

Case for Global Listed Infrastructure

Australian perspective

June 2010



Executive summary

Infrastructure assets are crucial for improving living standards, sustaining prosperity and supporting economic growth through increased productivity. However, some nations have significantly under-invested in their infrastructure needs, and are now actively budgeting for substantial new infrastructure investments.

The global infrastructure market has a strong growth outlook as governments are expected to invest trillions of dollars over the next few decades to meet the world's infrastructure needs. Furthermore, the privatisation of assets will continue as governments act to reduce their burgeoning debts and transfer risk to the private sector. Hence, the global infrastructure market, both listed and unlisted, will continue to grow and become more diversified across assets, sectors and geographies.

The typical characteristics of infrastructure assets, such as stable earnings, long durations and inflation linked yields, make them attractive investments. Investments in unlisted infrastructure funds by large pension funds have increased significantly over the last decade and investments in listed infrastructure funds have also gained popularity.

Unlisted funds may not be suitable for every investor because of their illiquidity and large minimum investment requirements. Global listed infrastructure funds however, provide investors with higher liquidity, easy access and diverse exposure to the global infrastructure market. Investors that are able to invest into both unlisted and listed infrastructure funds are better positioned to structure portfolios that can meet their needs and objectives.

Although the correlation of returns between the listed infrastructure market and the broader equity market has increased in recent years, we don't expect it to remain at current levels. During periods of high market volatility, as experienced during the global financial crisis in 2008 and 2009, it is expected that the global listed infrastructure sector will behave more like the broader equity market. Nevertheless, even though the correlation of returns has been high during the recent crisis, the lower price falls for the global listed infrastructure sector compared to the broader equity market was a reflection of its lower risk profile.

Over the 15 years to May 2010, the AUD hedged global listed infrastructure index outperformed the global equity index by 3.9%pa, while experiencing a 0.7%pa lower volatility (refer to historical performance section). Allocating part of a portfolio's global equities exposure to global listed infrastructure would have achieved superior return and risk outcomes over this period.

The relatively lower risk profile of the global listed infrastructure sector suggests that investors could expect to achieve a lower risk portfolio by allocating part of their global equities exposure to global listed infrastructure funds. The size of the appropriate allocation depends on the investor's risk and return profile and portfolio composition.

Furthermore, the global listed infrastructure market provides significant value-add opportunities for active managers who can identify mispriced securities.

Introduction

The global infrastructure investment market has developed significantly over the past decade. There has been a substantial increase in private sector ownership as governments continue to privatise assets to pay off debt.

The market has a strong growth outlook due to 'catch-up' investment following decades of government underinvestment and the strong growth outlook in industrialising economies. The Organisation for Economic Co-operation and Development (OECD) estimates that over US\$50 trillion will need to be spent by 2030 to meet the world's infrastructure needs.¹

Traditional infrastructure assets continue to mature and are now regarded as representing a unique asset class to which investors are making separate allocations. The global listed infrastructure market has grown significantly over the past decade and represents a diversified investment universe across assets, sectors and geographies.

In this paper, we examine the investment characteristics of infrastructure assets, briefly discuss the unlisted and listed infrastructure markets and examine the historical performance of the global listed infrastructure market. We also demonstrate the benefits of including an allocation to global listed infrastructure in a diversified portfolio.

Types of infrastructure assets

Infrastructure can be defined as the basic facilities, services and installations needed for the functioning of a community or society and for a country to be efficient and productive. Infrastructure assets can be either economic or social. Economic infrastructure refers to infrastructure services where access is paid by the user. These assets can be classified as transport infrastructure (toll roads, airports, ports and railways), utilities (gas, electricity and water), energy (oil and gas pipelines and storage) and communications (mobile towers and satellites). Social infrastructure assets, such as schools, post offices, hospitals, courts and prisons, remain largely publicly funded. Private sector participation in social infrastructure often takes in the form of private-public partnerships (PPPs).

