure assets face additional technological risks which can affect an entire subsector. For example, certain generation sources – particularly renewables – may be superseded by alternative sources of energy. The same risk applies to certain telecommunications and transportation assets.

Greater exposure to some of these risks is part of the trade-off associated with diversifying into infrastructure investments. For example, investing in a utility may reduce the amount of demand/economic risk exposure relative to a traditional portfolio with property, but will also typically increase regulatory risk exposure.

### ***Inflation hedging***

After a few decades of relatively benign inflation levels in the developed world, inflation concerns have recently regained momentum. Regardless of whether these fears prove to be founded, it is important that long term investors have adequate exposure to inflation linked assets in order to preserve their purchasing power.

While property income streams provide some degree of inflation protection as rents generally rise with inflation, this linkage tends to be more explicit with regulated infrastructure assets. Many toll roads, for example, have a mechanism where tolls are reset on an annual basis in line with rises in inflation. For unregulated infrastructure assets, the degree of pricing power may still be higher than property assets due to their strong monopolistic position.

### ***Accessibility and liquidity***

While direct investments in both property and infrastructure tend to be large-scale, infrastructure deals generally dwarf property deals on average. Due to their size, greater complexity and the larger number of stakeholders involved, infrastructure assets can be less liquid than property assets. However, the long lives of infrastructure assets and/or concession agreements tend to align with the long investment horizons of investors such as pension funds.

Unlisted infrastructure deal flow is generally lumpier than property. This is in part due to the different sources of investment opportunities. Commercial property transactions are generally driven by capital market and/or macroeconomic

conditions. Infrastructure investment opportunities can also be driven by these factors, but also depend on other factors such as the privatisation schedule in a particular country (politically driven), regulatory developments or technological changes.

### **Summary**

In this paper we have explored the case for inclusion of infrastructure in a balanced portfolio. While there are similarities between property and infrastructure, there are also significant differences, which warrant separate allocations for the two asset classes. Furthermore, while property and infrastructure returns have low correlations with traditional asset classes, they are also uncorrelated with each other.

One of the lessons learned from the global financial crisis was the need for investors to adopt a robust risk framework. Practically, this implies consideration of qualitative factors in addition to traditional measures of return, volatility and correlation. As the paper highlights, further differences between property and infrastructure become evident when evaluating these qualitative factors, adding to the case for a diversified real asset allocation.

Finally, the infrastructure asset class is a highly diverse, heterogeneous one – a point which is somewhat obscured by the lack of data availability and concentration bias in available aggregate indices. Investors should be aware that an active investment approach allows greater risk-return outcomes and portfolio construction possibilities than indicated at the aggregate asset level

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