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Infrastructure Debt: creating resilient cashflows through secured lending

How asset selection and structural protections can help create secure income cashflows for pension funds investing in private infrastructure debt

Introduction

Defined benefit (DB) pension funds in search of secure income cashflows have invested in infrastructure debt.

Better funded schemes have had the luxury of investing in senior, investment grade infrastructure debt where lending margins are lower because of the security from being a senior lender to the highest quality sponsors and against the highest quality projects. Typical lending margins (also known as the credit margin) are 1-2% p.a. above government bond yields.

At the other end of the spectrum pension funds, in search of higher returns to close funding deficits, have invested in junior (including mezzanine), sub-investment grade debt where margins can be significantly higher due to the sub-investment grade nature and, in many cases, the low sub-investment grade nature of this debt. These higher margins are due to the lender standing behind other senior lenders in the creditor queue; facing a lower quality sponsor/project and often accepting that interest and capital are only paid at loan maturity rather than amortised throughout the term of the loan¹. Typical lending margins are 5%² or more than above government bond yields.

In between these two ends of the spectrum, other DB pension funds have invested in so-called “cross-over³” sub-investment grade debt⁴ i.e. the highest quality part of the sub-investment grade spectrum. To enhance security, they have used diligent asset selection; structural protections in the form of seniority in the capital structure; security against tangible assets; lending covenants (restrictions) and often require that interest and (a portion of the) capital are repaid throughout the term of the loan rather than rolled up to the loan’s final maturity⁵. Typical lending margins are 3-5%p.a. above government bond yields. Our aim is to cover how, by lending to suitably chosen infrastructure projects and through appropriately

constructed lending arrangements, pension funds can earn attractive risk-adjusted returns and simultaneously benefit from secure income streams to help them meet their cashflow obligations.

A common theme in our paper is to encourage pension fund decision makers to look beyond “labels” and focus on first principles when making judgements about the robustness and stability of cashflow streams.

Private⁶ infrastructure debt lends itself to customisation of lending terms to improve security for lenders. For this reason, when creating secure income cashflows from private infrastructure debt, investors seeking secure income would be wise to look beyond credit ratings and the traditional dichotomy between investment grade and sub-investment grade debt. Instead they should rather focus on asset selection and structural protections embedded in the lending arrangements.

Private debt differs from listed debt; the former better lends itself to customisation of lending terms and, as will see, is part of the reason that pension funds are embracing the asset class in search of secure cashflows and improved risk-adjusted returns.



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Why is the creation of secure income from private infrastructure debt, and specifically sub-investment grade debt, important for pension funds?

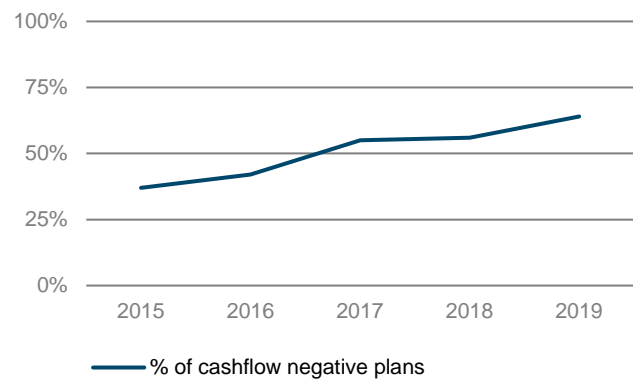
- Low yields dominate the investment grade infrastructure debt space. This is partly driven by insurers’ regulatory constraints which has increased demand for these investments. Pension funds, in search of higher yields and unburdened by the regulatory constraints of insurers, can create secure income cashflow streams from sub-investment grade infrastructure debt by focusing on diligent asset selection and structural protections.
- UK pension funds are increasingly turning cashflow negative; for an increasing number of pension funds income from investments and contributions is insufficient to meet cash outgoings to beneficiaries. This trend has been consistent over the last 5 years, as shown in Figure 1; more than 60% of pension funds surveyed in 2019 said that their fund was cashflow negative compared to less than 40% only 4 years prior.

This trend is expected to continue as shown in Figure 2, where 41% of plans that are currently cashflow positive are expecting to turn cashflow negative over the next 5 years.

Figure 3 shows that the most common approach to meeting cash outgo is to disinvest from assets. Selling equities, or other investments with volatile capital values, may not be a sustainable approach to meeting cashflow requirements. This is because sales may occur at inopportune times (e.g. following a market downturn) thereby crystallising investment losses. Figure 3 also shows a 60% increase (from 30% to 48%) in the proportion of pension funds that are relying on income generating investment mandates. (Note: since pension funds will rely on more than one method for meeting cashflows, the total percentage will not sum to 100% for any given survey).

