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LISTED VS. UNLISTED INFRASTRUCTURE – WHERE DO YOU SIT IN THE DEBATE?

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Abstract

We are often asked the question, “why listed?” when believe the real question should be, “why infrastructure?”. Investors target infrastructure as an asset class for many reasons including its potential lower volatility, higher earnings stability through long-term steady cash flows and dividends, inflation protection and portfolio diversification characteristics relative to broader equities. Investors commonly access such assets in two ways; either by investing in securities listed on global exchanges, or by investing directly in the assets themselves and/or through pooled investment vehicles.

We believe infrastructure is a homogenous asset class, and as such, the optimal allocation between listed and unlisted infrastructure is driven by individual investor circumstances. The single asset class premise is based on a number of long-term observations, including the view that:

1. assets owned by listed and unlisted infrastructure are the same;
2. regulators of infrastructure businesses are the same; and
3. management expertise is comparable between listed and unlisted, but it is also asset specific.

This paper challenges the assumption that listed infrastructure and unlisted infrastructure are two separate asset classes by analysing examples of actual assets owned by these two distinct investor classes. To support this research, we consider the “volatility conundrum” often cited as a concern for listed, where a lack of long-term observable mark-to-market or transaction-based performance of unlisted infrastructure (as opposed to valuations that are “marked-to-model”) has made return and volatility data incomparable with other liquid asset classes. We also review number of unlisted infrastructure transactions to better understand the volatility of returns of these assets.

For a rational investor, we believe listed should be considered equally and alongside unlisted when considering an allocation to infrastructure. Inherent in this decision are a number of factors including fees, liquidity and portfolio rebalancing requirements, risk exposures, diversification, cash flows, opportunity sets and perhaps most importantly, risk-adjusted valuations, as opposed to splitting the asset class by method of accessing equity.



The outlook for infrastructure in a world of COVID-19

The coronavirus crisis of 2020 is not the first global pandemic and certainly will not be the last. However, the lockdowns experienced by most economies globally were unprecedented and highlight the fact that basic infrastructure is essential to our societies, including electricity and gas, running water and sewage, and even the almost total reliance on communications services. Since the start of the crisis, those infrastructure sectors that are traditionally seen as defensive have, by and large, lived up to their reputation, in particular regulated utilities. Within this sector, water companies generally have the least sensitivity to economic demand and have stood up well, although the regulatory construct is important when evaluating any impact on earnings.

Equally, COVID-19 highlights how transport infrastructure assets are reliant on one thing – their users, and it is no surprise that the effects of lockdowns are most acutely felt with airports, and to a lesser extent, toll roads. Toll roads have been more resilient given they are linked to domestic activity with lesser restrictions. Over time, as people are able and willing to travel within and beyond their own countries, road and air travel will certainly resume – although perhaps not without necessary safeguards in place. The Chinese experience showed the world that a “V-Shaped” recovery is possible with virus control. However, in the near term, we are not convinced that such a recovery will be seen globally, and the pandemic has also given rise to several potentially permanent behavioural changes.

Nevertheless, the current crisis certainly opens up enormous opportunity for investors, and we believe that infrastructure investment has an important role to play in global recovery. Part of this increased investment will be made by the existing asset owners; and so the listed infrastructure sector, where the majority of privately-owned assets reside today, will play an important role in providing this investment, and create strong opportunities for investors as markets recover. While COVID-19 is not a typical economic crisis, it has led to relatively significant deviations between price and value, with significant focus on short-term uncertainty. In times of crises, hindsight often shows how investors in the listed space can deploy capital quickly and buy stocks at attractive prices, and we believe this especially true today for a long-duration asset class such as infrastructure that is benefiting incrementally from the significant contraction in interest rates around the world.

Characteristics of listed versus unlisted infrastructure

We see two distinct avenues for investing in infrastructure – securities listed on global exchanges, or through unlisted investments in the assets themselves and/or via pooled vehicles. The table below highlights, in our view, the key characteristics of each avenue, where listed instruments offer daily liquidity, access to a larger and more diverse universe, lower leverage and greater transparency, while unlisted offer lower volatility and lower correlations relative to other markets, such as equities. Both have good cash flow characteristics in the form of dividends for listed and regular income payments from unlisted.

Comparison of key characteristics

	Listed	Unlisted
Investable universe/ asset type	Larger universe – access to more assets and greater diversity across sectors, geographies, currencies	Typically lower geographic and asset diversity in investor portfolios
Volatility	Perceived to be higher	Perceived by investors to be lower due to no mark-to-market
Valuation frequency	Daily mark-to-market valuations	Infrequent – typically quarterly or bi-annual
Transparency/disclosure	Typically greater due to exchange/regulatory requirements	High for the manager, but typically much lower for investors
Liquidity	Higher	Lower
Portfolio turnover	Higher	Lower
Asset prices ¹	Currently lower in most sectors	Currently higher in most
Cash flow	Historically predictable dividends	Regular cash payments
Control	Typically lower	Typically higher for the manager, but not necessarily so for investors
Leverage	Typically lower	Typically higher
Capital markets access	Quicker access to fresh equity when required	More reliant on appetite from existing investors
Investor access	No minimum investment size	Typically significant minimum investment required

Assets owned by listed and unlisted infrastructure are either very similar or the same

Despite the common assumption that listed and unlisted infrastructure are distinct asset classes, we see the physical characteristics of assets owned by listed and unlisted investors as similar, if not the same.

By comparing a handful of key global infrastructure assets (for example, airports, toll roads, water utilities) owned by investors, two observations can be made:

1. Similar assets can be accessed via listed or unlisted markets

For example, access to an airport asset owned in an infrastructure fund of unlisted assets can be very similar to, if not the same as, access to an airport asset owned in the listed market.

- **Airports:** Melbourne Airport is owned by unlisted investors, while Sydney Airport is owned by listed investors. Other key listed airports include Frankfurt Airport, Paris Airports and Tokyo Haneda Airport, while unlisted airports include Brussels Airport and Bristol Airport. On a passenger traffic basis, eight of the world's top 20 airports and 15 of the top 50 airports are owned, partly-owned, or operated by listed airport companies and groups.²
- **Toll roads:** Melbourne's CityLink is owned by listed investors, while the Indiana Toll Road is owned by unlisted investors. Other listed toll roads include the M1 Eastern Distributor and WestConnex Motorway in Sydney and unlisted toll roads include the M6 in the UK and roads owned by Itinere in Spain.
- **Water utilities:** Thames Water is owned by unlisted investors, while Severn Trent is owned by listed investors. Other key listed water utilities include United Utilities and American Water Works.

2. Some assets have equity stakes in both listed and unlisted markets

For example, investors can access Vienna Airport, Heathrow Airport, M1 Eastern Distributor, Ontario's 407 Express Toll Route, Queensland Motorways in Australia, APRR (France) and Aleatica (Mexico) through both listed and unlisted routes.

Given the inherent similarities in the types and physical characteristics of both listed and unlisted infrastructure assets, it is difficult to differentiate infrastructure on the basis of ownership. As such, the immaterial difference between the physical nature and characteristics of the assets owned by listed and unlisted investors suggests they are somewhat homogenous, as opposed to distinctly different by nature.

¹ As at 31 August 2020.

² Source: Airports Council International. "Policy Brief", 2017.

