Russell Investments

Russell Research

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Structuring a listed infrastructure portfolio

As a real asset category, infrastructure offers risk, return and diversification characteristics distinct from those of other asset classes, and thus merits consideration for allocation in a diversified portfolio. Infrastructure investments feature steady cash flows derived from tangible, long-lived assets with monopolistic-like pricing power; many are regulated and may feature income linked directly to inflation. The noncompetitive position of the assets is driven by high barriers to entry, due to the considerable fixed costs required in development as well as a high degree of regulation. "Pure play" infrastructure assets—which include toll roads, regulated utilities, airports, seaports and cell towers—are essential to the fluid, effective functioning of societies, and accordingly feature highly inelastic demand patterns.

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Introduction

Infrastructure investment can be implemented through both listed and unlisted (or direct) vehicles. The distinction between listed and unlisted infrastructure is akin to that between listed and unlisted real estate: listed instruments offer daily liquidity, lower fees, lower leverage and generally better transparency, while unlisted investments tend to have lower volatility and correlations versus other major asset classes.

While the global infrastructure universe can be analyzed in a variety of ways, the space can be disaggregated into the following categories: transportation infrastructure, utilities, pipelines and communications infrastructure. *Transportation infrastructure* assets include toll roads, bridges, ports (sea and air) and rail. *Utilities infrastructure* includes electricity distribution and generation, gas distribution and storage, water and renewable energy. The *pipelines* sector comprises companies involved in the storage and transportation of oil and gas. *Communications infrastructure* features cable networks and satellite systems. Some subsectors—such as power generation—may be ignored altogether by "orthodox" investors looking to minimize volatility and correlations to global equities, while other sectors that are only indirectly related to infrastructure—such as mobile telecom companies—may be

attractive to “thematic” managers looking for enhanced returns (managers willing to invest in higher-beta, competitively exposed companies).

While there is a clear relationship between listed and private segments of infrastructure, we focus this discussion on the listed side. Listed infrastructure falls within a real assets mandate and is readily available to both retail and institutional investors, though available implementation options will vary with portfolio size.

Diversification is the key advantage of infrastructure ownership in a portfolio context.

Rationale for inclusion in a portfolio

Diversification is the key advantage of infrastructure ownership in a portfolio context. For the period from December 31, 2001, through December 31, 2007, the S&P Global Listed Infrastructure Index (“GLI”) had a 0.35 correlation with the Citigroup Global Bond Index, a 0.65 correlation with the EPRA NAREIT Global Property Index and a 0.75 correlation with the Russell Global Index. While historical correlations increased during the global financial crisis (reflected in Table 1), we expect correlations to revert back to lower levels. This will be driven by deleveraging across the asset class (which is already well under way), as well as by the further maturation of the asset class and the growth of a dedicated institutional investor base.

Table 1: Correlations

12/31/2001– 9/30/2010

Index	Russell Global Index	EPRA NAREIT	Citi Global Bond	S&P GLI
Russell Global Index	–			
EPRA NAREIT	0.86	–		
Citi Global Bond	0.16	0.29	–	
S&P GLI	0.90	0.84	0.38	–

12/31/2001–12/31/2007

Index	Russell Global Index	EPRA NAREIT	Citi Global Bond	S&P GLI
Russell Global Index	–			
EPRA NAREIT	0.63	–		
Citi Global Bond	–0.05	0.22	–	
S&P GLI	0.75	0.65	0.35	–

Indexes are unmanaged and cannot be invested in directly. Past performance is not a guarantee of future results.

In addition to diversification, infrastructure is expected to provide an attractive total return, a relatively high yield and some degree of inflation protection over the long term. From December 31, 2001, through September 30, 2010, the S&P GLI had an annualized since-inception return of 12.17% and an annualized standard deviation of 16.83%; by comparison

the Russell Global Index delivered an annualized return of 5.90% with an annualized standard deviation of 17.79%. Over the long term, we expect that listed infrastructure will deliver annualized returns marginally lower than those of global equities, with comparably lower volatility.

