

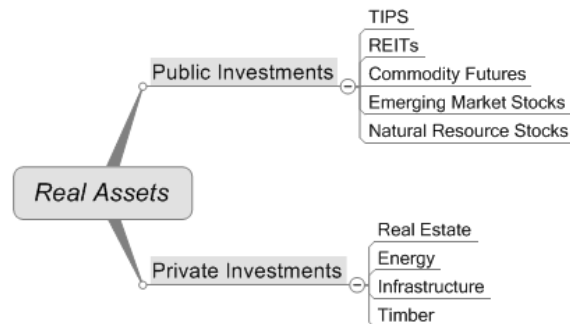
Infrastructure Investment Opportunities

Introduction

Infrastructure assets are the physical structures or facilities that provide essential services to a community. Historically, governments have funded infrastructure projects through taxes and debt financing. That is changing as governments are slowly allowing private companies to develop, purchase, or lease infrastructure assets. This change in attitude partly reflects the growing reality that most governments no longer have (or are willing to commit) the capital necessary to maintain existing infrastructure or support new infrastructure development. For most governments, raising taxes for these purposes is not politically acceptable and bond issuance, even if passed by voters, may be costly or not available. One view is that private ownership could provide better management and thereby improve service and reduce costs over time. Private ownership is also seen as a way to transfer financial support for infrastructure from general tax revenues to user fees.

For their part, private investors see infrastructure investments as a long term source of steady cash flow that increases with inflation, which explains why most institutional investors categorize infrastructure within the broader real asset class of investments shown in Exhibit 1.

Exhibit 1: Classification of Investments within “Real Assets”



Real assets are defined as investments that exhibit a positive correlation to inflation, meaning that they should perform well during inflationary periods. Real assets are divided into two sub categories in Exhibit 1, public investments which are exchange traded and therefore liquid and private investments which are generally illiquid partnerships that have long (10+ year) maturities. Most institutions invest in infrastructure assets through private partnerships. A few publicly traded infrastructure funds do exist, but they are owned primarily by retail investors. Some large institutions (generally public funds) invest or co-invest directly in infrastructure projects.

What are Infrastructure Assets?

Infrastructure includes any physical structure or system that enables the transportation of people and goods, the delivery of water and power, waste disposal, communication, health care, education, and safety. Generally, these are large structures or facilities that are expensive to build and maintain, require significant government approval and involve other complex legal and social

issues including environmental, labor, and private property rights. Infrastructure assets are most noticed when they sometimes break down. Whether from a grid locked road, intermittent power outages or flooding due to a broken levee, infrastructure assets are easy to see (or not see in the case of a blackout) and understand when our expectations of them are not met. Other examples of infrastructure assets include roads, bridges, tunnels, airports, railroads, seaports, water utilities, wastewater treatment facilities, electricity and natural gas transmission systems, wired or wireless phone towers, hospitals, schools and prisons.

Most people think of infrastructure as large publicly owned structures such as highways, toll roads, airports, and other municipal facilities that we often take for granted. However, private ownership of infrastructure assets is significant. Water and power utilities and transmission systems are largely privately owned as are many bridges, tunnels, roads and rail systems. Airports are often privately owned outside the United States.

Example: Bridges and Tunnels

Exhibit 2 provides an example of a transportation infrastructure investment. Here, the general partner (“GP”) of a diversified infrastructure fund purchased several toll roads from a private entity with the intent of adding other transportation assets to the initial investment. By combining multiple smaller toll properties – a strategy often referred to as a “roll-up” – the GP was able to lower costs through economies of scale and increase traffic. Improvements included the addition of new lanes, automatic payment systems, and advertising. Additionally, the GP lowered financing costs by obtaining higher credit ratings and extending debt maturity. The assets will eventually be sold to a strategic buyer, another infrastructure fund, or taken public by IPO.