Regulators of infrastructure businesses are the same

The regulators of infrastructure businesses are the same, regardless of who owns them. As monopoly providers of essential services, infrastructure businesses are regulated to guarantee certain outcomes, such as the provision of fair and transparent pricing, and adherence to rules around service quality, capital expenditure, maintenance and upkeep. We find it hard to reconcile the argument made by some proponents of unlisted infrastructure that unlisted investors have better access to regulatory experts than their listed counterparts.

As regulated infrastructure businesses are subject to long-term rules governing their rate of return on equity (ROE), it is only prudent that a core component of a listed infrastructure investor's research involves analysing regulatory documents and speaking with regulators around the world. One common observation is that there is only one regulator for monopoly assets within a specific sector and jurisdiction, meaning that listed and unlisted investors do not have an advantage over one other from a regulatory perspective. Regulators rarely pay attention to the ownership of the asset, except for some focus on capital structures which have some bearing on returns.

A key takeaway from a number of meetings we have had over many years with senior executives and chairpersons of the UK Water Regulator, OFWAT, has been the standardised nature of regulation across UK water companies. OFWAT's approach to regulation does not consider the asset owners for the purpose of regulation, while the return mechanisms are set on a consistent basis given the assets are largely homogenous. This is similarly the case with the Australian Energy Regulator (AER), which regulates the wholesale electricity and gas markets in Australia. In North America, utilities are regulated on a state-by-state basis and/or by the US Federal Energy Regulatory Commission (FERC), which also regulates interstate natural gas, oil, and electricity transmission and pipelines. Again, in the vast majority of cases considered, there is little regard for the ownership structure of the end owner.

Management expertise is comparable between listed and unlisted infrastructure

Some argue that unlisted infrastructure investors have better control as they have direct ownership and management of assets, inferring it is akin to buying private equity. However, it must be highlighted that it is difficult for unlisted infrastructure to outperform on purchase price or general market moves alone. Unlisted valuations generally trade at substantial premiums to the listed market and unlisted buyers must assume this premium when they compete for new assets.

A McKinsey & Co paper, "What public companies can learn from private equity", suggests that in the absence of any "valuation arbitrage", the only way for private equity to generate additional value for investors is through "governance arbitrage".³ It is certainly true that private equity has greater active ownership of assets compared to public equity investing, for example, by exerting greater influence through board seats, incentives, alignment of management, and control over costs and of cash flow. A number of other common arguments in favour of unlisted investments include less focus on short-term earnings, less time spent by management on investor relations and roadshows, and quicker decisions by a smaller number of owners. However, the impact of private equity on returns has proven less prominent – in fact, over the past decade, at least in the US, the return gap between private and public equities has diminished.⁴ In addition, the historical returns need to be seen in the context of higher fees and greater risk due to typically higher debt levels.

A lack of comparable data across listed and unlisted infrastructure investments makes it difficult to reach any decisive conclusions; but based on the McKinsey & Co report, our experience and our analysis (as detailed below), we strongly reject the argument that unlisted infrastructure always has the management "upper hand". In the listed infrastructure market, like many listed public equities, we agree there will always be examples of inferior governance structures leading to poor management. Nevertheless, as highlighted by McKinsey, there are numerous examples of listed companies fully aligned with shareholders through active ownership, strong management and robust governance. This is certainly the case with listed infrastructure, most notably where companies have a long history of being listed and are without government interference or material government ownership. Indeed, compared with the private sector, listed infrastructure companies are arguably more aligned to investors as management remuneration is typically tied not only to financial and operational performance indicators, but also total return measures such as share price performance and dividends per share.

Moreover, we have also found material divergences across the sub-sectors of the infrastructure universe. In the US, while the pipeline market is under-penetrated by unlisted, private-equity style investors, the management alignment and value creation for public shareholders has been remarkable. Examples include the Kinder Morgan, founded by Rich Kinder, and Enterprise Products, founded by Dan Duncan. In most cases, developed market regulated utilities (particularly distribution and transmission) would arguably be no better off under private control. In our experience, we have found that the management, alignment and shareholder return policies of many listed airports and toll road companies globally would not improve under private equity-style engagement. While we acknowledge this is not the case for all listed infrastructure companies, we believe this is an important observation and consideration when assessing the future return potential of any investment.

We have looked at a few sectoral examples where publicly available information on financial performance and margins makes it possible to compare infrastructure assets owned by listed and unlisted investors.

³ Source: McKinsey & Co. "What public companies can learn from private equity", Beroutsos, A. et al, January 2007

⁴ Source: Bain & Company. "Public vs. Private Equity Returns: Is PE Losing Its Advantage?", MacArthur, H. et al, February 2020

Case Study 1: Global airports

We have compared the EBITDA margins of similar airports to determine whether or not the ownership structure really has a bearing on operational efficiencies, as proponents of unlisted infrastructure often claim. Interestingly, due to the existence of independent regulators – in this case, the UK’s Civil Aviation Authority (UK CAA) and the Australian Competition and Consumer Commission (ACCC) – there is no information asymmetry between listed and unlisted investors.

In the top graph, we compare Manchester Airport (unlisted) to Heathrow Airport (once listed via BAA until 2006, today the largest shareholder is listed company Ferrovial) in the UK, and in the bottom graph we compare Melbourne Airport (unlisted) and Sydney Airport (listed) in Australia. These airports operate under the same regulator within their respective countries. As the charts illustrate, since the privatisation of these assets⁵, the improvements in margin by management have been comparable, if not more impressive for Sydney Airport considering its higher starting base. In the case of the UK, we note that Heathrow Airport has substantially improved its margins since the opening of its fifth terminal in 2008. In these examples, the listed-owned assets have shown to be at least as well if not better managed as similarly situated wholly unlisted assets.



Figure 1: EBITDA margins for comparable airport assets: Manchester Airport vs Heathrow Airport (top) and Melbourne Airport vs Sydney Airport (bottom)

Single Till – EBITDA Margin



Dual Till – EBITDA Margin



Source: UK CAA; Manchester Airports Group Plc; Heathrow Airport Holdings Limited; Sydney Airport Holdings Limited; Australia Pacific Airports Corporation Limited; Bloomberg; MBA GLI internal research. **Notes:** “Single Till” airports are those where the regulator takes into account the total returns of the airport as a whole, whereas “Dual Till” airports are typically those where the regulator splits the airport assets into two segments, being aeronautical assets e.g. tarmac, runway, terminal infrastructure, and non-aeronautical assets e.g. retail shops, car parking, property developments. For the purposes of determining returns and regulating “Dual Till” airports, the regulator will typically only consider the aeronautical assets. Past performance is not a reliable indicator of future performance.

⁵ Manchester Airport was privatised in 2013; Heathrow Airport in 1987; Melbourne Airport in 1997; Sydney Airport in 2002.