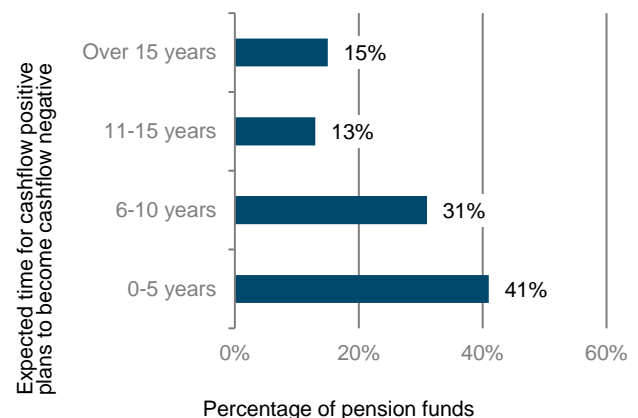
Debt investments with secure cashflow streams are an ideal substitute for more volatile investments because they can offer attractive yields and but also certainty of timing of both income and capital payments which, in turn, assists with cashflow planning. Furthermore, provided one is not a forced seller, market downturns need not lead to capital losses since, provided a borrower does not default, any fall in capital value will be recouped over the outstanding term of the loan⁷.

FIGURE 1: PROPORTION OF PENSION FUNDS THAT ARE CASHFLOW NEGATIVE



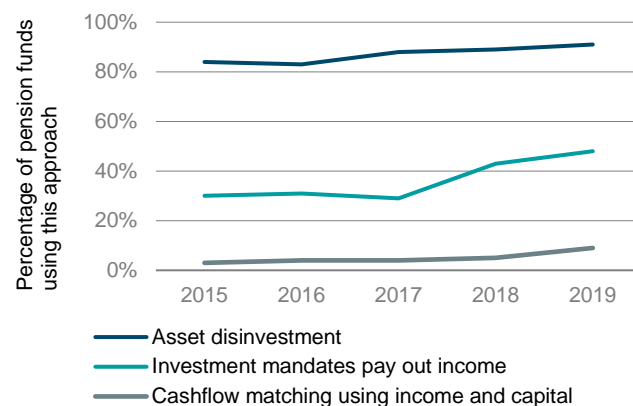
Source: Mercer European Asset Allocation Surveys 2015-2019

FIGURE 2: MORE PENSION FUNDS EXPECTED TO BECOME CASHFLOW NEGATIVE



Source: Mercer European Asset Allocation Survey 2019

FIGURE 3: HOW ARE PENSION FUNDS PAYING BENEFITS



Source: Mercer European Asset Allocation Surveys 2015-2019

The importance of “asset selection” in creating secure income cashflows

All else being equal, lenders to an infrastructure project or infrastructure corporate should assess the robustness and stability of cashflows they will receive on their loan by assessing the robustness and stability of cashflows from the underlying asset that will generate the revenue.

Why is “look through” to the underlying revenue-generating asset important?

Infrastructure lending can take a variety of forms. As an example, lenders could choose between lending to a specific infrastructure project via a Special Purpose Vehicle (SPV), also known as project finance or lending to a company, such as a utility, that owns and operates infrastructure assets, also known as corporate lending.

These are very different propositions. Project finance is characterised by lending to a specific project and against only that project’s cashflows. This means the debt that can be raised is limited and linked to the cashflows from the specific project in question and is secured against that project or asset. This is in contrast to lending to an infrastructure company where the entire balance sheet of the company determines the credit quality of the entity, and must be analysed to gain a true picture of financial soundness. Lending to an infrastructure corporate may also expose investors to parts of the balance sheet that are not infrastructure related and the loan security, therefore, may not all be linked to infrastructure projects /assets. And so in both cases, but especially in the case of a corporate, drilling down to understand the cashflow exposures (and the security) will be important. To create secure income linked to infrastructure, investors should understand the linkage of revenues to infrastructure projects/assets to gain the full picture of just how secure the cashflows that will then service the debt really are.

We expand on two key considerations in asset selection but note that this list is not exhaustive.

Regulated, contracted and merchant infrastructure

“Asset selection” refers to both the choice of infrastructure asset to lend to and the stage of the project that will be financed. All else being equal, cashflows from infrastructure projects where regulation provides full protection from both price and demand changes will tend to have the highest degree of resilience and unregulated assets the lowest (see Box 1).

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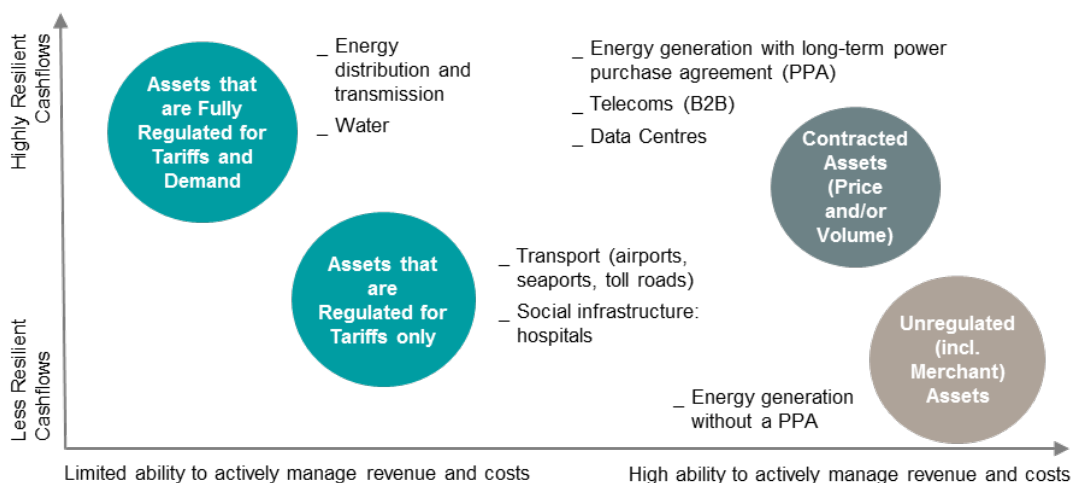
Brownfield vs greenfield infrastructure

