Insights

FTSE Russell

Meeting the demand for listed infrastructure indexes

Infrastructure is an asset class often seen by investors as a diversification tool that can provide a hedge to long-term liabilities by offering exposure to potentially stable, inflation-linked returns. Listed infrastructure indexes enable investors to measure the performance of an increasingly important segment of global equity markets.

Like real estate, infrastructure assets have shown the ability to generate a steady income stream, an increasingly attractive proposition in a low-inflation, low interest rate environment. In addition to higher dividend yields, listed infrastructure investments may provide higher return-to-risk ratios.

With these features in mind, market participants may use infrastructure indexes as diversification tools for global investment portfolios. The FTSE Infrastructure Index Series provides a means to benchmark the returns of listed companies involved in infrastructure activities on a global basis, by developed and emerging markets segments.

What is infrastructure?

In an investment context, infrastructure assets cover a wide range of sectors, including transportation, energy, utilities, communications and social infrastructure.

FTSE Russell defines core infrastructure companies as those that own, manage or operate structures or networks used for the processing or moving goods, services, information and data, people, energy and necessities from one location to another. This definition therefore includes the businesses that provide the means of processing or movement of goods or services, but not the goods or services themselves (see Figure 1 for examples).

Figure 1. Types of core infrastructure

Category	Core infrastructure		
Subcategory	**Transportation**	**Energy**	**Telecommunications**
Examples	Bridges, tunnels, toll roads, railways, seaports, airports. terminals, inland waterways	Power plants, water supply projects, oil and gas pipelines	Satellites, transmitters, cable networks, mobile telephone infrastructure

Source: FTSE Russell.

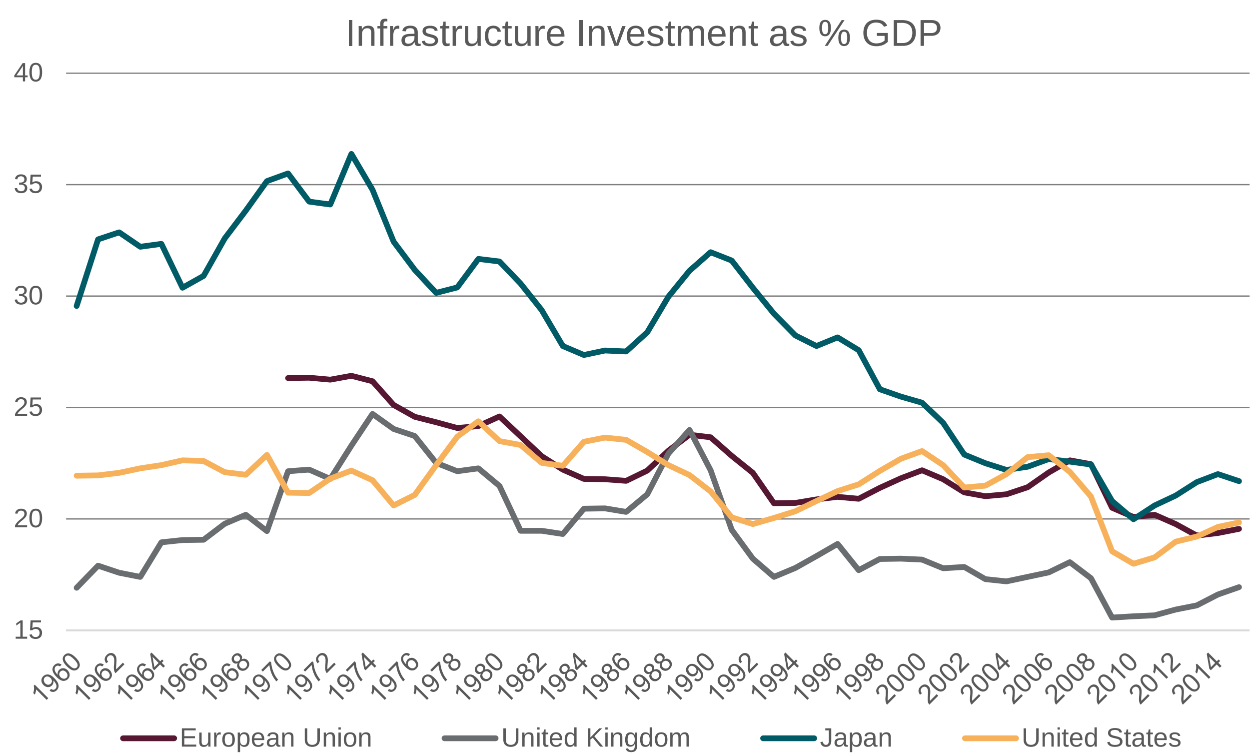
Global infrastructure spending on the rise

Global spending on infrastructure is projected to rise over the coming decades.[1] This is due both to the need in many developed economies to replace aging and decaying infrastructure and to the requirement to equip emerging economies with the basis for continuing high rates of growth.

