MACQUARIE ASSET MANAGEMENT

Perspectives

Private equity investments in infrastructure-adjacent companies: A balanced return and volatility solution for insurers

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Executive summary

- We believe there is a significant investment opportunity in the infrastructure ecosystem, driven by, among other factors, an estimated $US7.6 trillion investment gap in the US alone.[1]
- Private equity investments in infrastructure adjacent companies, which provide services, technologies, or products to infrastructure end-markets, may offer an attractive opportunity to capitalise on the long-term growth of the infrastructure ecosystem.
- Infrastructure-adjacent private equity investments may play a valuable role in insurance investors' portfolio construction due to:
  - A target net internal rate of return (IRR) of more than 20%
  - Lower volatility than traditional private equity
  - Potential regulatory capital benefits

1. American Society of Civil Engineers (ASCE), 2024 Bridging the Gap study, in 2022 US dollars. The gap is for the period 2024-2043, with the following assumptions: the Infrastructure Investment and Jobs Act's (IIJA) authorized spending continues through 2026. In 2027, infrastructure spending reverts to 2019 levels in place prior to passage of the IIJA and other major spending bills (inclusive of the federal surface transportation authorization, or FAST Act, 2016-2020).

What are infrastructure-adjacent companies?

We define infrastructure-adjacent companies as those whose primary business is to supply a service, software or product to underlying infrastructure customers. We believe these businesses are well positioned to capitalise on derivative growth driven by the long-term, durable growth trends within the infrastructure ecosystem. In this paper, we review three potential benefits of investing in this sector and analyse why it can be a particularly appealing investment for insurers.

Attractive economics to meet insurers' needs

Investments in infrastructure-adjacent markets are particularly attractive given their defensive growth characteristics, having the potential to deliver more than 3x money on invested capital (MOIC) over a five-year ownership period, while having the benefit of capitalising on the durable and stable tailwinds underpinning the infrastructure sector.

The returns in this sector generally capitalise on a mix of market tailwinds and value creation initiatives.

The attractive return characteristics of infrastructure-adjacent private equity investments can appeal to insurers facing pressure to meet both expected and unexpected claim payments. Additionally, investment in these specialised providers may offer insurers investment diversification benefits from existing public market allocations, as often these middle-market companies focus on securing private funding to capitalise on an active private equity value-creation approach to help them unlock growth.

Strong market opportunity

The infrastructure ecosystem presents a significant long-term investment opportunity, alongside the established and growing opportunity of the ecosystem of businesses surrounding it. Driven by durable global tailwinds, such as the infrastructure gap, digitalisation, electrification and the energy transition, there is heightened focus among infrastructure owners on developing and modernising infrastructure to address deficiencies, while enhancing resilience against future challenges.

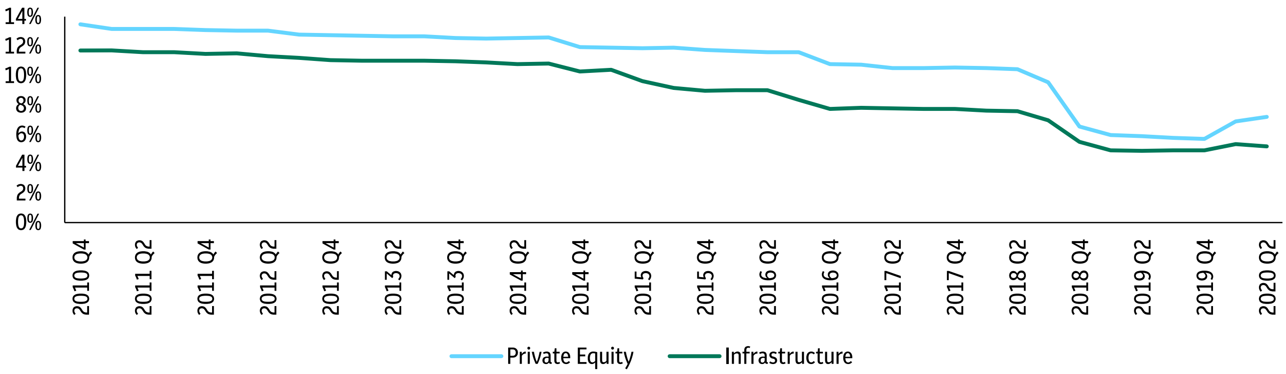
As infrastructure companies face increasing regulation and complexity, they have and are continuing to outsource non-core functions to specialised vendors. These specialised vendors have become a critical part of infrastructure operations and allow infrastructure owners to focus on their key offering, improve operational performance, and deliver their capital expenditure plans.

