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The compelling case for infrastructure debt in a CDI strategy

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The current high valuation of public assets often makes it difficult for defined benefit pension schemes to balance their need for excess returns with the risks necessary to obtain them. Investing in less traditional assets like infrastructure debt provides, we believe, an excellent way to balance these risk and return requirements. Furthermore, we argue that infrastructure debt is a particularly attractive component of cashflow driven investment (CDI) solutions, given its maturity profile and performance in stressed scenarios.

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UK defined benefit schemes have been in a difficult position for many years, but their funding position has generally improved recently for a number of reasons ranging from asset performance and mortality experience to higher transfer value activity. However, most pension schemes still face an uphill struggle to earn the return on assets required to meet their outstanding pension obligations at a time when the outlook for a number of public equity and fixed income markets is challenging. In these circumstances, many schemes do not have the risk tolerance required to invest in higher-returning and higher-volatility assets. Instead they are looking for 'contractual cashflow' (basically, credit) assets with a maturity and liquidity profile that generates the necessary returns and cashflows over the term of the maturing liabilities.

These contractual cashflows lie at the heart of the CDI approach to managing pension fund portfolios. However, it requires that schemes should think a little differently about risk. Those using contractual cashflows need to be highly confident that the assets will deliver the cash required in most scenarios. What would undermine that confidence is if there is a permanent loss, so looking at how different asset classes perform during periods of real stress may be the most relevant measure of their value.

In these terms, the junior infrastructure debt part of the market is one we see as providing a helpful risk/return profile, particularly for pension funds that aren't constrained by regulatory capital regimes[1]. The historical losses experienced on Ba-rated infrastructure debt are significantly lower than those of corporate bonds of the same rating[2]. In addition, Ba infrastructure pays a premium above Ba corporate bonds due to the private market nature of the transactions involved. We believe that this creates a compelling investment argument worthy of serious consideration for CDI strategies, as well as more traditional pension fund investment approaches.

[1]Understanding junior debt, Schroders, 2018.
[2]Moody's Infrastructure Default and Recovery Rates, 1983–2017.

Choosing a better solution

The strategy of using a portfolio of government bonds (known as gilts in the UK) to match liability cashflows has been adopted by many pension schemes as part of a liability-driven investment (LDI) portfolio. At its heart, this is based on the logic that a pension scheme's payments to pensioners are very similar to bond cashflows. These cashflows can be predicted and used to match the projected pension payments. In addition to gilts there are a wide range of other bond assets that also provide contractual cashflows, typically backed by companies or other entities rather than governments.

A cashflow-driven investment (CDI) approach suits schemes that are reasonably close to meeting their liabilities with a matching gilt portfolio, but are not quite there yet. The main attraction is that it offers significantly more certainty of achieving the target returns required to meet each liability payment than a more traditional growth-asset strategy incorporating equity, credit and alternative assets. Importantly, under a CDI approach the bonds are held to maturity or, where that is not possible, replaced by a bond with the same cashflow profile. Because the portfolio yield is known at the time of purchase, the assumptions on which a CDI portfolio is built are therefore more certain.

A typical CDI solution combining a range of these so-called 'contractual assets' is illustrated in Figure 1.

CDI design considerations

It can be seen that it is not necessary for the asset cashflow timings to exactly match those of the liabilities if a CDI solution is combined with liability driven investment (LDI) hedging to fill in any gaps. However, a broad cashflow match achieved with the CDI assets will reduce the amount of LDI hedging (and associated assets) required. Furthermore, to the extent that there is a mismatch in cashflow timing, it is better to receive any excess asset cashflows earlier in the life of the liability cashflows (as illustrated by the excess cashflows in the above diagram) so as to reduce the leverage of the LDI portfolio over time.