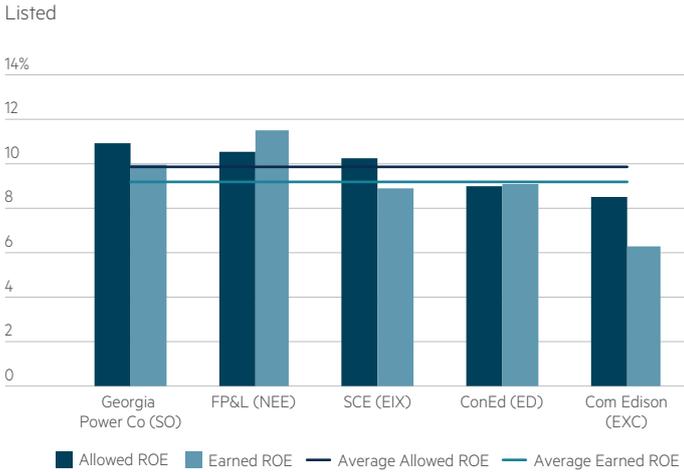
Case Study 2: US electric utilities

Within the global listed infrastructure opportunity set, the largest geographic concentration of regulated assets and assets in general can be found in the US. With the exception of some electricity generation and retail markets, the US utilities have mainly been privatised and regulated. Further, as the majority of these businesses are listed on public markets, they typically do not feature as a material allocation in most unlisted infrastructure fund holdings.

In the US, both listed and unlisted utilities are regulated on a state-by-state basis and/or by the US FERC. Here, the norm is a case-by-case method of setting an allowed rate of return on equity (ROE), which is the amount of profit authorised to return to shareholders as a percentage of the company’s common equity, as well as an allowed equity ratio, which is the equity component of a company’s capital structure. One of the more popular methods amongst state regulatory commissions is to determine what future dividends investors expect on a case-by-case basis, using discounted cash flow (DCF) analysis, to calculate a cost of equity. This is derived by the sum of two key sources of investor returns – (1) the dividend or “yield” portion of returns, and (2) the expected capital gain or “growth” portion. The simplicity of the “yield plus growth” method by state regulators is appealing, and makes cross-utility comparison extremely easy. The charts below compare the financial performance of the major US electric companies between 2017-2019.

Figure 2: Financial Performance of US Electric Utilities from 2017-2019

Allowed and Earned ROE



Unlisted

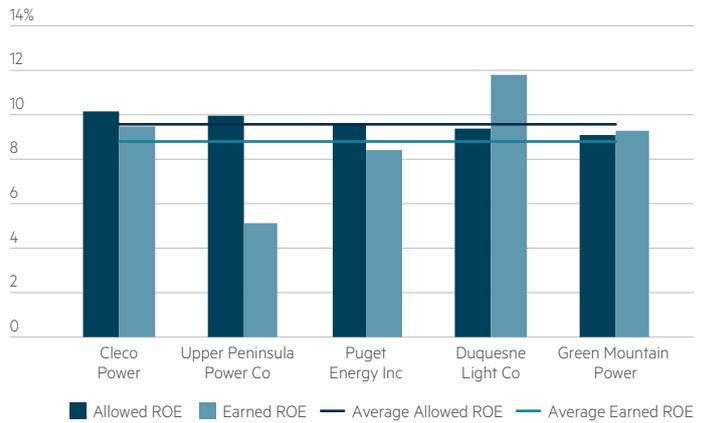
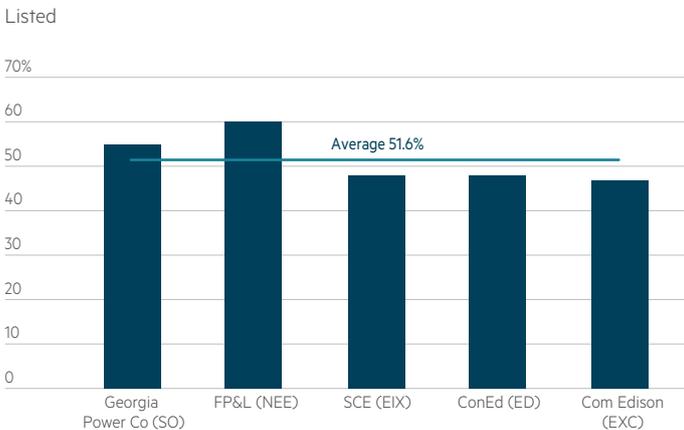
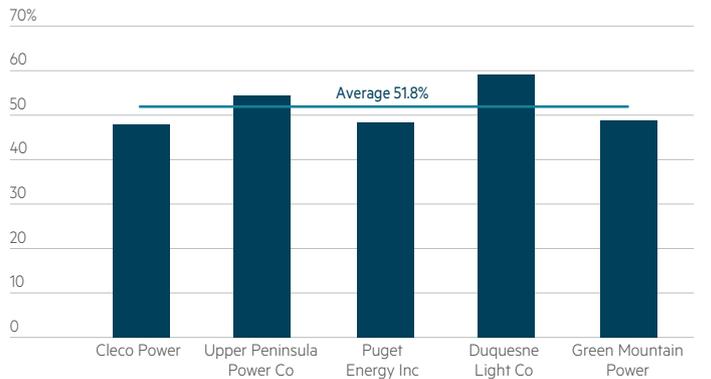


Figure 3: Financial Position of US Electric Utilities from 2017-2019

Allowed Equity Ratio



Unlisted



Source: Company reports/filings to the SEC, FERC or state-based regulators. Notes: Earned ROE is measured as net income for the year as a percentage of common equity. Allowed Equity Ratio represents the authorised common equity component as a percentage of the total capital structure. All values are 3-year averages from 2017-2019. Past performance is not a reliable indicator of future performance.

As can be seen in the charts, the average allowed ROE (the return granted by individual state regulators) as well as the actual earned ROE (the return achieved by the company, per their financial accounts), are both remarkably similar across regulated electric utility companies owned by listed and unlisted investors. Both the average earned and allowed ROEs for the publicly listed utilities are marginally higher, as is their lesser underearning their allowed ROEs (spread between earned and allowed). However, the lack of a big enough dataset of unlisted utilities makes it difficult to draw definitive conclusions.⁶

The allowed equity ratio – known in the US utility space as the “equity thickness” – is also similar across the two datasets, reflecting some consistency in regulators’ assessments of underlying asset risk and appropriate capital structures. While this does not provide any insights into whether there is additional holding company debt (which is particularly relevant for unlisted investments), it does suggest that debt is not a driver of the differentials or similarities between the achieved ROEs. This is distinct from the next example looking at regulated water utilities in the UK, where we have historically seen

the benefit of higher gearing flowing through to investors, particularly for unlisted-owned assets. In the case of the US regulated utilities, the gearing level has little influence on achieved returns.

Overall, in our view there is little to suggest that US electric utilities would be better off under either public or private control. To the extent that achieved returns over time are indicative of management quality, the distinction between listed and unlisted is simply absent in what is the largest sub-sector of the global infrastructure asset class.

Case Study 3: UK water utilities

The UK water and sewerage companies are all regulated by a single regulator, OFWAT. Each year OFWAT publishes the financial performance of all water companies in the UK, whether owned by listed or unlisted investors. Below we compare the financial performance of the major UK water utilities.

