SUPPLEMENT TO NOVEMBER 2017 i3 PUBLICATION

The value of listed infrastructure

From diversification to liquidity to cash flows

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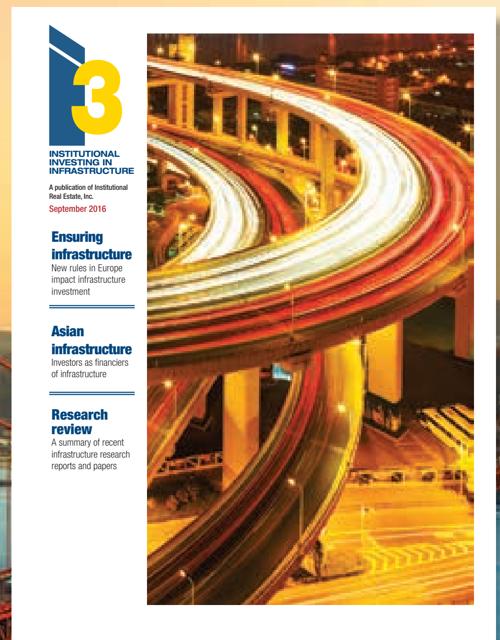

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Listed infrastructure has come a long way

The strategy that has led the infrastructure asset class for decades

by Drew Campbell

Investing in infrastructure is a trend that has only recently hit a critical mass among institutional investors globally, and the popular choice for allocating capital to the asset class has been closed-end, unlisted commingled funds. But many investors might be surprised to learn of the defining role listed infrastructure has played in the development of infrastructure investing. In fact, most investors have been investing in infrastructure and capturing the benefits associated with the asset class — predictable, inflation-hedged cash flows — for much longer than they might realize. For example, utilities that provide water and power — essential services that are largely immune from economic downturns — have been a staple of general equities allocations for decades.

During the early 1990s in Australia, meanwhile, listed infrastructure funds were some of the first vehicles in the country that offered private capital a means to invest in infrastructure, and in Spain in the 1960s the government turned to listed infrastructure to build toll roads.

In today's market, many investors have gravitated to unlisted infrastructure before allocating to the listed market. This is driven

in large part by a key component of the investment thesis for infrastructure investment — an alternative to traditional equities.

In other words, within portfolios that are largely comprised of general equities positions, investing in unlisted infrastructure, similar to investments in many classes of alternative investments, can blend a set of assets that are uncorrelated — or perform unlike one another — and this can help the overall portfolio's performance.

Many listed infrastructure managers, however, sense a change of late among investors, as the competition for unlisted infrastructure investments — and their prices — grows and investors question the value of buying in now. Listed infrastructure valuations have also grown, but the time it takes to get invested and exit is a fraction of that of unlisted and there is no competition to "win" these investments as there often is in the unlisted market.

"The distinct qualities of listed infrastructure as an asset class are increasingly gaining attention among investors," says Jeremy Anagnos, CIO – infrastructure, with CBRE Clarion Securities. "However, we are still at an early stage for the asset class and there is much education required. While many investors have accepted private infrastructure as a distinct asset class, the acceptance of listed infrastructure as a proxy for the same is less prevalent. This need for education is a key priority for the Global Listed Infrastructure Organization over the coming years."

Listed and unlisted infrastructure managers invest in the same types of infrastructure assets and companies, but the key difference between the two approaches is in how those investments are structured — unlisted investments are made directly with private companies whereas listed investments are made by buying the shares of companies on publicly traded exchanges. The distinction is an important one, especially for investors such as pension plans and insurance companies that invest in infrastructure as a means to diversify their portfolios from large equities allocations that are priced daily at the close of each trading session.

Unlisted infrastructure, on the other hand, is marked to market — or priced — annually or semi-annually, and this creates an investment that is uncorrelated with equities, which is something investors strive to achieve in their

Infrastructure investment trusts — an idea whose time has come

A common objection to private involvement in infrastructure investment is a political concern that "Wall Street" and large private equity firms would unfairly benefit from owning assets that we all need to use. But there is a way to both protect against this and broaden the opportunity for ownership of our nation's infrastructure. Access to infrastructure investments for every investor can be achieved by creating a vehicle that democratizes ownership via the equity market. This idea has already been tried and tested: The Real Estate Investment Trust model in the United States has allowed tens of millions of individual investors — either directly or through their retirement savings — to enjoy the benefit of investment in commercial real estate. Today, about 25 percent of all U.S. commercial real estate is in the hands of such investors through the REIT market. Another example is the Master Limited Partnership model, which has proven to be successful in stimulating broad ownership of energy pipeline infrastructure.