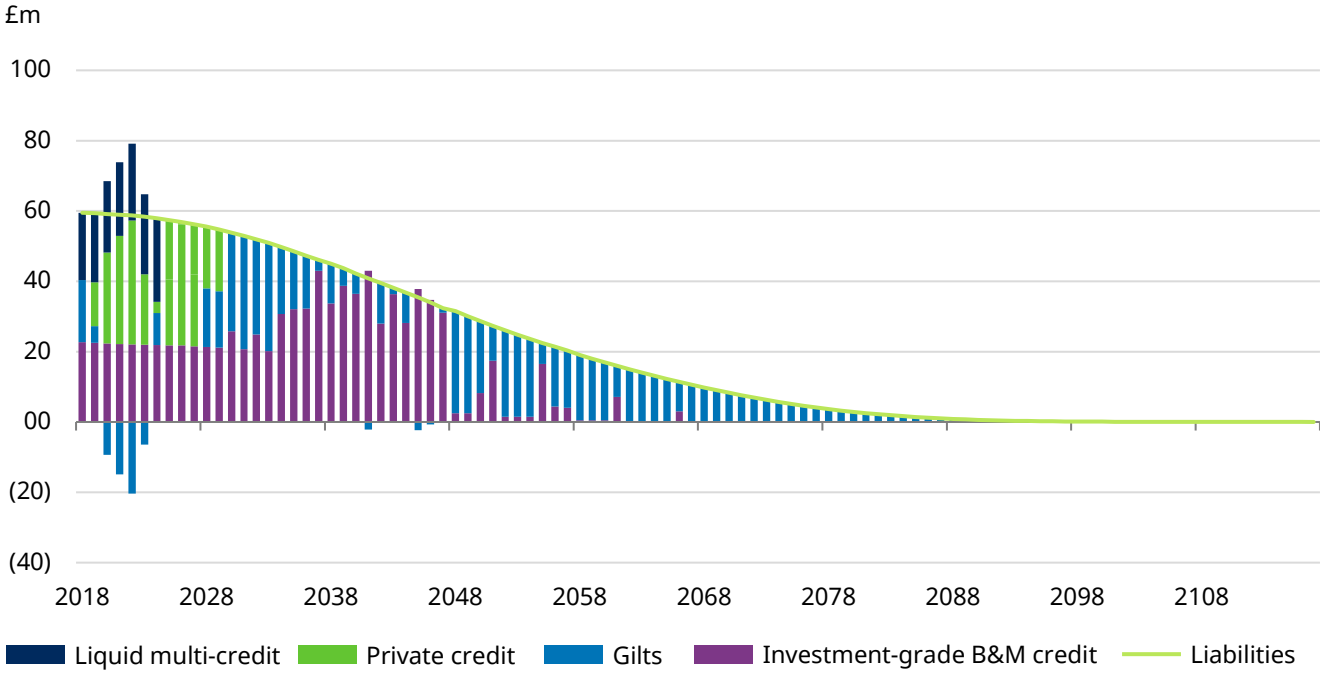
This gives some flexibility in solution design. In particular, solutions can be front loaded to provide excess returns from contractual cashflow assets in the earlier years. These can then be reinvested in gilts to meet later cashflows as part of the integrated LDI process. Indeed, from a covenant risk perspective, this is often the optimal approach as the portfolio is subject to more risk (or higher illiquidity in the case of infrastructure debt) at a time when the trustees of the scheme can be more certain about the strength of their sponsoring company's covenant. This sort of strategy can work well for a scheme that is aiming to negotiate a buy-out with an insurance company willing to take over the liabilities. Getting to that stage will depend on improving the funding as the fund matures or as more of the liabilities are settled through transfer values and by other means.

Spread x duration

The key measure for CDI is the spread on the assets over gilts, net of defaults, multiplied by the asset duration, with a higher value preferred. This provides a way of calculating the effective return contributions from a range of assets with different terms and spreads and makes direct comparisons much easier. Assets can be ranked according to this spread x duration measure, as shown by the contours linking equal values on the chart in Figure 2.

