INVESTMENT STRATEGY & RESEARCH

RESEARCH BRIEF

Thomas Dutka and Risman Cornelius

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High Income Infrastructure Debt: A Formidable Friend In Turbulent Times

PATRIZIA

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01 Introduction

A FORMIDABLE FRIEND IN TURBULENT TIMES

As with its equity counterpart, private infrastructure debt has matured considerably as an investable asset class over a relatively short period of time. Its appeals are by now well established – low volatility backed by stable long-term cash flows, lower default risk versus broader corporate credit, typically robust inflation insulation, and favourable portfolio construction benefits. Indeed, the current uncertain and turbulent economic backdrop plays to its strengths. Additionally, it can play a pivotal role in a key secular trend that has gained significant traction in recent years - generating decarbonisation and broader sustainability outcomes.

In this brief, we provide an outline of private infrastructure debt as an asset class, with an emphasis on high income private infrastructure debt. We discuss the current state of play, and how the class compares to other higher yielding debt asset classes - particularly under current economic conditions with an increasingly pessimistic global backdrop. Indeed, strong underlying business fundamentals, elevated base rates, and a funding gap created by retreating bank funding have created a compelling opportunity in high income infrastructure credit.

> “Private infrastructure debt has matured considerably as an investable asset class over a relatively short period of time.

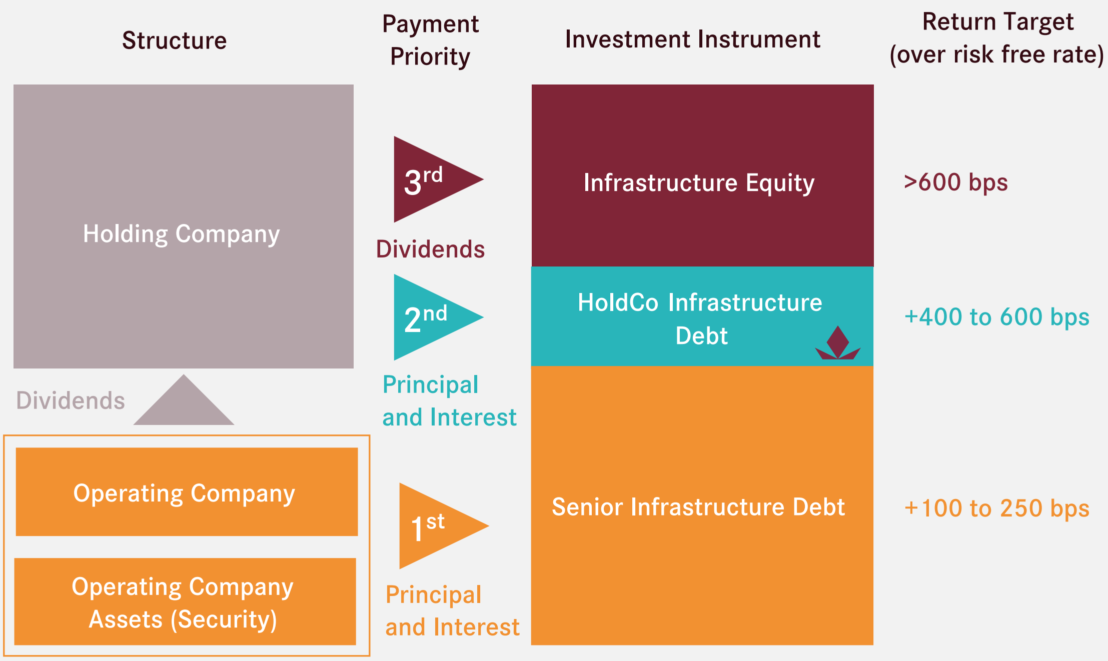
02 Infrastructure Debt – A Refresher

WHAT IS INFRASTRUCTURE DEBT?

Infrastructure debt broadly refers to the loan or bond component of an infrastructure asset's or company's capital structure. It is typically the financing of a project, asset or corporation backed by long-term contracted cash flows and protected by robust covenants. That said, it is by no means a homogenous class. For example, the infrastructure debt market can be segmented into direct private loans and publicly-issued bonds, fixed or floating rate instruments, secured or unsecured, senior or junior ranking, and investment grade or non-investment grade.

PATRIZIA Infrastructure's debt strategy is a "High Income" strategy, targeting spreads of 400 to 600 basis points above risk free rates (EURIBOR in the case of euro-denominated investments). The strategy is agnostic as to where it invests in the capital structure – debt investments can be senior or subordinated (legally or structurally at holding company level) and investment grade or sub-investment grade provided they are appropriately structured. The target rating profile of the strategy is BB/Ba, where there is less liquidity provided by banks and insurance investors. PATRIZIA Infrastructure generally targets investing in private holding company ("HoldCo") debt of core infrastructure assets with investment grade senior debt, generating subordination and illiquidity premia as shown in Figure 1 below.

Figure 1: Illustrative infrastructure investment structure



= PATRIZIA Infrastructure Debt focus area

Holdco debt ranks between equity and senior debt. Usually shorter in tenor than senior ranking debt, it does not directly hold the underlying assets. HoldCo debt's credit risk profile means credit spreads tend to be materially wider than senior debt, with an implied credit rating of BB/Ba2 and below. HoldCo debt tends to constitute the smallest proportion of the overall capital structure relative to equity and senior debt.

