An introduction to some key issues for long term institutional investors investing in infrastructure

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1. Introduction

There have been recurring calls for more long-term institutional investor capital to be allocated to the development of new infrastructure in recent years. These calls are driven by reports of infrastructure deficits globally, most acutely in developing economies, but also in developed economies. An infrastructure deficit is the gap between the current state of infrastructure and the level needed to adequately support public services and economic activities. These infrastructure deficits are too large to be closed by public spending alone, leaving a need for private capital if these gaps are to be filled.

Infrastructure projects are capital intensive and require a long investment horizon to make commercial sense. These features mean capital pools with shorter term objectives and a need for liquidity are not typically attracted to infrastructure investments. This leaves long-term institutional investors (**"LTII"**) such as pension funds and life insurance companies as obvious remaining candidates to close this gap.

This short paper provides an introduction to some key issues LTIIs must consider when assessing infrastructure investment opportunities - capital charges and methods of investment approach. A list of useful resources for further reading is also provided. There are many other important issues related to infrastructure investment which are outside the scope of this note but which were discussed in our comprehensive paper published in September 2022: Infrastructure investment - an introductory guide.

2. Capital charges

For the purpose of regulatory solvency-testing, the capital charges applicable to an infrastructure investment made by a LTII depends primarily on whether the LTII or their "customer" bears the downside risk of the investment, the nature of the liability that the asset is being held against, and the capital regime under which the LTII operates. The higher the level of capital charges on a given asset, the less attractive that asset will be for the LTII to hold, all else being held equal.

2.1. DC pension funds and investment-linked life insurance

Defined contribution (**"DC"**) pension funds and life insurance policies where the size of the liability is investment-linked face little to no restrictions or capital charges on their investments. This is sensible - the LTII itself is not at risk if any investment goes sour, although individual members or policyholders of the LTII may suffer loss. The rest of the capital charges discussion will focus on assets where the asset risk is borne by the LTII.

2.2. DB pension funds

Defined benefit (**"DB"**) pension funds based in developed markets face little to no restrictions or capital charges against investments made on behalf of their members. DB pension funds in developing markets may face some restrictions on the amount of their assets that can be held in illiquid assets.

2.3. Non-linked life insurance

Life insurance assets where the asset risk is borne by the company and not the policyholder are typically labelled as being "non-linked". This is because no policyholder benefits vary based on the performance of these assets. Non-linked life insurance assets can be broadly split into "matching assets" and "free assets":

- Matching assets are directly tied to a corresponding liability of the life company. For example, a company might invest in a long-dated sovereign bond for its regular coupon to (in aggregate) match against its liabilities under a whole of life annuity product purchased by a large group of policyholders.
- Free assets are not directly tied to a corresponding liability. Free assets do not need future cash flows to be predictable in structure and timing.

Capital charges held against non-linked life insurance assets (both matching assets and free assets) are calculated as a percentage charged on the market value of the asset. The charge calculated for a given asset is effectively an additional liability for the company. The charge uses up the limited capital of the company, restricting it from alternative use cases, such as supporting new product launches.

2.3.1. Capital charge calculation example

An example capital charge calculation for a single infrastructure asset, Bridge 1, which is held by Lifeco in the country Insurland, is shown below.

- Lifeco starts with €100 of cash, following a €100 equity injection from its shareholder. It has no corresponding liability.
- Bridge 1 has a market value of €100. Lifeco buys Bridge 1 and will bear the asset risk.
- The capital charge on a single infrastructure equity investment in Insurland is 20%. The capital charge against Bridge 1 that Lifeco would need to hold is €100*20% = €20.
- In balance sheet terms, Lifeco started with an asset of €100 cash and no liabilities, i.e. a net asset (or equity) of €100. This was turned into an asset of €100 and a liability of €20, i.e. a net asset (or equity) of €80.

This simple example illustrates how in a regime with capital charges on infrastructure assets, holding an infrastructure asset causes a direct hit to equity. Lifeco's level of equity in this example is lower because it has chosen to invest in an asset with an associated capital charge versus the alternative of holding an asset of equal value which does not have an associated capital charge.