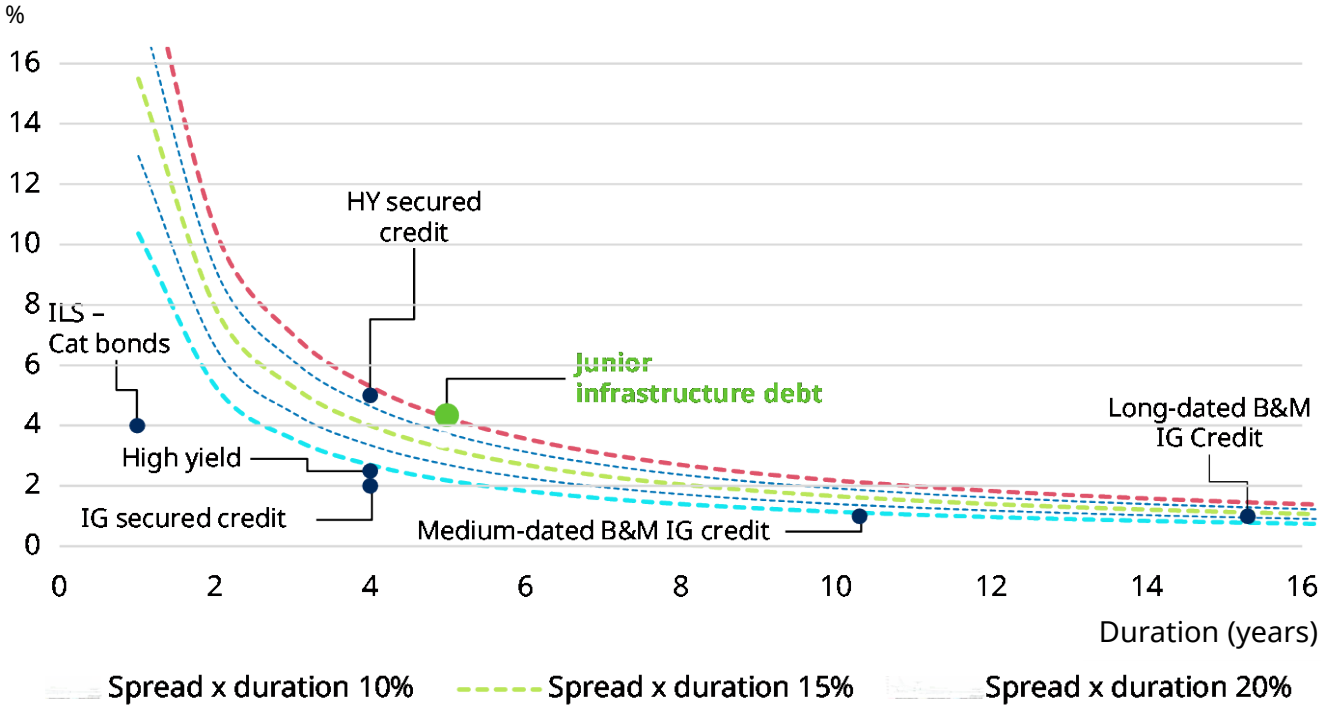
It is largely immaterial whether the asset is fixed rate or floating rate. Indeed there is some advantage in assets that generate excess cashflows in the early years having some floating rate exposure as the reinvestment of any excess cashflows can be more easily hedged

Figure 1: How a CDI strategy might help match a typical scheme's liabilities



Source: Schroders, June 2018.

Figure 2: Comparing spread x duration for contractual assets



Source: Schroders, June 2018.

Why junior infrastructure debt?

Junior infrastructure debt ranks highly as a CDI asset. The net of default spread on the asset is attractive thanks to the fact that it doesn't qualify for Solvency II capital relief and so isn't as popular with capital-constrained insurance companies. This means spreads for junior debt haven't compressed as much as they have for senior debt.

Also, typical junior debt maturities of 8–10 years provide a meaningful duration over which this spread is earned whilst falling within the 'sweet spot' of maturities that expire within the term over which many schemes are seeking to earn excess returns before they seek to de-risk or prepare for buy-out by an insurance company as the plan matures.

