

Executive summary

Infrastructure assets support economic growth by delivering essential services and facilities that are difficult to replicate or replace. The relatively stable cash flows appeal to equity investors and also provide comfort to lenders, enabling relatively high levels of leverage (c.75% debt financing, on average).

From an investment standpoint, there are many different routes to accessing this market with wide variation in the risk and return profile of each.

Listed infrastructure equities may at times outperform the broader market in absolute or risk-adjusted terms but these investments are also exposed to the vagaries of broader market sentiment and returns are likely to remain highly correlated with equities. Given elevated equity market valuations, it is optimistic to expect much more than mid single digit returns from listed infrastructure equities at present.

Unlisted infrastructure equity offers greater diversification potential than the listed market but high levels of fundraising over recent years alongside too few assets coming up for sale have pushed prices up considerably. Expected returns for core infrastructure investments have fallen from the double digit levels of the past to as low as 6-8% now.

Infrastructure corporate bonds do not provide any noticeable diversification benefits or a structurally better risk/reward trade-off than can be obtained in similarly rated global corporate bonds. From time to time, they may offer the prospect of better absolute or excess returns than available elsewhere but such opportunities are tactical rather than structural. A yield of around 3% is slightly higher than offered by global corporate bonds but only on a par with bonds of equivalent credit risk.

Private infrastructure debt is a diverse market, covering a range of maturities (5-30yrs), payment terms (fixed/floating), credit risks (investment grade/high yield), regions and sectors, with Europe being the largest market for operational assets. A 1.0-1.5% credit spread pick-up is available over European public infrastructure bonds as well as additional covenants and security not normally available in public markets. However, the trade-off is in liquidity with investors unlikely to be able to access their money easily, if at all, until their investments mature. Credit spreads have held steady at 2% in the European core 5-10 year market and investors who are prepared to move further down the risk spectrum into the more specialised high yield market can earn spreads of over 4%. However, in the long duration (up to 30 year) sector of the market, excess demand has pushed up prices, lowered credit spreads and dimmed attractions. Credit spreads here have fallen to 1.5-2.0% and, although these assets continue to serve a purpose from a liability matching standpoint, they now offer far less appeal on a stand-alone basis.

In addition to a higher credit spread, infrastructure debt has also demonstrated lower credit risk than public bonds of similar credit profile. Credit losses on secured BBB-rated infrastructure debt have been closer to those on secured A-rated non-financial corporate debt than BBB. Furthermore, credit losses on BB infrastructure debt have been around half that of BB non-financial issues.

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Infrastructure assets

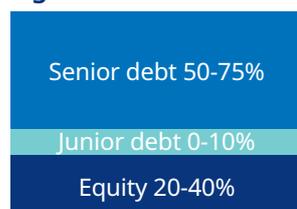
Infrastructure assets cover a wide variety of areas from airports and telecommunications networks to hospitals and schools. At a very high level, they support economic growth by delivering essential services and facilities that are difficult to replicate or replace. These assets are often characterised by having high barriers to entry, long economic lives, relatively stable operating cash flows (which are often inflation-linked) and a relative lack of sensitivity to the broader economic environment¹. Although these assets are not immune to risk, as illustrated, for example, by the profitability of ports and airports, or the usage of toll roads, that can fluctuate with the economic cycle, they have demonstrated a higher resilience to economic and financial cycles than other assets. Being essential to the community, and therefore often regulated by authorities, infrastructure assets are, however, more vulnerable to regulatory and political risk.

Given their very different cash flow and risk profiles, infrastructure assets are classified in different categories. A traditional distinction is often made between those assets which are operational (described as 'brownfield' projects) and those which are at the construction stage ('greenfield' projects).

How infrastructure is financed

The stable cash flow profile and asset-backed nature of infrastructure provides a degree of comfort to lenders. As a result, infrastructure financing typically involves high levels of debt (on average c.75%² of enterprise value) with the remainder in equity. A typical financing structure is set out in Figure 1.

Figure 1: Infrastructure is mainly financed through debt



Source: Schroders. As at January 2017

Most infrastructure assets are midcaps, with an enterprise value ranging from €500 million to €2 billion. Equity financing can either be private or public and can come from a variety of sources including institutional investors, corporations, governments, supranational agencies and capital markets.

Debt finance comes in the form of senior or junior debt (including mezzanine). In Europe, 70-80% of financing has historically been provided by the banking sector with only around 20-30% from capital markets, the opposite to the US situation. This feature is not specific to infrastructure financing but is common across European small and mid-market companies. However, this is progressively changing in the context of a broader disintermediation of credit in Europe due to the low rate environment and the impact of banking regulation. Yield-hungry institutional investors are increasingly stepping forward to fill the void and growing in prominence. Capital markets also have a part to play although this route typically appeals more to larger repeat borrowers, such as utility companies, than one-off projects, given the additional administrative and financial burden associated with this type of finance.

¹ EDHEC Infrastructure Institute: Revenue and dividend payouts in privately-held infrastructure investments. The analysis is focussed on firms situated in the UK.

² Association for Financial Markets in Europe (AFME)

The menu of infrastructure investments

From an investor's perspective, exposure to infrastructure can be obtained in a number of different ways. These are shown below in increasing order of governance burden.