Brownfield projects will typically be more resilient than greenfield projects (see Box 2). Brownfield (or operational) projects are those already generating revenue and for that reason are expected to provide greater certainty of cashflows compared to greenfield projects. Greenfield projects are projects that are still in construction (See Box 2) and so cashflow generation may be delayed to the end of the construction phase / start of the operational phase.

We draw the following conclusions from Box 1 and Box 2:

- Regulated (including availability-based) or contracted infrastructure projects may be preferred for secure income cashflows, while merchant assets may expose investors to greater cashflow volatility.
- Brownfield (operational) assets are typically more suited (than greenfield assets) to generating secure income cashflows immediately.
- Secure income cashflows, at higher yields, can be generated from lending to projects that have a greenfield (construction) component. In this case security of income for the project is linked to multiple factors including: i) the certainty of revenue for these projects from pre-agreed contracts that ensure demand for a specific volume at a specific price and ii) a strong competitive position. For debt holders, additional security is derived from careful structuring of the financing terms.
- Diligent asset selection is a pre-emptive attempt to avoid lending to assets that are more likely to experience financial difficulties.

Seasoned credit investors understand, however, that it is impossible to predict in advance which borrowers will end up defaulting and so adopt the mantra, “expect the best but prepare for the worst”. For this reason, most lending is done on the presumption that the borrower (no matter how creditworthy at the outset) may run into difficulty at some point and so careful asset selection is no substitute for careful structuring of the financing. After all, there is only one opportunity to get the lending terms right and that is before the lender parts with its money. This is where structural protections play a role.

BOX 1: CATEGORISING INFRASTRUCTURE PROJECTS**Types of Infrastructure assets**

Source: DWS.

Unregulated (including merchant) assets: are fully exposed to both pricing and volume risk. For example, a power plant selling its electricity at the current 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. On the other hand the absence of regulatory and (in some cases) contractual constraints means there is more scope for operators to actively manage their revenues and costs and this is illustrated in the chart shown above. In some cases these assets may be supported by private contractual arrangements and a strong competitive position both of which may limit the downside risk to cashflow generation.

Contracted assets: are less exposed than 'merchant assets' to both pricing and volume risk. This is because they may have medium-term (e.g. 3-5 year) or long-term (e.g. 5-15 year) 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'. A corollary of this though is that there is less scope to actively manage revenues and costs than merchant assets but more scope to do so than for regulated assets, again, as shown in the chart above. Historical analysis of performance (Source: EDHEC) suggests that contracted assets have displayed lower return volatility over long periods than some regulated assets. This is not a surprising result but does point to the benefit of greater operational and financial flexibility over regulated assets.

Longer-term contracted revenues (both price and volume) can also be achieved, e.g. energy assets can be supported by long-term 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 lower revenue volatility 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 (including availability-based and contracted): Regulated assets are typically natural monopolies and deliver essential services to society, for example, water networks. These assets have both a stable demand and price inelasticity to that demand. Price inelastic demand 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 usually transferred to private investors through long-term concession agreements that can often range up to 99 years.

Regulated assets are often "contractual" in nature meaning that the price paid for services and/or the offtake volume is dictated by regulations or concession agreements. They may also be "availability-based" meaning that the asset operator receives revenue linked to the project's availability for use by consumers; typically social infrastructure such as schools, prisons and hospitals.

Regulatory frameworks can vary substantially by asset type and country. At one end of the spectrum, transportation assets, for example toll roads, the pricing risk is generally removed by regulating the tariffs that 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, greater return predictability can be achieved by eliminating both pricing and 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)'. At this end of the spectrum, and unsurprisingly, assets tend to be more expensive and lending margins tightest since these assets offer the greatest return predictability. It follows that operators are less able to manage revenue and costs compared to contracted or merchant assets and the chart above reflects this.

So, even though infrastructure debt lends itself to delivering secure income cashflows, regulated assets or contracted assets are the subset of infrastructure assets that most lend themselves to secure income investing. Merchant assets that benefit from a strong competitive position and contractual arrangement with a high quality counterparty may also lend itself to secure income investing.

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BOX 2: GREENFIELD VS YELLOWFIELD VS BROWNFIELD INFRASTRUCTURE

Greenfield infrastructure refers to infrastructure projects in their construction phase, including the planning or pre-construction phase and so these projects are generally not delivering any cashflows to their project owners.

Brownfield infrastructure refers to infrastructure projects in their operational phases, meaning they are likely to be generating revenue from the sale of their service.