Table 2: Compound annual total returns, volatility

12/31/2001–9/30/2010

Index	Return	Standard deviation	Dividend yield (as of 9/30/2010)
Russell Global Index	5.90	17.79	2.40
EPRA/NAREIT	11.04	21.64	3.76
Citi Global Bond	8.38	7.60	2.81*
S&P GLI	12.17	16.83	4.10

*Refers to current yield.

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Distinct from other asset classes

Two of the key characteristics differentiating infrastructure from other asset categories are the long lives of the assets and the significant amount of capital required to develop them. Infrastructure projects can be massive undertakings: as an example, the project to replace New York State's Tappan Zee Bridge may cost anywhere from $16 to $23 billion. Because these projects involve such large financial commitments, many, including the Tappan Zee, are funded by governments as public projects. Yet in recent years, tight budget constraints and voter and legislative reluctance to increase taxes has made public funding of projects more difficult. Consequently, governments have increasingly turned to private markets to finance infrastructure projects.

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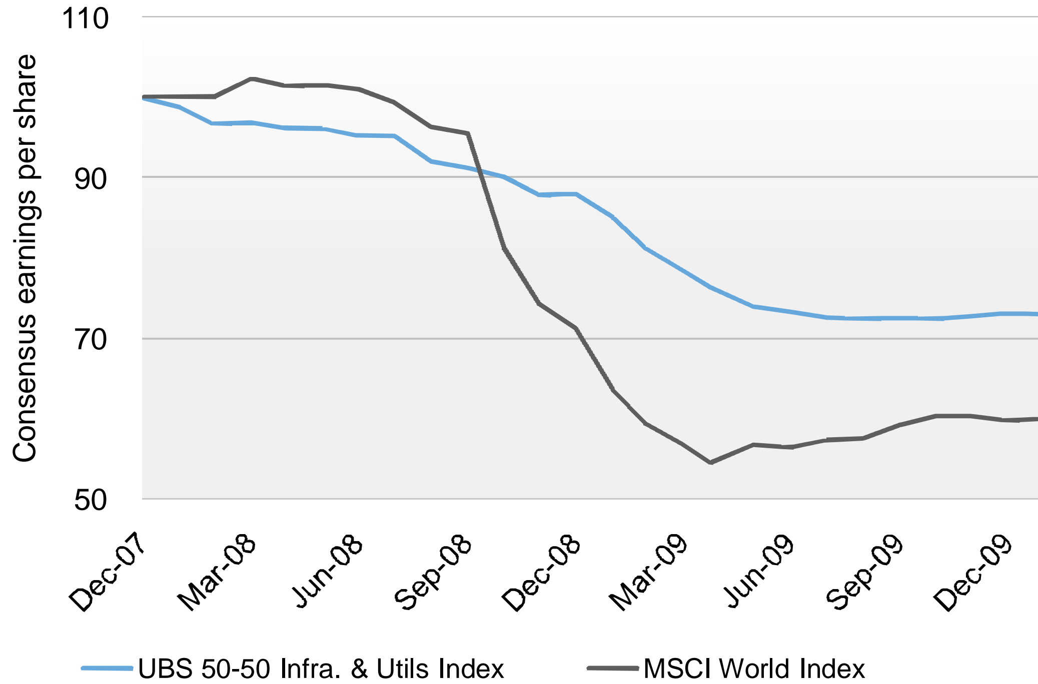
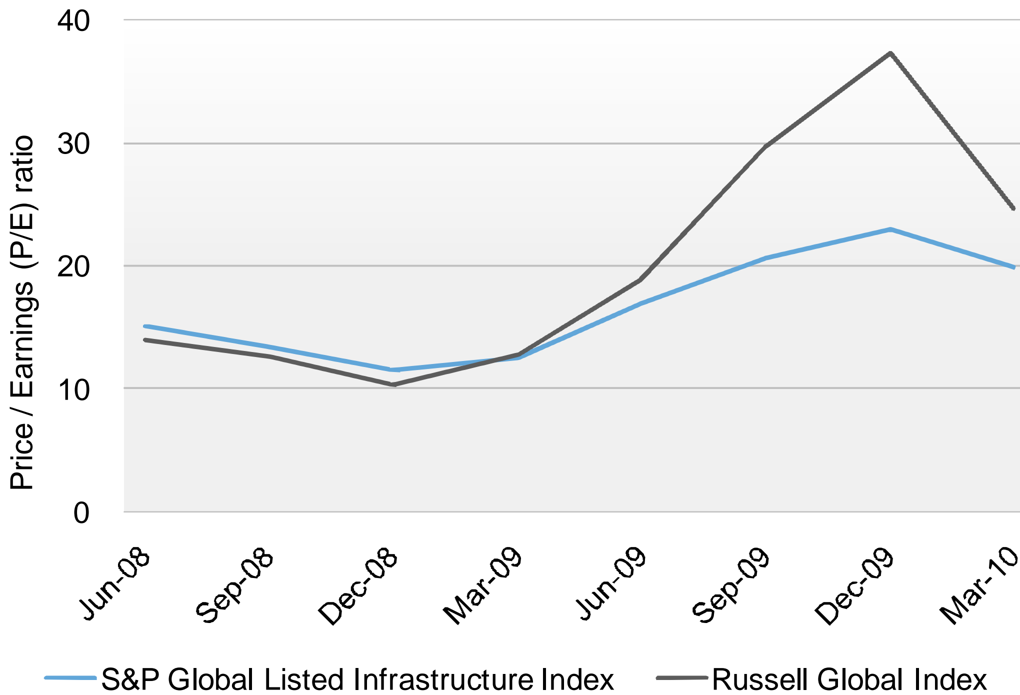
The long-lived, semi-monopolistic position of infrastructure assets supports a steady cash-flow profile and, accordingly, low volatility as compared with broad market equities. In a portfolio context, infrastructure tends to provide low-beta exposure (relative to the broader global equities universe), a relatively high yield, and—because tolls and user fees for many of these assets are often tied to inflation—a degree of long-run inflation protection. As a result of these exposures, infrastructure tends to underperform broader equity categories in strong market environments and to outperform in weaker environments. The asset class is somewhat unique in tending to provide stable returns in both dividend yield-driven and (to a lesser extent) inflation-driven environments. Through the global financial crisis, infrastructure companies saw smaller earnings downgrades than broader equities, and the sector has had a more measured recovery in the wake of the crisis (see Exhibits 1 and 2).