For example, speaking in January 2017, the incoming US President, Donald Trump, spoke of a need to renew national infrastructure that had "fallen into disrepair and decay."[2] "We will build new roads, and highways, and bridges, and airports, and tunnels, and railways," he said in his inaugural address.

Any worldwide rise in spending on infrastructure would represent a major shift from the recent past, however: data from the World Bank shows that gross fixed capital investment (investment in physical assets such as machinery, land, buildings, installations, vehicles, or technology) in the US, UK, European Union and Japan has been declining as a percentage of GDP since the 1970s (see Figure 2).

Figure 2. Declines in infrastructure investment across developed economies



Source: World Bank, Gross Fixed Capital Investment as % GDP, 1960-2015.

[1] http://www.pwc.com/gx/en/capital-projects-infrastructure/publications/cpi-outlook/assets/cpi-outlook-to-2025.pdf
[2] https://www.whitehouse.gov/inaugural-address

In a 2016 study,[3] consultant McKinsey estimated that global economies need to invest US$3.3 trillion in infrastructure annually between 2016 and 2030 to keep pace with desired economic growth rates.

Increases in infrastructure spending are likely to be financed by a mix of public and private sector spending (including hybrid models like public-private partnerships). Currently, the proportion of infrastructure spending that is financed by the public sector varies from country to country and by infrastructure sector.

For example, according to McKinsey in its 2016 study, in the US the public sector finances the majority of spending in the transportation (excluding vehicles and rolling stock) and water and sewage sectors, while the private sector dominates spending in power and communications.

Overall, the share of the private sector in infrastructure spending has been on the rise throughout the world, reflecting the trend during recent decades of privatizing previously public assets and continuing constraints on public finances.

On the demand side, investment institutions appear keen to increase their allocations to infrastructure. In a 2015 survey of 184 European pension plans, research consultancy Create reported that 38% of respondents considered infrastructure investments as best suited to meet their pension plans' goals over the next three years, a more positive response rate than for investments in emerging market equities, private equity and hedge funds.[4]

Investment characteristics of infrastructure

Many infrastructure assets have distinct economic characteristics, resembling a kind of monopoly. They are often subject to limited competition, offer significant economies of scale and operate in sectors with high barriers to market entry. For example, an infrastructure facility such as a motorway or road bridge may require a very large initial investment and, once built, effectively becomes the sole supplier of local transport services.

As a result of these characteristics, governments often seek to impose regulated pricing on the operators of infrastructure assets, with price increases linked to an inflation index during long-term contracts.

Demand for the services offered by the operators of infrastructure assets is often inelastic. For example, household usage of electricity, gas and water may be relatively constant and insensitive to the state of the economy or changes in the terms of contracts.

However, in other infrastructure categories (for example, energy refineries or airports), pricing is less regulated and may be subject to market supply and demand.

The inflation linkage or fixed return formulae embedded in many infrastructure operators' commercial models can be of interest to investors looking for a return stream that is less sensitive to the short-term economic cycle. In turn, infrastructure assets have been used by some investors as a hedge against future inflation-linked liabilities (such as pensions).

Listed and unlisted infrastructure investment

In the past, many institutions have preferred to invest in infrastructure via unlisted vehicles. Such vehicles are often structured as private equity funds, which typically lock investors in for a minimum period of several years, often a decade or more. Another option, open to large investors, could be to own infrastructure assets directly.

Although unlisted or direct infrastructure investment offers investors access to a more targeted portfolio of investment assets, by one estimate the opportunity set represented by global listed infrastructure is over three times larger.[5]

[3] "Bridging Global Infrastructure Gaps", McKinsey, June 2016.

[4] "How pension funds are responding to financial repression", CREATE-Research, 2015

[5] According to RARE Infrastructure, global listed infrastructure assets totaled US$3.688 trillion in June 2016, compared with US$1.142 trillion for unlisted infrastructure.

