

**Listed infrastructure investments: in a class of their own**

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**Executive Summary**

The equity financing of infrastructure assets is returning to private capital markets after a pause of over half a century. Infrastructure Equity is a separate and distinct asset class that is growing rapidly, due to an increasing shortfall of public investment in infrastructure (see chart below). Its management requires specialist knowledge, but offers attractive liability matching characteristics for long-term investors.

Many investors in the past have had sub-optimal allocations to infrastructure, due to the high costs of access and the difficulties in diversifying exposures. The global listed infrastructure markets are now of a size similar to the Australian Stock Exchange and are expected to grow much more rapidly. This offers the potential to invest in infrastructure at lower costs, with greater liquidity and within a well diversified portfolio spread across geographies, assets, regulatory regimes, and political risks.

While the infrastructure sector is relatively immature globally (Australia's, for example, is more advanced than those of many other regions), already some leading international pension funds allocate up to 10 percent of their portfolio to infrastructure. Early adopters of this strategy are likely to harvest returns that are well above what will be available when the asset class becomes better understood and moves to pricing equilibrium, but care has to be taken to identify preferred infrastructure assets, rather than focusing on only the physical characteristics of the assets.

## Infrastructure

Infrastructure assets are some of the essential building blocks within the structure of the modern economy. They enable the delivery of some of the fundamental services that are essential to the operation of a modern community or society. Some of the primary infrastructure sectors and sub-sectors are shown in the short list below.

<b>Sectors</b>		
<b>Utilities</b>	<b>Transport</b>	<b>Social</b>
Power	Roads	Health
Water Plant	Rail	Schools
Sewerage	Airports	Prisons
Communications	Ports	

There are a limited number of providers of these assets because they cannot be easily replicated due to regulation, environmental impact, or prohibitive cost. Hence, they do not operate in a fully competitive marketplace and consequently they have natural monopoly characteristics.

The investment characteristics of many infrastructure assets are: large up-front capital investment, low operating costs, and returns that are predictable and usually linked to inflation.

### History of Privately Owned Infrastructure

Some of the earliest written references to tollroads come to us from India at the end of the fourth century BC. In the eleventh century tollroads were common across Europe, and in 1286 a toll was introduced on the London Bridge that remained in place for 500 years.

The current trend to the private ownership of infrastructure is just a new wave of a phenomenon that has occurred before. For instance, in the nineteenth century most of the UK's major inter-urban roads were privately owned toll-roads, as were many river crossings (some of which are still in operation today). Similarly, the British canal system and railway network were privately financed and built over the nineteenth century. Britain even had privately built and operated systems of coastal lighthouses for commercial shipping in earlier centuries. The same principles of private infrastructure investment applied in other nations. For example, in the USA the majority of the power and railway infrastructure was originally developed by the private sector.

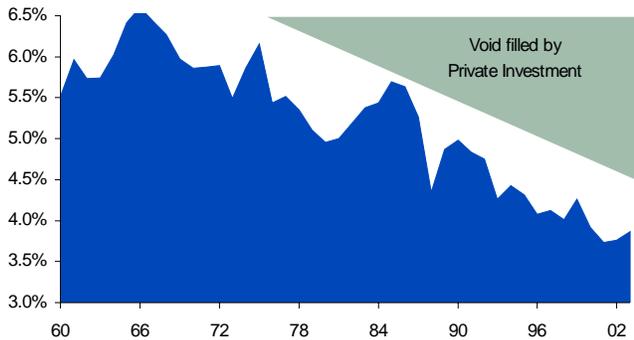
In this context the nationalisations and operation of infrastructure assets by governments at times during the twentieth century can be seen as a historical aberration, rather than the norm.

### Why Privately Funded Infrastructure?

Since the early 1980s in particular, demands for greater fiscal discipline and demographic challenges in the Western world have led to:

- The sale of government-owned infrastructure (particularly power utilities) to the private sector.
- A rising proportion of new infrastructure projects being privately funded—particularly tollroads and pipelines.

**Public Infrastructure Spending Is in Decline:  
Public Capital Spending As % of Australian GDP**



Source: Australian Bureau of Statistics – Gross Domestic Product Account

Budget-constrained governments have had to be creative about the funding of infrastructure. This has allowed the community to reap the social benefit of accessing infrastructure that ordinarily could not be afforded for many years.

