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DWS

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Cashflow Driven Investing

The merits of private infrastructure debt for Cashflow Driven Investors.

Executive Summary

Cashflow-driven investors are familiar with the arguments for investing in assets that offer contractual income with varying levels of credit risk based on investor risk-reward appetite. Inflation-linked income streams are highly prized but fixed income streams can also offer a compelling alternative to nominal gilt holdings and private infrastructure debt is an asset class that offers exposure to these income streams.

For liability-driven investors, private infrastructure debt denominated in the same currency as their liabilities, is an asset class that has received significant attention. Approaching an investment in infrastructure can be quite daunting even for experienced investors making their first foray into infrastructure. What follows is an attempt to demystify the asset class.

Several papers have been written on how to use these cashflows to match liabilities and so our focus here is less on this aspect. Instead we aim to add to the available material out there by summarising our view on the assets underlying these cashflows and the specific factors that influence the stability and predictability of those cashflows.

The paper covers the following:

– Background and context to the asset class by recognising that infrastructure is not a homogeneous asset class, outlining three simplified categories of infrastructure assets.
– We then delve deeper into the nature and characteristics of infrastructure debt and some of the key drivers of risk and return.
– We turn to portfolio construction by evaluating infrastructure debt as a substitute for an institutional investor's existing credit holdings (for example, corporate bonds).
– We tackle the listed vs unlisted debate and show, using available data, that when considering an investment in infrastructure debt, the risk-adjusted returns available on private infrastructure debt are sufficiently compelling to consider moving beyond listed infrastructure bonds.
– Those focused on a LDI (Liability Driven Investment) strategy understandably tend to have a 'home-bias' to cashflows that are denominated in the same currency as their liabilities. That said, for those investors who may be prepared to consider a tactical allocation to other currencies, we show that there are selective opportunities to access attractive yields globally.
– We then move on to some common implementation questions. A common concern with any asset class is whether the time is right and, specifically, whether there is too much money chasing too few assets. We look at the infrastructure debt deal pipeline in the main developed markets (UK, Europe and the US) and show that the pipeline is strong.
– Finally, on manager selection, we highlight what we consider to be important considerations in choosing an infrastructure manager, including the ability to source the right deals and adequately measure credit risk for private transactions.

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Q: Infrastructure conjures up images of airports, toll roads, water utilities and various forms of power generating plants. Are these all sufficiently homogeneous or should investors be evaluating these investments in separate categories?

Liability driven investors will often highlight their preference for contractual income. Typically, that preference is accompanied by a preference for inflation-linked income. That said, any contractual income still needs to be assessed for its predictability or certainty since all infrastructure investment has an element of credit risk. Credit risk is the risk that the contracting party is unwilling or unable to honour its obligations.

Our experience suggests that categorising infrastructure assets based on the certainty of ultimately receiving both the income stream and the return of an investor's capital can be a helpful way of evaluating the different risk-adjusted returns on offer.

Whether income is contractual and inflation-linked is typically a binary assessment, either it is or it isn't. On the other hand assessing the certainty of income (and ultimate repayment of capital) that an infrastructure asset will deliver to underpin their credit profiles, requires an assessment of at least three further risks:

– Pricing risk*: the risk that a lower than expected price is achieved for the goods/ services.
– Volume risk*: the risk that volumes at the expected price are lower than expected.
– Renewal risk: for contracted sales, the risk that at renewal, achieved prices and/or volumes are lower than expected and the term of the renewal is shorter than expected.

Infrastructure investors typically identify three categories of infrastructure assets (see Figure 1 below).

FIGURE 1: INFRASTRUCTURE DEFINITIONS

MERCHANT ASSETS
Are fully exposed to both pricing and volume risk. For example, a power plant selling its electricity at the spot market price will face uncertainty of both the revenue it will be able to generate as well as the profit it can expect to make. For this reason, merchant assets are often viewed as the riskiest type of asset, offering the lowest certainty of income with the greatest variability, as often also reflected in their sub-investment grade credit ratings.

CONTRACTED ASSETS
Are less exposed than 'merchant assets' to both pricing and volume risk. This is because they tend to have medium-term (e.g. 3-5 years) contracts for the sale of their goods. The contracts will typically provide pricing certainty, often at a specified volume, and in this way offer greater revenue certainty than 'merchant assets'.

Longer-term contracted revenues (both price and volume) can also be achieved, e.g. energy assets can be supported by long-term (10-15 years) power purchase agreements (PPA) for the sale of specified volumes of electricity at a certain price, or even by take-or-pay contracts. The income from a portfolio of 'contracted assets' is therefore subject to less 'renewal risk' than 'merchant assets' and this risk can be further mitigated by diversifying revenue contracts across different buyers (or counterparties) and by having contracts with different maturity dates.