Investing in these infrastructure-adjacent companies presents the opportunity to capitalise on derivative growth from the sector in the form of increased outsourcing spending. Despite their infrastructure focus, these businesses retain characteristics of more traditional middle-market companies, enabling them to benefit from traditional private equity value-creation levers that capture greater upside.

Lower potential volatility relative to generic private equity investments

Infrastructure investments may provide lower volatility compared with private equity investments. According to Cambridge Associates data, the annualised volatility of the Infrastructure Index over the past two decades[2] is 9.0%, whereas the Private Equity Index exhibits a higher annualised volatility of 10.7%. Furthermore, the rolling 10-year volatility of the Infrastructure Index has consistently remained below that of the Private Equity Index.

Figure 1:
Infrastructure vs generic private equity, rolling 10-year volatility



Source: Cambridge Associates. Private Equity Index data as of June 30, 2020. Infrastructure Index data as of December 31, 2024. For illustrative purposes only.

Infrastructure-adjacent companies share similar risk characteristics with traditional infrastructure investments, as these companies can capitalise on the durable tailwinds that support the stability of the infrastructure sector. The anticipated lower volatility from these investments is expected to be reflected in reduced revenue and margin variability. We believe this stability is driven by several key factors:

- **Revenue stickiness:** High-quality vendors with strategic market positions have the opportunity to benefit from the non-discretionary spend of infrastructure companies, essentially creating a stream of highly visible recurring revenue. For example, data centre cleaning services possess high barriers to entry due to the required security clearance and specialised expertise to clean such facilities effectively. Cleaning constitutes a non-discretionary expense for a data centre as it is necessary to maintain uptime, which is a critical metric for these assets.
- **Lower market competition:** Products and services may be difficult to replace due to the licensing or accreditation requirements, patents, minimum size or geographic presence needed to service scaled infrastructure players. Additionally, many infrastructure companies will operate via master service agreements (MSAs) with their vendors, which further increase the barriers to entry given the requirements to onboard and perform due diligence on suppliers to work on critical assets.

Lower volatility offers significant benefits to insurers, particularly in the context of accounting practices. Under generally accepted accounting principles (GAAP), private equity investments are marked-to-market, meaning fluctuations in their market value directly impact GAAP earnings, thereby increasing earnings volatility. Similarly, under statutory accounting, fluctuations in the market value of private equity flow through to statutory earnings, further contributing to volatility. Since investors typically prefer lower earnings volatility, managing these fluctuations becomes a crucial consideration for insurers aiming to maintain investor confidence and financial stability.

2. Quarterly return data from 1Q 2001 to 2Q 2020.

The utilities sector: A closer look

In the utilities sector, there is a strong relationship between capital expenditure (capex) and revenue, with utilities deriving their rate base (and in turn revenues and profits) from their level of capex spend. This capex includes investments to maintain and build generation, transmission and distribution of energy. A wide variety of suppliers tie into this capex spend and could span the spectrum of maintenance, engineering, installation, software, electric grid equipment and vegetation management. In many cases, suppliers are also onboarded via MSAs, which restricts the number of 'approved' supplier relationships for the utility. The impact of this often spans decades and helps grow relationships with 'preferred' suppliers.

Market growth

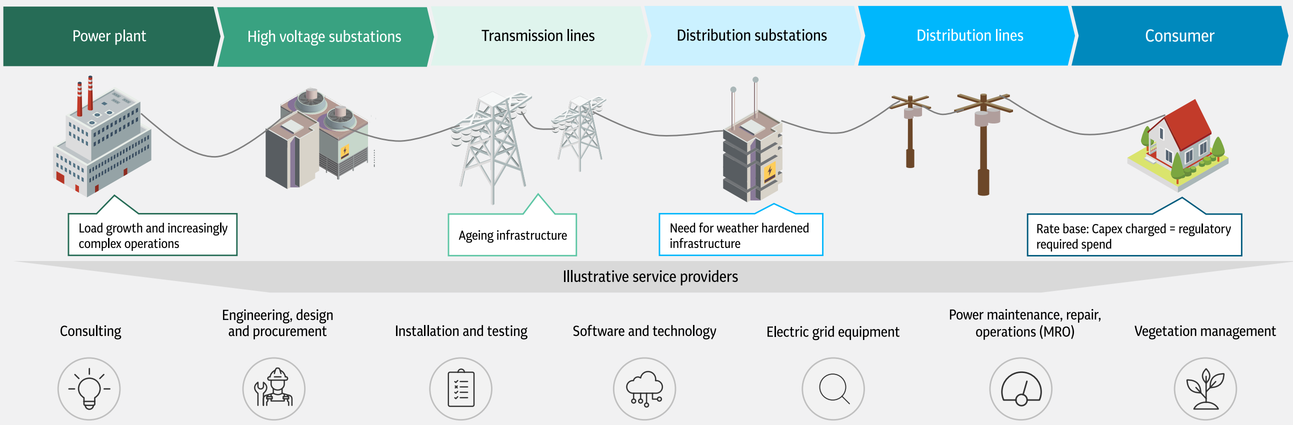
Global capex across the utility sector is expected to surge over the next few years, with utilities companies announcing plans to increase capex spend by 11% over the next three years compared with the prior three.[1] This is a result of a number of key factors:

- **Grid hardening and ageing infrastructure:** It is estimated that 70% of transmission and distribution lines are well into the second half of their useful lifespans, and that some components of the US grid are well past their 35-40 year life expectancy.[3] This, coupled with increasingly severe climate events and a focus on grid hardening, can lead to a significant and persistent uptick in maintenance spend.
- **Electric load growth:** US power demand is forecasted to grow at 3% per year for the next five years,[4] driven by trends such as reshoring, population growth, digitalisation and electrification. This will require a sixfold increase in the construction of new generation and transmission capacity compared with the past two decades.[2]
- **New power generation and data centre connections:** There is a significant backlog in connecting new power generation sources and new data centres to the grid.[3] This necessitates significant new construction and will be a multidecade journey, creating opportunity for suppliers within this ecosystem.

The supplier universe

The utilities sector represents a complex and highly outsourced ecosystem, offering significant opportunity for vendors. Figure 2 illustrates potential companies within the supplier universe, highlighting the breadth of opportunities available to capitalise on this growth.

Figure 2:
Illustrative supplier universe for utilities



Source: Macquarie Asset Management analysis. Non-exhaustive, for illustrative purposes only.

1. Bain, "Energy Capital Expenditures: Steady Growth Ahead" (accessed September 2[illegible]
2. Grid Strategies, "Strategic Industries Surging: Driving US Power Demand" (Decemb[illegible]24).
3. Environmental Resource Management, "Data Center Power Crunch: Meeting the Power Demands of the AI Era" (July 2025).

Regulatory capital considerations for insurers

Under the US regulatory capital framework, risk-based capital (RBC) is a methodology designed to quantify the capital requirements associated with various risks undertaken by an insurer.

For US life insurers, the following formula is used to calculate the company action level RBC:

$$RBC = C0 + C4a + \text{square root of } [(C1o + C3a)^2 + (C1cs + C3c)^2 + (C2)^2 + (C3b)^2 + (C4b)^2]$$

Formula definitions:

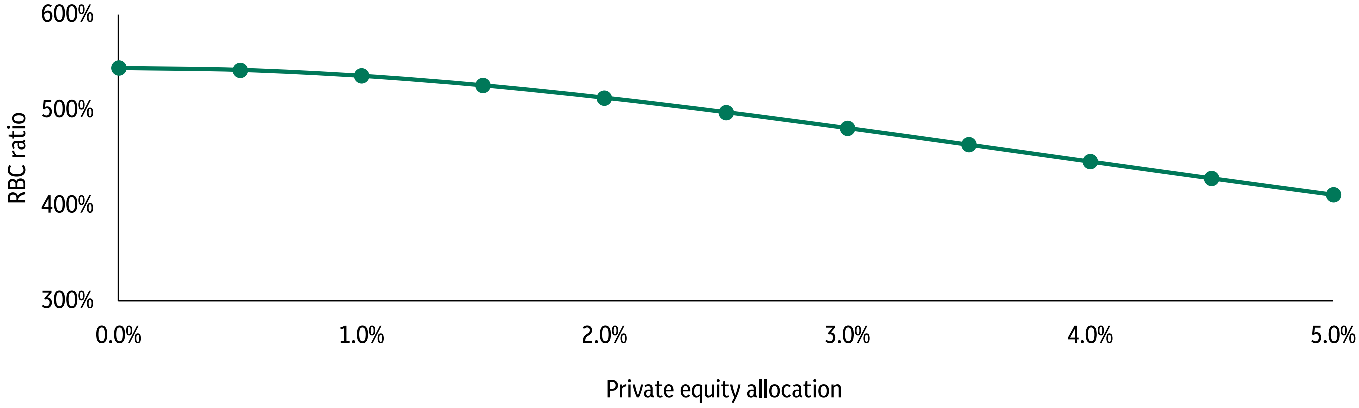
C0: Affiliate equity investment risk; C1o: Credit risk of fixed income investments; C1cs: Market risk of non-credit investments (e.g. private equity); C2: Insurance risk; C3a: Interest rate risk; C3b: Health credit risk; C3c: Market risk; C4a and C4b: Business risk.