Infrastructure assets may be regulated or unregulated. Regulated infrastructure assets are more stable but unregulated assets offer the potential for higher income streams. The typical characteristics of infrastructure assets include:

- large scale assets with long durations
- income oriented assets with relatively stable earnings
- inflation linked earnings
- pricing power due to inelastic demand and monopolistic/quasi-monopolistic positions (high barriers to entry)
- economies of scale (high fixed costs and low variable costs),
- price/economic regulation.

Infrastructure assets can also be categorised according to their risk-return profiles. At the low-risk end of the spectrum are the so-called 'core' assets. These are mature, regulated assets, with stable earnings and low risk exposures. At the high-risk end are the so-called 'opportunistic' assets. These assets are in their development stages and/or exposed to higher political or regulatory risk.

Although governments have historically been the predominant owners of infrastructure assets, the private financing, building and operation of infrastructure assets has increased substantially over the past decade. This is due to large scale privatisations as governments act to reduce their large debt levels and also transfer risk to the private sector.

Why invest in infrastructure?

Pension funds around the world (particularly the Australian, Canadian and Dutch pension funds) have been investing in infrastructure for some years now. Due to their scale, their exposures have predominantly been through unlisted funds.

Pension funds, in particular, are attracted to infrastructure assets for the following reasons:

- long duration facilitates hedging long term liabilities
- inflation linked returns assist in protecting against inflation
- relatively high yields assist clients to meet cash flow needs and reduce the need to sell down investments²
- low correlation with other asset classes diversifies sources of portfolio return and risk
- stable earnings (due to low competition, long term contracts and resilience to economic conditions) reduce portfolio risk
- potential for capital growth can further protect against inflation, and
- potential for a tax deferred distribution component (in some countries) can increase after tax returns.

The growth outlook for the global infrastructure market is strong. The key drivers of this growth will be catch-up investment following decades of government underinvestment and the strong economic development in emerging economies.

¹ Infrastructure to 2030, OECD (2007).

² As at January 2010, the net dividend yield on the UBS Developed Infrastructure & Utilities Index was 4.2%pa (source: UBS). In comparison, the net dividend yield on the MSCI World Index was 2.5%pa (source: Bloomberg).

How to invest in infrastructure: unlisted or listed?

Investors can acquire exposure to infrastructure assets through unlisted or listed funds. Unlisted funds invest directly in a portfolio of infrastructure assets whereas listed funds invest in the shares/units of publicly listed companies/unit-trusts that own and/or operate infrastructure assets.

The observed returns from unlisted infrastructure funds have low volatility and low correlation to equity market returns because individual infrastructure assets are valued at periodic intervals, typically semi-annually. Although these artificially smoothed returns considerably overestimate the diversification benefits of unlisted funds compared to listed funds, it has been the main reason for their greater popularity. However, there are challenges in investing into unlisted funds. Unlisted funds generally require substantial minimum investment commitments and are illiquid. As a result, unlisted funds often only suit very large investment portfolios with long term horizons and low liquidity needs. Hence, listed infrastructure funds provide an alternative structure for gaining exposure to infrastructure investments.

The investment characteristics of unlisted and listed assets can vary quite considerably over the medium term since the prices of listed infrastructure companies are correlated to broader equity market price fluctuations, especially during periods of high volatility. Over the long term however, it would be expected that the returns from comparable assets underlying listed and unlisted investments will be similar.

Differences in other attributes, such as gearing levels and diversification levels across assets, sectors and geographies, will contribute to differences in the long term returns from unlisted and listed infrastructure funds. Unlisted infrastructure funds generally lack diversification because they are concentrated to a lower number of assets and to fewer countries. Unlisted infrastructure assets also have significantly higher gearing levels compared to their listed counterparts, due to being mainly debt financed.

Portfolios with both unlisted and listed infrastructure allocations are likely to achieve more optimal outcomes. The stable returns from the unlisted funds and the liquidity available from the listed funds can provide an optimal strategy to gain exposure to the attractive investment characteristics of infrastructure assets.

Due to different factors influencing their medium term valuations, at any one period the listed and unlisted infrastructure markets may be at different parts of their investment cycle. This implies that having exposure to both the unlisted and listed infrastructure markets is expected to reduce the overall portfolio's risk profile.