A listed structure able to effectively invest in infrastructure assets would maximize the available pool of capital for infrastructure investment and the price the public can achieve for the value of these assets. One available option to create a listed entry into the infrastructure investment opportunity would be to expand the scope of the existing REIT or MLP structures to efficiently allow investment in infrastructure assets. An alternative option is to create a purpose-built vehicle — an Infrastructure Investment Trust — building on successful aspects of the REIT and MLP models, but specifically focused on infrastructure investment.

Creating an appropriate listed structure to allow infrastructure investment could open the floodgates of private capital into our underinvested roads, rails, airports, power grids and energy infrastructure, and also democratize infrastructure ownership. The steady cash flow characteristics of infrastructure projects would also mean that such a vehicle could be used as part of a stable, lower volatility, yield-oriented investment allocation, which should be in increasingly high demand by investors in an ageing population. ❖

overall portfolios. The benefits of having uncorrelated investments in a multi-asset portfolio is that the performance of any one investment class cannot have an outsized impact on the overall value of the portfolio because capital is spread across a range of investment types.

"The reality is when you have daily pricing in investments such as listed infrastructure, you are going to have more volatility," says Manoj Patel, managing director and co-head of global infrastructure securities with RREEF Management/Deutsche Asset Management. "But this should not be an apples to apples comparison. Direct infrastructure portfolios are valued once or twice a year, and so there is going to be a lag in valuations from listed infrastructure. If you applied the same concept to listed — priced the investments once or twice a year — you would probably find the gap in the volatility or the risk-adjusted return between listed and unlisted would narrow significantly."

The point being, the underlying assets and cashflows targeted by unlisted and listed infrastructure vehicles are the same; it is the structure of the investment that is different, but over the long term, the performance of the two types of investments will behave in a very similar way.

"If you don't have a need to access for liquidity, then you should allocate more to direct infrastructure," Patel continues, "and that is what the majority of our infrastructure clients do. On average 20 percent to 40 percent of their long-term infrastructure allocations are to listed."

But if an investor values liquidity and certain assets that are not available in the unlisted market — the ability to enter and exit investments on their schedule — and diversification and the ability to invest across geographies and sectors as well as in infrastructure companies big and small, listed infrastructure has that advantage over unlisted.

"I can count the number of institutions globally on one hand that have truly diversified unlisted infrastructure allocations," says Patel, "and that is mainly because they started 15 or 20 years ago and built that portfolio over time. In addition, to achieve a truly global diversification in the unlisted market requires a huge amount of capital."

Investors that have come to infrastructure investing more recently have found the market is more challenging as the competition for quality investments has increased tremendously. To

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achieve a diversified infrastructure portfolio using unlisted investments takes time under any circumstances, but in today's market, it is particularly difficult because the amount of interest from institutional investors — and therefore investors competing for investments — has grown considerably.

"What has changed of late is we are starting to see a lot more interest in infrastructure, in particular from U.S. institutions of all types," says Ben Morton, senior vice president and portfolio manager, infrastructure, with Cohen & Steers. "We are also seeing greater acceptance of listed infrastructure as a distinct asset class."

Part of what is driving the increase in interest is investors who want listed equity-like exposure but with stronger downside protection and who perceive listed infrastructure can provide this. Recent focus on infrastructure investing, in particular with the presidency of Donald Trump in the United States, also has helped turn the attention of investors — especially those who have been targeting alternative investments — to the infrastructure asset class.

"Investors that allocated to private infrastructure, to some degree, are getting invested, but at a slower pace than they probably hoped," says Morton. "Many of these investors are layering in listed infrastructure as either a complement to their overall private allocation or as a way to get invested in their infrastructure allocation."