Table 1: A variety of ways to gain exposure

| Equity | Debt |
|--|---|
| Listed infrastructure equities (a subset of global equity markets) | Infrastructure corporate bonds (a subset of the broader corporate bond universe) |
| Unlisted equity investments in infrastructure projects via funds and external managers | Private infrastructure loans via funds with external managers |
| Direct investment/co-investment in specific infrastructure projects or companies | Private infrastructure loans via direct lending or segregated accounts through an asset manager |

Within these categories there are many different flavours of investment across the risk spectrum which can result in a diverse range of return profiles for investors.

Infrastructure equity

Investors in infrastructure equity, like investors in any other form of equity, are part owners of a corporation or vehicle. They rank junior to debt holders in the capital structure which means that debt holders have first claim on the assets and cash flows generated by the company. If there is anything left over after the debt holders have been paid then this value accrues to the equity holders. Debt interest payments are normally fixed in nature (either in absolute terms or relative to some reference rate such as LIBOR) whereas payments to equity holders can be more variable. If the asset is performing in line with expectations then the excess above that required for other purposes can be earned by equity investors through distributions, including dividends. In contrast, if there are insufficient earnings to pay debt holders then equity holders can be left with nothing. In return for bearing this risk, equity investors expect a higher return than debt holders. Considering the predictability and resilience of infrastructure assets' operating cash flows, unless the asset is over leveraged with debt, equity distributions are deemed to be relatively predictable and resilient over economic and financial cycles.

Listed infrastructure equity

Listed infrastructure equity indices can be either regional or global. In addition to traditional corporations such as National Grid (UK), Enbridge (Canada) and Crown Capital (US), some also include Real Estate Investment Trusts (REITs) and Master Limited Partnerships (high-yielding publicly-traded limited partnerships popular in the oil and gas sector). Global indices, such as the Dow Jones Brookfield Global Infrastructure Composite Index ('DJBGICI'), tend to be dominated by North America (65%) and the utilities and energy sectors (c.85%). Only a few predominantly large assets have access to capital markets which means this only captures a subset of the global infrastructure universe and does not reflect the split of infrastructure assets accessible to investors by sectors and geographies.

Since 2002, when the DJBGICI was established, it has generated a higher return than the broad equity market with lower volatility. In risk-adjusted terms listed infrastructure has outperformed the broad market considerably (Sharpe ratio of 0.9 vs 0.5). It has also outperformed all individual sectors of the global equity market in absolute and risk-adjusted terms – the utilities sector has returned 8.8% a year and earned a Sharpe ratio of 0.6, in comparison. Finally, it trades on a much higher dividend yield than the broad market (even if Master Limited Partnerships are excluded then the dividend yield is still more than 1% higher than the broad market).

Table 2: Key characteristics of listed infrastructure equities

| | Listed global infrastructure | Global equities |
|----------------------------------|------------------------------|-----------------|
| Return p.a. | 12.3% | 8.5% |
| Volatility p.a. | 12.8% | 14.9% |
| Sharpe ratio | 0.9 | 0.5 |
| Correlation with global equities | 0.8 | n/a |
| Beta to global equities | 0.7 | n/a |
| Dividend yield | 4.2% | 2.5% |
| Price/earnings multiple | 34.3 | 21.9 |
| Price/book multiple | 2.5 | 2.2 |

Source: Datastream, S&P, Schroders. Data 31 December 2002-31 December 2016. Dividend yield and price/earnings multiple as at 31 December 2016

However there are a number of caveats. Firstly, listed infrastructure has been highly correlated with broad markets so has offered little diversification. Secondly, infrastructure indices have little or no exposure to financials, a sector which suffered significantly in the financial crisis so the historic comparison flatters infrastructure. Volatility levels more recently and before the financial crisis were much more comparable (Figure 2). Consequently, a degree of caution is required when interpreting these figures. Thirdly, listed infrastructure trades on more expensive price/earnings and price/book valuation multiples than the broader market. This is not a new feature as infrastructure equities have consistently traded on a higher price/earnings multiple than the market but it is presently more stretched than normal (the relative price/book valuation is close to historic norms).

Figure 2: Rolling 24 month volatility



Source: Datastream, S&P, Schroders

Listed infrastructure may at times outperform the broader market in absolute or risk-adjusted terms but these investments are also exposed to the vagaries of broader market sentiment and returns are likely to remain highly correlated and volatile compared with other diversifying assets in a portfolio. Against a backdrop where high valuations have driven return expectations for public equities down to mid single digit levels (or lower), it is difficult to argue that listed infrastructure equities are in a position to offer much more.

Unlisted infrastructure equity

Unlisted infrastructure investments can either be made through funds or segregated accounts with external managers or by investing directly (including co-investments). The latter is the cleanest route to obtaining infrastructure equity exposure but requires a significant amount of expertise and governance oversight which is outside the scope of many institutional investors. This route also typically requires a much larger amount to be committed to each investment which means that only very large investors are likely to have sufficient scale to be able to build a diversified portfolio.

A more traditional route for institutional investors to access unlisted infrastructure equity is through an external manager. These are normally structured as closed-ended private equity style vehicles with long horizons e.g. 10 years. Money is committed up front by investors and drawn down over a number of years (five or more is not uncommon) while the manager identifies assets to purchase. Management fees are of the order of 1.5% annually on committed capital (including undrawn amounts) plus a 10-20% performance fee for returns in excess of a hurdle rate.