Furthermore, the diversification characteristics of the asset mean that it can complement exposures to a range of typical contractual cashflow assets, such as investment grade corporate debt, high yield corporate debt, corporate lending and property-related lending.

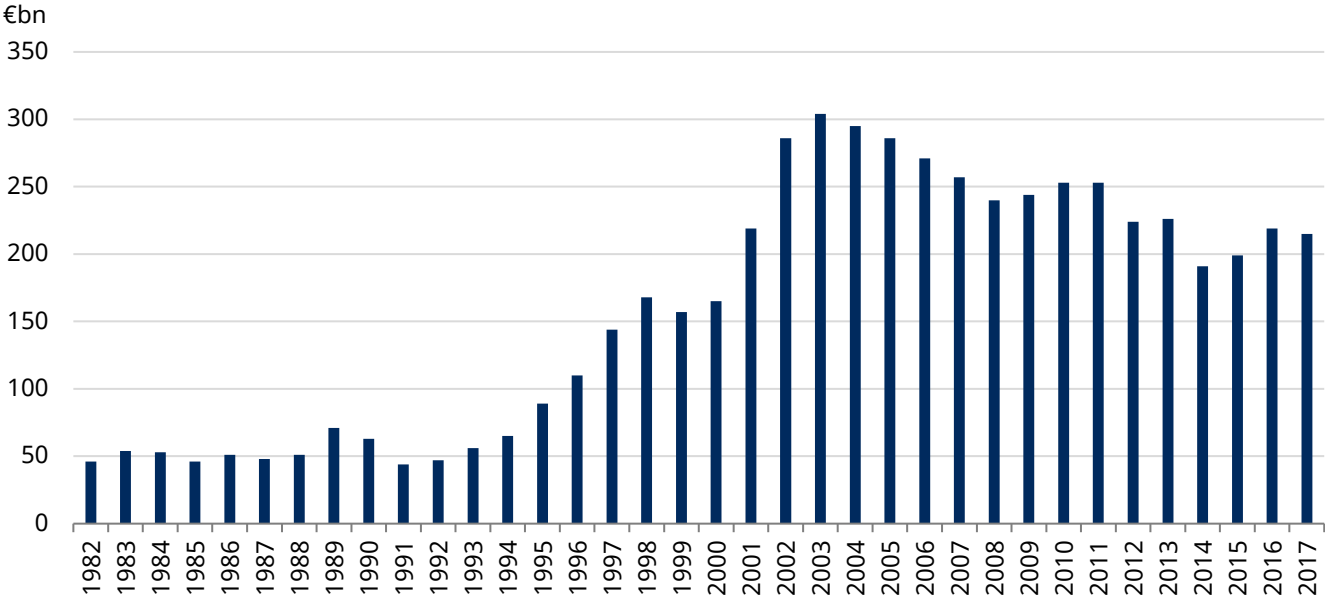
If investments are made through typical limited partnership structures, it means that the asset is accessible to pension schemes of most sizes. Moreover, as infrastructure debt is by its nature managed on a 'buy and maintain' basis with assets held to maturity, it fits perfectly into a CDI solution design. The only caveat to this is the risk of early prepayment, but even here we find that terms can be negotiated to include non-callable periods and compensation for early repayment.

Of course, given that this asset will be part of a buy and maintain portfolio, these benefits could be significantly compromised if investors were to suffer serious defaults. We have therefore investigated how junior infrastructure debt would have performed as part of a pension fund investment portfolio, in particular in terms of defaults.

What history can teach us

Moody's have recorded historic default and recovery data across all their rated securities in the corporate infrastructure and project finance database. The data go back to 1982, although there was a significant uptick in the number of B- and Ba-rated securities around 2001/2002, as shown in Figure 3.

Figure 3: B- and Ba-rated infrastructure securities have jumped since 2000



Source: Moody's infrastructure default and recovery rates, 1983–2017.