Yellowfield infrastructure sits between greenfield and brownfield assets since these assets are, typically, already built and require work to upgrade or replace the asset. A construction phase is involved but, unlike brownfield assets, performance data is more readily available and revenue is possibly also being generated.

For pensions funds in search of secure income cashflows, operational projects that are already income generating offer greater security of future cashflows to both debt and equity investors in those projects. Greenfield and yellowfield projects offer enhanced yields provided they are accompanied with careful asset selection, covenants and deal structuring to ensure that cashflows are genuinely secure.

The importance of structural protections in creating secure income cashflows

Overview

The second category of risk mitigation is the structural protection that can be created through:

- _ seniority in the capital structure,
- _ security against assets and
- _ covenants that surround the lending arrangement.

“Structural protections” is the collective term for seniority in the capital structure; security against tangible assets and lending covenants (restrictions) written into the loan documentation. Taken together these materially improve the likelihood that the lender will ultimately receive, on time and in full, all interest and capital payments due.

Figure 4 provides an overview of the variety of structural protections available to infrastructure debt investors. In the next section we will describe the importance of each of

these layers of structural protection but first we explain why structural protections increase the certainty of cashflows.

Structural protections act as a “safety net” for lenders should the borrower run into financial difficulty

Repayments of interest and capital from a borrower to a lender need to be considered after allowing for the risk of default. This can be done by evaluating the cashflows from the borrower to the lender, net of any expected losses (see Box 3). Expected losses are a function of both:

- _ The probability or likelihood of default by a borrower (typically quantified by credit ratings⁸).
- _ Losses, after allowing for recoveries, once a default has occurred.

FIGURE 4: STRUCTURAL PROTECTIONS TO HELP CREATE SECURED CASHFLOWS

Structural protections (seniority, security and covenants)			
1 Holding Company		Operating company	
2 Senior	Whole loan / unitranche	Junior / mezzanine	
3 Security over assets (bank accounts, receivables, equity investments)			
4	Timing of loan repayments is fixed and contractual	Mandatory repayment clauses following significant events (e.g. change of control)	Restrictions on total leverage allowed means equity capital provides a significant buffer to debtholders
	Interest rate “floor” protects against negative interest rates	Early repayment of loan in event of unexpected windfall proceeds (e.g. IPO)	Restrictions on distributions to equity shareholders to avoid over-gearing
	Interest rate ratchets up if incremental debt taken at higher margin (“MFN” clause)	Early repayment penalties to mitigate lender’s re-investment risk	Restrictions on distributions to shareholders in the event of a default
	Interest payments are paid in cash as due and not rolled up or deferred to later (payment-in-kind “PIK”)	Cash reserves must be held to “buffer” interest payments from unexpected events	Financial covenants test if revolving credit facilities are drawn and cause excessive leverage
	Interest rate ratchets down if leverage ratios reduce.	Allowance for equity injections to avoid default	Restrictions on incremental debt and/or restrictions on seniority of incremental debt
	Clause to ensure interest is paid irrespective of whether the loan is drawn down by the borrower [“ticking fee”]	Intercreditor agreements mitigate risk of disputes when there are multiple lenders	Limits on related party transactions to avoid dilution of lender security
	Fixed charge/mortgage over plant, property and equipment.		

Source: DWS.

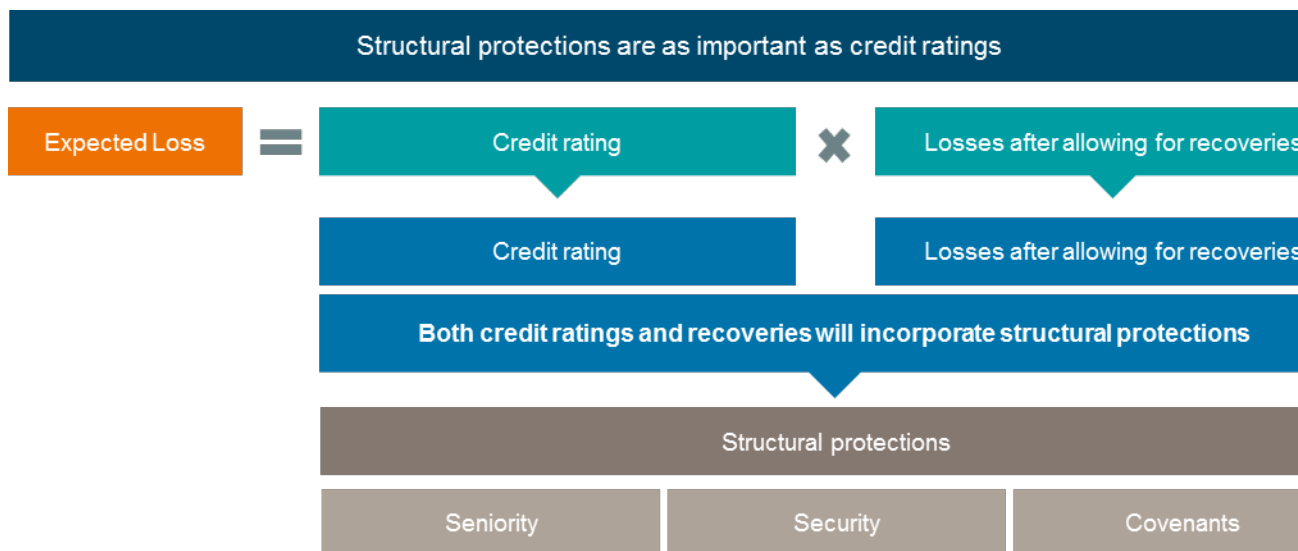
BOX 3: EXPECTED LOSS

It is customary to evaluate cashflows net of any expected losses. Expected loss comprises two components:

- a. probability or likelihood of default and
- b. loss given default.