The formula aggregates various risks using a 'covariance' equation, which accounts for the fact that not all risks materialise simultaneously. Both the credit risk (C1o) and market risk (C1cs) associated with investments are included in this covariance adjustment.

US regulators evaluate an insurer's financial health and solvency by comparing the total available capital (TAC) to the RBC requirement, resulting in the calculation of the RBC ratio. This ratio serves as a critical metric for assessing an insurer's capital adequacy.

To illustrate the diversification benefits, particularly in relation to private equity investments, and the impact on the RBC ratio, we present a straightforward example. We estimate the impact of varying private equity allocations within the investment portfolio on the RBC ratio. This analysis is primarily based on year-end 2023 life and fraternal RBC statistics published by the National Association of Insurance Commissioners (NAIC). While the results for individual insurers can differ significantly, the objective of this analysis is to demonstrate the non-linearity of the capital charges in response to changes in private equity allocations.

Figure 3:
RBC ratio relative to private equity allocation



Source: BMA, "Guidance Notes for Commercial Insurers and Insurance Groups' Statutory Reporting Regime" (2016).

In Figure 3, the allocation to private equity increases from 0% to 5% of total invested assets. Initially, the decline in the RBC ratio occurs at a much slower rate, suggesting that the diversification benefits are more significant when an insurer's portfolio has a high concentration in credit allocation. When this characteristic is coupled with the typically higher returns offered by private equity compared with high-quality credit investments, the asset reallocation from credit to private equity becomes a compelling and worthwhile strategy to enhance performance returns.

This strategic reallocation not only enhances portfolio returns but also aligns with broader considerations in insurance portfolio management. One such consideration is asset-liability management (ALM), a critical process for insurers given the nature of their liabilities. Insurers with liabilities extending beyond 30 years often encounter difficulties in sourcing credit investments with durations that align with these extended time horizons. To address these challenges, certain insurance regulatory authorities, such as the Bermuda Monetary Authority (BMA), permit insurers to use non-fixed-income instruments, such as private equities, to fund these long-term liabilities under specific guidelines.

Under the scenario-based approach in the Bermuda Solvency Capital Requirement (BSCR) framework, insurers with long-term liabilities can perform two calculations for their best estimate liabilities (BEL).

- **Standard BEL calculation:** This calculation excludes non-acceptable assets, such as private equity.
- **Alternative BEL calculation:** This incorporates alternative assets, including private equity, to cover liabilities extending 30 years into the future on a rolling basis.

The difference between these two calculations is treated as a positive adjustment to Tier 1 capital, subject to regulatory approval. This approach enables insurers to better reflect their financial resilience while effectively addressing the unique challenges of managing ultra-long-term liabilities.

Conclusion

Infrastructure-adjacent private equity investments offer a compelling opportunity for insurers looking to optimise their portfolios. These investments offer attractive economics, with a net target internal rate of return (IRR) of more than 20%, alongside lower volatility compared with traditional private equity. Moreover, private equity allocations can benefit from the covariance effect within the RBC framework, enhancing portfolio efficiency. For insurers with long-term liability profiles, such investments may also provide BSCR capital relief. Collectively, these advantages position infrastructure-adjacent private equity as an appealing asset class for insurers seeking strong returns, effective risk management and alignment with regulatory requirements.

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The **Cambridge Associates LLC Global Private Equity Index** represents a horizon calculation based on the historical performance records of 850+ private investment fund managers and 2,910 institutional-quality funds raised. These funds have a total capitalisation of $US4.12 trillion as of 31 March 2025.

The **Cambridge Associates Infrastructure Index** represents a horizon calculation based on data compiled from 78 infrastructure funds, including fully liquidated partnerships, formed between 1993 and 2015. The Developed Markets sub-index comprises 51 funds; the Emerging Markets sub-index comprises 27 funds.

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