In addition, governments, particularly in Europe, have seen the development of infrastructure by the private sector as an important economic stimulus and one that is essential if their country is to remain internationally competitive.

We believe the investment market for privately funded infrastructure is set to expand significantly as governments and their agencies move to a greater acceptance of the privatised infrastructure model, and as more countries are classified as “Capitalist”. This would apply to many of the Eastern European countries (e.g., Hungary, Poland, and the Czech Republic), which have significant infrastructure needs. Their admission to the European Union reduces sovereign risk as they gain the support of agencies, such as the European Investment Bank, and access to foreign capital.

**The Definition of Preferred Infrastructure Assets**

The term “infrastructure” is often associated with large-scale capital-intensive assets that perform essential and core economic functions. Thus the *American Heritage Dictionary* defines “infrastructure” as:

**The basic facilities, services, and installations needed for the functioning of a community or society, such as transportation and communications systems, water and power lines, and public institutions including schools, post offices, and prisons.**

While this is a useful definition for the sociologist, from an investment perspective this emphasis on the function and physical nature of the assets is insufficient.

Our definition of “infrastructure” emphasizes the primacy of investment characteristics over physical characteristics. This narrower definition of “Preferred” infrastructure assets is based on the following criteria:

- Monopoly asset status
- Captive customer base
- Pricing power, inviting regulation
- High operating margins
- Low volatility of cashflows
- High probability of distributions

This definition excludes some assets generally held to be infrastructure and includes some others that are not normally associated with this term. In fact some specifically mentioned in the *American Heritage Dictionary* definition, such as schools and post offices, are unlikely to meet our “investment definition” of infrastructure.

When infrastructure investments have disappointed it has often been because, while the asset was broadly seen as “infrastructure”, it did not have these “Preferred” investment characteristics. Perhaps the most widely publicised examples were power generators that relied on selling power into a newly deregulated electricity market. Power prices were forced down through competition and many generators were barely able to cover their debt obligations, let alone pay a suitable return to equity. One of the most graphic illustrations of the consequences of this misunderstanding of the characteristics of “Preferred” infrastructure was the case of Horizon Energy. Equity investors in Horizon, which owned a part of Loy Yang A in Australia, lost their entire capital within 7 years and only received a single 9¢ dividend return on their original \$1 investment.

Thus, under our definition, companies that own electricity transmission networks (poles and wires) would generally be considered to be “Preferred” infrastructure because of the monopoly nature of the asset. But companies in the electricity industry that operated in competitive markets such as generation (unless there were long-term take or pay contracts) and retailing would clearly not be considered “Preferred” infrastructure.

### The Regulation of Infrastructure Assets

The monopolistic nature of many of the assets mentioned above leads to extraordinary pricing power, so it is not surprising that most of these privatised assets are subject to some form of regulation.

Having arrived at an investment-based definition of “Preferred” infrastructure, the next step is an analysis of the regulatory regimes, which can be classified as shown below.

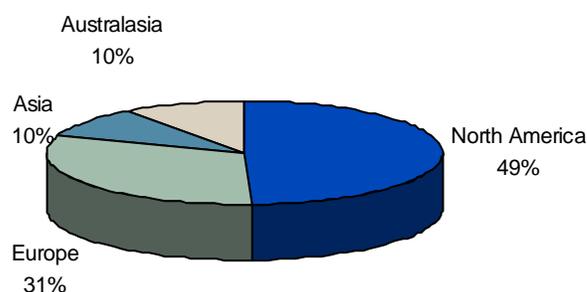
1. **Regulated:** Total return on assets is determined by the regulator, who sets pricing in order for the asset to achieve regulated return.
2. **Concessioned:** Pricing is regulated via a concession deed, which specifies a specific regime of allowed prices and price changes (e.g., tollroads). Importantly, the total return earned by investors is not regulated under this framework.
3. **Hybrid (“dual tills”):** Returns on a component of the business are regulated (e.g., airports and ports).