According to asset manager Maple-Brown Abbott,[6] a firm specializing in the global listed infrastructure sector, an investment in publicly traded infrastructure equities offers characteristics which some investors may consider advantageous by comparison with an investment in infrastructure made via an unlisted fund:

- **A larger opportunity set**—investors have greater choice in the listed infrastructure equities market than when investing in infrastructure via an unlisted fund
- **More attractive valuations**—although valuations depend on market conditions, Maple-Brown Abbott calculates that between 2006-2016, the equity market valuations[7] of listed companies investing in airports were consistently 20-50% below the average transaction multiple of acquisitions by unlisted funds in airports
- **Greater diversification**— an investment in infrastructure via the listed equity market provides greater opportunities for diversification since the minimum investment amount is likely to be much lower than for an unlisted infrastructure fund
- **Transparency**—as part of regulated stock markets, listed infrastructure companies provide high levels of disclosure and information to investors
- **Daily liquidity**—investors in listed infrastructure equities can exit their positions at will, whereas investors in unlisted infrastructure funds may have to wait years to redeem their holdings
- **Lower fees**—a listed infrastructure fund typically carries substantially lower fees than an unlisted fund, which may levy a management fee and a performance fee

FTSE Infrastructure Index Series

The FTSE Infrastructure Index Series provides a comprehensive set of benchmarks to measure the performance of listed infrastructure equities on a global basis, for developed and emerging markets equity segments.[8] Within the FTSE Infrastructure Index Series, the Core Infrastructure and Core Infrastructure 50/50 indexes are used most widely.

To become eligible for the FTSE Core Infrastructure Indexes, companies must derive at least 65% of their revenues from core activities, as defined in Figure 1. Companies from core infrastructure sectors are included at their investable market capitalization.

In 2015, responding to client demand, FTSE Russell launched two additional capped "50/50" indexes to expand the existing FTSE Core Infrastructure indexes. The 50/50 indexes have cumulative weightings of 50% in utilities and 50% in other infrastructure sectors: 30% in transportation and a 20% mix of other sectors, including pipelines, broadcasting/entertainment and telecommunications. Individual company weights are capped at 5%.

These indexes give market participants an industry-defined interpretation of infrastructure and are used both as benchmarks for the listed infrastructure sector and as the underlying performance target of several index-tracking financial products.

[6] See "The role of infrastructure in a portfolio", Maple-Brown Abbott, September 2016

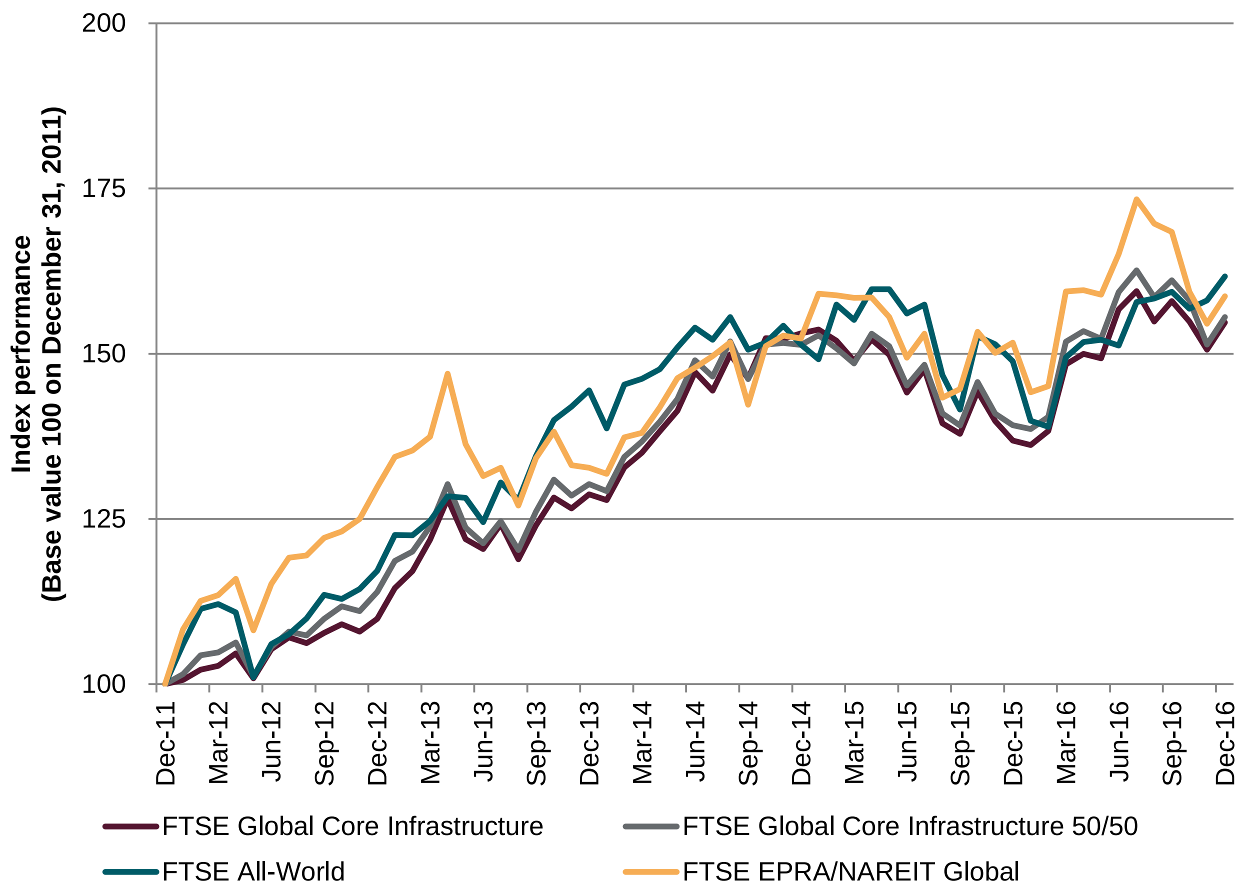
[7] Calculated as the ratio of enterprise value to earnings before interest, tax, depreciation and amortization (EV/EBITDA)