Figure 4: Financial Performance of UK Water Utilities from 2015-19

Return on Regulatory Equity

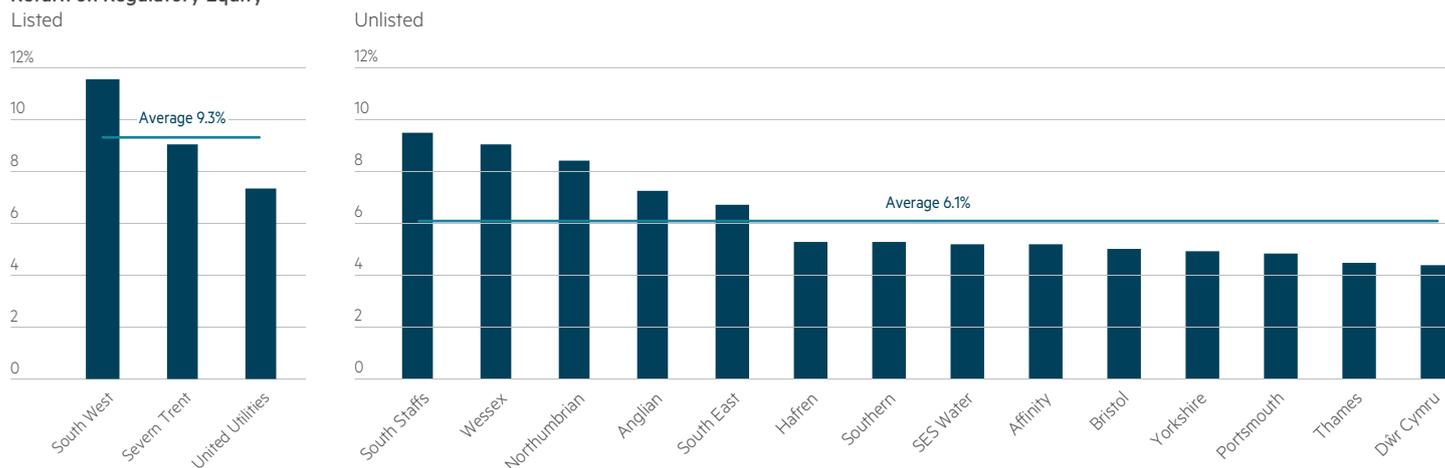
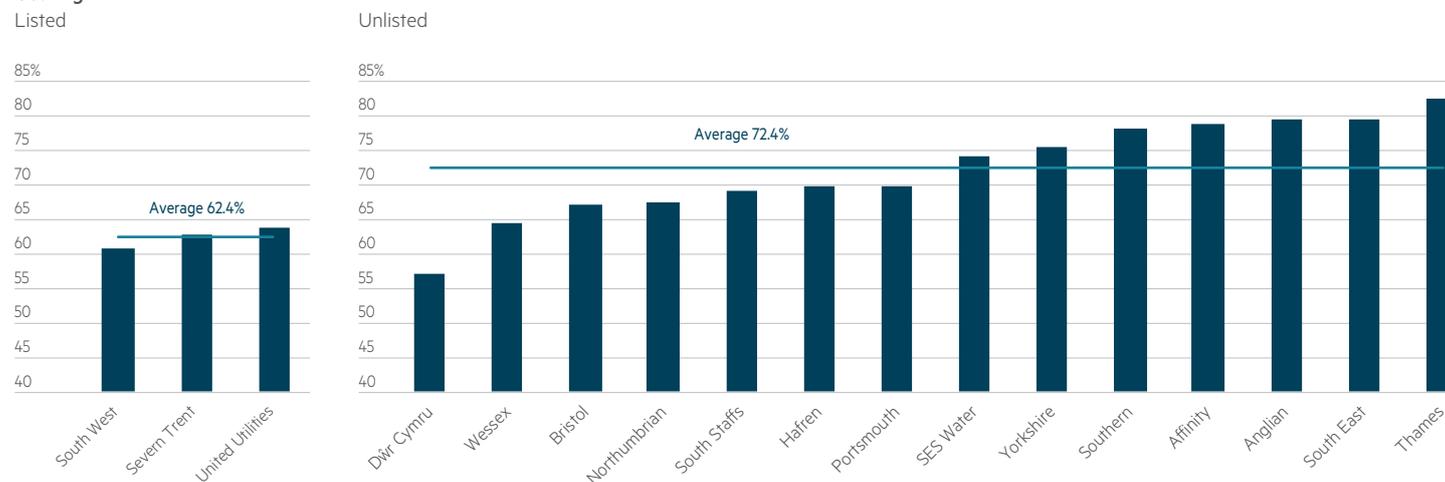


Figure 5: Financial Position of UK Water Utilities from 2015-19

Gearing



Source: OFWAT. **Notes:** Return on Regulatory Equity (RoRE) is the return to shareholders as a proportion of the equity component of Regulatory Capital Value (RCV). Gearing is measured as Net Debt to RCV. All values are 5-year averages from 2015-2019 (March year-end). Past performance is not a reliable indicator of future performance.

⁶ In doing the comparison, we only found five regulated electric utilities that are owned by unlisted investors (as well as some smaller gas utilities). The unlisted dataset is somewhat limited. Conversely, the majority of regulated electric utilities are in the listed market, or otherwise owned by municipalities or larger government authorities. We have compared these unlisted utilities to the five largest electric utility subsidiary companies by customer numbers (regulated entities, as opposed to the actual listed companies that own them).

Listed water utilities in the UK have demonstrated superior operational performance and returns to equity compared to their unlisted counterparts. For every pound (sterling) invested in water assets over the 2015-19 period, the three water companies owned in the listed market have generated an additional 3.2% return on their regulatory equity, despite lower levels of debt. The gearing levels in the chart only include the debt inside the regulatory ring-fence and excludes the additional holding company debt typical for many of the unlisted companies. The three listed water companies were also fast-tracked for a price review in 2019, which allowed the companies to receive their draft determinations earlier than their unlisted peers.

It is also worth noting that management of these listed companies operate and invest at lower risk to shareholders, with average gearing materially lower, at 62.4% and in line with OFWAT assumptions, compared with those water companies owned by unlisted infrastructure investors, at 72.4%. That is, despite using more debt, the average unlisted water utility has not been able to boost its returns to equity. This is interesting because regulated companies, especially the UK water companies, are somewhat protected from the impact of higher interest rates as their allowed cost of equity (and debt) moves between regulatory resets. For example, every five years, the regulator resets the cost of debt and equity components of the allowed return on regulatory capital value (RCV) to account for prevailing debt and equity conditions. Although unlisted investments with debt levels materially higher than the regulator's assumptions (62.5% gearing⁷) are currently benefiting from historically low rates, it must be highlighted that increased debt costs at the time of future refinancing creates a risk that it cannot be recovered. Further from a risk perspective, it is worth acknowledging that historically the unlisted water utilities have paid less tax due to higher gearing and offshore structuring. However, this approach has caused severe regulatory and political scrutiny. Subsequently there has been a response from the regulator to tighten the tax rules on such companies, which we have seen as a detrimental.

Some assets are only available to listed infrastructure investors

We find the types of infrastructure assets owned by listed and unlisted investors varies between sectors, with some either under-owned or not owned at all by unlisted investors. For example, many large regulated utilities, such as large city gas or electricity distribution networks, or large, long-distance pipeline infrastructure, are more difficult to access for an unlisted investor. This is not to say it is impossible, but both past and present evidence suggests that there is only a finite amount of capital that unlisted investors – whether individually or by consortium – can and will commit to single infrastructure investments, and so ownership of these larger assets becomes more difficult. In addition to this, we believe there is a quality bias in favour of the listed market as the largest assets, more often than not, need to be listed. Looking around the world, we find some of the largest airports, distribution and transmission networks, pipeline networks and water utilities are typically owned in listed markets.