2.3.2. Capital charges on infrastructure investments for life insurers across locations

Table 1: Nature of capital charges on infrastructure investments for life insurers

Treated as separate asset class, with favourable (lower) capital charges than comparable non-infrastructure assets	**Not treated as separate asset class**
EU - Solvency II ● Project equity: 30% ● Corporate equity: 36% ● Debt: varies. Spread risk charge typically c30% lower than normal debt	USA
China - C-ROSS II ● Equity: 25%	Singapore
South Africa - Solvency Assessment and Management ● Equity: 33% ● Debt: Varies. Typically 30% lower than normal debt	Hong Kong
Philippines - Projects under the Philippine Development Plan ● Equity: 9% ● Debt: 6%	

2.4. Arguments for and against lower capital charges for infrastructure investments

2.4.1. Arguments in favour of lower capital charges for infrastructure investments

- Long-term, stable and predictable cash flows make infrastructure investments attractive assets for DB pension schemes and matching portfolios of life insurers.
    - Infrastructure debt has experienced lower default rates and economic losses than non-financial corporate bonds of the same credit rating.
    - Infrastructure equities usually have more stable cash flows and less volatile project valuations than traditional private equity investments.
    - Including infrastructure investments as part of a multi-asset investment portfolio diversifies the LTII's overall risk.

2.4.2. Arguments against lower capital charges for infrastructure investments

- The core regulatory mission to preserve the solvency of regulated insurance companies and to protect policyholders cannot be compromised by encouraging LTIIs to invest in infrastructure.
    - Placing infrastructure investments in their own category adds granularity and complexity to capital charge calculations.
    - Incentivising infrastructure investments through regulatory framework changes could risk unintended consequences.
- Infrastructure investment in existing assets ("brown"), not the development of new assets ("green"), has little of the benefits that advocates for infrastructure investment seek to achieve.

    - Getting LTIIs to make green investments is naturally challenging and has typically involved government guarantees to ensure both that there are sufficient cash flows for investors and to mitigate the large risks of cost overruns and delays which could put policyholder or member benefits at risk. For example, large Canadian DB schemes.
- Increased allocation to infrastructure would mean decreased allocations to other assets, such as government bonds. This could reduce demand for government bonds and thus increase the cost of government borrowing.
    - Governments, because they can borrow cheaper than any other institution, ought to be the first to finance infrastructure, not LTIIs.
- Infrastructure globally is limited in size of allocation eg. even in Australia and Canada it is only 5%.
    - Infrastructure is simply higher risk than what many LTIIs are looking for. Particularly when the gearing structures commonly used to enhance returns are allowed for.
    - Infrastructure allocations should be diversified by stage (development vs operational), subsector, geography, and size. Making an oversized single country focused allocation unlikely, especially for smaller LTIIs.

3. Methods

Infrastructure assets of LTIIs are held through five main approaches. These approaches are arranged below in order of decreasing internal effort required to make the investment (and in order of increasing liquidity).

Table 2: Approaches to infrastructure investment of LTIIs

Approach	Managed by	Effort level for the LTII	Popular with	Cost
Internal	Dedicated in-house investment department.	Most.	Larger pension funds. Public pension funds. Non-US pension funds.	Low.
Co-Investment	Externally. LTII takes a direct stake. Invite only.	High - invites conditional on fund investment.	Larger LTIIs.	Least.
Limited partnership fund	Closed-ended fund, predetermined holding period.	Medium.	Medium - large LTIIs.	High.
Fund of funds	Infrastructure funds selected by intermediaries.	Low.	Smaller LTIIs. US pension funds.	Most.
Open-ended fund	Private open-ended infrastructure fund.	Low.	Most LTIIs.	High.

3.1. Impact of choice of approach method on net returns achieved

Pension fund investments in infrastructure | Journal of Asset Management finds that the approach used to infrastructure investment appears to have little impact on net returns achieved.