REGULATED ASSETS
Are typically natural monopolies and deliver essential services to society, for example, water networks. These assets have the strongest demand stability and price inelasticity to that demand. Price inelastic demand also means that regulations are needed to protect consumers. They also, typically, require large initial capital investments and have long payback periods, meaning that investors are better protected if regulations reduce the long-term pricing and volume risks on the sale of these goods or services. Ownership of regulated infrastructure is often transferred to private investors through long-term concession agreements that can range up to 99 years.

Regulated assets may be viewed as a special subset of contracted assets in that their contracted price and, often, volume will typically be dictated by regulations.

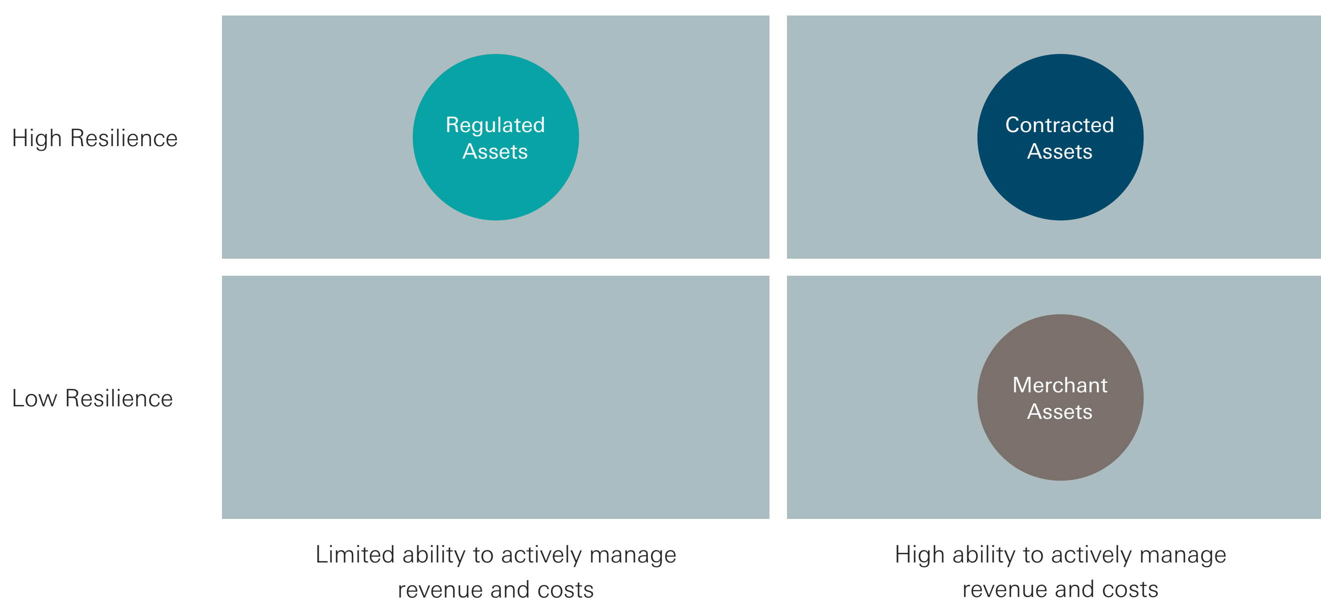
Regulatory frameworks can vary substantially by asset type and country. At one end of the spectrum, transportation assets, for example toll roads, pricing risk is generally removed by regulating the tariffs than can be charged to users, including possibly specified uplifts linked to inflation. Volume risks, however, may still remain. At the other end of the spectrum, and moving beyond pricing, greater return predictability can be achieved by eliminating volume risk. In effect, the minimum investment return an investor can expect to achieve is specified by regulation for a specified period of time, typically a 5 year cycle. At the end of the regulatory cycle, the regulator may review regulated return levels, to rebalance the interest of consumers and investors. An example of this occurs for UK water companies using a mechanism that is popular in much of Western Europe known as the 'Regulatory Asset Base' (RAB); whereby pricing tariffs (and hence revenues) are designed to create an environment conducive to long-term infrastructure investing. In the UK, RAB commitments rely on regulators, adhering to these commitments, rather than legislation.