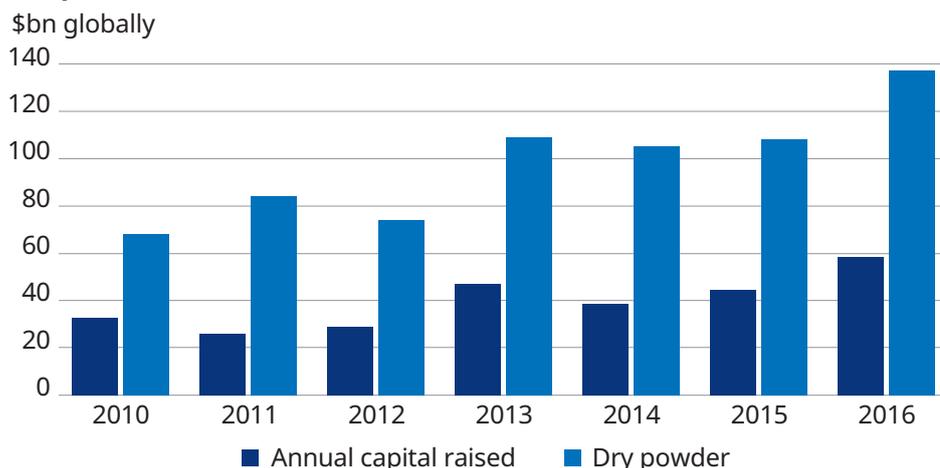
Given the illiquid nature of the assets, managers need to realise value for investors by exiting these investments at some stage within the fund's lifetime. Traditional routes include Initial Public Offerings, sales to trade buyers or sales to other financial investors.

Realised historic internal rates of return (IRRs) have varied by fund and risk level but have been broadly 8-10%, net of fees. Rising asset prices and, to a lesser extent, refinancing proceeds have been the key drivers of these returns. On a more granular level, IRRs vary by sector, with relatively safe government-backed Public Private Partnership ("PPP") projects and regulated utilities at lower levels and businesses in riskier, more economically-sensitive sectors with more variable cash flows at higher levels.

Today, expected returns have declined to 6-8%, net of fees with target cash yields around 5%. These return expectations are slightly more than expected from listed equity markets but less than private equity funds typically target. The declines in return expectations reflect the increases in valuations that have also been seen in public equity markets but also conditions specific to the infrastructure sector.

In particular, a large volume of money has been raised by infrastructure funds over recent years – 2016 fundraising set a new all-time high, on top of increased capital being made available by direct investors such as large Canadian pension funds and Sovereign Wealth Funds (money allocated by these investors is estimated to be as large as the sums raised by fund managers). Alongside, too few assets have come up for sale as deal volumes have flat-lined. This combination has resulted in a doubling in the volume of so-called "dry powder" of funds looking for a home for investment since 2010:

Figure 3: Record fundraising and insufficient opportunities have increased competition for assets



Source: Preqin, 2016

The main impact of increased competition has been to put upward pressure on the pricing of the underlying deals. Transaction multiples have been on an increasing trend since 2012 and are now back at levels not seen since before the financial crisis. Expected returns on infrastructure projects have declined.

Infrastructure debt

As described earlier, infrastructure projects are normally financed predominantly by debt, which in the past has been provided mainly by the banking sector. However, due to the retrenchment of the banking sector, especially in Europe, there is a growing opportunity for institutional investors to access this area of the market. Senior infrastructure debt offers a more stable, less glamorous alternative to equity investments and this appeals to certain types of institutional investors. In particular, given the long economic lives of many infrastructure assets, senior infrastructure debt can be very long dated in nature, sometimes inflation-linked, and these long dated cash flows are highly prized by pension schemes and life insurance companies. The junior parts of the debt capital structure are normally shorter duration and offer the potential for higher returns, with higher risk than senior debt but less risk than equity. Figure 4 shows the diversity of opportunities that are available across the sector:

Figure 4: The wide-ranging characteristics of infrastructure debt

| Liquidity | Nature | Sectors | Geography | Business | Rating | Maturity | Seniority | Currency | Rate |
|-----------|------------|-----------|--------------|--------------|----------|-----------|---------------|----------|----------|
| Public | Greenfield | Transport | West Europe | Availability | >A- | 20Y+ | Senior | EUR | Fixed |
| Private | Brownfield | Power | South Europe | Contracted | BBB/BBB+ | 10Y – 20Y | Sub-ordinated | GBP | Floating |
| | | Utilities | CEE | Concession | BBB- | 7Y – 15Y | HoldCo | USD | Linker |
| | | Telecom | UK | Regulated | BB+/BB | <7Y | | AUD | |
| | | Social | OECD | Merchant | NR | | | Other | |
| | | | Emerging | | | | | | |

Source: Schroders, for illustrative purposes only.

Investors can access this sector of the market either through traditional corporate bond markets or in private markets. In Europe, the private market is dominant, accounting for c. 80% of infrastructure debt, therefore offering a greater diversity of exposures than the corporate bond market. While the underlying asset characteristics may be similar, the debt-specifics can be quite different:

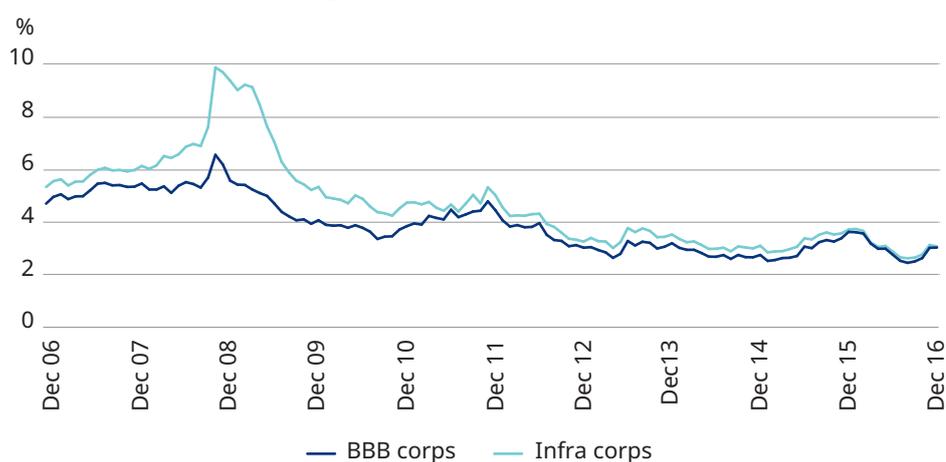
- Credit spread: private debt offers a significant premium to public bonds, estimated between 1.0% to 1.5% for a similar credit profile in Europe
- Liquidity: private debt is not readily tradable, as most debt instruments are loans and not securities
- Security: while the vast majority of bonds are unsecured, loans are often secured, i.e. provide collateral to lenders in the event of a credit event in the form of real assets, shares, bank accounts, etc.
- Covenants: private transactions allow investors to negotiate covenants to provide additional protections and a greater ability to manage risk than would be available in public markets
- Structuring: bespoke structures can be created for private transactions to adjust the risk profile of the debt instrument to that of the underlying asset, whereas corporate bonds offer less flexibility
- Fee income: private lenders are normally paid an arrangement fee when they lend money and exit penalties apply for early repayment. These fees can be material.
- Fund management fees: the additional work involved in sourcing, transacting, maintaining and managing the risk of a private debt portfolio results in slightly higher fund management fees than traditional corporate bond funds. However, considering the difference in effort required, the difference in fees is small e.g. 0.4% is representative for infrastructure debt compared with around 0.3% for corporate bonds.

Infrastructure corporate bonds

Infrastructure corporate bonds are a small subset of the broader corporate bond market. In terms of scale, the Dow Jones Brookfield ("DJB") Global Infrastructure Broad Market Index had a market capitalisation of \$809 billion at the end of 2016, around 10% of the size of the Barclays Global Aggregate Corporate index, less if high yield bonds are included. The DJB index spans investment grade (87%) and high yield debt (13%) with an average credit rating around BBB. This is slightly poorer than the global investment grade corporate bond market which has a rating of A-. Like the broad market, the largest regional exposure is to US dollar-denominated bonds (63%) which, just like for listed equities, does not reflect the actual geography and credit diversity of the universe of infrastructure assets.

At a strategic level, infrastructure corporate bonds have historically offered little that could not be easily captured through broad market exposure. Risk-adjusted returns have been slightly better than the broad market but only in line with corporate bonds of equivalent credit rating (see table 3, below). Furthermore, yields have been persistently lower than comparably rated corporate bonds due to greater exposure to the low yielding European and Japanese markets. Credit spreads have varied relative to the market but at the end of 2016 infrastructure corporate bonds offered a slight pick-up over comparably rated bonds:

Figure 5: Infrastructure corporate bonds yield less than global corporate bonds of equivalent rating



Source: Barclays, S&P

As with infrastructure equities, infrastructure corporate bonds have been less volatile than market comparators but this is only true because financial securities suffered greatly during the financial crisis and the infrastructure market has little exposure to this sector. Outside of the height of the crisis, infrastructure bonds have offered no volatility advantage.

Furthermore, the correlation between the DJB Index and global BBB-rated corporate bonds has been upward of 0.9 over the past 10 years. It is difficult to argue that there has been any noticeable difference between infrastructure corporate bonds and the bonds that investors may already hold as part of a global corporate bond portfolio.

Table 3: Key characteristics of infrastructure corporate bonds

| | DJB Infra Corp index | Global Agg Corp | BBB Corp | A Corp |
|-----------------------|----------------------|-----------------|----------|--------|
| Return p.a. | 4.4% | 3.9% | 5.0% | |
| Volatility p.a. | 7.3% | 7.2% | 7.8% | |
| Sharpe ratio | 0.5 | 0.4 | 0.5 | |
| Average credit rating | BBB | A- | BBB | A |
| Average maturity | 14.5 | 9.0 | 9.1 | 9.1 |
| Duration | 6.9 | 6.6 | 6.5 | 6.7 |
| Yield to worst | 2.9% | 2.7% | 3.1% | 2.5% |
| Credit spread | 1.7% | 1.3% | 1.6% | 1.0% |

Source: S&P, Schroders, Barclays. Return, volatility and Sharpe ratios calculated over 30 November 2006-31 December 2016. All other data as at 31 December 2016.

For investors seeking credit exposure to infrastructure in a liquid format, infrastructure corporate bonds may have a certain appeal. However, there are no diversification benefits or a structurally better risk/reward trade-off than can be obtained in similarly rated global corporate bonds. From time to time, infrastructure corporate bonds may offer the prospect of better absolute or excess returns than available elsewhere but such opportunities are tactical rather than structural.