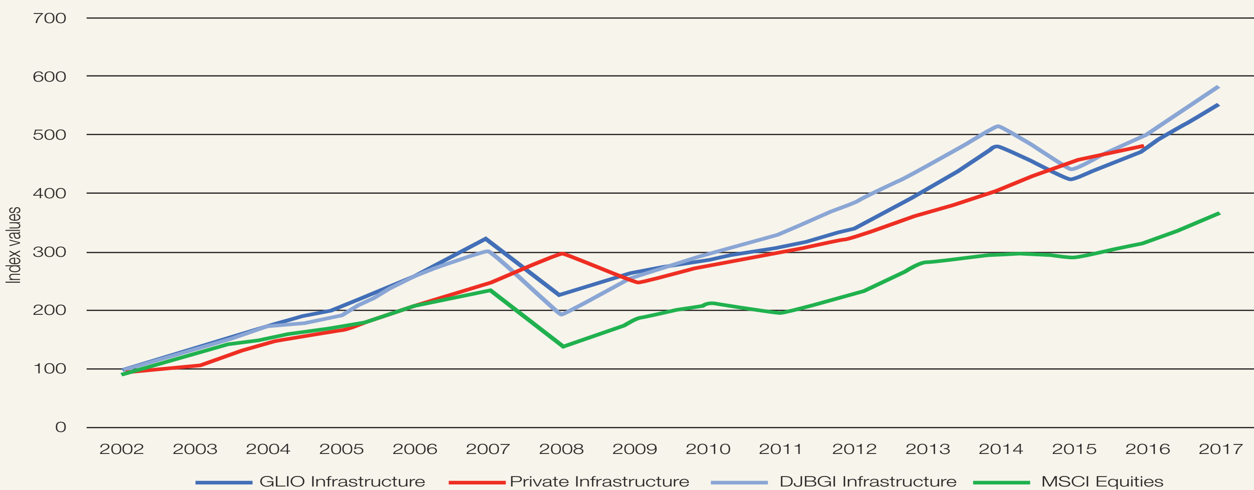
Investors have several options to invest in listed infrastructure. In the time between the first forays into infrastructure investing in Spain and Australia, and the more recent interest in the asset class, the types and number of offerings investors can use to invest in infrastructure has grown. For example, the

Listed and private infrastructure — mission critical and complementary

As the demand for infrastructure continues to increase, the question of how listed and private infrastructure complement each other comes to the fore. In fact, the listed real estate sector went through a similar debate in the 1990s. Following years of research and work by the real estate industry and their representative bodies, institutional investors and consultants generally agree that listed and private real estate can, in fact, complement each other. The large Dutch pension funds are a great practical example of this. The same is true of infrastructure, and many industry participants envisage similar developments to the real estate experience in the coming years.

The definition of infrastructure is a key first step. Looking at the core infrastructure indices, the FTSE Core, Dow Jones Brookfield and GPR Pure

Comparison of infrastructure vehicles versus equities



Sources: GLIO, Imperial College, Thomson Reuters

GLIO coverage for infrastructure is more than $2 trillion of market capitalization.

"Investors can access listed infrastructure through a variety of vehicles," says Anagnos. "One of the advantages of listed infrastructure is the flexibility that can be offered in terms of ways to invest from separate accounts to open-end mutual funds, closed-end mutual funds, to off-shore commingled funds and other customized vehicles."

The most common avenue for institutional investors to invest in listed infrastructure is separate accounts, and for smaller institutions, commingled mutual funds. Unlike the pioneering infrastructure vehicles in Spain and Australia, which were typically focused on specific sectors and assets such as toll roads, today's offerings are a diversified portfolio of infrastructure companies and assets across many sectors and geographies.

"The benefit of each option is dependent upon the nature of the investor's needs and their own specific requirements," says Anagnos.

And within this infrastructure universe are several different views about exactly what should and what should not be considered infrastructure. For many investors, companies in the business of supplying the raw materials for infrastructure construction — cement and steel, for example — are taken out of mix.

"When you carve out listed infrastructure companies from a general equities allocation, you find they have a unique set of characteristics that appeals to investors," says Patel. "There is a lot of value to be captured when specialist managers analyze these companies and decide which offer the best risk-adjusted returns."