Furthermore, the liquidity of listed infrastructure investments can significantly enhance the optimal management of a portfolio's total infrastructure exposure.

The table below summarises the key characteristics that differentiate the two types of investment.

	Minimum investment	Liquidity	Return volatility	Gearing	Transparency	Management of underlying assets	Diversification	Asset turnover	Transaction cost
Unlisted	Very large	Very low	Low	Higher	Lower	Higher	Lower	Very low	High
Listed	Small	High	High	Lower	Higher	Lower	Higher	Varies	Low

Although investors in broad equity funds may have an exposure to infrastructure securities, on average this is expected to be minor. In the MSCI World Index, the utilities and infrastructure securities³, which are classified under the 'Utilities' sector, represent only around 5% of the index. Furthermore, within this sector, the utility companies make up over 85% of total market capitalisation while other infrastructure companies represent less than 15%. This means that for a portfolio with 50% in global equities, while the overall infrastructure and utilities exposure may average around 2.5% of the portfolio, the non-utility component may average only 0.4%.

Due to its minimal weight in the global equity market and its concentration to utilities, to gain a meaningful and diversified exposure to all the sectors within the global infrastructure market, investors will need to make a separate allocation to infrastructure funds. Actively managed global listed infrastructure funds provide an effective means of gaining such diversified exposure.

Global listed infrastructure funds

Global listed infrastructure funds provide investors with high liquidity, easy access and diverse exposure to the global infrastructure market. Having a globally diversified portfolio will mitigate political, regulatory, social, geographical and economic risks.

The remainder of this report focuses on the historical return, risk and diversification benefits of investing in the global listed infrastructure market.

We have included both the AUD hedged and unhedged global listed infrastructure indices in our return and risk analysis and comparison against the unhedged global equity index.

³ To which we have simply referred to as 'infrastructure securities' in this report.

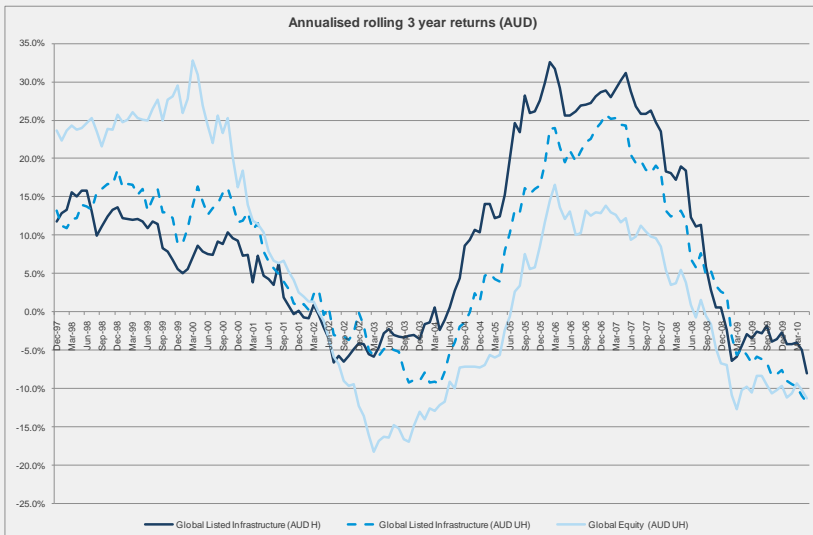
Historical performance

Compared to broad equity market returns, the global listed infrastructure market has provided attractive returns over the last decade. We have compared the historical return and risk characteristics of the global listed infrastructure sector with the broader global equity market. The following table summarises the indices that were used in the analysis.⁴

Asset class	Index used
Global Equities (UH)	MSCI World Free Net TR Index (AUD)
Global Listed Infrastructure (H)	UBS Global Infrastructure & Utilities 50-50 Net TR Index (AUD Hedged)
Global Listed Infrastructure (UH)	UBS Global Infrastructure & Utilities 50-50 Net TR Index (AUD)

We have used the AUD hedged return series as the primary index for global listed infrastructure because of its popularity among Australian investors. Australian investors typically allocate to global listed infrastructure for its relatively high yields and there is a preference to hedge out currency risk. However, we have also shown the performance of the AUD unhedged index series for comparison purposes. Over the long term, hedging this exposure has resulted in higher returns with lower volatility.