Private infrastructure debt

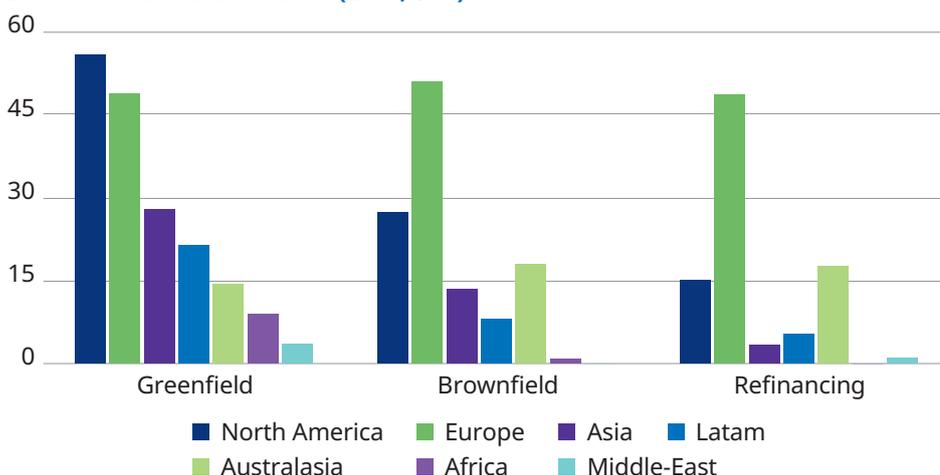
Private infrastructure debt has been a growing area of the market in recent years:

- On the demand-side, pension schemes, insurance companies and other institutional investors have been forced to broaden their investment horizons in the search for yield. Faced with the prospect of having to take on additional credit risk in this pursuit, it has become increasingly popular to instead turn to illiquid fixed income asset classes such as infrastructure debt. Here, a pick-up in yield can be earned without a commensurate increase in credit risk. Nothing comes for free, however, and the payback is in a requirement for money to be tied up for longer.
- On the supply side, structural issues and regulatory change have led to a pull-back in lending by European banks, as described earlier. Banking regulation is particularly unfriendly towards long duration or higher risk exposures. These issues and changes have created an opportunity for institutional investors to step in and fill the void.

This is a global asset class but, within the lower risk brownfield market (operational assets), Europe dominates by some margin (Figure 6). The vast majority of US infrastructure debt funds concentrate on the construction stage which has a very different risk/reward profile (projects at this stage do not normally generate any positive cash flows). The remainder of this section concentrates on the European brownfield market.

Figure 6: Europe dominates the brownfield market

Infrastructure transactions (2015, \$bn)



Source: Infradeals, September 2016

Note that these figures do not tie up exactly with those in Figure 3 due to differences in sources but this does not impact the conclusions being made. Due to the private nature of the market, such inconsistencies are inevitable and unavoidable. "Greenfield" stands for new build (equity and debt), "Brownfield" for the acquisition or the funding of new developments of operating assets (equity and debt), and "refinancing" for the refinancing of operating assets (debt only).

Infrastructure debt is a heterogeneous asset class, mirroring the variety of risk profiles among infrastructure companies. Figure 4 detailed some of the key differences and table 4, below, sets out the characteristics of the main investable sectors of the private infrastructure debt market. There is also a small market for inflation-linked infrastructure debt (located mainly in the UK where the demand from investors is higher than in the rest of Europe), which pays a yield premium over inflation-linked government bonds. This has largely remained bank-financed to date but the investable market is expected to grow. As with unlisted infrastructure equity, investments are today typically made via closed-ended private equity style vehicles, although larger institutions can also lend to specific projects or companies on a direct or co-invested basis or through segregated accounts managed by an external asset manager. Investment horizons and risk levels vary considerably.

Table 4: The private infrastructure debt universe

| | Core | Higher Yielding | Long Duration |
|--|-----------------|--------------------|---------------|
| Maturity (years) | 5-10 | 5-7 | 10-30 |
| Fixed/floating | Mainly floating | Floating and fixed | Fixed |
| Bonds/loans | Mainly Loans | Loans or Bonds | Bonds |
| Rank | Senior | Subordinated | Senior |
| Credit risk (average) | [BBB] | [BB] | [BBB] |
| Credit spread (basis points) | 200 | 400+ | 150-200 |
| Annual issuance in Europe and UK (€bn, estimate) | 50 | 5 | 10 |

Source: Schroders, January 2017, for illustrative purposes only.

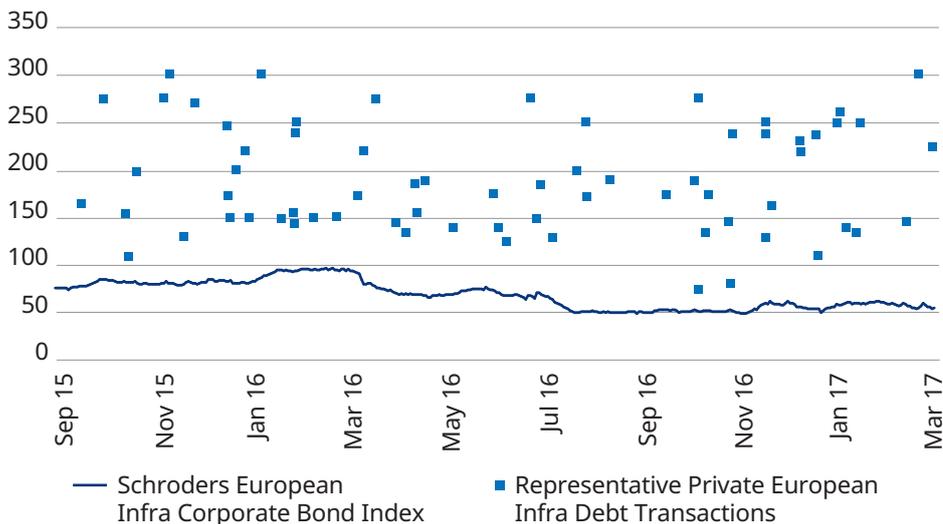
As a result of the historic bank domination of infrastructure companies' financing, the majority of the market is structured as **5-7 year floating rate loans**. Most are not rated but share characteristics with bonds of **low investment grade credit** quality, on average. Access is via the secondary loan market or on the primary market in the pool of lenders, usually alongside banks.