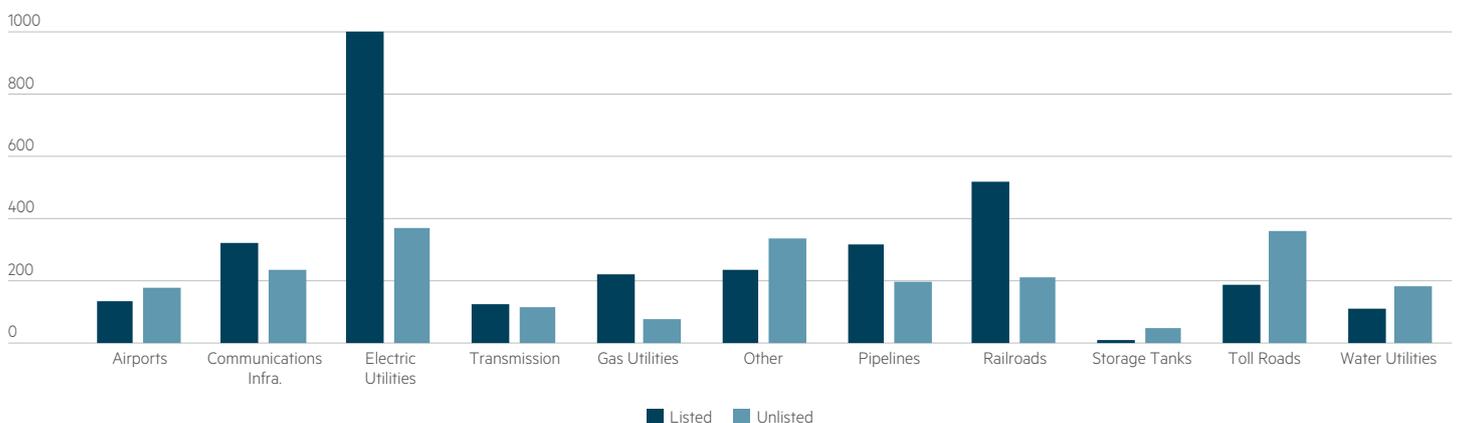
A large asset footprint is a competitive advantage of listed infrastructure in itself. For example, in greenfield investments this provides opportunities. Orsted and NextEra Energy have better wind data than the majority of their renewable peers. Transurban has better traffic data across many different geographies than competing private players, so they can make more informed bids when RFPs or tenders for new assets come out.

For brownfield and M&A, the large footprint of incumbents is also a source of value in the listed space. For example, listed pipeline owners who have large networks 'assets in the ground' can make brownfield investments much more easily than an owner of a single asset who is in the process of trying to build a completely new pipeline. The competitive advantages of being an incumbent, and a large player in the listed market, means that any new entrant will have to take on more risk or "pay up" to own assets.

The chart below illustrates the value of unlisted and listed infrastructure assets by sub-sector.

Figure 6: Comparison of listed and unlisted infrastructure investable universe, by sub-sector

Value of Global Infrastructure Assets (USD Bn)



Source: MBA GLI internal research, Inframation, Bloomberg as at 31 July 2020. **Notes:** Listed values are equal to the aggregate market capitalisation of infrastructure stocks in the FTSE Core Infrastructure, Dow Jones Brookfield, S&P Global Infrastructure and GLIO infrastructure indices and/or the MBA GLI Focus List at 31 July 2020. Unlisted infrastructure values are represented by the aggregate value of all known transactions since 2000.

⁷ OFWAT had set a notional capital structure with notional gearing of 62.5% Net Debt to RCV for AMP6 (2015-2020), being the period corresponding to the above charts.

Many industries offer similar-sized opportunities across either listed or unlisted investment routes, including airports and communications infrastructure assets. Notably, electric utilities, particularly in North America, offer significant opportunities for listed investors. For instance, of the 45 investor-owned regulated electric utility parent companies in the US, 40 are listed. These companies alone have a combined market capitalisation of US\$905bn, and the top 15 each have a market cap greater than US\$25bn.⁸ The sheer size of the equity value of these assets highlights why it is so difficult for unlisted infrastructure investors to penetrate the space. This is particularly important given North American regulated utilities represent approximately 38% of the FTSE Global Core Infrastructure 50/50 Index.⁹

Similarly, we see North American pipelines as an underpenetrated sector in unlisted investor portfolios. The large cross-country pipelines and networks in Canada and the United States are predominantly found in listed markets, whether owned and operated by Enbridge group of companies, TransCanada, Kinder Morgan, Enterprise or Magellan, to name a few. As an example, the Alerian MLP Index, a composite of the 29 most prominent MLPs¹⁰ (mostly pipeline infrastructure assets), has a total market capitalisation of more than US\$150bn. The average market cap is US\$5.3bn, further demonstrating the greater opportunity for listed infrastructure investors.

We also recognise that the vast majority, if not all, of infrastructure owned in the unlisted space is owned by infrastructure investors. This compares to the listed space where there is approximately US\$108bn under management by dedicated listed infrastructure managers, representing around 3% of listed infrastructure assets, while the remainder is largely owned by generalist investors across global equity portfolios.¹¹ Perhaps this in itself highlights the underpenetrated nature of the listed infrastructure universe for existing unlisted infrastructure investors.

The importance of ESG

It would be remiss to not explore the environmental, social and governance (ESG) angle in this paper. As long-dated assets, many of which being essential services, we see a true alignment between infrastructure investing and companies' ESG credentials. A broad spectrum of material ESG factors are intrinsically linked to the long-term financial performance of companies; whether that's climate-related transition risks associated with stranded assets, the opportunities of low carbon technology, community and regulatory consultation for projects, or the diversity and skillset needed to successfully navigate through a pandemic. As McKinsey & Co rightly points out, there is considerable evidence to suggest that ESG is positively related to investment performance.¹²

While ESG factors are increasingly at the forefront of infrastructure investors' minds, we are seeing two different stories play out between listed and unlisted investing. McKinsey & Co highlights that private market investors lag behind their listed peers in factoring ESG considerations into investment processes, while unlisted companies themselves typically demonstrate lacklustre progress on factors such as diversity and inclusion.¹³ It is, however, worth noting there is a subtle divergence in the investment approaches being taken by unlisted and listed investors; with the former opting for more impact-focused investing, and the latter integrating ESG factors into end-to-end investment processes. Nevertheless, as investors increasingly embrace ESG factors as being material to investment performance, it is likely these paths will merge as more ESG products are developed for changing client needs.

Importantly, listed infrastructure companies are typically more incentivised to produce comprehensive and decision-ready ESG reporting due having a broader and more liquid investor base coupled with higher levels of public scrutiny. Interestingly, we are increasingly seeing market exchanges themselves, such as the London Stock Exchange Group (LSEG), ASX, Euronext and SGX, issue ESG guidance to listed companies while recommending the Task Force on Climate-Related Financial Disclosures (TCFDs) for reporting on climate-related physical and transition risks.¹⁴ This is not to suggest that unlisted infrastructure companies are not incentivised – far from it – but the demands and requirements being placed on them by stakeholders are different to their listed counterparts. As such, we are seeing different responses from companies across the infrastructure spectrum on ESG factors.