The chart below compares the annualised rolling 3 year total returns for the two UBS Global Infrastructure & Utilities 50-50 (UBS I&U) indices and the global equity market index, over the 15 year period to 31 May 2010.



Data source: Bloomberg

The three year returns for hedged global listed infrastructure has remained above that of global equities since June 2002, averaging 9.9%pa versus -2.4%pa for global equities. The performance comparison for the 15 years to May 2010 is summarised below.

	Global Listed Infrastructure (H)	Global Listed Infrastructure (UH)	Global Equity (UH)
Geometric return (%pa)	7.7	4.4	3.8
Volatility of returns (%pa)	12.3	12.1	13.0
Return/Risk ratio	0.62	0.37	0.29

Over this 15 year period, the hedged and unhedged global listed infrastructure indices outperformed the overall global equity index by +3.9%pa and +0.6%pa respectively. The cumulative compounded return for hedged global listed infrastructure was 129% greater than global equities, while its volatility of monthly returns was 0.7%pa lower.

To compare the historical performance of these three indices on a risk adjusted basis we have estimated the return provided per unit of risk endured. The volatility of returns was used as a proxy for this risk measure. Both the hedged and unhedged global listed infrastructure indices provided superior risk adjusted returns over this period compared to the global equity market index.

In the following section, we compare these indices on a number of risk measures, i.e. volatility, correlation, market beta and maximum loss, over the 15 year period to May 2010. When assessing the risk characteristics of an asset class, it is more prudent to consider these risk measures in combination than focusing on a single risk measure.

⁴ All index data used in this report were sourced from Bloomberg.

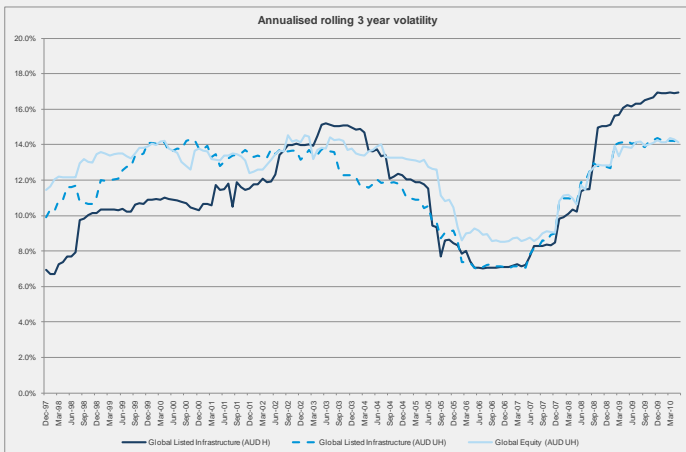
Historical risk analysis

Volatility

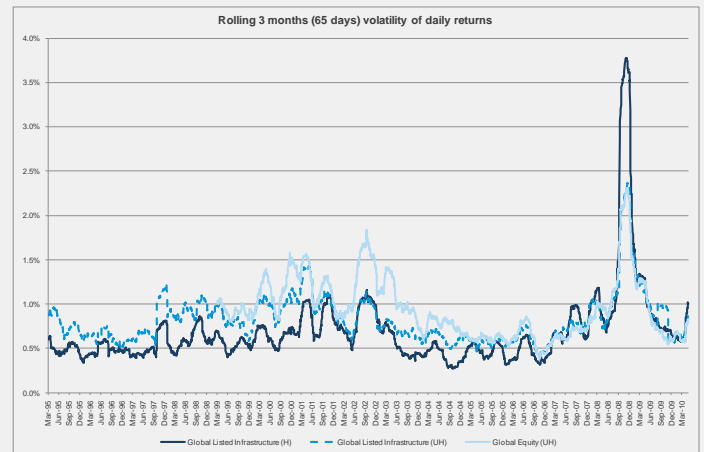
The annualised rolling three year volatilities of monthly returns for the three indices are shown in the left chart below. Before the onset of the global financial crisis, the volatility for the AUD hedged global listed infrastructure index had generally been lower than that of global equities. However, the sharp depreciation of the AUD in the fourth quarter of 2008 meant that unhedged foreign currency exposures partially offset the large falls in foreign equity exposures during this period. Furthermore, the *unrealised* losses from the hedging contracts of AUD hedged global listed infrastructure investments effectively leveraged the equity exposures when markets were falling sharply. Consequently, unhedged foreign equity investments experienced lower volatilities during this period.