Typically, investors can ask managers for a portfolio that is customized within certain parameters to meet their objectives, whether that is

Infrastructure series all capture the core, or traditional, infrastructure. Along with the GLIO Coverage of 140 global infrastructure stocks, these indices focus on core regulated utilities, transportation and communications infrastructure in developed and emerging markets. The chart, on page 4, plots core listed infrastructure (blue), with private infrastructure (red), versus world equities (green) over 15 years. The long-term path of the listed infrastructure follows that of private infrastructure. Investors may intuitively expect this outcome, considering the underlying assets and cashflows are derived from the same industries.

The well-publicized amount of $150 billion "dry powder" looking to invest in infrastructure would be well advised to take a close look at the listed market as a liquid avenue to achieve exposure to these attractive underlying assets and cashflows. Looking through the short-term differences (apples versus oranges) in the valuation metrics of the private (valuation based) and listed (marked-to-market) infrastructure, the asset class can provide investors with attractive long-term total returns, directly linked to the professional management of those assets. It is worth not forgetting that the underlying infrastructure assets are subject to the same economic conditions and regulations, irrespective of whether they are held privately, or by a listed company.

In a recent GLIO article by Simon Wilde, Imperial College, he produced a simple mean-variance model using both unlisted and listed infrastructure to build an exposure to the infrastructure asset class. The results show that by using both types of infrastructure vehicles — private and listed — the risk/return profile of the portfolio is optimal when utilizing both infrastructure vehicles. It is clear both listed and private vehicles can offer attractive features and benefits, and provide investors access to long-lived assets in what are often monopolistic industries. These assets have historically generated relatively predictable and stable cash flows, which are often linked to inflation.

Global listed infrastructure has performed extremely well over the short, medium and long term. The asset class comes into its own when looking at the longer-term, achieving average annual total returns, as measured by the GLIO Coverage (US$2 trillion), of 12.6 percent over a holding period of 15 years. Relative to MSCI World Equities, this shows a 3 percent per annum excess return, coupled with 3 percent less volatility (11.5 percent). This is reflected in a Sharpe ratio of 1.06 for the GLIO Coverage versus 0.65 for global equities. Global bonds record a Sharpe ratio of 0.68. The Cambridge Associates Private Infrastructure Index recorded net IRR's of 8.6 percent to LPs over a similar period 2002–2016. Volatility stood at 10.8 percent and the Sharpe ratio was 0.65.

Finally, and most importantly, it is essential to not lose sight of the much larger picture. The need to fund and maintain mission-critical infrastructure, which forms the backbone to the global economy, will require both listed and unlisted or private vehicles to work together efficiently. Working hand-in-hand will be vital in driving new capital and presenting stable investment opportunities suitable for a wide range of investors over the next 15 years. ❖

certain sectors and geographies, as well as expectations for growth and income. Several benchmarks have been developed to achieve this.

What many listed infrastructure managers are aiming for, when they decide which companies are in and which are out, are the long-lived infrastructure assets that these companies own and operate — the physical pipelines, roads, ports, airports and electricity transmission lines — rather than the companies that drill for oil and gas and use the pipelines, or the companies that generate the power that is carried via the transmission lines, or the airlines that use an airport's runways and gates. Those are separate businesses with different challenges and risk-return profiles.

"Indexes are an important tool for investors to measure performance of the asset class," Anagnos explains. "While there are multiple indices available to investors, the varied definitions and classifications of the securities have led to different profiles of the indices. GLIO has made a concerted effort over the last 12 months, supported by investment managers and consultants in the space, to create a coverage that represented a consensus of the market."

Today's listed infrastructure market has evolved from its beginnings more than 50 years ago, and investors can now benefit from the development of several types of vehicles and indices as well as the expertise of a growing number of investment managers focused on companies and management teams that operate infrastructure assets globally. It is this type of focus, expertise and tools that can help investors achieve their risk-adjusted return objectives. ❖

Drew Campbell is senior editor of *i3*.