[8] For additional information on the FTSE Infrastructure Index Series methodology, please refer to the construction and methodology document at http://www.ftse.com/products/indices/infra

Performance of listed infrastructure

The total return performance of the FTSE Global Core Infrastructure Index and the FTSE Global Core Infrastructure 50/50 Index over the five-year period from December 2011 to December 2016 is shown in Figure 4. The total return performance of a global equity index and of a global real estate equity index (the FTSE All-World Index and the FTSE EPRA/NAREIT Global Index) is shown for purposes of comparison.[9]

Figure 4. Total return performance: FTSE Global Core Infrastructure and FTSE Global Core Infrastructure 50/50 indexes



Source: FTSE Russell, data from December 31, 2011 to December 31, 2016. Total return index performance in US dollar terms. Index values are rebased to 100 on December 31, 2011. Past performance is no guarantee of future results. Please see the disclaimer for important legal disclosures.

Over the 10-year period ended December 2016, the return-to-risk ratio of the FTSE Global Core Infrastructure and FTSE Global Core Infrastructure 50/50 indexes (0.6 and 0.5, respectively) was in excess of the return-to-risk ratio of the FTSE All-World Index or the FTSE Global All Cap Index, which includes global small cap equities (0.2—see Figure 5). The two infrastructure indexes also had considerably lower maximum drawdowns over the period (-42% and -48.5%, respectively) than the FTSE All-World Index (-57.9%) or the FTSE Global All Cap Index (-58.4%).

[9] The inflation-linked income produced by many real estate equities is often compared with the inflation-linked income produced by infrastructure equities.

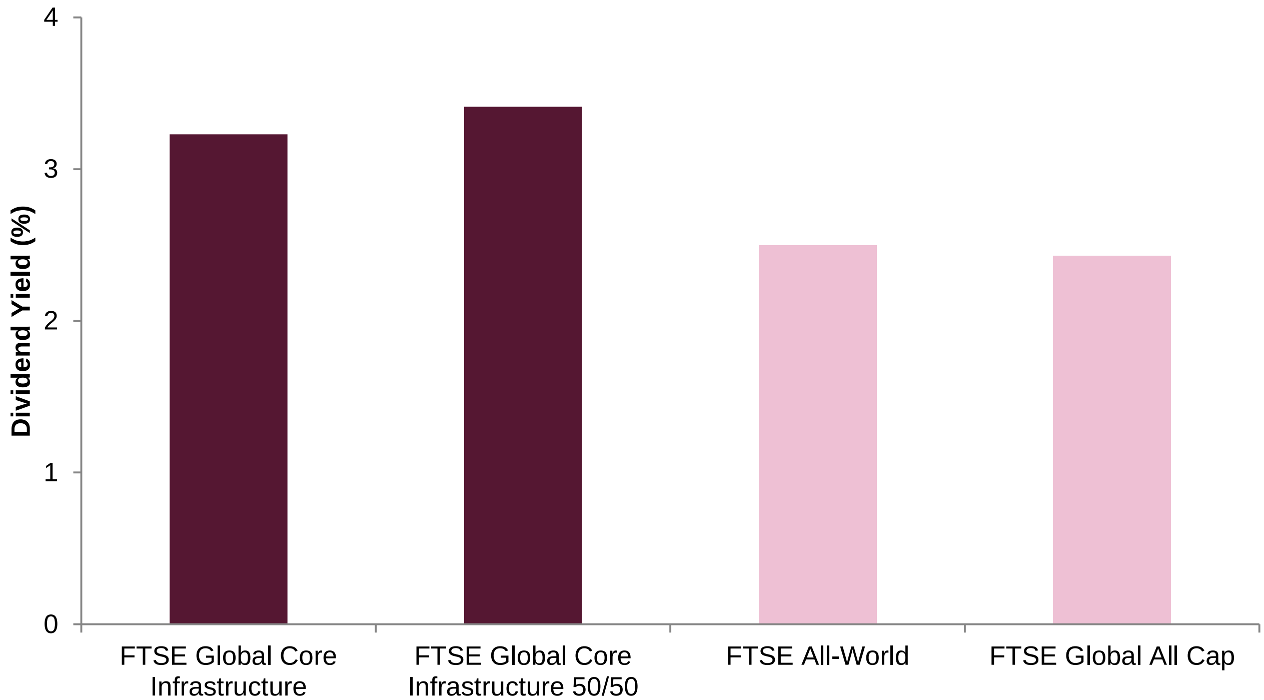
Figure 5. Return-to-Risk Ratio and Maximum Drawdown: FTSE Global Core Infrastructure and FTSE Global Core Infrastructure 50/50 indexes