During periods of market crisis unhedged foreign equity investments can provide less volatile returns. This is because the falls in equity markets tends to be complemented by depreciations in the AUD as investors flee to currencies perceived as less risky.

Nevertheless, in most market conditions the AUD hedged global listed infrastructure index has experienced lower volatility. This can be observed from the second chart below, which shows that the larger spike in the volatility of hedged returns was temporary.



Data source: Bloomberg

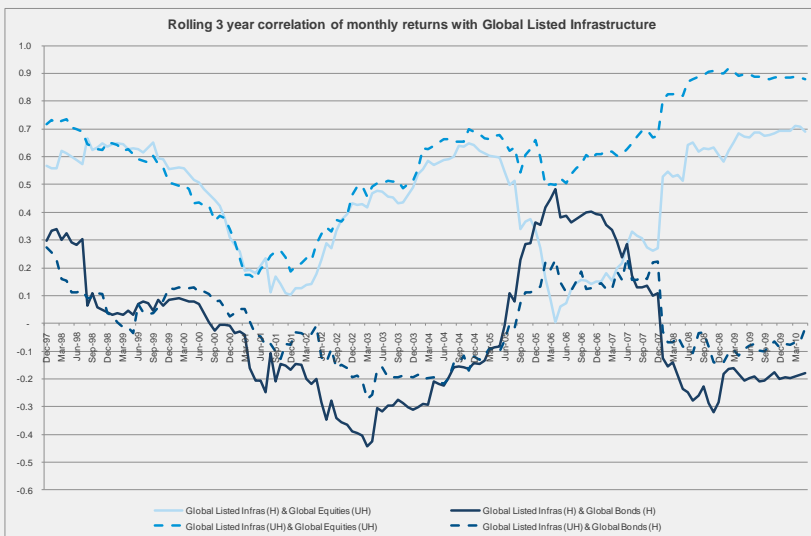


Data source: Bloomberg

Historically, the volatility of *daily* returns for the *unhedged* global listed infrastructure index was generally below that of the global equity index. However, this gap has diminished with the increase in the popularity of the global listed infrastructure sector, as investors started making separate allocations to this sector, leading to a significant rise in active management within this sector.

Correlation

The rolling three year correlation of monthly returns for the hedged and unhedged global listed infrastructure indices with the global equity and global bond indices are shown below.⁵



Data source: Bloomberg

Examining the historical correlations with global equity returns, hedged global listed infrastructure returns have provided significantly lower correlations than unhedged global listed infrastructure returns. Correlations with global bond returns have also generally been lower for hedged global listed infrastructure returns.

⁵ The Citigroup World Government Bond Index (All Maturities) Hedged to AUD was used to represent the global bond market.

Although the correlations of global listed infrastructure returns with global equity returns have increased during the global financial crisis, we don't expect that the correlations will remain at the current high levels. Furthermore, the impact on the volatility of a diversified investment portfolio would have been partly offset from the large drop in the correlations with global bonds.

Going forward, we expect that the long term correlation of returns with the broader global equity market will be below 0.8 for the unhedged global listed infrastructure returns and below 0.7 for hedged returns. Even at the current high levels, investors can expect an enhanced risk adjusted return outcome over the long term by including an appropriate allocation to global listed infrastructure (preferably AUD hedged). The low correlation to fixed income assets also provides scope for diversification benefits.