Exhibit 1: Consensus earnings per share 2009 expected



Rebased to 100 at 31 December 2007
Sources: Lazard Investment Management, Bloomberg, Institutional Brokers' Estimate System (IBES).

Exhibit 2: Price-to-earnings multiple: S&P GLI vs. RGI



As of March 31, 2010
Sources: Russell, MSCI, S&P
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Infrastructure is classified as a real asset because the underlying assets are physical, with real use to a functioning economy—much like real estate. Infrastructure has elements of property investing; of real usage commanding a fee; of inflation protection due to index-linked fees; and of diversification to financial assets that are highly correlated with market conditions. Infrastructure is the wheels and grease of a functioning economy. Inflation protection and diversification from financial assets will be more prominent in unlisted investment.

In terms of overlap with broader global equities, just 1.1% of the Russell Global Index is in the S&P GLI, and just 23% of the market cap of the S&P GLI is in the Russell Global Index (as of 9/30/2010). It should be noted that most of this overlap comes in the form of mega-cap diversified utilities with exposure to generation. Most companies in the S&P GLI that do not overlap with the RGI are smaller "pure play" companies.

MAJOR ASSET CLASS SEGMENTS

Investment in infrastructure can be implemented through listed or unlisted vehicles. Listed infrastructure is a collection of infrastructure assets that have found their way onto equity exchanges. The distinction between publicly traded and private infrastructure is akin to that between listed and unlisted real estate: listed vehicles offer much greater liquidity and transparency and tend to have lower management fees than private investments. Moreover, diversification across regions and sectors may be more easily effected through listed investment, as investors are not obliged to concentrate their allocations in a handful of large assets (given the enormous size and cost of infrastructure assets, a typical private equity portfolio will comprise only a few investments). Listed infrastructure companies often have lower levels of leverage than unlisted vehicles and feature straightforward tax structures.