- External fund managers deliver a high gross performance. However this only compensates LTIIs for the additional costs associated with external managers. It does not overcome these additional costs so as to provide superior returns.
- The absolute size of the infrastructure mandate of a LTII does appear to be a significant factor. A doubling of mandate size is associated with an 84bps increase in net return achieved.

4. *Useful resources for further reading*

Solvency II

1. Solvency II European Commission Delegated Regulation 2015/35 (latest version as of 2017): https://publications.europa.eu/resource/cellar/163318c6-1824-11ed-8fa0-01aa75ed71a1.0009.03/DOC_1
2. Norton Rose Fulbright note (2016): Solvency II and the calibration of infrastructure risk | United Kingdom | Global law firm | Norton Rose Fulbright
3. Obligo Group note (2018): Qualified infrastructure investments (QII) under Solvency II: Maximizing return and capital efficiency
4. KPMG Luxembourg article (2023): Solvency II - Capital Efficiency through Infrastructure Investments
5. Milliman note including summary of infrastructure asset capital charges changes (2019): Solvency II Under Review: Part 3 | Milliman
6. Morgan Stanley briefing note (2024): A Summary of Solvency II Treatment of Equities under the Standard Model
7. Risk Control note (2020): Infrastructure Debt Capital Charges for Insurers | Risk Control

Solvency UK

8. Clifford Chance briefing note on proposed Solvency UK reforms to the matching adjustment (2023): SOLVENCY UK - REFORMING THE MATCHING ADJUSTMENT TO SUPPORT INVESTMENT AND GROWTH.
9. Deloitte blog on proposed Solvency UK reforms to the matching adjustment (2023): Solvency UK Matching Adjustment: Another piece of the puzzle falls into place | Deloitte UK

*Other Risk-Based Capital (**"RBC"**) regimes*

10. New England Asset Management article on capital efficiency opportunities arising from NAIC capital charge changes for bonds (2021): Latest NAIC RBC C1 for Life Insurers: Time to Reposition Your Portfolio?
11. World Bank note on EM Infrastructure asset capital requirements (2017): Risk and Capital Requirements for Infrastructure Investment in Emerging Market and Developing Economies
12. Twenty Third Floor blog on the South African Solvency Assessment and Management regime (2019): Capital implications of infrastructure assets for insurers under SAM – Twenty Third Floor

Comparing different RBC regimes

13. NMG Consulting deck on treatment of infrastructure investments across different regimes (2022): Treatment of Infrastructure Assets in Risk-Based Capital Framework
14. CAS RBC Research Working Parties paper comparing Solvency II Standard Formula and NAIC RBC (2012): Solvency II Standard Formula and NAIC Risk-Based Capital (RBC)
15. DWS briefing note summarising capital efficiency of European infrastructure debt across Solvency II and Asia-Pacific RBC regimes (2023): European Private Infrastructure Debt

Plugging the gap - life insurers

16. NAIC website on infrastructure investment topics: Insurance Topics | Infrastructure Investments | NAIC
17. NAIC paper (2021): Can Insurance Company Investments Help Fill the Infrastructure Gap?
18. NAIC deck (2022): Can Insurance Company Investments Help Fill the Infrastructure Gap?
19. UK Investment Delivery Forum website: Investment Delivery Forum

Pension fund considerations

20. BBVA deck (2015): Factors that impact on pension fund investments in infrastructure under the current global financial regulation
21. Dutch academic paper (2023): Pension fund investments in infrastructure | Journal of Asset Management

Plugging the gap - pension funds

22. OMFIF blog (2023): UK pension funds can learn from Canada and Australia - OMFIF
23. Schroders UK article (2023): Stop blaming everything on pension funds
24. LSE blog arguing against pension funds being the solution to the UK infrastructure deficit (2023): How to unpick calls for pension funds to invest more in the UK
25. APG blog (2022): Can we invest more pension money in Dutch infrastructure? | APG