Market beta

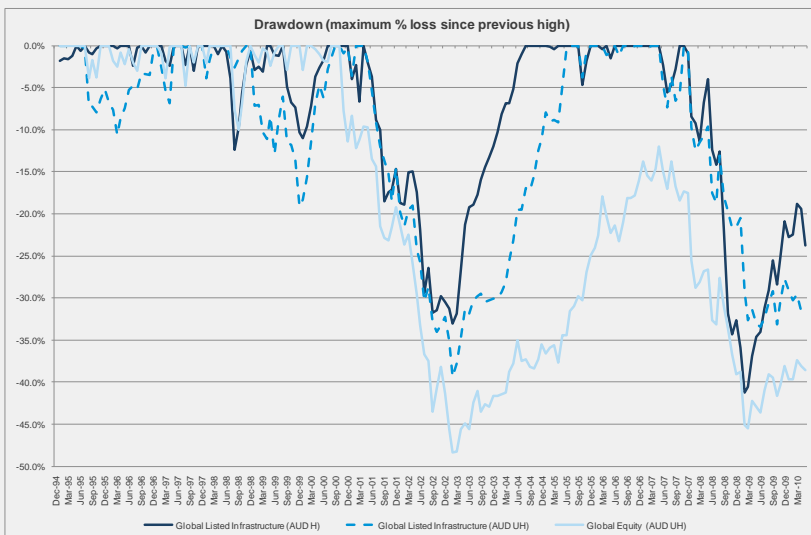
Although the correlation measure is a good indicator of the degree of co-movement between two series of returns, it only measures the similarity in the *direction* of returns and not their magnitude. Applying regression analysis on historical monthly returns, over the 15 year period to May 2010, we have also estimated the component of global listed infrastructure returns that is due to global equity market movements. This measure, referred to as *market beta*, was estimated to be 0.51 for hedged global listed infrastructure returns and 0.60 for unhedged global listed infrastructure returns.⁶

A market beta estimate of 0.60 suggests that the global listed infrastructure market is expected to move by only 60% of the global equity market return.

The results suggest that the listed infrastructure sector has a lower market risk than the overall equity market. When equity markets fall the listed infrastructure sector is expected to fall by a lesser amount. This is also evident in the drawdown chart below.

Maximum loss/drawdown

To assess the risk of investing in the global listed infrastructure market we have also estimated the maximum loss an investor may have incurred by investing at historical peaks over the last 15 year period. This measure is referred to as the "drawdown" and its historical values for the hedged and unhedged global listed infrastructure indices and the global equity market index are compared below. We have used monthly data.



Data source: Bloomberg

The drawdown values for global listed infrastructure have been less extreme than those for the broader global equity market. This was most evident during the global recession of 2001-2003 and during the global financial crisis of 2008-2009. Furthermore, following the 2001-2003 recession, the global listed infrastructure market recovered its earlier losses at a faster rate than the global equity market.

Considering that the drawdown values for the three indices are relative to their individual prior highs, which have occurred at different times, we have also assessed the maximum loss from each index from the 2007 peak of the global equity index. Based on daily index data (in AUD), the global equity index had fallen by 42% from its peak on 29 May 2007 to its low on 6 March 2009. In comparison, the unhedged global listed infrastructure index had fallen by 33% over the same period, a +9% outperformance.

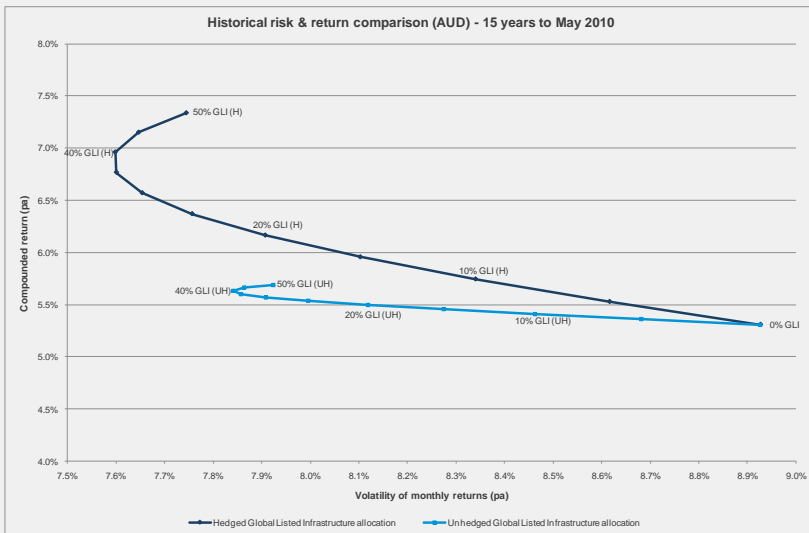
In summary, our analysis of historical volatility, correlation, market beta and maximum loss suggests that investors with both global equity and global listed infrastructure allocations are expected to achieve lower risk portfolios compared to portfolios invested solely in global equities. In the following section, we demonstrate the diversification benefits of allocating parts of the global equity allocation of an equity/bond portfolio to global listed infrastructure.