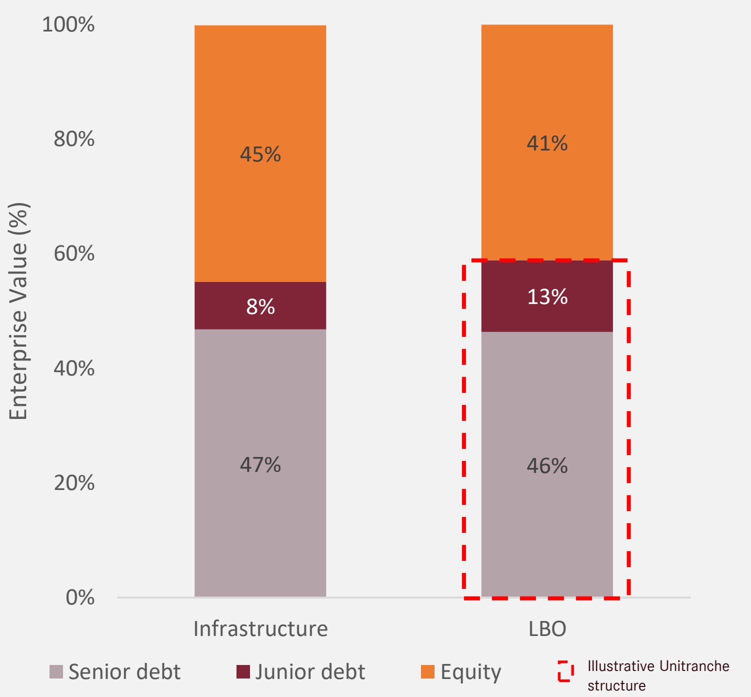
High Income Infrastructure Debt and Direct Lending

When considering an allocation to high income infrastructure debt, we find investors are increasingly comparing and contrasting it with direct lending – that is, the provision of finance to borrowers directly by institutions without a bank intermediary. This market has increased in size considerably over the past decade or so – especially in the United States and Europe - buoyed by institutional investors re-allocating fixed interest books toward more illiquid – and higher yielding – debt segments. Underpinned by significant capital raises in recent years, the largest direct lenders have raised significant capital pools and are now able to compete with the syndicated loan and high yield bond markets for deals.

A key trend among direct lenders is that they often focus on the offer of unitranche loans - that is, a hybrid form of lending where, rather than issuing senior and junior debt, a single tranche is issued. Accordingly, in such instances the return offered will be above senior debt as recompense for the absence of a riskier subordinated tranche and illiquidity.

Another trend is that direct lending is generally secured against small- to mid-cap businesses across various sectors, some of which exhibit material cyclicality; by contrast, high income infrastructure loans are typically secured against businesses or assets with long term stable cash flows. It is these cash flows that support the relatively high enterprise values and equity buffers of infrastructure businesses compared to leveraged buyouts that direct lending often supports (see Figure 2).

Figure 2: Capitalisation of infrastructure and leveraged corporates[1]



Source: Bloomberg, Morningstar, IHS Markit, PATRIZIA.

Leveraged loans are also increasingly structured on a covenant-lite basis whereas high income infrastructure debt typically benefits from more robust covenants. Over 90% of European leveraged loans have been structured on a covenant-lite basis in the last twelve months, this compares to below 80% of loans structured five years ago.[2]

> “
> **Leveraged loans are increasingly structured on a covenant-lite basis whereas high income infrastructure debt typically benefits from more robust covenants.**

1. Leveraged capital structure (European) sourced from Morningstar, data as at February 2023 (last twelve months). Infrastructure data is weighted average capitalisation of portfolio companies in PATRIZIA Infrastructure Debt Partners I program at the time of investment.
2. Morningstar European Leveraged Loan Index.

03
The Case for High Income Infrastructure Debt

HIGH INCOME INFRASTRUCTURE DEBT OFFERS NUMEROUS BENEFITS

The investment rationale for infrastructure debt – and, in our view, the HoldCo segment in particular – is a compelling one, with several key aspects to the investment rationale. When structured appropriately, it can present a favourable return profile in the current market environment, possessing risks typically nearer to senior debt with returns close to core infrastructure equity. It also benefits from premia relating to complexity, illiquidity, subordination and bank disintermediation. More topically, HoldCo infrastructure debt is well placed to handle bouts of rising rates and high inflation, with the potential to generate favourable sustainability outcomes.

COMPLEXITY PREMIA

As an iteration of private credit, high income infrastructure debt possesses higher complexity relative to senior investment grade debt and many other fixed interest asset classes. As a result, it generally falls at the higher-returning, more specialist end of the spectrum – albeit retaining a degree of capital preservation benefit given its longer-term cash flow certainty.

Compared to direct lending, it also represents a niche market requiring expert knowledge, with relatively complex technical lending terms. Accordingly, lenders with greater scope to undertake their own credit analysis are better able to identify attractively priced opportunities and capture additional return premia. Given its status as a relatively niche class, high income infrastructure debt is a relatively illiquid market. These traits are reflected in the relatively high returns available, which are superior to comparably rated high yield bonds and leveraged loans as shown in Figures 3 and 4 below – albeit with materially lower volatility, which will be discussed in more detail later in this brief. Performance data on direct lending is, by its nature, not in the public domain – leveraged loans are the closest proxy.