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These advantages are offset in part by a higher correlation to broader equities, a higher level of volatility relative to unlisted assets and reduced access to assets in development, which tend to be owned by unlisted interests. Similar to real estate properties, mature infrastructure assets are often cash-flow-rich, and they tend to offer higher yields than those typically available with broad market equities.

With respect to segments within listed infrastructure, the universe is usually disaggregated by sector as the primary dimension of risk; regions are considered a secondary dimension. Major sector categories include transportation, utilities, pipelines and communications. Sector breakouts for the primary listed infrastructure benchmarks are provided below. At the regional level, most indexes (and most active portfolios) have a lower exposure to the U.S. than broader global equity indexes, given that the only infrastructure companies listed in the U.S. are utilities, pipelines and cell towers/satellites.

Benchmarks

As there are no immutable guidelines for defining the listed infrastructure universe, the construction of indexes in the space is inevitably problematic. Indexes founded on a market cap weighting methodology will predictably have a high concentration in utilities, while the indexes with more balanced industry exposure profiles tend to have somewhat arbitrary sector weights. The four main indexes Russell has reviewed are:

- S&P Global Infrastructure Index
- UBS Global Infrastructure & Utilities Index
- UBS Global Infrastructure & Utilities 50/50 Index
- Dow Jones Brookfield Global Infrastructure Index

All things considered, we favor the balanced indexes, and believe the S&P and Dow Jones Brookfield are appropriate for most investors seeking diversified global listed infrastructure exposure.

S&P GLOBAL INFRASTRUCTURE INDEX

The S&P Global Infrastructure Index comprises 75 companies distributed across three industry groupings and 24 countries. With respect to sector exposures, the index rebalances quarterly to 40% utilities, 40% transportation and 20% energy. At the geographic level, the largest weights are to the U.S., Germany, France, Spain and Australia. Overall, we believe the balance of sector exposures makes this an attractive option as a fund benchmark. As with other benchmarks, however, there is considerable exposure to "non–pure play" companies, particularly in the utilities sector.

UBS GLOBAL INFRASTRUCTURE & UTILITIES

The UBS I&U is the largest of the infrastructure indexes with respect to both number of constituents and market cap. The index is heavily weighted toward utilities, having the highest weighting in that sector of any of the global infrastructure indexes noted above (roughly 85%). Exposure to the transportation and oil/gas storage sectors is meaningfully lower than both the Dow Jones and the S&P indices. At the geographic level, the UBS I&U has roughly a 40% exposure to the U.S., second only to the DJ Brookfield. The index is fairly concentrated at the regional level, with a large share of its market cap concentrated in five countries (France, Spain, Japan and Italy, in addition to the U.S.). Also of note is the absence of any emerging-markets exposure across the UBS infrastructure indexes. Overall, the UBS I&U is best suited for managers who are not seeking to materially pare down the utilities universe via screening, and who aim to invest exclusively in OECD countries.

UBS GLOBAL INFRASTRUCTURE & UTILITIES 50/50

As its name suggests, this index is a derivative of the broader UBS Global I&U, with a cap of 50% (on a market capitalization basis) on utilities exposure. This 50% utilities cap is maintained through quarterly rebalancing. With respect to subsector exposure, integrated utilities has the highest exposure, at roughly 30%. The next largest exposures are in regulated utilities, toll roads and communications infrastructure. At the geographic level, the index is very similar to the broader I&U in that its regional exposure is concentrated heavily in four countries (U.S., UK, Spain and Japan), and it does not hold any stocks in emerging markets.