Any attempt to “stabilise” the cashflows must focus on reducing expected losses. And reducing expected losses requires a focus beyond credit ratings since the latter only talks to the probability of default. What “safety net” do lenders have once a default has occurred?

As the diagram below shows, given a default then, structural protections, the collective term for seniority in the capital structure; security against tangible assets and lending covenants (restrictions), are the main levers available to lenders to protect against losses.



Source: DWS.

In a later section we decompose credit spreads (the additional interest rate above the risk-free rate) into a net credit spread after expected losses.

We calculate expected losses using historical data on default and recovery rates sourced from one of the longest running studies of its kind, “Moody’s Infrastructure Default and Recovery Rates: 1983-2019” published in October 2020.

Some points on the data used:

- _ It covers infrastructure securities issued by both public and private issuers and it does include ratings on private infrastructure loans carried out by Moody’s.
- _ Whilst it includes both public ratings and private ratings undertaken by Moody’s, it is not possible to identify the weighting of the dataset to each.
- _ Since many private infrastructure debt funds raised by fund managers tend to be heavily weighted towards corporate and project finance issuers, we focus on this data set when calculating expected losses. The total data set from Moody’s includes U.S. municipal issuers and these exhibit lower default rates and higher recovery rates, so lower expected losses. Had we used it, the total data set would have shown a more optimistic picture for expected losses.

Reducing expected losses

The likelihood of default can be reduced by lending to those projects with the highest credit ratings; the latter often tend to be closely correlated with the issues we outlined in the previous section on “asset selection”.

However narrowly focusing on credit ratings or “asset selection” ignores the reality that predicting defaults is fraught with difficulties, both for ratings agencies and for asset managers. And so, the second contributor to “expected losses”, losses in the event of a default, are best reduced using structural protections agreed at the outset.

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Understanding the different types of structural protection

Figure 4 set out the different types of structural protection. We now describe each in turn.

The borrowing entity (“Hold Co” / “Op Co”)

The first level of structural protection comes from an active choice about which legal entity to lend to. An infrastructure project may comprise of a number of different legal entities. Our main point here is to encourage investors to look beyond labels of “senior” and “junior” debt because, as we explain below, the precise nature of the borrowing entity can also impact “seniority” or priority in the creditor queue and hence just how secure the income is. Higher priority creditors have a preferred call on the assets or cashflows of the project to protect their investment. An informed choice of the borrowing entity can improve a lenders priority and protect the lender as illustrated in Figure 5 and described more fully below.

The operating company (Op Co)

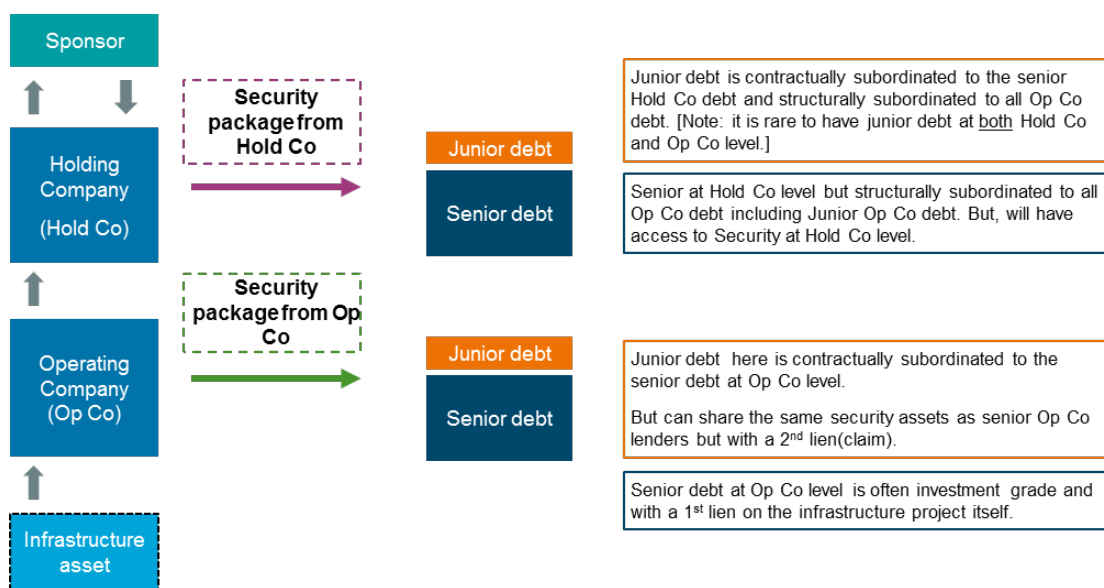
This is the company that owns the infrastructure project. Senior lenders to the Op Co will typically enjoy the greatest

protection of their expected interest and capital repayments but lending margins will be, commensurately, lower. To earn a higher yield, some lenders to the Op Co may actively choose to become “sub-ordinated” lenders and so stand behind the senior lenders. This is called contractual sub-ordination. These lenders take comfort from the knowledge that they generally share the same security package as the senior lenders to the Op Co (also known as having a 2nd lien on the assets of the Op Co), even though they stand behind them in the creditor priority queue.