Analysis of the regulatory framework is a critical component of the assessment of infrastructure assets, as regulated assets, by definition, will go through regulatory uncertainty as the returns and price controls for the next regulatory period are determined. One of the clearest examples of this dynamic was the experience of the UK-regulated water assets. UK water assets’ valuations (based on Enterprise Value), when expressed as a percentage of the Regulated Asset Base (RAB), fluctuated widely around this base, with a peak value of a 30% premium to the RAB and a trough of a 30% discount. Given that these assets have been highly geared, the impact on equity holders has been even more pronounced.

### Listed Infrastructure Assets

Different countries are at different stages down the path of privately funded infrastructure. For example, much of the energy, communications, and railroad infrastructure in the US is in private hands, but the first privately funded toll-road concession of any significance was only awarded in the 1990s.

### Percentage of Listed Infrastructure Assets by Country (by value)



Source: LAMP estimates; Bloomberg LP

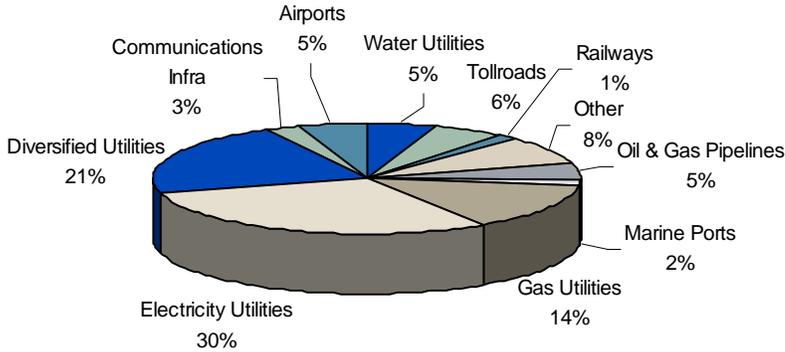
The private infrastructure market is growing rapidly, and increasingly these assets are now being listed on global stock exchanges. We estimate, based on the conventional definition of infrastructure, that there are 228 listed infrastructure stocks of reasonable size in OECD markets, with a total market capitalisation of around US\$1.7 trillion.

Following Lazard’s definition of “Preferred” infrastructure

- based on “investment” not just “physical” characteristics
- the potential universe falls to approximately 70 stocks, with a total market capitalisation of around US\$350 billion.

Social infrastructure, such as hospitals, schools, and prisons, has been the last of the assets to be privatised. Government is typically the primary user of these assets. Not surprisingly, they also tend to be owned by government and operated for the “common good.” This makes them less attractive from an investment perspective.

**Percentage of Listed Infrastructure Assets by Sector Exposure**



Source: LAMP estimates; Bloomberg LP

However, the UK’s Private Finance Initiative (PFI) programme has seen the private sector build a range of social infrastructure including schools, hospitals, defence establishments, and laboratories. Under this programme the private sector builds and maintains the facility and generally provides cleaning and services such as catering but the government is still responsible for the basic functioning of the facility, e.g., teaching, nursing, etc. Social infrastructure development in Australia has largely been limited to a few prisons and hospitals.

**Investing in Infrastructure**

This willingness of governments to seek more creative forms of infrastructure finance has coincided with the expansion of pension funds and their capacity to invest in these projects.

Yet few pension funds anywhere in the world have invested meaningful amounts in this emerging asset class. In Australia, industry (or Taft-Hartley-type) funds are the largest-growing sector of the pension market, and this is where the most interest in infrastructure assets has been seen. One major Australian consultant to industry funds has a typical allocation of 5-8% within balanced portfolios.

In addition, because of the complexity of each investment, most pension funds have concentrated on domestic infrastructure investments.

The infrastructure investment market continues to evolve, with opportunities ranging from direct investment to various forms of managed funds.

Currently most investment is direct.

In Australia, managed infrastructure funds have been offered by three institutions. All three have provided satisfactory returns, although all have invested in at least one asset that has performed poorly. We see this as part of the learning experience of the local infrastructure market. In most of the cases of inadequate returns, the underperformance can be traced back to the definitional issues outlined above, i.e., funds have made geared investments in power stations, which operate in contestable markets and thus did not have “Preferred” infrastructure asset characteristics.

**Risk and Return Characteristics**

Infrastructure assets are generally characterised by relatively inelastic demand. This results in extremely predictable revenues (often inflation-protected). Operating costs are generally low and operational risk is usually quite predictable.

Consequently, the financial performance of the asset has a low correlation to economic cycles. This defensive characteristic means that capital risk is generally lower than other forms of equity.