DJ BROOKFIELD GLOBAL INFRASTRUCTURE

The Dow Jones has a modest number of holdings in comparison to the other indexes. In terms of market cap, this index is fairly evenly weighted between utilities and infrastructure, with a slight tilt toward utilities. Relative to other infrastructure indexes, the Dow Jones offers the most even sector distribution. However, the index's geographic distribution is highly concentrated in the U.S. and the U.K. The index also offers exposure to emerging markets. Also notable is the fact that the Dow Jones is the only index of those noted above with any exposure to the Middle East.

With respect to replication, the S&P GLI serves as the basis for a global infrastructure ETF. There are currently no equity futures for any of the global infrastructure indexes.

Liquidity Issues

Listed infrastructure investment offers daily liquidity comparable to that of mid/large cap global equities strategies; most of the companies in the S&P Global Infrastructure Index are highly liquid, as the methodology for constructing the index includes the largest cap names within each sector category. As a whole, the manager universe tends to have a small cap bias relative to the S&P GLI, though liquidity is an issue only with a very small subset of the companies in the universe.

Liquidity risk in private (unlisted) infrastructure investment is highly comparable to that of other forms of private equity investment: private equity style infrastructure limited partnerships tend to have lock-up periods of 10 to 15 years. Unlike real estate, there is not yet a robust universe of open-end private infrastructure funds for U.S. investors; we are aware of only one prominent perpetual open-end fund currently available in the U.S. marketplace, although in Australia, this structure is more widespread than closed-end.

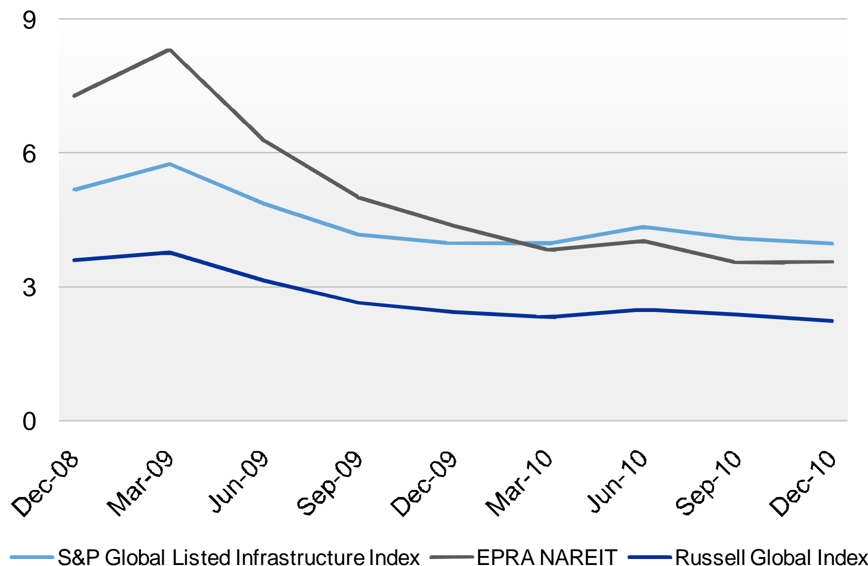
Provision of an attractive dividend yield is a key component of the case for infrastructure investment, and infrastructure yields have been considerably higher than those in the broader market, as illustrated in Exhibit 3.

Cash flow

Because infrastructure assets often hold a government-guaranteed monopoly on the provision of essential services, cash flows may be extremely predictable. These generally predictable cash flows can support high credit ratings and result in very reasonable borrowing costs as compared with most real estate assets. On the flip side, heavy government involvement may spell close scrutiny on asset behavior, potentially resulting in more modest returns than those offered by other private markets. Because infrastructure assets provide essential services, economic ups and downs may have limited impact on cash flows.

Provision of an attractive dividend yield is a key component of the case for infrastructure investment, and infrastructure yields have been considerably higher than those in the broader market, as illustrated in Exhibit 3. As of 12/31/2010, the yield for the S&P GLI was 3.98%, while the yields for the RGI and EPRA/NAREIT were 2.23% and 3.57%, respectively.