We see a true alignment between infrastructure investing and companies' environmental, social and governance (ESG) credentials. We believe that it is beneficial to actively integrate ESG factors into the investment process, engage with companies on ESG issues and align proxy voting decisions with shareholders' interests.

⁸ Source: Edison Electric Institute (EEI) Index. Figures at 31 Dec 2019.

⁹ As at 30 June 2020.

¹⁰ Master Limited Partnerships (MLPs) are US limited partnerships that are publicly traded on an exchange. MLPs combine the tax benefits of a limited partnership with the liquidity of listed equities. The vast majority of MLPs are pipelines, which typically earn income from the transport of oil or natural gas. Figures at 30 June 2020.

¹¹ Calculated as Assets Under Management (AUM) by GLI managers combined at 31 Dec 2019, estimated by the GLIO "Journal 6", divided by total market capitalization of listed infrastructure stocks.

¹² Source: Bassen, A., Busch, T., & Friede, G., 'ESG and financial performance: Aggregated evidence from more than 2,000 empirical studies', Journal of Sustainable Finance & Investment, Vol.5(4), December 2015, ssrn.com.

¹³ Source: McKinsey & Co. "McKinsey Global Private Markets Review 2020: A new decade for private markets". February 2020, p. 30-31.

¹⁴ For example, the LSEG has ESG guidance for issuers and investors; the ASX Corporate Governance Principles recommend companies adopt the Task Force on Climate-Related Financial Disclosures (TCFD) along with other environmental and social risks; the Euronext has issued ESG Guidelines for companies and endorsed the TCFD recommendations; and the Singapore Exchange has introduced mandatory ESG for Singapore-listed companies.

Long run returns for listed and unlisted infrastructure are comparable

It is sometimes argued that unlisted infrastructure has outperformed listed infrastructure and is less volatile. However, there are several information and valuation asymmetries that make comparing the returns and volatility of listed and unlisted infrastructure problematic. Listed infrastructure is priced and valued daily, and is therefore influenced by market sentiment. Unlisted infrastructure values meanwhile are based on periodic valuations of underlying assets, which typically occur on a quarterly, semi-annual or annual basis. Unlisted infrastructure volatility calculations are based on valuation movements, which are typically a manager's or independent third-party auditor's best estimate of the expected future cash flows to investors of an infrastructure asset discounted to their present value.

To put this into the listed perspective, this is analogous to an investment manager taking their valuation model for a listed company and calculating the volatility from quarterly or annual movements in their internal valuations, irrespective of share price performance. Accordingly, these valuations are not equivalent to a market price, even on a quarterly basis, as they lag the market and are inherently smoothed. For example, a comparative analysis by Lambrev showed that the EDHEC Global Unlisted Infrastructure Equity Index consistently delivered superior returns with lower volatility compared to eight listed infrastructure indices over 2001-2018.¹⁵ Here, the EDHEC index is not priced daily, but is instead based on quarterly valuations and gives the impression of lower volatility. This is not surprising to us. We understand there is a need to report performance of unlisted infrastructure, and do not dispute that in the absence of transacted prices, there is no better way of valuation than the use of models. We only find it flawed that proponents of unlisted infrastructure as a standalone asset class believe that relying on "smoothed" valuations demonstrate anything about volatility of the underlying assets or their cash flows.

Our research suggests these differences in performance do not persist over the medium to long run, and rather, the underlying performance of listed versus unlisted infrastructure is highly comparable. We have compared the performance of listed infrastructure, using the FTSE Global Core Infrastructure 50/50 Index (FTSE), to the most recently released EDHEC Global Unlisted Infrastructure Equity Infra300 Index (EDHECinfra). Over the 10 years to 30 June 2020, the volatility of the FTSE was actually lower than that of EDHECinfra. This is a surprising result to many, but highlights the impact of removing daily mark-to-market from one's perception of volatility.

Against this backdrop, we can see how listed and unlisted infrastructure are complementary. Over the past decade, unlisted infrastructure has outperformed listed infrastructure, but listed (when valued quarterly, like unlisted) has actually exhibited slightly lower volatility. Past performance is not an indicator of future performance, and so without a crystal ball there is a strong argument for blending allocations between listed and unlisted, given they indeed own the same types of assets.

There are diversification benefits in doing so too – partly due to the somewhat lagged valuations in the unlisted space, but also due to the different asset exposures that are available in listed. Due to this lag, there have been periods where returns for listed and unlisted have been diametrically opposed, for example, in the quarters ending September 2011, March 2012, September 2015, March 2017, March 2019, March 2020 and June 2020.

Figure 7: Return comparison between listed and unlisted infrastructure over the last decade (top); and risk/return analysis of blended allocations (bottom)

Historical Total Returns



Historical Risk/Return Trade-Off in Blending Listed and Unlisted Infrastructure

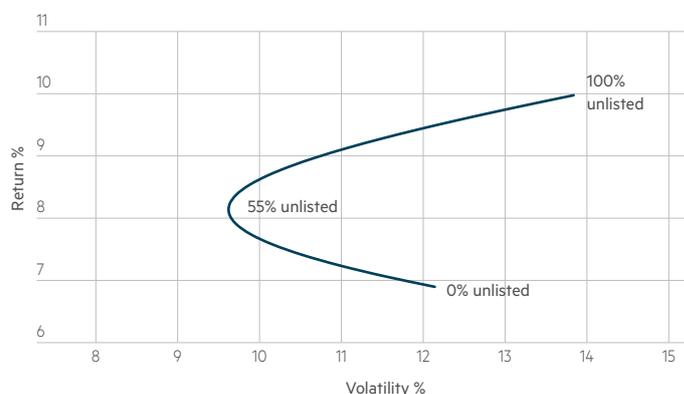


Figure 8: Risk and return analysis of unlisted and listed infrastructure over the last decade

USD Total Returns	Unlisted	Listed	Blended 50% GLI	Blended 25% GLI	Blended 15% GLI
Return	10.0%	6.9%	8.5%	9.3%	9.5%
Volatility	13.8%	12.1%	9.9%	11.5%	12.4%
Sharpe ratio*	0.72	0.57	0.86	0.81	0.77

Source: MBA GLI internal research; Bloomberg, EDHECinfra. Notes: Listed benchmark is the FTSE Global Core Infrastructure 50/50 Net Tax USD. Unlisted benchmark is the EDHEC Infra300 equity index in USD. Calculations based on quarterly data since over the 10 years to 30 June 2020. *Sharpe Ratio excludes risk-free rate. Past performance is not a reliable indicator of future performance.

15 Source: Lambrev, D. (2019). Infrastructure Indices: Comparative Analysis of Performance, Risk and Representation of Global Listed Proxies, *Naše gospodarstvo/Our economy*, 65(3), 23-39. doi: <https://doi.org/10.2478/ngoe-2019-0011>

Unlisted transactions remain at a significant premium and are more volatile than listed infrastructure

Private transactions have generally occurred at significant premiums to the multiples of listed infrastructure companies, and recent years have seen this gap further widening. The unlisted infrastructure universe has seen robust fundraising over the last several years, leading to a significant uninvested backlog, commonly known within the industry as “dry powder”, reaching US\$212bn in 2019.¹⁶ This significant private investment demand is facing a competitive environment with relatively few assets available for sale, driving deal multiples and respective valuations upwards. For instance, analysis by the Global Listed Infrastructure Organisation (GLIO) indicates that private investors have been acquiring assets at multiples of 18–20x year-ahead cash flows, compared with a 10–12x average cash-flow multiple for listed infrastructure companies.¹⁷

We have built up two databases of approximately 100 unlisted transactions in both the airports and water sectors, where publicly available data is the richest. Our findings demonstrate a distortion in the infrastructure investment universe whereby direct investors appear to be willing to pay a significant premium, making the listed market an easier and less expensive way to obtain similar asset exposure.