The results from regressions of the returns of the MSCI World Transport Infrastructure Accumulation Index, versus the MSCI Index, show that only a small part of total risk comes from market sources (non-diversifiable). In other words, only a small part of the price movements in infrastructure stocks can be explained by changes in the market generally. The majority of risk comes from industry-specific factors, which can be diversified.

Infrastructure investments require large amounts of upfront capital. This results in a large depreciation charge when the asset is commissioned. This can depress “accounting profitability” until revenues build up to the point where they exceed depreciation and interest. But the key to valuing infrastructure is not profitability, but discounted free cashflow (DCF) – a far more fundamental consideration in any long-term investment.

**Derived Asset Betas of Listed Infrastructure Assets Compared with Required Excess Return Above Risk-Free Rate)**

Asset	Asset Beta (B)	Required Return Above Risk Free (%pa)
Market	0.7	4.6%
Airport	0.5	3.0%
Electricity Transmission	0.4	2.5%
Tollroad	0.3	2.0%
Electricity & Gas Distribution	0.3	2.0%

Source: LAMP Estimates

The overall predictability of cashflows (low asset beta) results in a very low cost of capital (weighted average cost of capital, or WACC). To take advantage of this, most of these projects include a significant debt component in the funding mix. Increasingly, sophisticated financial structures are being developed to leverage the equity performance of these assets. Investors need a corresponding level of expertise to ensure their investments are appropriate for their long-term requirements.

**Manager Skill**

The absolute total return from infrastructure stocks has been substantially in excess of global equities over the last five years (as measured by the return on the MSCI World Index). This is because infrastructure, as an investment class, is still very much in its infancy. A large part of the volatility is due to investors not understanding the underlying investment dynamics.<sup>1</sup>

This early-stage benefit should reduce as more analysts cover the stocks, and investors better

understand the factors that impact on valuation.

Ultimately, risk is inextricably linked to return, and generally, infrastructure assets are demonstrably less risky than average industrial companies<sup>1</sup>. Consequently, their expected return, in equilibrium, is also less.

Managers who add value will have a good understanding of the intricacies of long-term concession agreements, regulatory formulas that cap returns, and complex financial overlays.

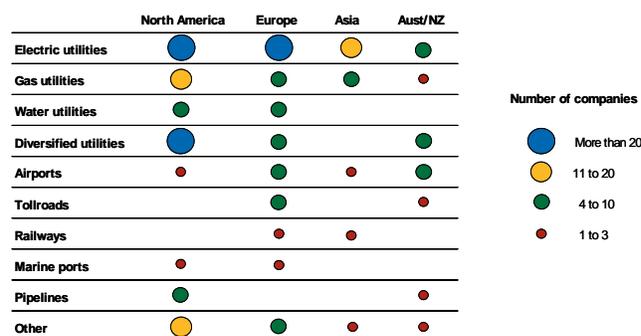
**Investing in Global Listed Infrastructure**

A subgroup of infrastructure equities, that we call Preferred Infrastructure, does indeed have attractive investment characteristics. As discussed earlier, to qualify as Preferred Infrastructure, companies must have stable demand and high operating margins, a combination that produces revenue and profit certainty. They must also have pricing power, which is often the result of a natural monopoly. Whilst this usually involves pricing or return regulation, some regulators allow reasonable returns to encourage replacement and expansion capital expenditure, so Preferred Infrastructure returns tend to be fairly closely linked to inflation. Another characteristic that we require is that expenses, including the cost of financial gearing, are manageable. Finally, the projects must have longevity; which means they should have fairly long lives and be located where the legal system is likely to protect investor’s interests.

Currently, we can construct a portfolio of Preferred Infrastructure equities from companies that are listed on global stock exchanges. It is designed to deliver returns of more than inflation + 5% per annum over rolling five-year periods, with volatility and financial risk between bonds and equities. This is an attractive proposition for many investors.

## Investing globally – the opportunity set

The chart below presents approximately 230 listed infrastructure stocks by region and by sector and illustrates how large the investment opportunity set is for Global Listed Infrastructure.