The holding company (Hold Co)

The Hold Co owns shares in the Op Co and will receive distributions from the Op Co after the Op Co lenders have been paid. Becoming a senior lender to a Hold Co may be another way to earn higher yields as compensation for being further behind the creditor queue – i.e. behind lenders to the project(s) at Op Co level. This is referred to as structural sub-ordination – so-called because the sub-ordination is created through the Hold Co and Op Co structure.

FIGURE 5: INFRASTRUCTURE FINANCING



Source: DWS.

So how might we reconcile senior Hold Co debt with secure income?

- _ If the underlying infrastructure project is a contracted or regulated brownfield asset, the cashflows will be stable and therefore there is greater certainty that the Op Co will be able to make both interest payments and fulfil its commitment to distributions to the Hold Co.
- _ The Hold Co will also offer a security package e.g. a first lien claim on the equity that the Sponsor owns in the HoldCo. For regulated or contracted brownfield assets, considering the high quality of the asset, the equity share in the Hold Co has significant value and provides a robust source of collateral for Hold Co lenders.

The underlying principle here is that creditors in closest proximity to high quality cashflows are best placed to create "secure income" cashflow streams. For example, senior Hold Co debt of a regulated asset may offer a higher certainty of cashflows than senior Op Co debt of a merchant asset.

Senior, unitranche or junior lending

The second type of structural protection we think important is a lender's position in the capital structure. Secure cashflows can be created by being a senior or a junior lender.

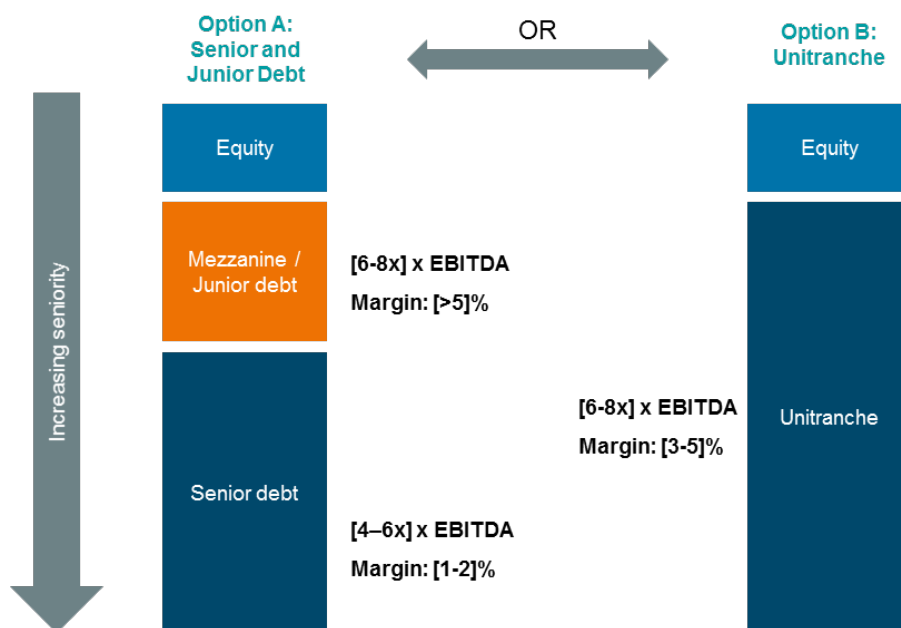
Apart from the choice of legal entity and the labels of "senior" and "junior, it is equally important to look at other aspects such as security and covenants in judging the security of income. For some projects, junior debt with strong structural protections may well turn out to offer equally robust cashflows as some senior lending arrangements for other projects.

Beyond senior and junior lending, unitranche lending can also be used to create secure income streams. Unitranche lending occurs when a lender simultaneously takes the role of both senior and junior lender as shown in Figure 6.

Lenders may prefer unitranche lending because:

- _ It avoids being subordinated to a senior lender in the "recovery queue" and therefore may offer greater control and recovery should things go wrong.
- _ It can offer higher margins than pure senior lending, although it can be riskier due to the higher leverage.

FIGURE 6: CORPORATE INFRASTRUCTURE FINANCING STRUCTURES



Source: DWS

Security over assets

The third type of structural protection comes from being a secured lender. Being secured is one of the main advantages of private debt. By taking security over assets, lenders protect themselves from other creditors (such as unsecured creditors) stepping in and laying claim to assets. The type of security will depend on whether lending was done at Op Co or Hold Co level. Figure 7 provides examples of the types of security available.