Moreover, these transactions give us a much better idea of the true volatility of unlisted infrastructure assets, rather than relying on smoothed returns from theoretical valuation models. Our research suggests the volatility of valuations of unlisted transactions, as demonstrated by their transaction multiples, are remarkably similar to listed market valuations, highlight a similar result to the EDHECInfra300 equity index in terms of valuation volatility.

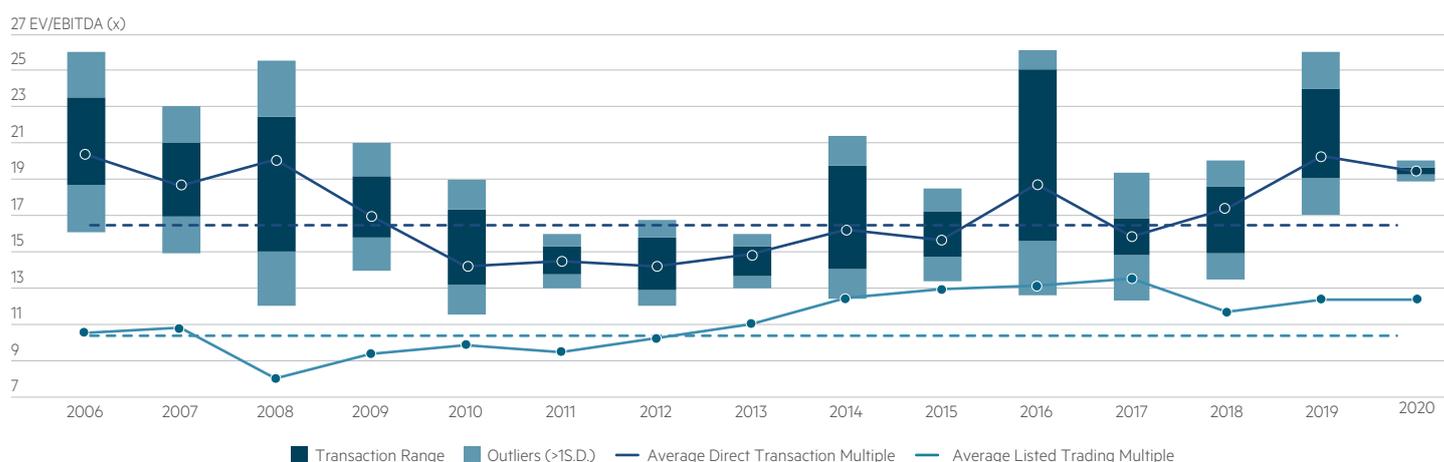
Airports transactions

We have documented more than 70 unlisted global airport transactions over the past 18 years to 30 June 2020. We use the EV/EBITDA as a comparative metric because it is capital structure neutral. Our analysis suggests that the average EV/EBITDA transaction multiple was approximately 16.4x, which compares to the average EV/EBITDA trading multiple of listed airport companies of approximately 10.6x.¹⁸

Of further interest is the volatility of the transaction and trading multiples. Although it is difficult to compare individual airport multiples, we believe it is still worth considering that the standard deviation of unlisted airport transaction multiples in our database was approximately 4x EV/EBITDA. This compares to the 2x EV/EBITDA standard deviation of the average trading multiples of listed airport companies we cover. Although we note that these are not like-for-like comparisons, it does show that there is still reasonable volatility in transaction pricing in the unlisted market and that one cannot heavily rely on a valuation model for the purposes of calculating returns. In other words, the total return of one's investment will be heavily influenced by the exit transaction multiple achieved, and if the last decade is any guide, that multiple has shown higher volatility for unlisted transactions.¹⁹

Figure 9: Comparison of historical global airport transactions with listed airport peers²⁰

Global Airport Trading & Transaction Multiples



Source: MBA GLI internal research. History of more than 70 known airport transactions between 2006 and 2020. Past performance is not a reliable indicator of future performance.

16 Source: Preqin. "Global Infrastructure Report 2020", February 2020.

17 Source: Global Listed Infrastructure Organisation. "GLIO Journal 6", February 2020.

18 EV/EBITDA is a ratio of Enterprise Value to Earnings before Interest, Tax, Depreciation & Amortisation. MBA GLI's proprietary database consists of over 70 global airport transactions between 2002 and 2020. MBA GLI has estimated the multiples where lacking full disclosure from private companies. Transactions where information could not be reliably obtained or estimated have been excluded for the purpose of the above analysis.

19 Past performance is not a reliable indicator of future performance.

20 The Average Listed Trading Multiple is an equal-weighted average of the ratio of EV/EBITDA for the period, computed daily for calculation purposes, based on Bloomberg estimates for each airport on MBA GLI's Focus List. Not all securities on the Focus List were listed for the entire period. The Average Direct Transaction Multiple is the equal-weighted average of all transactions in MBA GLI's proprietary database in any given year between 2006 and 2020. The EV/EBITDA multiple for each transaction has been sourced from company presentations, news reports, broker reports and financial accounts. MBA GLI has estimated the multiples where lacking full disclosure from private companies. Transactions where information could not be reliably obtained or estimated have been excluded for the purpose of the above analysis.

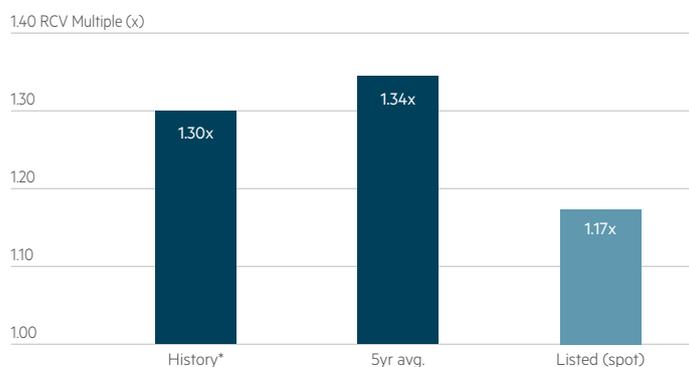
Capital structure is one major point of difference often cited between listed and unlisted infrastructure investments. Unlisted infrastructure managers have historically been willing to use higher levels of leverage in an attempt to boost returns to equity. For unlisted investors launching takeovers of listed infrastructure assets, debt-funded transactions have also been an easy way to boost returns to equity. Although leverage might help boost distribution yields on investments, it also increases the volatility of capital value and risk of capital loss when it comes time to realising the investment, amongst other risks. The airports example is a case in point as gearing is often substantially higher in unlisted airports. Our analysis suggests that although not marked-to-market daily, an unlisted investor's equity is likely to be just as – if not significantly more – sensitive to movements in the airport's enterprise value.