⁶ The market beta estimates were statistically significant at 95% confidence level.

Diversification benefits

To demonstrate the diversification benefits of including an allocation to global listed infrastructure in investor portfolios, we have simulated the return series of alternative portfolios using market index returns. Our starting portfolio has 70% global equities and 30% global bonds. Our alternative portfolios have various degrees of global listed infrastructure allocation, starting with 5% and increasing in 5% increments until it reaches 50%. For all the alternative portfolios we have sourced the global listed infrastructure allocation solely from the portfolio’s global equity allocation.

The chart below plots the historical return and risk profiles of these portfolios for the 15 year period to 31 May 2010⁷. Over this 15 year period, allocating part of a portfolio’s global listed equity allocation to global listed infrastructure would have reduced a portfolio’s risk while also increasing its return. The improvements in the return and risk outcomes were greater with an AUD hedged global listed infrastructure allocation.



Data source: Bloomberg

Active management in the Global Listed Infrastructure market

The risk/return profiles of infrastructure assets vary by sector, geography and also over time. Investment teams focused on researching infrastructure securities can identify value add opportunities and avoid high risk exposures to add significant value to client portfolios.

Unlike the unlisted market, investors are able to conduct transactions immediately, at very low cost and on any number of shares in the listed infrastructure market. These attributes, together with the transparency of listed companies, allows active managers to identify attractive investments, achieve diversified portfolios and manage risk exposures (e.g. political/regulatory risk).

Conclusion

The global infrastructure market has a strong growth outlook as governments are expected to invest trillions of dollars over the next few decades to meet the world’s infrastructure needs. Furthermore, the privatisation of assets will continue as governments act to reduce their burgeoning debts and transfer risk to the private sector. Hence, the global infrastructure market, both listed and unlisted, will continue to grow and become more diversified across assets, sectors and geographies.

The typical characteristics of infrastructure assets, such as their low correlation to other asset classes, long durations and relatively high and stable income streams, which are typically linked to inflation, make them attractive investments.

Unlisted funds may not be suitable for every investor because of their illiquidity and large minimum investment requirements. Global listed infrastructure funds however, provide investors with higher liquidity, easy access and diverse exposure to the global infrastructure market.

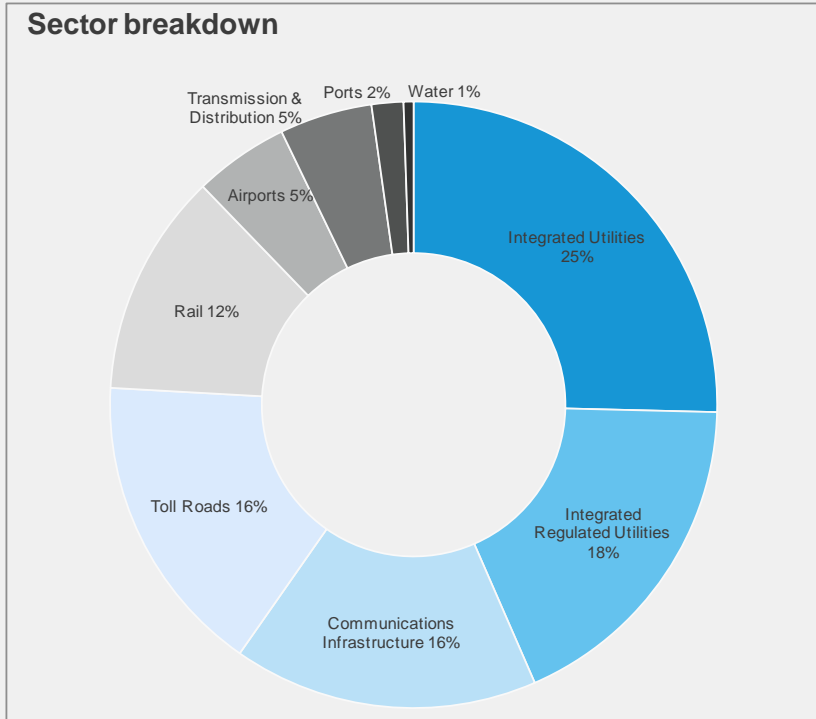
Allocating part of a portfolio’s global equities exposure to global listed infrastructure would have achieved superior return and risk outcomes over the 15 year period to May 2010. The relatively lower risk profile of the global listed infrastructure sector suggests that investors could expect to achieve a lower risk portfolio by allocating part of their global equities exposure to global listed infrastructure funds. The size of the appropriate allocation depends on the investor’s risk and return profile and portfolio composition.