Figure 3: All-in yields to maturity (31 December 2022)[3]

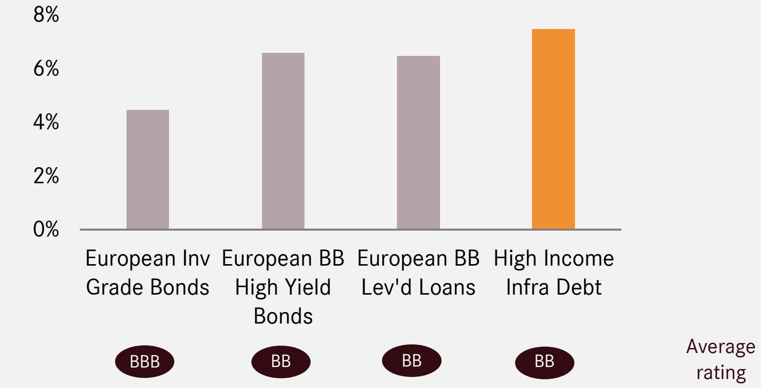
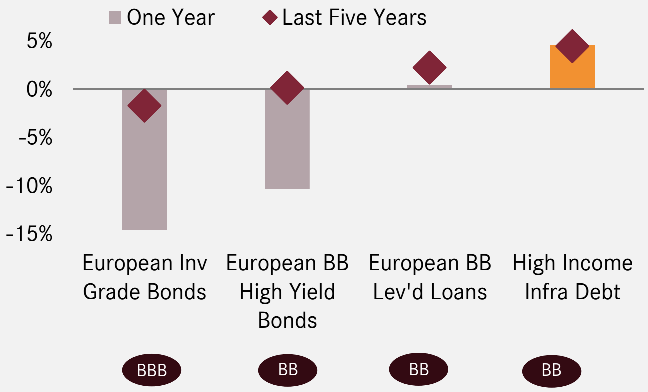


Figure 4: Annual returns[3]



Source: Bloomberg, Morningstar, IHS Markit, PATRIZIA.

3. As at 31 December 2022. All data hedged to euros. Indices used – Bloomberg Pan-European Aggregate Corporate Total Return Index, Bloomberg Pan-European High Income Index, Morningstar European Leveraged Loan Index, PATRIZIA High Income Infrastructure Debt Strategy performance history. For PATRIZIA High Income Infra Debt Strategy, all-in yield to maturity is the expected gross IRR for assets within the PATRIZIA Infrastructure Debt Partners I investment programme. PATRIZIA annual returns figures are gross IRRs (on a pre-fees basis), on all assets since 2008, excluding senior investment grade investments made since 2014, and including interest rate derivatives. Past performance is not a reliable indicator of future performance.

PORTFOLIO CONSTRUCTION BENEFITS

High income infrastructure debt tends to exhibit low volatility and a low correlation with both equities and other fixed income asset classes. This is the result of its long-term cash flow stability and inflation-linkage of revenue. In addition, the asset class is less frequently marked-to-market than publicly-traded credit asset classes. Given the benefits of higher returns and lower volatility, PATRIZIA high income infrastructure debt has produced a high historical Sharpe ratio.

Together with its low correlation to both equities and traditional fixed interest relative to other forms of higher-yielding debt, it typically presents favourable diversification traits within a multi-asset portfolio, including relative to allocations to leveraged loans and high yield bonds.

Figure 5: Long term asset class correlation[4]

	European Equity	Global Equity	High Yield Bonds	Leveraged Loans	Inv Grade Credit	PATRIZIA High Income Infra Debt
European Equity	1.0					
Global Equity	0.9	1.0				
High Yield Bonds	0.7	0.7	1.0			
Leveraged Loans	0.6	0.6	0.8	1.0		
Inv Grade Credit	0.5	0.5	0.6	0.5	1.0	
PATRIZIA High Income Infra Debt	0.1	0.1	-0.1	-0.1	0.2	1.0

Source: PATRIZIA, Bloomberg

Figure 6: Long-term volatility (per annum)[4]

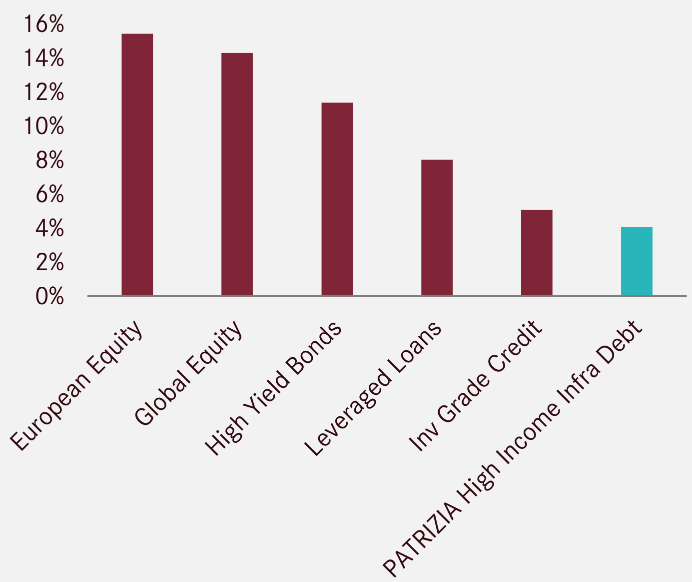
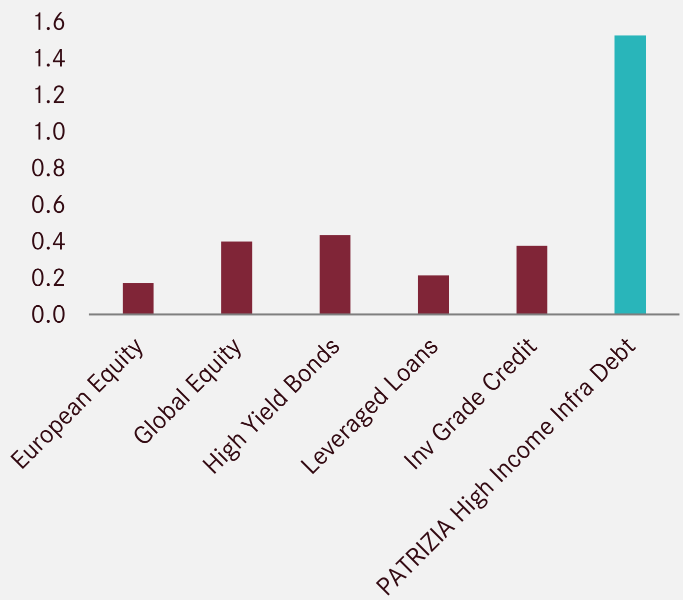