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Infrastructure benchmarks

Creating a clear picture

by Fraser Hughes

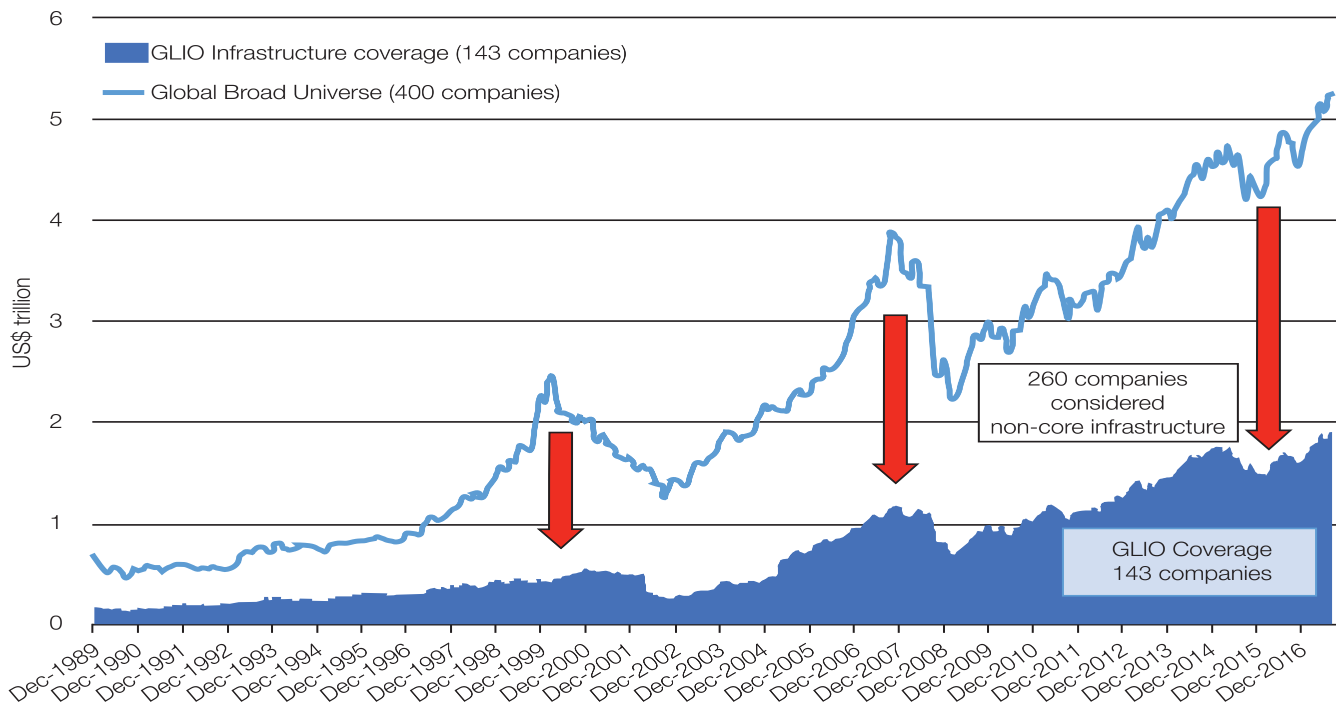
The infrastructure benchmark industry is in a development phase, much the same as the real estate benchmark industry was in the 1990s. Results can differ considerably, however, depending on the benchmarks used in research, so investors must become aware of the differences among infrastructure benchmarks in order to make informed decisions.

Listed infrastructure benchmarks

In listed infrastructure, a step in the right direction over the past 12 months is the GLIO Infrastructure Coverage Index, which finds commonality across the core global listed infrastructure index providers by only including companies covered by at least two or more index providers among Standard & Poor's, Dow Jones Brookfield, STOXX, FTSE and GPR. One of the challenges in discussing listed infrastructure is the wide variety in definitions of listed infrastructure. The broadest definition covered by the core and broad-based global listed infrastructure providers equates to approximately $5 trillion in market capitalization, as can be seen in the "GLIO Coverage and total infrastructure universe" chart below. This total broad-based universe is very misleading, however, and the GLIO Coverage methodology allows a much more tightly defined traditional or core infrastructure universe to evolve.

When controlling for companies included in two or more indexes, around 260 companies, representing more than $3 trillion in market capitalization, drop out of the selection. Examples of the companies excluded are Verizon, Vodafone, China Mobile, Telefonica, Deutsche Telekom, Royal Mail, Ferrovial and Digital Realty. This method offers a much clearer picture of global listed core infrastructure by cutting out large-cap outliers,

GLIO Coverage and total infrastructure universe



Sources: Thomson Reuters, GLIO, Imperial

particularly telecommunications, logistics, construction and service companies.