Exhibit 2: Example of Private Infrastructure Investment

Purchase of Toll Roads

- Purchase of a group of toll roads
- Located in the U.S.
- Reserved capital for follow-on investments

Investment Thesis

- Improve operations with new lanes, install auto pay system, better maintenance, and advertising
- Reduce financing costs
- Seek economies of scale through follow-on investments
- Increase toll revenues
- Improve management

Transaction Details

Total size	\$800 million
Equity	\$240 million
Debt	\$560 million of AAA long term bonds
Geography	North America
Ownership	100%

Toll Road



Example: Water Utility

Exhibit 3 illustrates another example: a regulated water utility in Europe which serves a large customer base. Cash flow from the project is stable, regulated, and inflation-protected. The GP obtained low rate long term inflation linked borrowing, thereby locking in a spread against higher yielding inflation linked revenues.

Exhibit 3: Example of Private Infrastructure Investment

Purchase of a European Water Utility

- GP purchased a European water utility serving more than a million customers

Investment Thesis

- Regulated inflation protected cash flows with a high cash yield before capital expenditures

Transaction Details

Total size	\$500 million
Equity	\$250 million
Debt	BBB+ rated inflation linked bond
Geography	Europe
Ownership	100%

Water utility



The example also illustrates that infrastructure assets can use debt, but at modest levels compared to traditional buyout companies. The debt used in the water project equaled 47% of assets, which is typical of publicly traded companies but low compared to the 80%-90% debt used by most buyout companies.

Public-Private Partnerships

The privatization of public infrastructure assets has in some cases created negative public opinion. The proposed sale of the Pennsylvania turnpike is one recent example. The public reaction is understandable, but often reflects poor communication because in many cases the assets are not necessarily owned by the private investor. Instead, by way of agreements and concessions between the public owner of the asset (federal, state or local government) and the private investor, the asset is turned over for a negotiated period of time (from 15 to 99 years) to the private investor to manage, operate and improve. These agreements are often referred to as concession agreements or Private Public Partnerships (“PPPs” or “P3s”). In the United Kingdom, Private Finance Initiatives (“PFIs”) are the prevailing agreement used.

PPP agreements specify the term and responsibility of each party. In the case of a toll road, the private investor will typically be given the right to keep all revenues in return for bearing the financial responsibility for maintenance and improvements. Additionally, PPP agreements will include termination clauses that, for example, require the private investor to maintain certain quality standards. In other cases, the governmental body will be required to make pre-determined payments to the private investor through a concession. For example, a public road without a toll system may be managed and operated by a private investor where the government owner contracts to provide a predetermined schedule of payments to the infrastructure operator. These agreements will generally include inflation-linked payments or rate increases. The agreements might also specify other pass-through costs. For example, the cost of electricity may be directly paid by the government owner to operate the lights on a road or to run the pumps at a waste water treatment facility.

Investment Characteristics of Infrastructure Assets

Infrastructure assets possess attractive business characteristics including monopolistic supply from high barriers to entry or regulation, inelastic demand from a captive consumer base or the essential services that are provided, long-life assets, and stable inflation sensitive revenues.

Monopolistic – A water utility is an example of a monopolistic business. We all need water, but in most cases we all have just one water company providing service to our homes and businesses.

High Barriers to Entry – A large toll road is an example of an asset that has a high barrier to entry. Not only are capital costs prohibitive, but it is unlikely that government approval would be granted if alternates already exist or if a new road required the removal of existing homes and businesses.

Inelastic Demand – A captive customer base means that a business can count on a minimum level of participation. In the case of a natural gas utility, it is fairly certain that a minimum level of demand can be guaranteed. When the weather gets colder, demand will rise. When the weather is moderate, there is a base level of demand for hot water, cooking, electricity generation and other industrial uses that the utility can count on. This is a proven characteristic from studies of several mature infrastructure assets. For example, the Pennsylvania Turnpike has a historical base level of cars per day through various economic cycles.

Long Duration Assets – The size and type of construction and materials used in building infrastructure projects result in long standing assets. Additionally, many of the assets that have been turned over to private operation and management contain long term concessions or leases. Concessions up to 99 years have been used. A waste water treatment plant provides an example of an infrastructure asset that has a long life. Many of these facilities are designed to last 50 years or more.

Stable Inflation Sensitive Cash Flows – Inelastic demand produces a stable revenue stream. Along with stable cash flows, many infrastructure assets include in their agreements payment or rate increases linked to inflation. In most toll road concessions for example, toll increases are linked to inflation.