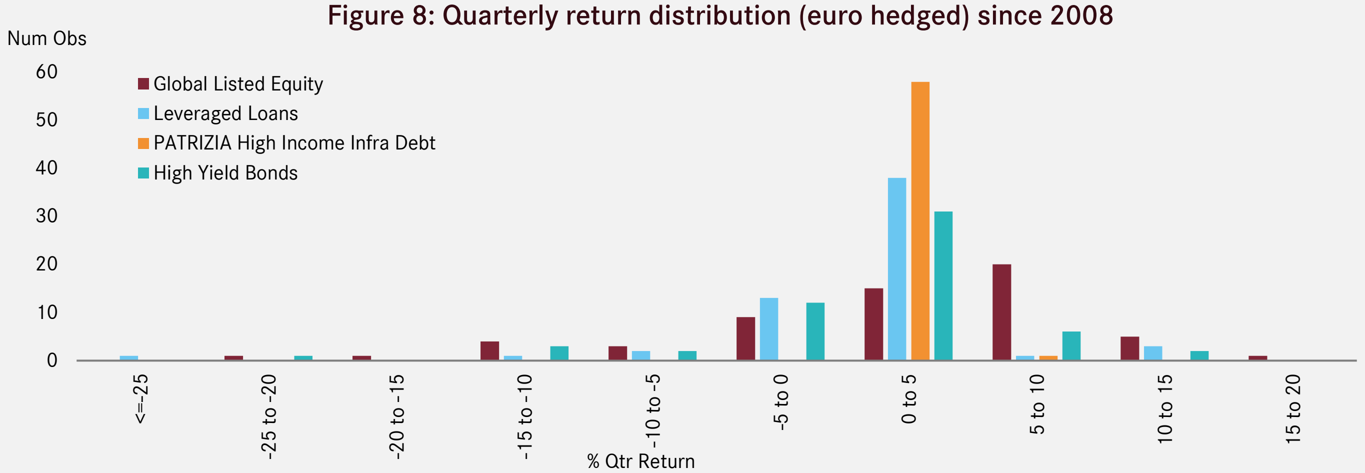
Figure 7: Long term Sharpe ratio [4]



4. Data from 2008 to 2022. Data series used in analysis: European Equity – MSCI Europe Index (EUR Hedged); Global Equity – MSCI World Index (EUR Hedged); High Yield Bonds - Bloomberg Pan-European High Income (Euro) TR Index (EUR Hedged); Leveraged Loans – Credit Suisse Leveraged Loan Index (EUR Hedged); Investment Grade Credit – Bloomberg Global Aggregate Credit Index (EUR Hedged), PATRIZIA High Income Infra Debt – strategy history. Sharpe ratio uses 3 Month EURIBOR as risk free rate.

The stability of PATRIZIA's high income infrastructure debt strategy returns is evident when comparing performance dispersion relative to similar types of credit – while high yield bonds and leveraged loans have generated more stable returns compared to global equities over the past decade, they nonetheless still experienced periods of significant upward and downward movements. By contrast, PATRIZIA's high income infrastructure debt strategy has returned between 0% and 5% each calendar quarter over the past decade – testament to its strong risk-adjusted return profile.

Figure 8: Quarterly return distribution (euro hedged) since 2008



Source: PATRIZIA, Bloomberg

To delve deeper into evaluating the portfolio construction benefits of PATRIZIA's high income infrastructure debt strategy relative to other forms of high yielding credit, we have analysed historical risk and return data to show the overall portfolio impacts for a European investor.

As a model portfolio, we have assumed the asset allocation of a typical European defined benefit scheme.[5] Within their return-seeking fixed interest sleeve, we have interchanged a 5% weighting between European high yield bonds, European leveraged loans, and PATRIZIA's high income infrastructure debt strategy, all hedged to euros over the last 15 years. As noted earlier, given the dearth of data on direct lending generally, the use of leveraged loans is considered as a proxy for direct lending allocations.