Of the index providers, the large majority of dedicated global listed infrastructure managers either use the FTSE Core Infrastructure series or Dow Jones Brookfield. GPR Pure Infrastructure is also a credible newcomer to the core/traditional infrastructure market. The broader indexes produced by STOXX, S&P and MSCI are viewed as too broad by the dedicated listed infrastructure manager community. They tend to be a product of broad-based industry classification systems such as GICS, which can produce unfocused results.

Private infrastructure benchmarks

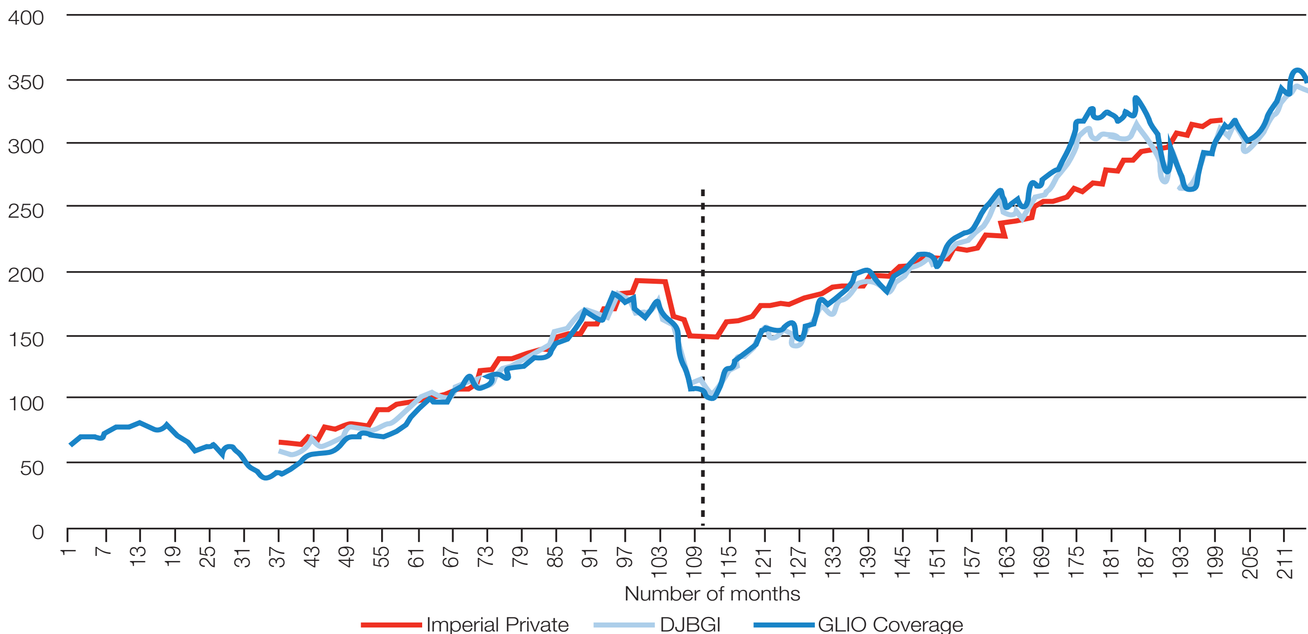
Valuation methodologies on the private side differ across providers. This results in differing returns across benchmark providers.

On the private infrastructure side, the Cambridge Associates Infrastructure Index uses a pooled horizon net internal rate of return and is compiled from data from 93 private funds across the risk spectrum. The investment strategies represented in the index include diversified infrastructure, utilities and power, public-private partnerships, renewable energy, telecommunications, and transportation. The index includes funds that invest all over the world, including funds that focus on the United States, Europe, Latin America and Africa. For the period ending Sept. 30, 2016, the index recorded annualized 10-year net IRRs of 7.1 percent. For the five-year period, annualized net IRRs were 8.9 percent.

MSCI/IPD Global Infrastructure Index tracks 123 assets, contributed by nine fund managers of unlisted funds, with an enterprise value of $61 billion as of Dec. 31, 2016. The quarterly index is valuation based (not transaction based). MSCI/IPD is heavily weighted toward continental Europe and the United Kingdom (41 percent) and Australia (47 percent). North America represents 9 percent of the index's assets. At a sector level, transport (excluding airports) accounts for 27 percent of the index, and airports represent 21 percent. Water is 19 percent, power transmission is 16 percent and renewable energy is 6 percent. Approximately 36 percent of the index is classified as regulated, 29 percent is partially regulated and 35 percent is unregulated. The average leverage is approximately 50 percent. Through December 2016, the 8.5-year U.S.-dollar total return was 15 percent for uncontracted infrastructure (including an approximately 4 percent income return) and 11 percent for contracted infrastructure (including an approximately 5 percent income return).