At this end of the spectrum, and unsurprisingly, assets tend to be more expensive since these assets offer the greatest return predictability. For the same reason, credit ratings for regulated assets tend to be investment grade. So, even though infrastructure debt lends itself to income-oriented investing, within infrastructure, regulated assets are probably the subset of infrastructure assets that most lend themselves to income investing but it is also where returns have historically been more compressed.

Source: DWS, September 2018. For illustrative purposes only. Past performance is not a guide for future returns.

*Price and volume are linked. It may be possible to generate a specified level of income at lower price but through higher contracted volumes although this will depend on the marginal cost of producing higher volumes.

FIGURE 2: INFRASTRUCTURE ASSETS BY EXPOSURE TO ECONOMIC CYCLE AND OPERATING FLEXIBILITY



Source: DWS, September 2018. For illustrative purposes only.

Simply put, contractual income from infrastructure has the greatest predictability and certainty when it displays both:

- high resilience to economic cycles, and
- high ability (of the owner) to actively manage their revenues and/or costs.

Figure 2 below shows that in our view 'Contracted Assets' offer a combination of high resilience and operational flexibility. Regulated Assets then sit somewhere between Contracted Assets and Merchant Assets. Merchant Assets typically sit lower down on both these criteria and so income predictability and certainty is expected to be the worst for this category of infrastructure debt.

In summary, cashflow driven investors should pay attention to the skill that their infrastructure debt manager shows in understanding and optimising the predictability and certainty of cashflows from a portfolio of assets. This requires a manager that will pay attention to the cashflows from different categories of assets, by striking a balance between Regulated, Contracted and Merchant Assets.

Q: When an investor purchases bonds, they tend to focus on the yield, duration and cashflow characteristics of the bond. For corporate bonds we consider the credit worthiness of the issuer (both the likelihood of default and expected recovery in the event of default). Assuming it makes sense to do the same for private infrastructure debt, how would you summarise the investment characteristics of private infrastructure debt?

In common with most debt instruments, private infrastructure debt's risk-adjusted return can be assessed by considering:

- the gross expected return over the term of the investment and
- expected losses which capture the credit-riskiness of the investment. Expected loss would capture both the probability of default as well as the loss given a default.

Turning to the nature of the cashflows then, most private infrastructure debt issued tends to be fixed or floating rate debt with only a very small proportion of the market being inflation-linked. Further, most private infrastructure debt is amortising in nature, meaning that both capital and interest are repaid throughout the life rather than 100% of capital being repaid as a single bullet payment at the maturity date.

Figure 3 summarises the key investment characteristics of an investment into infrastructure debt for each of the three sub-categories we have previously identified.

FIGURE 3: INFRASTRUCTURE DEBT KEY CHARACTERISTICS

UK infrastructure category	Example of an underlying asset	Nature of debt	Typical Weighted Average Life (WAL)/modified duration	Estimated gross spread after allowing for expected loss	Typical credit rating	Typical cashflow profile
Merchant	Power plant	Floating / Fixed/ Inflation	Typically 5 years WAL	LIBOR/Gilts plus 200-300	BB and below	Typically amortising redemption with cash sweeps*
Contracted	Power plant, renewable generation, waste management	Fixed / Floating / Inflation	Typically 7 years WAL	LIBOR/Gilts plus 150-200	BBB-BB	Amortising redemption
Regulated	Water networks, toll roads, electricity and gas grids	Fixed/ Floating/ Inflation	Typically 10 years WAL	LIBOR/Gilts/ Linkers plus 80-130	A-BBB	Typically bullet redemption

Source: DWS, HIS Markit, Moody's Investors Service, October 2018. For illustrative purposes only. Past performance is not a guide for future returns.

*Mandatory provision to use excess cash (as per an agreed definition) to repay the loan before distribution or capitalisation in the business. For illustrative purposes only. Characteristics highlighted are not exhaustive.

Q: In searching for higher yields than government bonds, we have typically invested in corporate bonds. How does an investor compare risk-adjusted returns? And does private infrastructure debt provide a compelling substitute for part of an investor's existing corporate bond holdings?

Two key assessments can be made when comparing risk-adjusted returns.

Firstly, as for any debt investment, a comparison will be made of the yield on offer after allowing for the credit risk of the instrument. This assessment is no different to a manager deciding amongst different corporate bonds from different issuers.

Secondly, for private infrastructure debt one would also need to take into account the unlisted and customised nature of the lending agreements for infrastructure debt vs the listed, standardised lending terms of corporate bonds.

- Unlisted debt will be less liquid and, therefore, investors should expect some compensation for illiquidity risk.
- On the one hand, it could be argued that customised lending agreements increase the complexity of the transaction and investors may require a complexity premium.
- On the other hand, private lending agreements, unlike standard terms in the listed bond market, benefit from covenants which provide lenders with greater protection compared to bondholders.