As the data reveals, the low volatility and relatively high return of high income infrastructure debt generates superior risk-adjusted outcomes. Even though the only change to the portfolio is a 5% allocation between different types of return-seeking fixed income, high income infrastructure debt – using PATRIZIA's track record - generates lower volatility, a lower worst quarterly return, and a higher return per unit of risk (as measured by volatility); all while generating a per annum portfolio return slightly higher than if allocated to leveraged loans or high yield bonds.

Figure 9: European defined benefit fund model portfolio – performance comparison

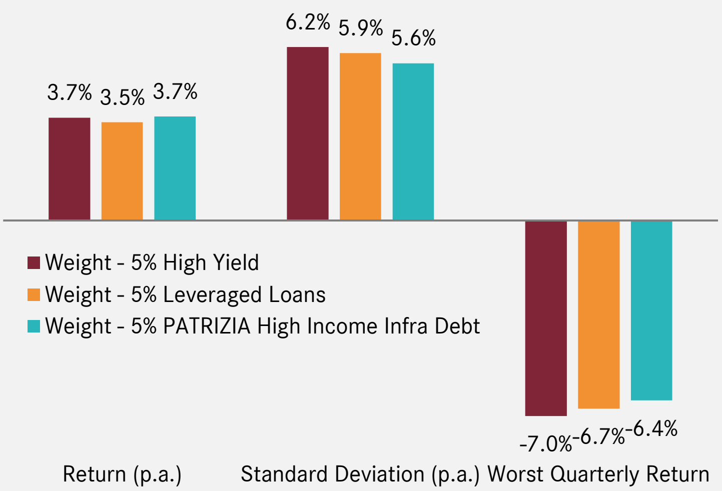
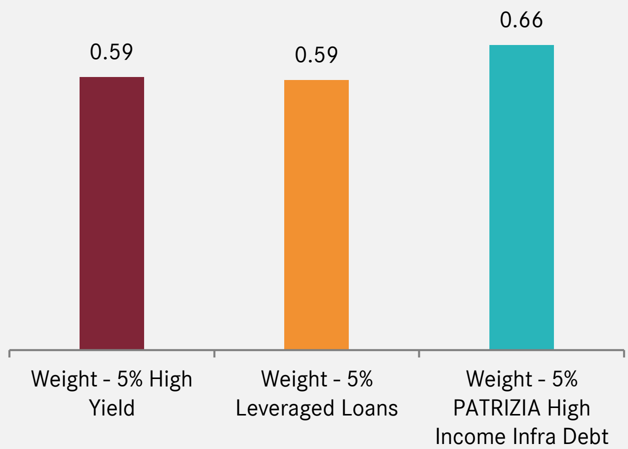


Figure 10: European defined benefit fund model portfolio – return per unit of risk



5. Model portfolio based on total asset allocation for European defined benefit scheme in "Investing in the future - European Asset Allocation Insights 2021: DB Asset Allocation Trends across the UK and Europe", Mercer.
6. Return per unit of risk is calculated as return per annum divided by standard deviation per annum.

FAVOURABLE CREDIT RISK PROFILE

While high income infrastructure debt can be subordinated to senior debt, it still benefits from long-term cash flow certainty, robust security and strong covenants. It also benefits from the equity cushion atop the capital structure; the typical equity buffer for PATRIZIA's infrastructure debt portfolio is around 35% to 50% - that is, the enterprise value of the borrower would need to decline by nearly half before lenders were impacted in the event of a default.

As Figure 11 below suggests, this high cash flow stability begets a lower incidence of non-performance, defaults and credit losses compared to other types of corporate debt at equivalent credit ratings. Given their capital-intensive nature, infrastructure investments tend to be backed by tangible, valuable assets. Additionally high barriers to entry and monopolistic traits further shore up future cash flows. As a result, in the event of default, infrastructure debt investors generally achieve higher recovery rates than other sectors, and infrastructure debt investors can expect the return of a larger proportion of their capital.

HIGH INCOME INFRASTRUCTURE DEBT ACHIEVES LOW CREDIT RISK BY INVESTING IN TRUE INFRASTRUCTURE ASSETS WITH STABLE CASH-FLOWS

Sustainable energy infrastructure and utilities

Assets operating under a regulated frameworks, backed by long-term offtake agreements or enjoying monopolistic market positions. Includes power generation (with a renewables focus), transmission and distribution assets, district heating, water utilities, grids and storage assets.

Transportation infrastructure

Assets generating revenue from tolls, availability payments under PPP projects or long-term contracts.

Examples include rolling stock fleets and mass transit systems, EV charging networks and electric-related mobility.

Social infrastructure

Social infrastructure corporates and projects including PPP structures, such as hospitals, schools, and healthcare facilities.