Using the same set of Moody's data, we were able to determine how many securities defaulted in each year as a percentage of the number of securities in the database (Figure 4). We used the rating one year prior to default (the longest time horizon available in the data set) to ensure we captured securities which experienced downgrades prior to default but could conceivably be held in a B/Ba portfolio, i.e. we intentionally captured securities which migrated down to C rating at the time of default.

We were also able to identify the recovery rate for the securities which defaulted in each given year. Not all of the securities have recovery data, but we were able to make estimates for most years except 2010, where we had to use the recovery rate on a Caa1 security to provide a best guess. The Caa1 security we used for recovery rates data had a very similar profile to the B2 security which defaulted, both were senior secured securities issued by US-based utilities, so we believe this is a reasonable estimate. It is important to note that the data set is not large, and the number of securities that default each year is low, so the data aren't completely robust from a statistical standpoint. However, they are consistent with infrastructure debt experience more broadly – the instance of default has been low, and the numbers are small.

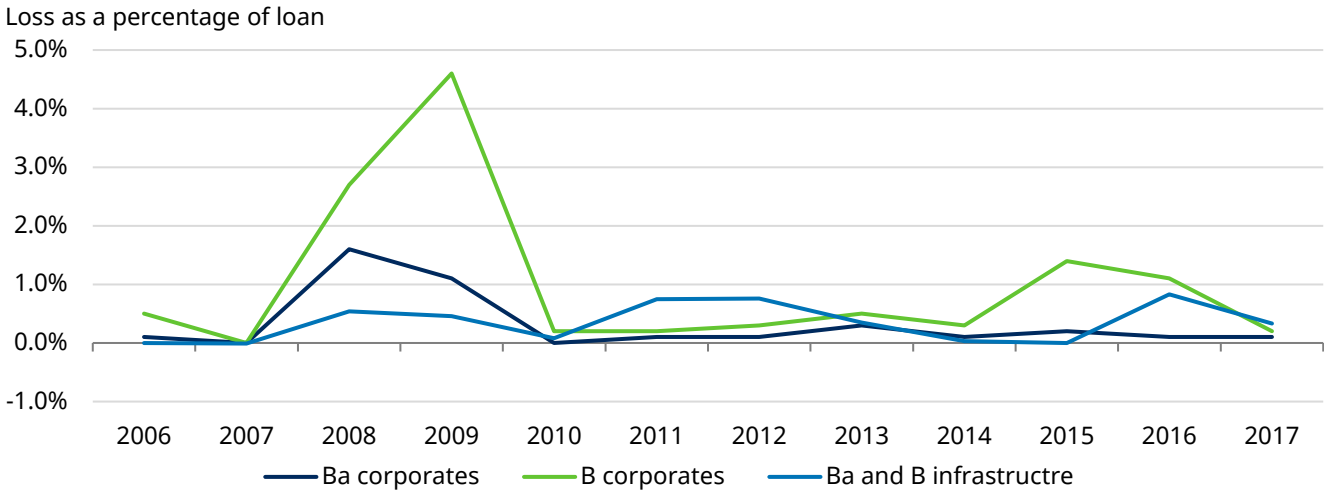
Figure 4: Infra debt default rates have been low for many years

Year	B/Ba defaults (num)	B/Ba defaults (%)	B/Ba recovery rate	Realised B/Ba loss per annum
2006	0	0.0%	N/A	0.00%
2007	2	0.8%	100.7%	-0.01%
2008	4	1.7%	67.7%	0.54%
2009	2	0.8%	44.0%	0.46%
2010	1	0.4%	79.0%	0.08%
2011	2	0.8%	5.1%	0.75%
2012	3	1.3%	43.5%	0.76%
2013	2	0.9%	60.8%	0.35%
2014	4	2.1%	98.3%	0.03%
2015	0	0.0%	N/A	0.00%
2016	3	1.4%	39.3%	0.83%
2017	2	0.9%	64.1%	0.33%

[1]Recovery rate from defaulted Caa1 loan. [2]Negative where bond holders were repaid more than principal – likely due to prepayment penalties or waiver/default fees. Source: Moody's Infrastructure Default and Recovery Rates, 1983–2017 and Schroders.