⁷ The Citigroup World Government Bond Index (All Maturities) Hedged to AUD was used to represent the global bond market.

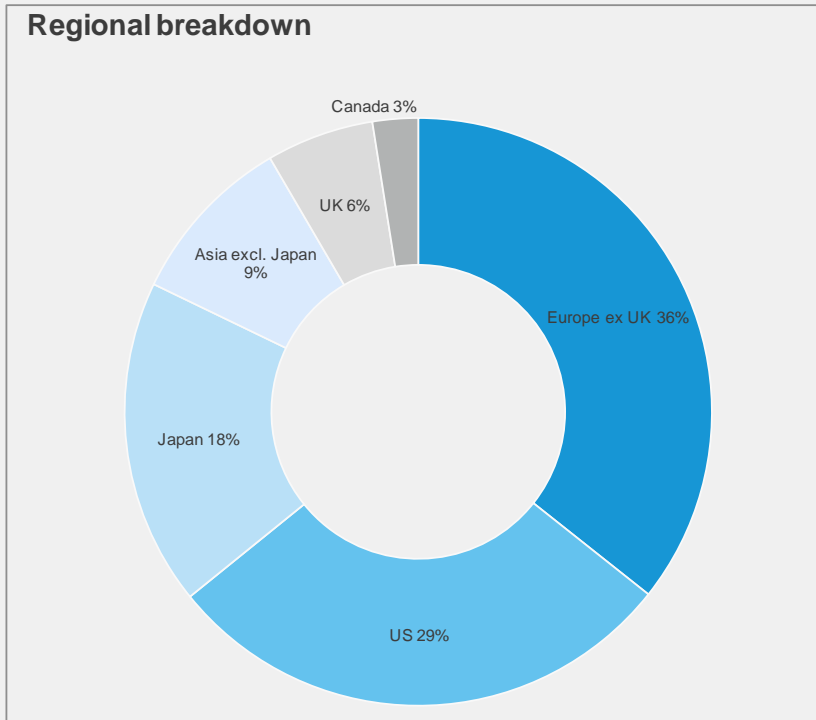
Appendix: UBS Global Infrastructure & Utilities 50-50 Index (as at January 2010)

Total market capitalisation US\$1.4 trillion

Source: UBS



Source: UBS



Source: UBS



For further information

Regional Managing Director, Australia and New Zealand

Joanna Davison +61 2 9303 7007

Institutional Business Development and Consultant Relationships

Matt Russell +61 2 9303 7024
 Ali Karmali +61 2 9303 6070
 Tracey McNaughton +61 2 9303 2695

Institutional Relationship Management

Liz Krajewski +61 2 9303 2927
 Dan Bristow +61 2 9303 6311
 Helen Squadrino +61 2 9303 6142
 Hugh O'Neill +61 2 9303 6116
 Simon Good +61 3 8628 5681
 Harry Moore +61 3 8618 5532
 Nadene Moore Maternity leave

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