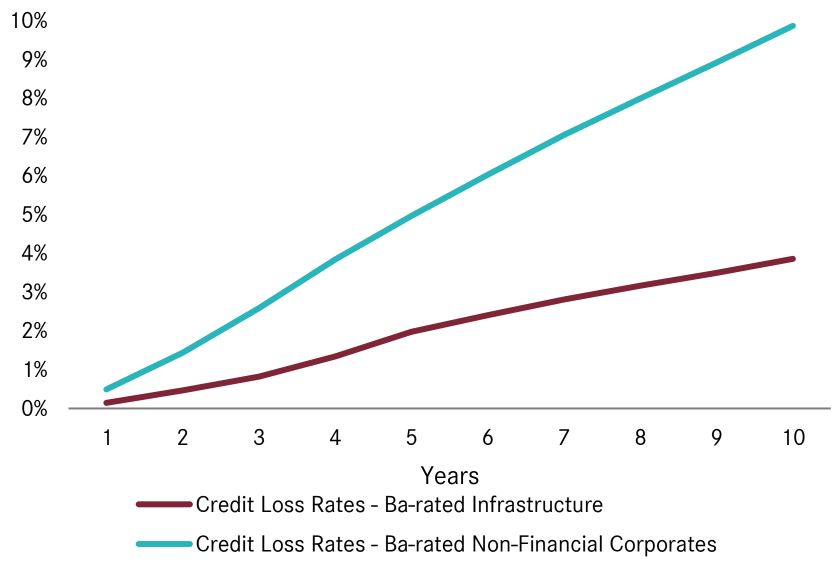
Digital infrastructure

Assets that facilitate connectivity and serve as a backbone for the digital transition. For example, mobile and broadcasting towers, fibre networks and data centres.

The strong credit risk profile of infrastructure debt is reflected in PATRIZIA's track record – over the past 20 years, PATRIZIA Infrastructure has invested in a diversified portfolio of fifty-one assets (as at 31 December 2022) and has not experienced a single default or any credit loss.

High income infrastructure debt is also underpinned by structural protections embedded in negotiated loan terms. For example, these usually include more robust covenants, lock up tests and security - by contrast, an overwhelming majority of leveraged loans issued in recent years have been covenant-lite. These structural protections are also likely to offer greater benefit during periods of downturn and defaults - an increasing risk in the current economic climate.

Figure 11: Historical cumulative credit loss rates[7]



Source: Moody's Infrastructure Default and Recovery Rates 1983 to 2021.

7. Moody's infrastructure credit loss rates incorporate segments outside the focus of PATRIZIA Infrastructure's debt strategies. For example, Moody's data include US and Asian merchant power deals, which have a relatively high default rate.

INSULATION FROM ECONOMIC CYCLICALITY

Infrastructure loans tend to be underpinned by assets well-placed to weather economic headwinds. This is often due to a combination of regulatory stability, pricing agreements via long-term contracts, and inelastic underlying demand. As a result, infrastructure debt that is externally-rated tends to exhibit an overall stable credit rating profile.

For example, loans funding mobile tower assets tend to be underpinned by longer-term, fixed price, indexed contracts with large high quality telecom operators.

Comparing performance to listed equities as a gauge, the resilience of PATRIZIA's high income infrastructure debt strategy has been considerably higher compared to other forms of higher-yielding credit such as high yield bonds and leveraged loans. In the five worst calendar quarters for listed equity performance over the last decade, PATRIZIA's strategy has recorded modest positive performance, whereas high yield bonds and leveraged loans were generally more correlated with listed equities.

Infrastructure debt's performance stability through the economic cycle is also a strength relative to other forms of private debt, especially in periods of looming downturn such as the present. For example, classes such as middle-market lending tend to benefit in economic upturns, when deal activity is elevated and liquidity favourable. By contrast, distressed debt is considerably more attractive in the imminent aftermath of a sharp contraction. Infrastructure debt, meanwhile, tends to perform fairly consistently across all stages of the economic cycle.

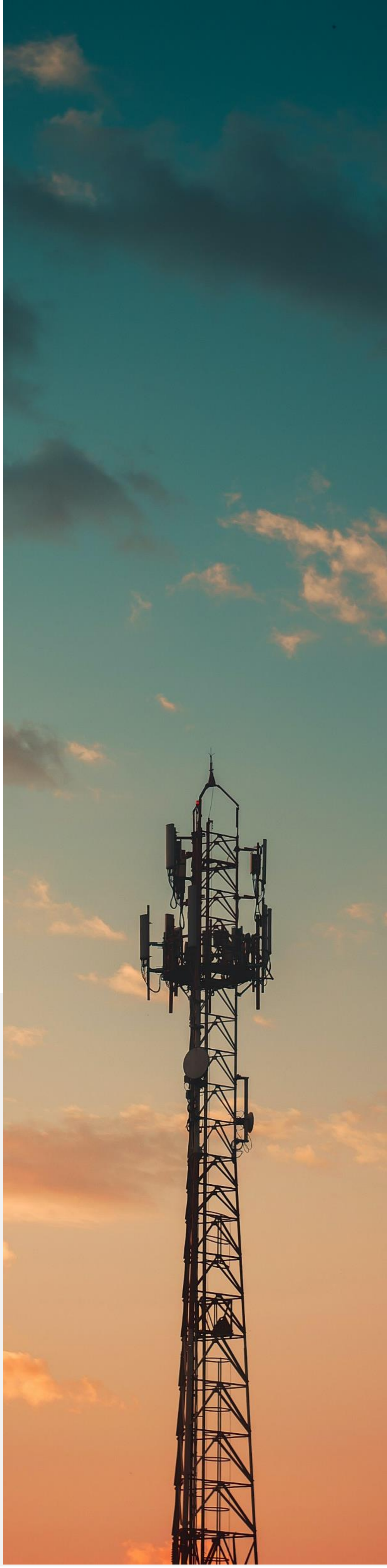
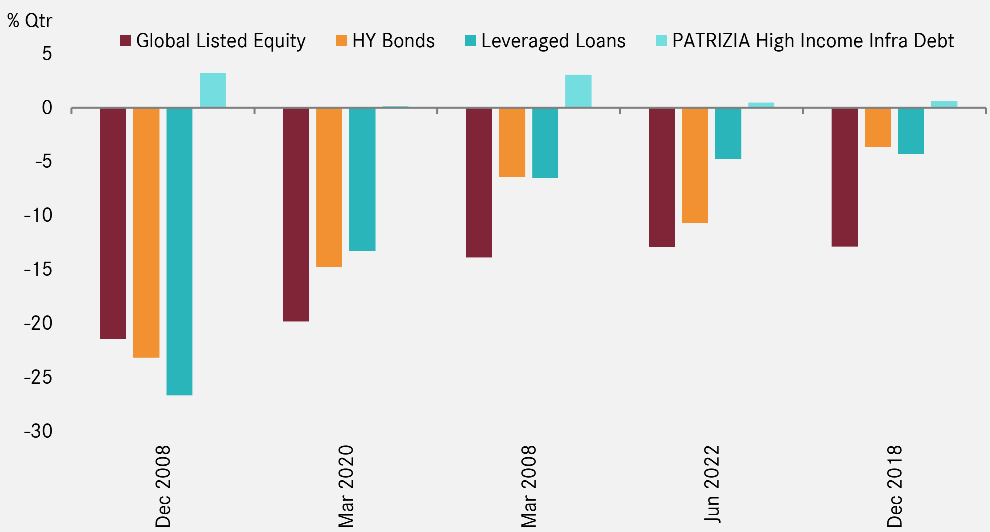