Exhibit 3: Dividend yield: S&P GLI, Russell Global, EPRA/NAREIT



Source: Factset, Russell.
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Active management potential and common strategies

In listed space, active managers often produce a purer exposure to infrastructure than published indexes. These indexes are exposed to securities with only partial or diluted exposure to true infrastructure assets. This is largely a result of the difficulty in developing a naïve formula for identifying pure-play infrastructure companies, particularly in the large and highly diverse utilities sector. Most indexes take one of two construction approaches: applying a market cap weighting methodology to 'infrastructure sectors' (in which case utilities will always dominate the index) or imposing fairly arbitrary hard caps on these sectors. In order to effectively identify companies with the pure-play characteristics outlined above, it is necessary to dig into financials and identify what percentage of earnings comes from competitively exposed versus regulated lines of business. Essentially, active management affords not only the classic alpha opportunity, but also a "better beta" opportunity, in that active managers are able to screen the investment universe for companies that have pure-play infrastructure characteristics.

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While listed infrastructure investment styles cannot be as elegantly defined as those of broader equities managers—with factor exposures clearly delimiting a growth or value approach—there is a degree of variation, based largely on the approach to universe definition taken by the manager. Some managers take an absolute-return, "orthodox" view of the space, considering only stocks with the most stable cash flow patterns and lowest correlations to broader equities for portfolio inclusion. This philosophy is founded on the belief that listed portfolios should replicate—to the extent possible—the types of assets investors would get exposure to through a "core" direct investment strategy and generally ignore infrastructure benchmarks. This approach tends to favor pure-play infrastructure sectors, including toll roads, airports, seaports and highly regulated, low-beta utilities (notably transmission and distribution companies). On the other end of the spectrum, some managers operate under a much less constrained definition of the space, with a "thematic" view of what constitutes infrastructure and, as a result, a much larger opportunity set (in some cases benchmarked against a broad equities index such as the Russell Global Index). Such portfolios may include "infrastructure-related" companies such as shipping, diversified communications, power generation and the like. In between, a number of managers are explicitly aware of risks relative to a listed infrastructure benchmark (such as the S&P GLI), but also sensitive to preserving a robust infrastructure beta profile.

As with real estate securities, there is also some variation in the approach to investing from a geographic perspective: some managers restrict investment to Organisation for Economic Co-operation and Development (OECD) countries, while others are willing to take material exposure to emerging economies.

Model weights within the asset class

Within the listed infrastructure asset class, we believe it is very important for investors to get exposure to pure-play infrastructure companies offering steady, low-volatility cash-flow streams supporting strong diversification with other asset classes. We also believe it's important for investors to achieve this through diversification across the sector categories comprising infrastructure, including transportation, utilities, pipelines and communications. Accordingly, for clients taking a benchmark-aware approach to investment, we believe balanced sector indexes are preferable to capitalization-weighted indexes as benchmarks for listed portfolios.

Given the significant liquidity restrictions (long lock-ups for closed-end funds, and absence of open-end options) and limited sector/regional diversity associated with unlisted infrastructure investment, we believe most clients should have exposure to listed infrastructure as a component of their overall infrastructure allocation. We also believe the

ratio of listed to unlisted should be lower for large institutional investors (who tend to have more liquidity flexibility) than for mid-market and smaller investors. For retail investors, given the dearth of private options, the entirety of infrastructure exposure will likely come from listed securities.

There is an enormous need for private-sector investment in infrastructure globally, both in developed and developing economies.

Conclusion

There is an enormous need for private-sector investment in infrastructure globally, both in developed and developing economies. In 2007, *Strategy+Business* magazine estimated that modernizing and expanding global infrastructure will require approximately $41 trillion USD over roughly 25 years.[1] Given the essential role of infrastructure assets in serving as the backbone for economic growth, and in light of the growing trend in privatization of these assets, the sector is very much an emerging asset class in its own right, offering investors a strong source of diversification, yield and attractive total returns in a portfolio context. Listed infrastructure, in particular, offers a sound anchor and immediate entry point into the asset class, particularly for investors sensitive to liquidity and management fees.

[1] *Strategy+Business* magazine (Spring 2007) by Booz Allen Hamilton, Inc.

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