In the answer to the next question, we look at yields relative to those of corporate bonds.

Q: Recently, our trustee group has fielded a number of presentations from the pension fund's equity and credit fund managers about the current valuation levels in global equities as well as the compression in credit spreads to levels not seen since prior to the default of Lehman. Also, we have been hearing that some sectors of the equity market look particularly expensive.

As an unlisted investment, infrastructure debt would appear to be an asset class where valuation metrics are not readily available, making it more difficult to assess valuation levels. Is now the right time to consider investing in infrastructure debt and, if so, are there any specific areas of the market we should be targeting or avoiding?

Figure 4 shows that after allowing for expected losses, listed infrastructure debt is an attractive investment and offers higher yields than listed (non-financial) corporate bonds for buy-and-hold strategies. We compare credit spreads on each by looking at the additional yield above government bond yields.

Whilst both the gross and net (after allowing for expected loss) credit spreads are higher for listed infrastructure bonds, Figure 4 also highlights that, for example, in the 'BBB' category, expected losses for listed infrastructure bonds are less than one-third of those for listed (non-financial) corporate bonds (Figure 4 shows that expected losses for listed infrastructure bonds are 4bps p.a. compared to 15bps p.a. for listed (non-financial) corporate bonds) . This is because not only are default rates expected to be lower but also losses, in the event of a default, are lower for infrastructure, i.e. recovery rates are higher in a default scenario. This is because infrastructure assets are real assets, and will almost always retain a residual value during periods of distress.

FIGURE 4: RISK-ADJUSTED BENCHMARK SPREAD ANALYSIS (JULY 2018)

	Average Rating[1]	Duration[1]	Benchmark Spread (bps.)[2]	Average Annual Cumulated Default Probability (Estimate)[2]	Loss Given Default (Sen. Secured, (%)[3]	Expected Loss (bps.)[3]	Risk-Adjusted Benchmark Spread (bps.)[4]
EUR							
Infrastructure, 'BBB', EUR	'BBB'	5	162	0.13%	26%	3	159
Non-Financial Corporates, 'BBB', EUR	'BBB'	5	147	0.27%	46%	12	135
USD							
Infrastructure, 'BBB', USD	'BBB'	8	177	0.14%	26%	4	173
Non-Financial Corporates, 'BBB', USD	'BBB'	8	168	0.32%	46%	15	153
GBP							
Infrastructure, 'BBB', GBP	'BBB'	9	167	0.14%	26%	4	163
Non-Financial Corporates, 'BBB', GBP	'BBB'	9	163	0.33%	46%	15	148

Source: IHS Markit, Bloomberg, Moody's, July 2018. EUR, GBP, and USD refers to Euro, British Pound, and Dollar currencies, and reflect issuers globally which issue securities in these currencies irrespective of domicile of the issuer.

Notes: 1: Markit calculates the benchmark spread as the difference between the yield of the bond and the benchmark bond. 2: based on iBoxx official statistics. 3: based on Moody's statistics. 4: Calculated as the difference between benchmark spread and expected loss. Infrastructure: iBoxx Infrastructure Debt Indices; Non-Financial Corporates: iBoxx Non-Financial Corporates. Index duration may not always exactly match, and available indices within the 'A' rating category were chosen to minimise duration variance. Past performance is not a guide for future returns.

So, an investor in Sterling, listed infrastructure bonds following a buy-and-hold strategy could expect to earn an additional credit spread above listed corporate bonds of 4bps (167bps vs. 163bps), but this improves to 15 bps (163bps vs 148bps) after allowing for expected losses, for a buy-and hold strategy.

We have previously noted that some of this premium in excess of the expected loss, may be compensation for the greater illiquidity and complexity risk. A further premium arises because of the inability to construct a sufficiently diversified portfolio of infrastructure debt. We can explain this as follows. The concept of expected loss only really works where one is able to diversify away the idiosyncratic risk from any one counterparty, leaving only market risk. It is more difficult to construct a diversified unlisted infrastructure debt portfolio than a corporate bond portfolio, and so some of the premium is likely to be a reward for the inability to fully diversify away this idiosyncratic risk.

We now turn to consider, in Figure 5, credit spreads on unlisted or private infrastructure debt and compare this with listed (non-financial) corporate bonds. Again, we compare credit spreads on each by looking at the additional yield above a risk-free rate.