Figure 12: Credit class returns (EUR hedged) in five worst equity quarters – last 15 years



Source: PATRIZIA, Bloomberg.

PROTECTION FROM RISING RATES AND INFLATION

A key distinguishing characteristic of PATRIZIA's Infrastructure debt strategy is that it targets floating rate loans. That is, rather than lending at a fixed interest rate like vanilla high yield bonds, PATRIZIA Infrastructure's debt strategy tends to be referenced against a short-term rate plus a credit spread. This means loan yields and valuations are better protected in times of rising interest rates – including from late 2021 to the present.

Of course, rising rates are an attempt to curb demand and, therefore, stymie inflation, which has run to multi-decade highs in many countries over 2022. It is against this backdrop that infrastructure loans offer an additional benefit - given the revenues of underlying infrastructure assets typically entail inflation indexation, their cash flows can gain from rising prices, benefitting their credit risk profile and tempering risks to the lender.

FAVOURABLE MARKET DYNAMICS

High income infrastructure debt is a niche lending market and faces lower competition than investment grade debt. Not only does it comprise a small component of the overall capital structure of an infrastructure asset – it has also been impacted by significant and ongoing bank disintermediation. This is due to the post-global financial crisis regulatory landscape, particularly the Basel III reforms and Solvency II directive in Europe, both of which have rendered banks' and insurers' regulatory capital treatment of investment grade debt more attractive. As a result, a funding gap for high income infrastructure debt has emerged, leading to greater demand for private lenders to fill this funding gap, with more attractive yields for institutional investors due to less competition among institutional investors.

SUSTAINABILITY

PATRIZIA Infrastructure has long considered sustainability in its investment decision and portfolio construction approach. Its debt investments are focused on assets that have been designed and built to adapt and be resilient to climatic impacts and which provide communities with reliable, essential services.

For example, PATRIZIA Infrastructure's Debt team integrates E, S and G factors into its asset selection and due diligence process, and has solid expertise in investing in companies whose goals are aligned with the achievement of UN Sustainable Development Goals (UN SDGs). Accordingly, it has built a strong record of sustainable investments[8] while maintaining diversification and yield.

Figure 13: PATRIZIA Infrastructure Debt – Recent Responsible Investment Examples

Year	2016	2017	2019/2022	2021	2021	2021	2022
Sector	Transport - Motorway	Renewables - Offshore wind	Transport - Rolling Stock	Digital – Backbone fibre	Social – Modular Building	Energy – Smart Meters	Digital - Towers
ESG Traits	Social	Environment	Environment	Social	Social	Environment	Social
Key UN SDG Alignment	9 INNOVATION AND INFRASTRUCTURE	7 AFFORDABLE AND CLEAN ENERGY	9 INNOVATION AND INFRASTRUCTURE	9 INNOVATION AND INFRASTRUCTURE	11 SUSTAINABLE CITIES AND COMMUNITIES	7 AFFORDABLE AND CLEAN ENERGY	9 INNOVATION AND INFRASTRUCTURE

Contrary to growing trends in the European leveraged loan and European high yield bond markets, PATRIZIA's Infrastructure debt investments are not subject to ESG-linked margin ratchets. PATRIZIA focuses on selecting borrowers whose sector of activity is sustainable or can demonstrate a robust pathway to more sustainable outcomes without affecting credit margins.

Our expectation is that European disclosure regulations for financial institutions (SFDR) and for corporate entities (CSRD) will contribute to formalising and aligning sustainability objectives and data standards. This will lead to a level playing field between borrowers and investors data and reporting requirements, and likely reduce the appeal of ESG-Linked margin ratchets to investors.

8. In this context, sustainable investments refers to investments into investee companies with supportive ESG traits, it is not intended as a term of art.

RISKS

As with infrastructure equity, infrastructure debt carries risks linked to the cashflow stability of the underlying assets – such as patronage or volume risk, operational, regulatory and construction risk. That said, the relatively stable collateral value and cashflow profile of the class means it tends to possess lower risks compared to other credit classes.