However, given the nature of the infrastructure cash flows themselves, **very long dated (up to 30 year) fixed rate debt** is also common, in contrast to the traditional corporate bond market. This sub-segment is usually structured in the format of institutional **bonds** through private placements. Unlike other infrastructure debt segments, institutional bonds have characteristics that are more common to liquid corporate bonds, and more frequently are tending to be unsecured with no financial/maintenance covenants.

And a small market for **higher yielding opportunities** exists for investors who have the willingness to bear additional credit risk. Given the limited supply of funds in that segment compared to the growing demand from sponsors and borrowers, higher yielding infrastructure debt characteristics are more flexible than high yield bonds. They can be structured as floating or fixed rate, loans, notes or bonds, but always have security packages and financial/maintenance covenants. As such they differ to high yield bonds which do not usually feature such protections for lenders.

Infrastructure debt has offered a persistent spread pick-up over the public market. Data on pricing is limited given the private nature of the market but Figure 7 shows a selection of representative European private transactions with implicit investment grade characteristics against a European infrastructure corporate bond index. On average, private infrastructure debt of this type has offered a credit spread of 100-300 basis points over equivalent government securities over the 18 months to March 2017, 50-200 basis points more than public bonds. However, this varies from transaction to transaction depending on risk, covenants, maturity, complexity and other characteristics. Some of this pick-up also represents an illiquidity premium – compensation that investors demand for the lack of liquidity in infrastructure debt. Ideally we would be able to isolate this factor by comparing a private infrastructure bond with an otherwise identical public market bond. However, given the unique terms for each infrastructure transaction, this is not possible. The best we can do is to say that it is likely to be a factor.

Figure 7: Spread pickup over listed infrastructure bonds



Data relates to bonds or transactions with explicit or implicit investment grade characteristics. Sources: Schrodgers, Bloomberg, InfraDeals database, The Private Placement Monitor, Cbonds.com, Bank of American Merrill Lynch ("BoAML"). Index is BoAML European infrastructure corporate bond index, developed with Schrodgers (proprietary index).

As with infrastructure equity, demand for senior infrastructure debt has recently outpaced supply, leading to a compression in the additional credit spread offered over public markets. This is particularly true within the long duration sector where demand has been strong from European insurers, due to the favourable capital treatment that infrastructure debt can obtain under Solvency II (qualifying debt is entitled to a 30% reduction in its capital requirement compared with equivalent rated public corporate bonds). Current spreads of 150-200 basis points in this sector are down from 200 basis points on average in 2013 and 250-300 basis points following the financial crisis³. Long duration infrastructure debt continues to have a role to play in liability management but the return case is now less compelling. In contrast, credit spreads on shorter dated core infrastructure debt have remained more stable around 200 basis points as this pricing is mainly driven by the banking industry, where profitability remains under pressure, rather than institutional investors. Spreads on more subordinated debt have actually increased above 400 basis points, as this is a less mature market with less competition. Investors seeking attractive risk-adjusted returns may find these sectors of the market more appealing.

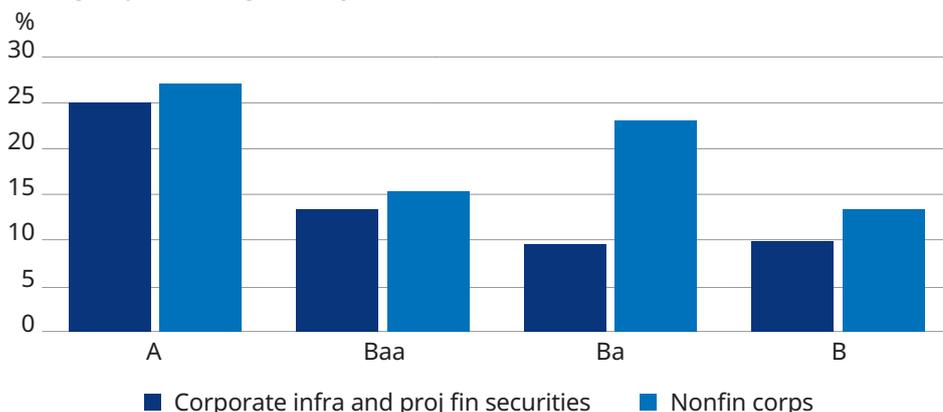
From a credit risk perspective, infrastructure debt has historically suffered fewer credit losses than comparably rated corporate bonds due to a combination of:

1. Lower likelihood of suffering a deterioration in credit quality

Rated infrastructure securities have historically been less likely to suffer a deterioration in credit quality and be downgraded than the broad market:

Figure 8: Infrastructure debt is less likely to be downgraded

Average 5-year downgrade experience



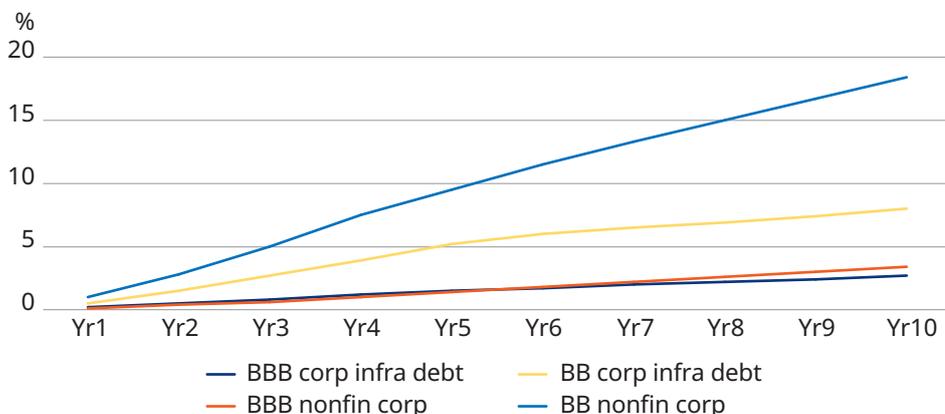
Source: Schrodgers, Moody's Infrastructure Default and Recovery Rates, 1983-2015. For illustrative purposes only.

2. Lower long term default rates

Historically, the near term likelihood of default has been similar between BBB-rated infrastructure securities and non-financial corporate securities but infrastructure debt has outperformed over longer investment horizons.

At lower credit qualities, infrastructure debt's default experience has been far superior, over both short and long horizons. For example, cumulatively, around 5% of BB-rated infrastructure securities have historically defaulted on a five-year horizon but that figure is almost 10% for the broader non-financial BB universe.

Figure 9: Average cumulative default rates 1983-2015



Source: Moody's Infrastructure Default and Recovery Rates, 1983-2015. For illustrative purposes only.

3. Higher recovery rates in the event of default, resulting in lower default loss rates

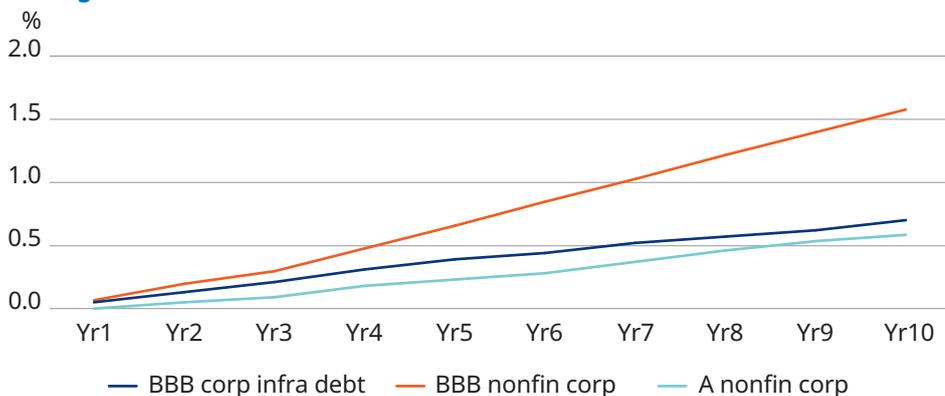
Table 5: Average recovery rates 1983-2015

| | Senior secured | Senior unsecured | Subordinated |
|---------------------------------|----------------|------------------|--------------|
| Corporate infra debt securities | 74% | 56% | 32% |
| Non-fin corporate issuers | 54% | 38% | 33% |

Source: Moody's Infrastructure Default and Recovery Rates, 1983-2015. For illustrative purposes only.

For senior secured BBB-rated infrastructure debt, the combination of similar near term but lower long term default rates (Figure 9) and a much higher recovery rate (Table 5) results in slightly lower default loss rates in the near term but significantly lower loss rates over long investment horizons. Over the long run, default losses on BBB-rated securities have been almost 1% lower than non-financial equivalents, with performance closer to A-rated securities than BBB (Figure 10):

Figure 10: Default losses have been closer to bonds a full credit rating higher
Average cumulative loss rates, secured debt

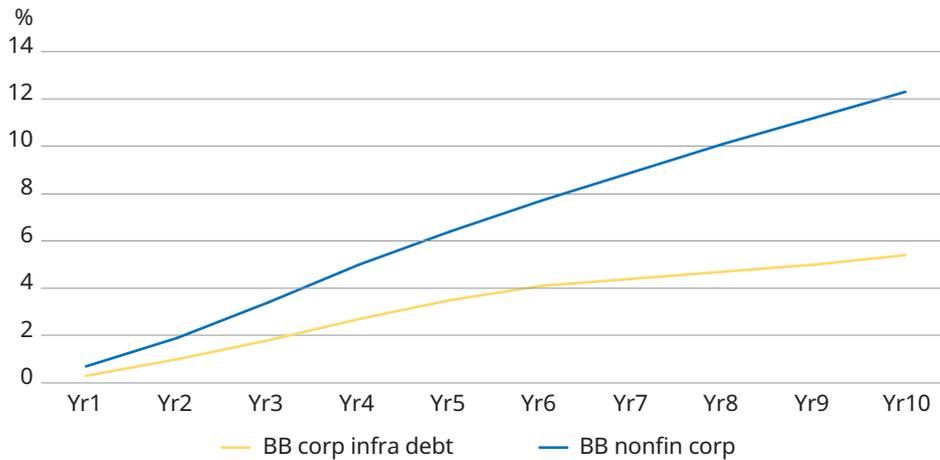


Source: Moody's Infrastructure Default and Recovery Rates, 1983-2015, Schroders. Loss rate has been calculated as default rate x (1 - recovery rate). For illustrative purposes only.