Here we observe that, for example, in the 'BBB' rating category, an investor in sterling, private infrastructure debt could expect to earn an additional credit spread above listed corporate bonds of 45bps (210bps vs. 165bps), but this improves to 56 bps (206bps vs 150bps) after allowing for expected losses. Again this is because infrastructure debt exhibits a lower expected loss than listed (non-financial) corporates.

In summary, there is compelling evidence to suggest that:

- Private market infrastructure debt offers strong risk-adjusted returns not only relative to listed (non-financial) corporate bonds but also versus listed infrastructure bonds.
- Some of this additional yield is compensation for greater illiquidity and complexity risk. A further premium arises because of the inability to construct a sufficiently diversified portfolio of infrastructure debt.
- A significant component of this yield uplift is due to private infrastructure debt exhibiting lower expected losses (both lower probabilities of default and lower losses given default).
- Given that expected loss calculations are generated by considering risk over the entire term of the loan, harvesting the credit risk premium from private infrastructure debt is best achieved by following a buy-and-hold strategy.
- Cashflow driven investors are increasingly aware that one of the key benefits of cashflow driven investing arises from being able to invest in credit-risky bonds and loans on a buy-and-hold to maturity basis rather than actively trading the credit portfolio. Infrastructure debt would appear to lend itself well to this aspect of cashflow driven investing.

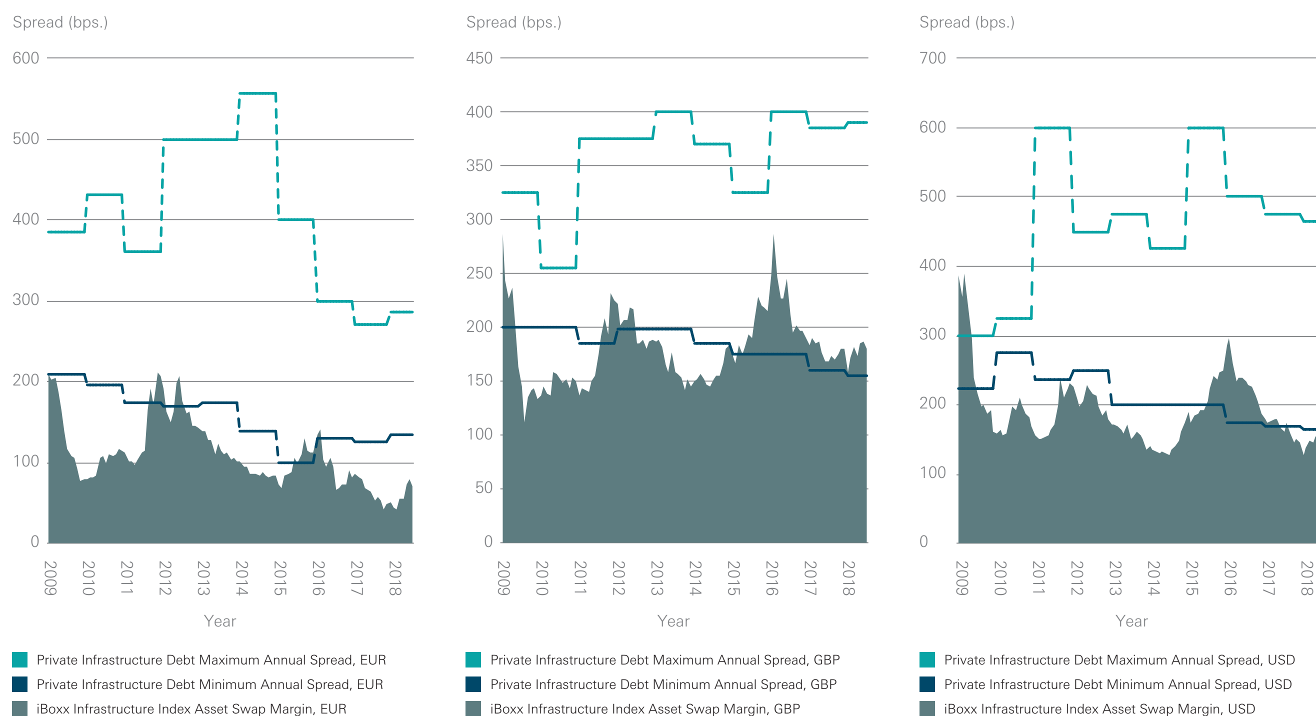
Finally, Figures 4 and 5 provide a point-in-time estimate of available spreads. In Figure 6, we show these spreads in a historical context by looking at the range of historical spreads for UK, European and US private infrastructure debt across the investment grade and high-yield rating space.