The less liquid nature of private infrastructure debt can be a double-edged sword. While illiquidity and complexity premia can enhance returns, it can also limit opportunities for sale, particularly in volatile market conditions. Fund managers mitigate this risk by maintaining active networks of banks, advisors and brokers in case sale is required.

The illiquidity of high income infrastructure loans can also render valuation more challenging. Depending on methodologies, there is potential for valuation volatility for fixed rate debt, which carries higher duration and therefore interest rate sensitivity. Most high income infrastructure loans are typically, by contrast, floating rate, and PATRIZIA Infrastructure targets floating rate loans; these loans carry lower interest rate duration, protecting investors from volatility attributable to changes in underlying interest rates.

The highly stable nature of infrastructure assets supports higher leverage. To address credit risk, loans can be structured by restricting operating activities, lock-up tests, debt service reserve accounts and maintenance covenants. Lenders also take security over shares and assets, with the ability to sell them in the event of default.

As private infrastructure loans tend to have a bullet repayment at maturity, refinancing risk also exists. Margin step-ups and cash sweeps are commonly included to incentivise the borrower to refinance ahead of maturity.

04 Setting Sail for Choppy Waters

CONCLUSION

Following robust performance driven by an easing pandemic and unprecedented policy stimulus, the global economy is undeniably facing elevated risks in the period ahead, with significant uncertainty around the persistence of multi-decade high inflation and the impact of the exceptionally sharp pace of policy tightening.

Fortunately, high income infrastructure debt offers investors a number of benefits in these conditions – its long-term cash flow stability, typically robust insulation from inflation, through-the-cycle resilience and market dynamics all place it in a particularly strong position to weather the choppy waters ahead.

That said, regardless of the direction the global economy takes in the coming years, high income infrastructure debt's ability to generate superior portfolio construction outcomes and contribute to sustainability outcomes is likely to ensure its investment rationale remains compelling in the years to come.

Thomas Dutka, CFA
Director, Investment Solutions

Thomas authors macroeconomic research covering current global financial and political developments, and infrastructure-specific research. He also contributes to strategic asset allocation processes, and portfolio construction and manager research with an emphasis on fixed interest, credit and cash. Prior to joining PATRIZIA, Thomas worked within the origination team of Macquarie Asset Management's structured product division, developing complex, bespoke investment solutions for clients. He has also practised as a corporate lawyer at a leading Australian law firm. Thomas is a CFA Charterholder.

Risman Cornelius
Director, Investment Solutions

Risman oversees the Investment Solutions team's portfolio construction and asset allocation analysis, as well as investment manager research and related decision-making, and the development and delivery of portfolio solutions for institutional clients. Prior to joining PATRIZIA in 2014, Risman spent 12 years as a portfolio manager and investment analyst at a leading boutique funds management firm which specialises in socially responsible investment. His investment management experience also includes three years as an equity analyst with Macquarie Bank. Risman is an alternate member of PATRIZIA's Listed Infrastructure Investment Committee.

PATRIZIA

Alex Waller
Head of Infrastructure Debt

Alex has over 22 years' industry experience in debt financing and principal investment and runs the Infrastructure Debt business at PATRIZIA. He is the primary Portfolio Manager for the funds, leading the successful fundraising for PATRIZIA's inaugural debt fund and has completed many successful transactions in 16 years at the firm, including financings for Alpha Trains, Yorkshire Water, Aquasure, Aunor, TDF, BAA, Wireless Infrastructure Group and Calisen.

Prior to joining PATRIZIA Infrastructure, Alex worked in the Structured Capital Finance group at RBS, specialising in event-driven financing for infrastructure businesses, closing acquisition financings for Associated British Ports, London City Airport and Sanef. He began his career at Barclays Capital.

Alex holds LL.B degree in Laws (Hons) and the S&II Level 3 Certificate in Investments (Securities & Financial Derivatives).

Bathelemy Dognin
Director, Infrastructure Debt

Barthelemy is responsible for driving origination and execution of high income infrastructure debt transactions globally. He actively manages existing investments and relationships with borrowers and sponsors, and has a lead role in developing investment strategy and fundraising activity for infrastructure debt products.

He has 19 years of experience in banking and asset management across Europe, 14 of which have been in infrastructure financing and debt advisory. He has advised clients, financed, and invested in key sectors of infrastructure in Europe such as digital infrastructure , renewables and transportation. Barthelemy holds a Master in Finance from University Lille 2, a PostGrad Diploma from University of Essex, and a bachelor from Sciences Po Lille.

Chris Hart
Director, Infrastructure Debt

Chris is responsible for driving origination and execution of high income infrastructure debt transactions globally, as well as active management of existing investments and relationships with borrowers and sponsors. He has a lead role in developing the evolving investment strategy and fundraising activity for infrastructure debt products.

Prior to joining PATRIZIA, Chris worked as part of the infrastructure finance team at HSBC. He has a wide range of experience across all infrastructure sub-sectors including Power & Utilities, Transport, Digital and Core-plus. In addition to infrastructure, Chris has experience across alternative asset types including real estate, leveraged loans and distressed debt from his time at Commerzbank, ICG and PwC. He holds a Master of Arts degree in Economics from the University of Edinburgh and is a Chartered Accountant (ICAEW).

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