Source: Lazard Asset Management Pacific Co. - Approx 230 stocks in Universe Selection Database, 30 June 2006

Investing globally has enabled our current portfolio of approximately 30 stocks to be diversified against political (country), exogenous (sector) and specific (stock) risks. Global investment can involve currency risks but these can be (and in the case of our Fund, they are) hedged in the forward currency markets.

### Advantages and Disadvantages of Listed Infrastructure

A fund invested in listed infrastructure assets will obviously appear more equity-like in its characteristics, but a large portion of the portfolio diversification benefit will remain. In addition, any equity market volatility will not, of course, change the underlying investment characteristics of the assets. Thus any observed volatility will be largely equity market noise and generally short-term in nature only. If there were any re-appraisal of the fundamental value of infrastructure assets – due to, say, a change in the long-term expected real cost of money – then this would, of course, be reflected in the pricing of both direct and listed assets.

Regardless of the short-term volatility of listed infrastructure investments around the world, distributions from these assets exhibit low volatility, high predictability, and real growth (CPI+), thereby matching the long-term liability profile of the pension fund.

Listed infrastructure also has the same benefit of easy access, versus direct, as any “listed” asset has over its unlisted or direct comparative.

The divisibility that comes with listed assets provides the critical advantage of allowing investors to diversify their holdings. Rather than being committed for many years to individual infrastructure projects, investors can diversify their holdings by physical asset class, regulatory regime, currency exposure, and political risk.

Finally, for all but the largest of pension funds, direct investment has highly prohibitive costs. Direct investors must maintain a dedicated team of investment professionals, which must be further complemented with due diligence and investment banking fees at times of asset acquisitions. Via the listed market, investors are subject to the usual impacts of specialist fund managers’ fees which, although currently higher than many other asset classes, are significantly lower than those of the direct route for all but the very largest institutional investors.

### Infrastructure vs. Real Estate

Infrastructure is often compared with real estate. Although there are some similarities (large upfront investment; low operating cost; low beta; interest-rate sensitivity), the differences are significant:

- Infrastructure has monopoly-like characteristics, giving it considerable pricing power (hence the need for regulation).
- Infrastructure has more predictable cashflows and lower risk.
- Some infrastructure assets, such as tollroads, provide real returns – more akin to inflation-indexed bonds.
- Infrastructure is less mature, not as well understood and, consequently, more likely to be inefficiently priced.

## How to use Global Listed Infrastructure in your Portfolio

In our experience, investors have tended to use the strategy of investing in Global Listed Infrastructure:

- As a higher yielding substitute for index linked bonds to immunize long-term real liabilities
- To diversify their unlisted infrastructure portfolio
- To get set in the infrastructure market quickly, with diversification and/or less ongoing internal due diligence and lower headline risk.
- As an “alternative” investment at the lower end of the risk spectrum.

## Conclusion

Investors, both institutions and individuals, have long sought diversification in their investment portfolios. The traditional asset classes of equities, bonds, cash, and property that have been used to achieve such diversification have now been joined by infrastructure, an asset class that was familiar to investors in earlier historical periods.

Some leading international pension funds now allocate up to 10% of their portfolio to infrastructure. Early adopters of this strategy are likely to get returns that are well above what will be available when the asset class becomes better understood and moves to

pricing equilibrium, but care has to be taken to identify “Preferred” infrastructure assets, rather than focusing on only the physical characteristics of the assets.

The listed “Preferred” infrastructure sector available globally is similar in size to the Australian equity market and is growing rapidly. This greatly simplifies access to this asset class with lower costs, greater liquidity and better diversification.

Investing in the Lazard Global Listed Infrastructure Strategy provides investors both small and large with access to the global infrastructure market via “Preferred Infrastructure” assets. This may suit investors looking for professionally managed exposure to this sector.

The Lazard Global Listed Infrastructure Fund provides investors with access to the global infrastructure market. The Fund invests in 25 – 50 stocks, primarily in OECD countries and is hedged back into the Australian dollar. The Fund targets a return on CPI +5%p.a. over rolling 5 year periods.

The Lazard Global Listed Infrastructure Fund is available on :

- BT Wrap
- Questor

<sup>1</sup> For more information, please refer to Lazard’s paper titled “Lazard Global Listed Infrastructure; Returns, Volatilities and Correlations”

<sup>1</sup> Horizon Energy Ltd Information Memorandum (1996) and various annual reports

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