FIGURE 5: RISK-ADJUSTED BENCHMARK SPREAD ANALYSIS

	Rating	Duration	Asset Swap Spread (bps.)	Risk-Adjusted Asset Swap Spread (bps.)
EUR				
Private Infrastructure Debt, 'BBB', EUR[2]	'BBB'	7	175	172
Non-Financial Corporates Bonds, 'BBB', EUR[1]	'BBB'	7	109	97
Private Infrastructure Debt, 'High Yield', EUR[2]	'BB'	4	275	250
Non-Financial Corporates Bonds, 'High Yield', EUR[1]	'BB'	4	196	111
GBP				
Private Infrastructure Debt, 'BBB', GBP[2]	'BBB'	8	210	206
Non-Financial Corporates Bonds, 'BBB', GBP[1]	'BBB'	8	165	150
USD				
Private Infrastructure Debt, 'BBB', USD[2]	'BBB'	8	225	221
Non-Financial Corporates Bonds, 'BBB', USD[1]	'BBB'	8	173	158
Private Infrastructure Debt, 'High Yield', USD[2]	'BB'	4	300	275
Non-Financial Corporates Bonds, 'High Yield', USD[1]	'BB'	4	223	138

Source: 1: IHS Markit iBoxx Indices, 2: Private debt spreads on DWS proprietary transaction database of market transactions, September 2018, 3: Moody's Infrastructure Default and Recovery Study 2017, July 2018. Past performance is not a guide for future returns.

FIGURE 6: PRIVATE INFRASTRUCTURE DEBT LOAN PREMIUM RANGE ESTIMATE (2009-2018)[1]



Source: IHS Markit, iBoxx Infrastructure Debt indices. Private debt spreads on DWS proprietary transaction database of market transactions, September 2018. Past performance is not a guide for future returns. Private infrastructure debt annual spread maximum and minimum include transactions across both investment grade and high yield rating categories. For illustrative purposes only.

We draw out two key points from Figure 6:

- The additional credit risk premium on private infrastructure debt is persistent through time as evidenced by both the maximum annual spread and minimum annual spread being, for the most part, above the shaded area (listed infrastructure debt).
- There are times in the past, notably 2008/2009, when listed spreads trade above private market spreads but this is rare. Even when listed spreads trade above the minimum available spread, there are higher yielding deals to be done in private infrastructure debt. This illustrates the importance of deal selection and an experienced origination partner.

Q: With the help of our investment advisers, our pension fund was able to take advantage of the favourable risk-adjusted returns on offer from diversifying our local-currency corporate bond portfolio into offshore corporate bonds. Furthermore, we have hedged the currency risk to allow for the fact that our liabilities are denominated in our local currency. Are there opportunities for doing the same in infrastructure debt?

Infrastructure debt opportunities are clearly global in nature and so it can make sense to diversify your holdings across geographies. The merits will vary depending on an investor's specific circumstances and assuming the asset class is of interest, then structuring a portfolio to best meet an investor's requirements would be a three-way conversation between the trustees, their investment adviser and the asset manager.

In Figure 6, we illustrated the range of returns on infrastructure debt in the main developed markets, USA, Europe and the UK, to provide investors with an indication of the returns on offer globally.