Index (USD)	Return/Risk Ratio				Drawdown (%)			
	1YR	3YR	5YR	10YR	1YR	3YR	5YR	10YR
FTSE Global Core Infrastructure	1.0	0.5	0.9	0.6	-8.1	-18.5	-18.5	-42.0
FTSE Global Core Infrastructure 50/50	0.9	0.5	0.9	0.5	-10.0	-16.9	-16.9	-48.5
FTSE All-World	0.6	0.3	0.9	0.2	-11.9	-18.8	-18.8	-57.9
FTSE Global All Cap	0.6	0.3	0.9	0.2	-12.1	-19.2	-19.2	-58.4

Source: FTSE Russell, data from December 31, 2006 to December 31, 2016. The return to risk ratio is based on compound annual returns and volatility is annual, based on twelve months' daily data. Maximum drawdowns are calculated using daily data. Past performance is no guarantee of future results. Please see the disclaimer for important legal disclosures.

As of December 31, 2016, higher income from infrastructure assets was reflected in the dividend yields of the FTSE Global Core Infrastructure and FTSE Global Core Infrastructure 50/50 indexes, whose yields exceeded those of the FTSE All-World and FTSE Global All Cap indexes (Figure 6).

Figure 6. Dividend Yield: FTSE Global Core Infrastructure and FTSE Global Core Infrastructure 50/50 indexes



Source: FTSE Russell, data as of December 31, 2016. Past performance is no guarantee of future results. Please see the disclaimer for important legal disclosures.

Meeting a growing need

In an environment of low interest rates and increasing demand for assets that can help manage against future inflation-linked liabilities, infrastructure is generating interest from a wide variety of investors. Many companies in this sector earn revenues on the basis of long-term, inflation-linked contracts, and these revenues are reflected in the companies' dividend payouts. Listed infrastructure equities offer exposure to the foundation of the global economy, including transportation, energy, telecommunications and related sectors.

FTSE Russell offers a comprehensive set of benchmarks to measure the performance of listed core infrastructure equities on a global basis, by developed and emerging markets segments. In addition, the FTSE Global Core Infrastructure 50/50 Index and FTSE Developed Core Infrastructure 50/50 Index give market participants an industry-defined interpretation of infrastructure by setting the exposure to particular infrastructure sectors (50% in utilities, 30% in transportation and a 20% mix of other subsectors) at each semi-annual index review.

For more information about our indexes, please visit ftserussell.com.

About FTSE Russell

FTSE Russell is a leading global index provider creating and managing a wide range of indexes, data and analytic solutions to meet client needs across asset classes, style and strategies. Covering 98% of the investable market, FTSE Russell indexes offer a true picture of global markets, combined with the specialist knowledge gained from developing local benchmarks around the world.

FTSE Russell index expertise and products are used extensively by institutional and retail investors globally. More than $10 trillion is currently benchmarked to FTSE Russell indexes. For over 30 years, leading asset owners, asset managers, ETF providers and investment banks have chosen FTSE Russell indexes to benchmark their investment performance and create investment funds, ETFs, structured products and index-based derivatives. FTSE Russell indexes also provide clients with tools for asset allocation, investment strategy analysis and risk management.

A core set of universal principles guides FTSE Russell index design and management: a transparent rules-based methodology is informed by independent committees of leading market participants. FTSE Russell is focused on index innovation and customer partnership applying the highest industry standards and embracing the IOSCO Principles. FTSE Russell is wholly owned by London Stock Exchange Group.

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