In Figure 5 we have plotted annual credit losses for B and Ba infrastructure securities against those for corporate securities of Ba and B rating.

Figure 5: Ba and B infra securities have been more reliable than their corporate counterparts



Source: Moody's Infrastructure Default and Recovery Rates, 1983–2017 and Annual Default Study: Corporate Default and Recovery Rates, 1920–2017, and Schroders.

As these data show, the realised losses on a portfolio of B and Ba infrastructure securities are extremely low and are far less cyclical than losses on traditional corporate securities. One explanation for this is that infrastructure loans are backed by 'essential' assets like water, renewable energy projects or roads and are therefore less correlated to GDP and the broader business cycle. This means defaults and losses tend not to increase during difficult economic times and may be a very useful asset to have in a portfolio in times of stress.

How does an investment in junior infrastructure debt work?

For a junior infrastructure debt fund:

- Investments would be made over an 18–24 month period with capital called as investments are made
- As a weighted average across the portfolio, floating loans would pay three-month GBP Libor +400bps pa and fixed loans would pay eight-year GBP swap rate +400bps pa, with interest being passed through to investors on a quarterly basis
- 10% of the portfolio would amortise each year, with prepayments being reinvested during the 'ramp-up' period of the fund term and then paid out as distributions.
- The strategy would thus be 'buy and maintain', apart from the initial ramp-up period
- Loans would be valued using discounted cashflow methodology

While some junior infrastructure debt may be subject to prepayment risk, as a private asset it is often possible to negotiate early redemption terms that provide compensation.

Conclusion

CDI solutions seek to secure liability cashflows with contractual assets held to maturity. We argue that junior infrastructure debt is an ideal asset to provide at least some of those cashflows for a number of reasons:

- It has an attractive net 'spread x duration'
- It has a maturity within the 'sweet spot': not too short and not too long
- It provides diversification of corporate and real estate risks of other CDI assets
- It is accessible as a 'buy and maintain' asset for schemes of all sizes

This is a winning combination, we would argue, for those schemes close to full funding that need an extra push to get them over the finishing line, but can't afford to take too much risk. It should give them just the nudge they need, while providing trustees and advisers with the necessary reassurance that their funding ratio is protected.

Key risks of infrastructure debt

- **Interest rate risk for fixed-rate instruments**: interest rate volatility may reduce the performance of fixed-rate instruments. A rise in interest rates generally causes prices of fixed-rate instruments to fall
- **Deterioration of the credit quality of the bond:** caused by a change in the market environment (for commercial activities) or a change in law/regulation (for all infrastructure activities)
- **Risk of issuer default**: a decline in the financial health of an issuer can cause the value of its bonds to fall or become worthless
- **Prepayment risk**: the capital may be repaid by the borrower before reaching maturity
- **Exchange rate risk**: where assets are denominated in a currency different to that of the investor, changes in exchange rates may affect the value of the investments
- **Illiquid and long term investment risk**: due to the illiquid nature of the underlying investments, an investor may not be able to realise the invested capital before the end of the contractual arrangement (which is likely to be long term). If the investment vehicle is required to liquidate parts of its portfolio for any reason, including in response to changes in economic conditions, the investment vehicle may not be able to sell any portion of its portfolio on favourable terms or at all
- **Capital loss**: the capital is not guaranteed and investors may suffer substantial or total losses of capital
- **Greenfield risks:** in contrast to 'brownfield' investments, investments in 'greenfield' infrastructure assets expose investors to additional risks, in particular construction risk (e.g. construction delays, cost overruns, etc.) and deployment risk (e.g. capital being deployed in several instalments during construction period rather than upfront for brownfield investments)

Operational risks

- **Trade cancellation risk**: trades and settlements are made on a bilateral, negotiated basis. A last-minute trade cancellation can occur in the absence of standard trade and settlement processes via clearing houses
- **Service provider risk**: investments can be at risk due to operational and administrative errors, or the bankruptcy of service providers.