Covenants (affirmative, financial and negative)

The fourth and final type of structural protection is covenants. Covenants fall into three main categories.

Figure 8 lists a number of specific types of covenants – the customised nature of covenants means that an endless variety of covenant permutations and combinations can be used by lenders and it is probably best to focus on the principles behind covenants.

One way to view covenants is through an accounting paradigm but then to overlay the dimension of the time in order to recognise that accounting statements may not always provide a prospective view of financial soundness. When viewed in this way, we can make a few observations

- _ Accounting statements represent a snapshot in time, are not continuously updated and some non-financial actions may take time to show up in accounting statements. Covenants can address this shortcoming.
- _ Covenants are tools for lenders to encourage borrowers to proactively protect and strengthen key financial metrics for the borrowing entity e.g. debt service coverage ratios and limits on leverage limitations such as those linking maximum leverage to a multiple of earnings. In this way they can act as a valuable deterrent against actions which could ultimately impact financial soundness over a longer period of time e.g. the sale of key assets may create near term cashflow advantages but may adversely impact the longevity of the project.
- _ However, on the other hand, covenants impact the running of the business and, if overly restrictive, and cause more harm than good. For this reason, they are better viewed as “guardrails”; leaving managers free to run the business as they see fit but “biting” or “sounding the alarm” when those actions may damage the longevity of the project.

FIGURE 7: SECURITY

Type	Description
Concession agreement	Ensures lenders can “own” the rights to build and operate the project and receive directly a portion of the revenues/compensation proceeds should the borrower default.
Plant and equipment	Especially important where it forms a significant part of the project assets.
Real property	Lenders may want to acquire any land if the borrower defaults and sell it to recoup debt.
Construction agreement	Ensures lenders directly receive liquidated damages/compensation proceeds under the Construction Agreement to continue the project or recoup debt.
Parent company guarantee	Lenders may want to have recourse to any guarantees offered by the construction company.
Key project agreements (e.g. operating & maintenance, offtake and supply agreements)	Ensures lenders directly receive revenues/compensation proceeds under key project contracts to continue the project or recoup debt.
Project insurance	Lenders need recourse to lay claim to insurance proceeds if an insured event wipes out the project.
Bank accounts	Allows control over project cashflows
Products	Production by the infrastructure project (e.g. energy) will be owned by the lenders should the borrower default.
Other (e.g. consents and permits; intellectual property rights)	Can be important to maintaining continuity of the project.
Shares in Op Co	Lenders can take ownership of the project and sell or operate to maximise recovery.
Completion and cost overrun guarantee	Reassure lenders that the project will be completed on time and in budget. Could be provided by shareholders where there is no construction contract.
Management agreements	Affords lenders access to key employees need to run the project.
Equity contribution agreements	Lenders call on additional equity injections agreed to by shareholders/sponsors to continue or de-lever the project.
Collateral warranties	Affords lenders the right to enforce warranties provided by professional services providers to the project.
Direct agreements	To protect lenders from losing any investments or project assets and step-in where the project company defaults on any of its obligations under say the concession agreement, construction agreement or supply agreement.

Source: DWS.

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FIGURE 8: COVENANTS

Type	Description
Affirmative (positive) covenants	Actions imposed by the lender on the borrower which, if not implemented, may constitute a default by the borrower.
Restrictive (negative) covenants	Lender-imposed limitations on the borrower which, if breached, could result in specified interventions by the lender
Financial covenants	A sub-set of the above two categories but important enough to constitute a category in its own right. Lenders will require borrowers to maintain specified financial metrics within specific agreed ranges and block dividends or call an event of default if ranges are not met.

Source: DWS.

The evidence on infrastructure debt as a “secure income” asset class

In comparison to other alternative asset classes such as real estate, default data for infrastructure debt has a long history that traces back to the 1980s. This provides investors with useful information, describing the long-term credit performance of infrastructure debt through different macroeconomic cycles. Credit performance data from default studies refer to rated infrastructure debt issued by both public and private issuers, thus this information excludes credit performance of unrated infrastructure bonds or loans but does include data on the performance of private loans.

By analysing past experience on default rates and credit losses for infrastructure debt it is possible to assess the historical resilience of debt issued by infrastructure projects.

We demonstrate the resilience of infrastructure debt from the perspective of an investor in private European infrastructure debt with an 8-year maturity⁹ and contrast this to an investment in corporate bonds of a similar maturity and credit quality. The gross spreads¹⁰ an investor in private, European infrastructure debt can expect to earn in current market conditions (January 2021) are shown in Figure 9 but decomposed into two components:

- _ The net spread after expected loss
- _ Expected loss, which is calculated by considering the probability of a default and the resultant losses suffered after any recoveries are made from the borrower (see Box 3).