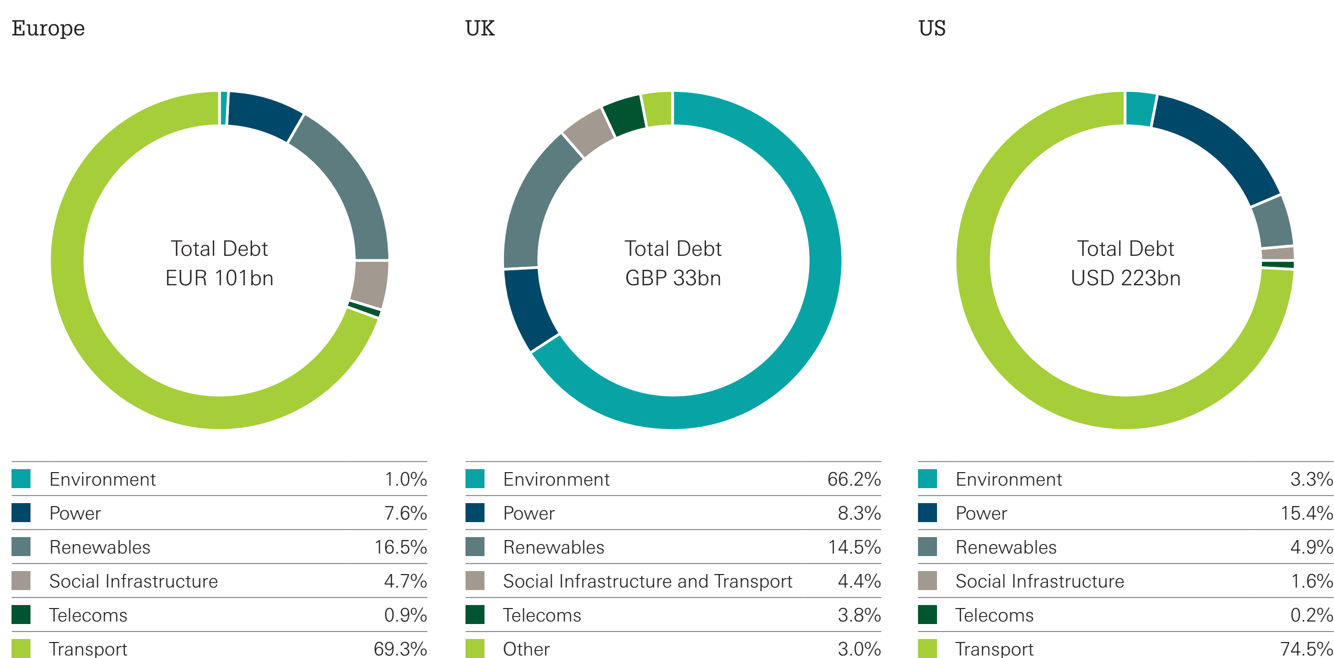
Figure 6 shows that there are opportunities to earn attractive yields by constructing a portfolio of global infrastructure debt. That said, a further key benefit from being able to access to a broader opportunity set is the ability to construct a more diversified portfolio which is more likely to deliver superior risk-adjusted returns.

It may be appropriate to structure a mandate by setting a benchmark for the manager that is denominated in the same currency as the liabilities but then to allow the manager some flexibility, possibly up to 25% of the mandate, to access transactions in other currencies, on a currency hedged basis, as and when the manager considered it opportune to do so.

Q: Many asset managers seem to be promoting infrastructure investments. Is there a danger that there will be too much of money chasing too few assets leading to poorer value for money?

Globally and within regions, the deal pipeline is very deep and there is a huge amount of deal activity. Figures 7 and 8 below shows our estimates of the total amount of debt that we expect to be issued just over the coming 3 years across the three main markets, the USA, Europe and the UK. Based on this, we don't foresee a supply/demand imbalance materialising any time soon.

FIGURE 7: PIPELINE ESTIMATED TOTAL LOAN DEBT BY SECTOR



Europe

Sector	%
Environment	1.0%
Power	7.6%
Renewables	16.5%
Social Infrastructure	4.7%
Telecoms	0.9%
Transport	69.3%

Source: InfraNews database, October 2018. There is no guarantee that the forecast pipeline highlighted will materialise. For illustrative purposes only.

UK

Sector	%
Environment	66.2%
Power	8.3%
Renewables	14.5%
Social Infrastructure and Transport	4.4%
Telecoms	3.8%
Other	3.0%

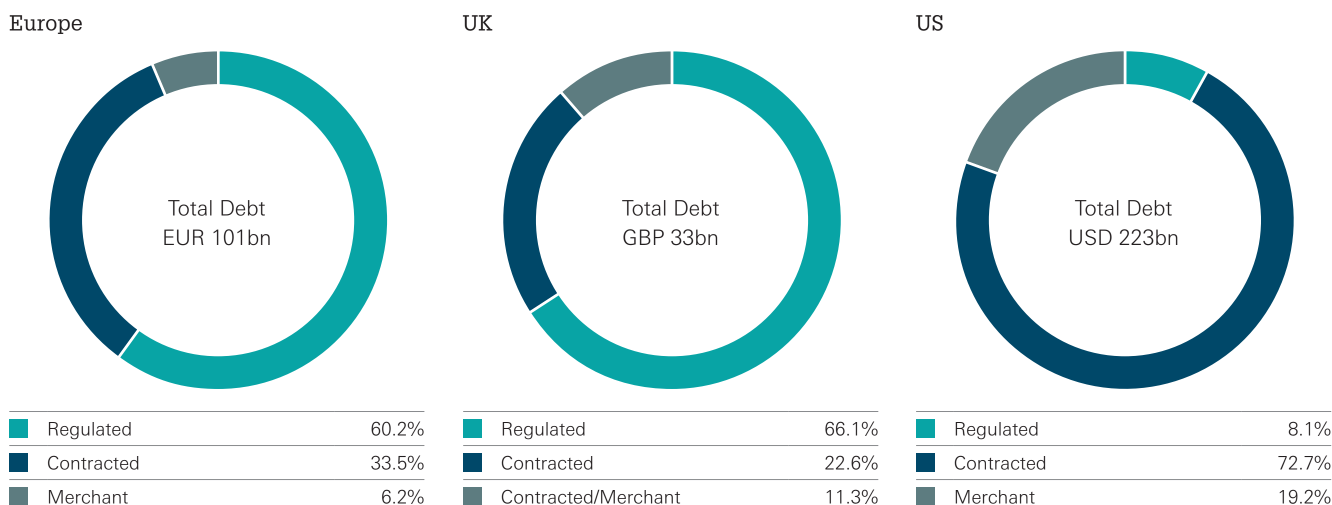
Source: InfraNews database, September 2018. There is no guarantee that the forecast pipeline highlighted will materialise. For illustrative purposes only.