Building on this index, Simon Wilde at Imperial College calculates an adjusted index based on detailed quarterly cash flow and NAV data on approximately 80 funds, which are typically larger funds, equaling a sample size of $100 billion of capital. Wilde's index analyzes the spread of returns and the diversification effect of holding multiple funds, using what Wilde considers to be better metrics, such as modified IRR and public market equivalents derived from academic private equity research. The series begins in 2003, and it has an average annual total return of 8.9 percent for the 2003 to 2015 period.

Listed and private infrastructure performance lagged to the financial crisis, 2003–2017



Sources: Thomson Reuters, GLIO, Imperial

EDHECinfra All Infrastructure Private Equity Index covers 14 European countries covering 330 value-weighted "live exposures" representing approximately €295 billion ($350 billion). The coverage goes back to January 2000. The index is heavily skewed toward the United Kingdom at 66 percent, with Germany representing 10 percent and Italy accounting for 10 percent. The sector breakdown is transport (44 percent), environmental services (21 percent), energy (16 percent), and oil and gas (16 percent). Breaking the index down by business model, regulated businesses represent 59 percent, merchant businesses represent 24 percent and contracted businesses represent 17 percent. Heathrow Airport makes up 15 percent of the total index, with five ex-listed U.K. water utilities in the top 10 holdings.

Performance attribution is an estimate of the sensitivity of individual constituent excess returns to year-on-year changes in interest rate level, term structure slope and convexity, as well as cash flow volatility changes — for each reporting period. EDHEC reports historical total annual returns from 2000 of 11.2 percent. The measurement process is complex and, interestingly, the index did not experience a downturn during the global financial crisis.

Comparing benchmarks

Comparing listed infrastructure benchmarks with private infrastructure benchmarks is not a straightforward exercise because of the variety of valuation metrics involved across the various index providers. Listed infrastructure benchmarks are simpler because of their real-time pricing which, naturally, experiences the short-term movements consistent with a liquid market. Over the medium to longer term, this washes out and performance reverts to type, i.e., it is linked to the quality of assets and cash flows, plus the influence of the company's management teams.

On the private infrastructure benchmark side, a variety of pricing metrics are used, from NAVs, IRRs and transactions pricing to more complex academic methodologies. These pricing metrics bring to the table their own set of issues, such as dampening "real" volatility and possible autocorrelation of pricing.

It is key to acknowledge the fact listed index pricing is forward looking, i.e., current pricing is based on future expectations of company performance, while private metrics are inherently looking over their shoulder, or backward looking.

Subsequently, this introduces a lag effect when comparing listed and private. A good example of this is when comparing a combined Imperial/Preqin series (we use this because it is the largest sample size and more evenly spread geographically, not too dissimilar to the listed market) versus the GLIO Coverage and Dow Jones Brookfield in the chart on page 8, "Listed and private infrastructure performance lagged to the financial crisis, 2003–2017". The private data hits its global financial crisis nadir at the end of third quarter 2009, while the listed core infrastructure market hits a nadir in February 2009 — a full seven months difference.

Therefore, in the chart we lag the listed indexes by seven months to lock together at the low point of the financial crisis. From this simple comparison, it is reasonable to conclude the global core listed companies are linked to the (albeit far smaller sample size) private infrastructure market over the medium to long term. Note, this chart is not intended as a private versus listed arbitrage pricing comparison. (Another key issue to consider when comparing listed and private returns is the effect of leverage, but this is a topic for another article!)

While the infrastructure benchmarking world continues to develop, we will see plenty of comparative research over the coming years, as we have seen in the real estate industry during the past 20 years. Clearly, the relationship between listed and private infrastructure performance is hard to unravel if one looks solely at broad index comparisons. By creating a balanced library of research that shows how the private and listed infrastructure market can complement each other is essential so that long-term global investors can understand the opportunities of using both private and listed vehicles as integral parts of their global infrastructure strategy. ❖

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