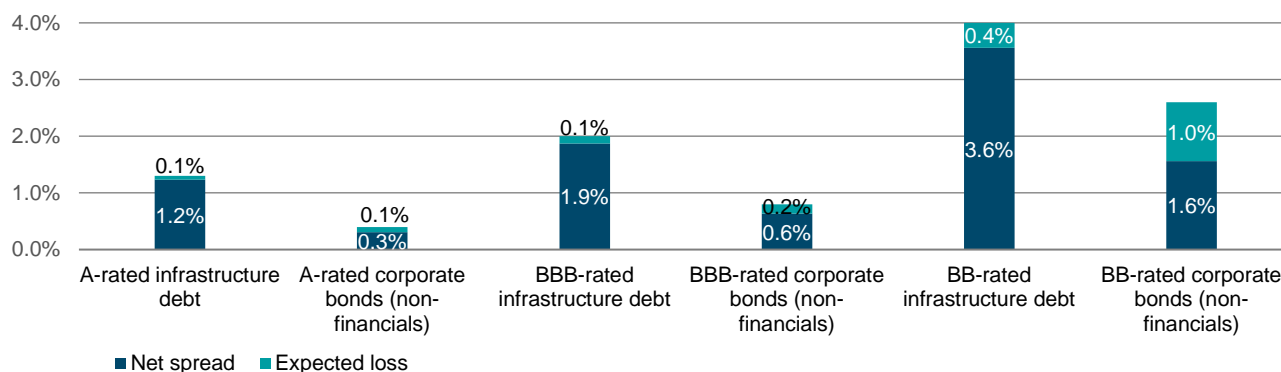
Figure 9 demonstrates that across both investment grade and sub-investment grade infrastructure debt investors can expect both a higher gross spread and a lower expected loss due its resilience. This is not surprising given that infrastructure debt is generally secured by a real asset. This means that, in the case of a default, this translates into comparatively higher recovery rates (or lower expected losses).

Looking at yields, BB-rated private infrastructure debt offers a significant yield pick-up relative to corporate bonds with a comparable credit quality, as compensation for illiquidity (and the complexity) of investing in private markets. But this benefit would appear to not be at the cost of higher expected losses.

The benefits appear most pronounced in the sub-investment grade area where, expected losses are estimated at 0.4% p.a.¹¹ versus 1% p.a. for similar maturity corporate bonds. Combined with a healthy gross credit margin, then the net credit spread of c. 3.6% p.a. is more than twice that of similarly rated corporate bonds of a similar maturity.

We conclude that the resilience of infrastructure lending makes it an ideal asset class for pension funds seeking secured income at better risk adjusted yields than may be available in traditional credit markets.

FIGURE 9: 8-YEAR MATURITY EUROPEAN CREDIT SPREADS AND EXPECTED LOSSES



Source: Moody's and DWS

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CONCLUSION

Pension funds, in search of higher yields and unburdened by the regulatory constraints of insurers, can create secure income cash flow streams from infrastructure debt by focusing on careful asset selection and structural protections. These secure cashflows also benefit mature pension funds who increasingly find themselves needing greater positive cashflows from their investments to meet payments to beneficiaries.

Private infrastructure debt lends itself to customisation of terms which can improve security for debt holders. There are a variety of ways to achieve such protection which,

when combined with careful asset selection, allows investors to earn superior risk-adjusted returns through a robust, stable and secure stream of cashflows.

Using default data on public and private infrastructure debt we can show that both investment grade and sub-investment grade infrastructure debt offer lenders significantly enhanced protection from expected losses relative to lending to non-financial corporate borrowers

¹ Payment-in-kind (PIK) arrangements allow for interest to be added to the capital amount and paid at the final maturity date. As a result, the loan amount increases over the term. PIK arrangements create a series of forward starting loans for an amount equal to the deferred interest payments. Uncertainty increases with time and so lenders demand a higher credit risk premium for longer term lending. PIK structures therefore compensate lenders for the risk and uncertainty associated with the outstanding loan amount growing as time passes.

² Typically corresponds to a rating of B+ or lower.

³ Cross-over refers to debt whose rating is on the cusp of investment grade and sub-investment grade.

⁴ Expected credit rating of BBB- to BB-.

⁵ Also known as requiring cash interest payments and debt amortisation over the term of the loan.

⁶ Private infrastructure debt differs from public infrastructure debt. The former is more akin to an “over-the-counter” arrangement where investment terms are customisable between borrower and lender whilst public debt terms are typically not customisable.

⁷ Also known as the “pull-to-par” effect. A similar argument for equities would rely on mean reversion over an uncertain time period and so makes equities less attractive as an asset class for meeting cashflows.

⁸ Moody’s do consider expected loss when arriving at their credit rating

⁹ Our choice of 8-year maturity is driven by the maturity of an infrastructure debt strategy that may be suitable for pension funds not looking to invest in ultra-long dated infrastructure debt in order to retain flexibility in the end-game planning.

¹⁰ Gross spreads are based on DWS estimates of private infrastructure lending margins as at January 2021

¹¹ The expected loss of 0.4% is calculated by using the Moody’s 8-year cumulative probability of default for BB-rated infrastructure debt and using an average recovery rate (53%) weighted 50/50 in senior secured and subordinated debt. Assuming a 0% recovery rate would increase the expected loss to 0.9% which would still be less than the 1% for BB-rated non-financial corporate bonds.

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