US

Sector	%
Environment	3.3%
Power	15.4%
Renewables	4.9%
Social Infrastructure	1.6%
Telecoms	0.2%
Transport	74.5%

Source: InfraNews database, October 2018. There is no guarantee that the forecast pipeline highlighted will materialise. For illustrative purposes only.

FIGURE 8: PIPELINE ESTIMATED TOTAL LOAN DEBT BY CONTRACT TYPE



Source: InfraNews database, October 2018. Estimates are based on projects with specified contractual (payment) structure. There is no guarantee that the forecast pipeline highlighted will materialise. For illustrative purposes only.

Source: InfraNews database, September 2018. There is no guarantee that the forecast pipeline highlighted will materialise. For illustrative purposes only.

Source: InfraNews database, October 2018. Estimates are based on projects with specified contractual (payment) structure. There is no guarantee that the forecast pipeline highlighted will materialise. For illustrative purposes only

Q: New infrastructure projects are perhaps not coming on stream as quickly due to market, political and other uncertainties. Won't this impact the pipeline?

Historically, it is not unusual to see about 45% of the debt pipeline as being from the refinancing of existing debt rather than the origination of new debt for new projects. So, a significant part of the pipeline does not rely on the approval of new projects. This gives us more confidence and greater visibility over our estimate of future deal supply. Moreover, a considerable part of the refinancing pipeline sees issuers looking at increasing debt maturities to take advantage of the historically low interest rate environment. As a result of longer durations, we are observing that institutional investors increasingly account for a large share of the lending market, as stricter leverage ratios and higher capital charges under Basel III are driving a gradual shift in bank capital from long-term infrastructure lending to other sectors.

Q: When the largest asset managers have a stock idea, they typically suffer from being unable to change their portfolios as swiftly as smaller asset managers. That said, larger asset managers can benefit from of scale economies and preferential access to new issues, for example, at IPO. How does the size of AUM impact an infrastructure manager's competitive positioning?

In common with other asset classes, infrastructure investing requires an investment team across multiple capabilities including:

– deal origination,
– credit and equity research and analysis,
– portfolio management and monitoring, and
– work-out skills.

This creates a fixed cost base which would need to be spread over a sufficiently large asset base. However, identifying the minimum asset base needed to be competitive is not easily done. Different businesses adopt different approaches to building and maintaining their capabilities in each of these key areas.

As an example, deal origination may be set up as a combination of both internal originators as well as partnerships with other organisations. Strong networks, partnerships and relationships improves the reach of a deal origination team and improves access to deal flow.

The use of external advisers to handle specialist tasks within the due-diligence process also provides an efficient way to access highly technical skills without the need to have these skills on the manager's payroll.

One feature of the infrastructure market that is worth highlighting is found in a recent survey by IPE.com*. Globally, only 5 infrastructure managers had assets of in excess of GBP £10bn whilst 64 real estate managers had such scale. This means that the infrastructure market is still a relatively concentrated 'club' of investors.

Bringing this all together, we would suggest that investors choosing an infrastructure manager should aim to understand the following:

- The manager's competitive edge in each of the key areas of the investment process and how each manager has set themselves up to maintain that competitiveness.
- Origination is an important capability. Does the manager's size (or more precisely, lack thereof) in any way impact its ability to access deal flow? Deal flow in the infrastructure arena is readily available and some analysis of the manager's participation in deals should be considered. By participation, we include simply having the opportunity to participate rather than actually committing capital. This should provide a good indication of the manager's reach.

* Source: https://realassets.ipe.com/infrastructure/infrastructure-top-10-manager-profiles/10017323.article

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