Within the subordinated sub-investment grade market, recovery rates are broadly the same across infrastructure debt and non-financial corporate debt. However, the much lower default experience of BB-rated securities outlined above contributes to lower default loss rates than comparably rated nonfinancial corporate debt:

Figure 11: Sub-investment grade subordinated infrastructure debt suffers much lower credit losses than broad market equivalents

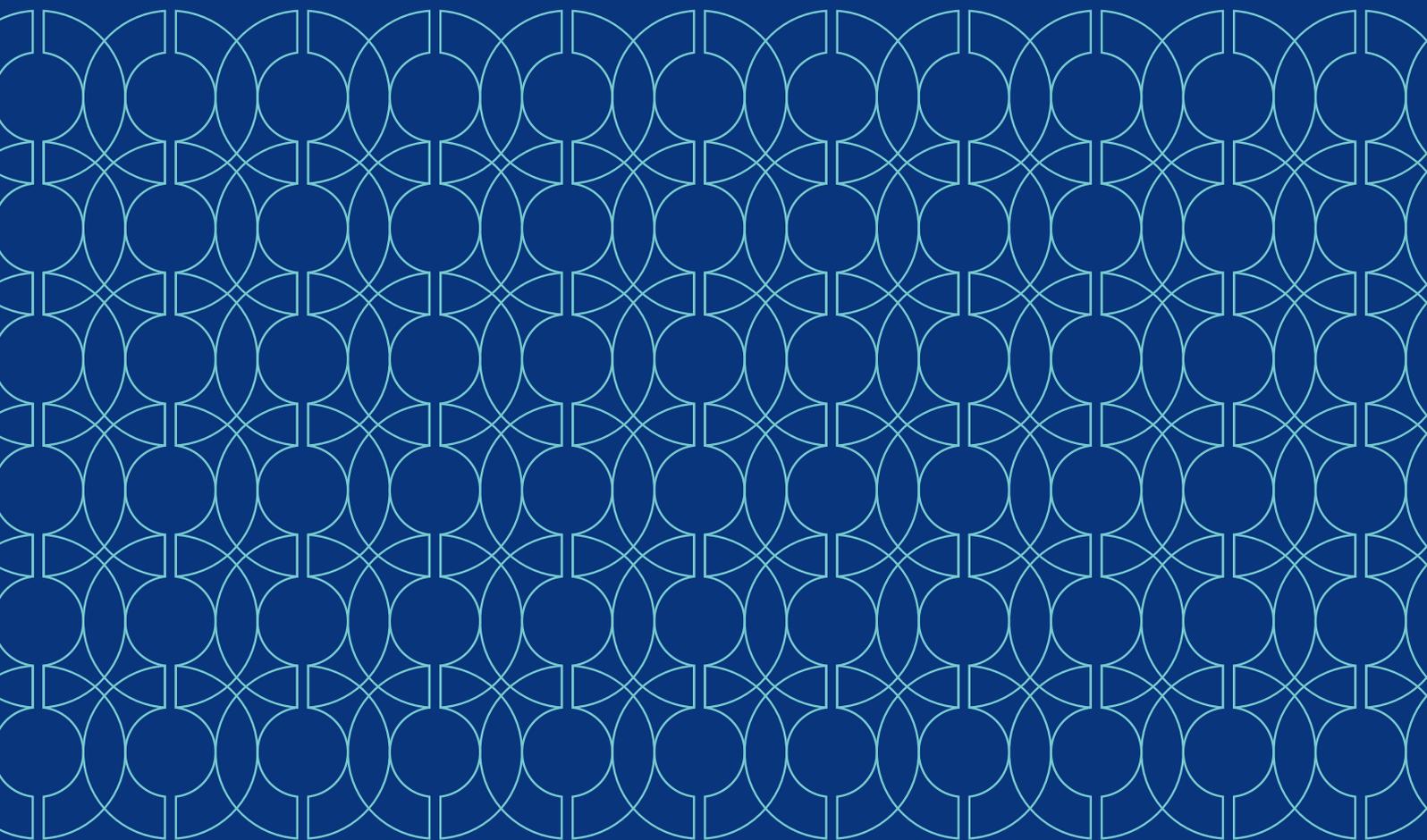
Average cumulative loss rates, subordinated debt



Source: Moody's Infrastructure Default and Recovery Rates, 1983-2015, Schroders. Loss rate has been calculated as default rate x (1 - recovery rate). For illustrative purposes only.

A caveat to the points above is that infrastructure debt is more exposed to political or regulatory risk than traditional corporate bonds – these are the top risks that concern infrastructure investors. Credit quality can change rapidly and without warning in response to either of the former. There is evidence that these concerns are warranted. Only 2% of nonfinancial defaulters had an investment grade credit rating the year prior to default but 28% of infrastructure debt defaulters did. Event risk appears more prominent in infrastructure debt. This is why a large number of institutional investors have focused their attention on infrastructure debt raised by borrowers located in geographies that have shown more stability in credit rating over the last cycles, such as North and Western Europe.

Overall, private infrastructure debt offers a spread pick-up over comparably rated corporate bonds and reduced exposure to credit risk, on average. Price competition has dimmed its attractions by compressing the spread pick-up, particularly at longer durations. However, an advantage remains, especially at shorter durations and in riskier parts of the market. On the risk front, some assets will be more vulnerable to the economic cycle than others and investors must grapple with a different set of risks to normal, including the regulatory and political climate. Finally, investors in infrastructure debt are unlikely to be able to access their money easily, if at all, until their investments mature.



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