Water utilities transactions

We have documented approximately 25 unlisted UK water utility transactions over the past 15 years. Our analysis suggests that the average RCV multiple of the transactions was 1.30x. More interestingly, the standard deviation of these transaction multiples was 0.11x RCV. In addition, gearing is also materially higher in unlisted-owned water assets, exacerbating the impact to equity owners of any movements in asset values.

Figure 10: Comparison of historical UK water utility transactions with listed peers²¹

UK Water Assets Transaction Multiples



Source: MBA GLI internal research. History* of all known UK water transactions between 2003 and 2020; 5yr avg. to present. Spot is at 31 July 2020. Past performance is not a reliable indicator of future performance.

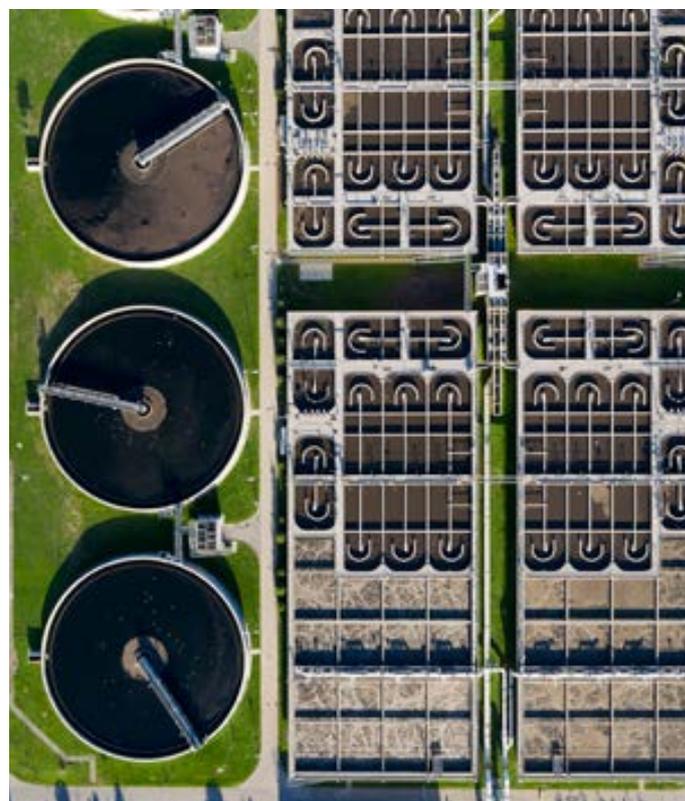
In doing so, we have compared the RCV trading of Severn Trent from 2006 to 30 June 2020.²² This time period of approximately 14 years encompasses more than a full market cycle, including the 2007 peak and the March 2009 trough following the Global Financial Crisis and the more recent COVID-19 pandemic. It also includes several regulatory resets.

We have only used one company for this analysis as it is the only listed water business that has existed in a pure form over the entire time period, in other words, without investments or operations in other infrastructure or utility segments. Notwithstanding that the average RCV trading multiple was materially lower (1.10x) than the unlisted average (1.31x over this time period), the standard deviation was also lower as a multiple of RCV. Additionally, due to the higher gearing levels, the implicit impact on equity value from a one standard deviation move away from the average is higher for unlisted.

Figure 11: Higher gearing of unlisted assets impacts volatility

Sector (2006-2020)	Listed Water (SVT)	Unlisted Water (Transactions)
Average RCV Multiple (x)	1.10	1.31
Standard Deviation (x RCV)	0.10	0.13
Average Gearing (Net Debt/RCV) ²³	59%	71%
Estimated equity value impact of a -1 S.D. move in asset value	-19%	-21%

Source: MBA GLI internal research.



²¹ The RCV Multiple is a ratio of the Enterprise Value to Regulatory Capital Value, applicable for both listed and unlisted water utilities in the UK. MBA GLI's database consists of more than 25 known UK water transactions between 2003 and 2020, with multiples varying between 1.09x and 1.61x RCV. The RCV multiple for each transaction has been sourced from news reports, broker reports, company presentations and/or financial accounts. Transactions where information could not be reliably obtained or estimated have been excluded for the purpose of the above analysis.

²² Severn Trent was effectively a "pure" regulated water utility for this period, following its divestment of Biffa, a UK waste management business in 2006.

²³ This only captures regulated ring-fence, not holding company debt, which is featured in many unlisted water company structures.

Conclusion

Our analysis concludes that infrastructure is a single asset class, independent from the means of ownership or capital structure.

To summarise our view:

1. Assets owned by listed and unlisted investors are inherently the same.
2. Regulators across infrastructure sectors are also the same.
3. Management expertise, alignment and governance are not always better in unlisted assets. In fact, they can be equal to and in some cases better in listed assets than in comparable unlisted.
4. Valuation processes result in different volatility outcomes – perceived not real – with volatility much more similar when compared on a like-for-like basis.
5. ESG integration is generally more developed in listed markets.

For a rational investor, the allocation to infrastructure as an asset class is the first question. Further questions should revolve around desires such as increasing a balanced portfolio's inflation protection, reducing its volatility and increasing its diversification.²⁴ Additionally we know investors like the potential for strong and consistent cash flow of unlisted infrastructure and so suggest they should look to at the high dividend yield of strong listed infrastructure companies too. Only once an investor has decided to allocate to infrastructure should they consider how they wish to direct capital to listed and unlisted exposures. They will need to have a view on a number of factors including the opportunity set, diversification requirements, fees, liquidity and portfolio rebalancing requirements, and risk-adjusted valuations. Indeed, blending listed and unlisted infrastructure investments has shown to actually reduce asset portfolio volatility.

Our analysis of the valuations and the volatility of a number of infrastructure sectors also highlights a material difference in prices between listed and unlisted infrastructure today. It is perplexing to find that investors are willing to pay such large illiquidity premiums to lock themselves into unlisted assets, in order to reduce the supposed volatility of their investments by relying on theoretical models rather than actual values. We believe that listed infrastructure provides a less expensive means of obtaining exposure to infrastructure assets, while noting the significant gaps between transactions and trading multiples across many sectors, along with other potential benefits such as greater liquidity and diversification. This is particularly amplified in the world of COVID-19 where listed markets price in short-term uncertainty at the expense of long-term value. We encourage investors to consider listed as a long-term investment versus a short-term mark-to-market risk.

Authored by Steven Kempler, Portfolio Manager, Global Listed Infrastructure. MBA GLI would also like to acknowledge the significant research contribution made by Amelia Campbell, Research Associate, to the development of this research paper.

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The MBA GLI Focus List is a proprietary list of infrastructure stocks considered by the MBA GLI investment team as providing the strongest combination of inflation protection and low volatility. The stocks on the MBA GLI Focus List may change at any time. To the extent permitted by law, neither MBA, nor any of its related parties, directors or employees, make any representation or warranty as to the accuracy, completeness, reasonableness or reliability of the information contained herein, or accept liability or responsibility for any losses, whether direct, indirect or consequential, relating to, or arising from, the use or reliance on any part of this paper. This information is current as at 26 August 2020 and is subject to change at any time without notice.

²⁴ We have also authored a separate white paper entitled "Global Infrastructure in a Portfolio", considering this allocation question further including the quantitative benefits of including infrastructure in a portfolio.