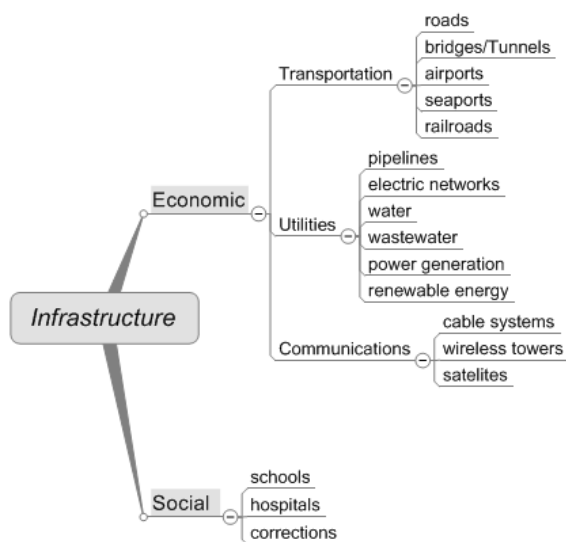
Regulatory Oversight – Infrastructure assets are often regulated to protect consumers from predatory pricing. Water utilities, power utilities, and toll roads are often regulated.

Infrastructure Characteristics

Exhibit 4 provides a typical scheme for subcategories of infrastructure. Infrastructure assets are first subdivided by whether they are economic or social in nature. Economic infrastructure assets are those that provide economic services to a community while social infrastructure assets support a community's social infrastructure.

Infrastructure assets exist in all communities in all countries around the globe. The state and stage of the assets are as varied as economic production with risk and return profiles that follow the same curve as other global investments. The list of investment opportunities is significant enough to allow investors to specify what geographic sectors they are willing to invest in.

Exhibit 4: Infrastructure Economic Sectors



Infrastructure assets are also distinguished by their size. The minimum threshold for most infrastructure funds is approximately \$50 million with a maximum that can be greater than \$10 billion. In the larger or trophy asset categories, it is very likely that a consortium of investors will be formed. Currently, the acquisition of the large trophy assets brought to market through auctions is competitive among buyers. There is less competition for small to mid size transactions where deals may be internally sourced, avoiding the auction process.

Infrastructure is also broadly defined by stage of development. “Brownfield” investments refer to existing projects that may have already experienced their most significant growth phase and are currently producing significant cash flows. Some investors and managers also refer to brownfield investments as “core” infrastructure and are generally considered to deliver lower return and risk characteristics. The Pennsylvania Turnpike in Exhibit 5 is a brownfield example.

Exhibit 5: Brownfield (“Core”) Infrastructure Example: Pennsylvania Turnpike

Large Mature Toll Road-Penn Turnpike

- Brownfield asset
- 60 year old toll road in the United States
- Large auction transaction
- 75 year concession
- 500 mile key traffic corridor
- 27% of U.S. population within region of the asset
- Transaction failed due to political conflict

Investment Features

- Regulated monopoly providing inflation protected cash flows
- Tolls were below market
- Toll increase of 25% in first year, greater of 2.5% or CPI annually thereafter

Transaction Details

Date	NA
Total size	\$12.8 billion
Equity	\$4.35 billion
Debt	66% total leverage
Geography	United States
Ownership	Consortium

Pennsylvania Turnpike



“Greenfield” infrastructure refers to projects that require new construction or development. Greenfield investments have the potential for significant growth and higher returns but carry with them higher risk. Greenfield infrastructure investments are often described as “opportunistic” infrastructure. However, a greenfield asset developed under a concession agreement, PPP, or PFI may allow the private investor to mitigate much of the business risk. Greenfield infrastructure assets can carry this protection through guaranteed payments from the government entity.

Exhibit 6 provides an example of a greenfield utility infrastructure project where the GP is building a replacement waste water treatment facility. Business risk is mitigated in this example because it is a replacement facility with an existing customer base and a concession agreement with the local sponsoring municipality.

Exhibit 6: Greenfield (“Opportunistic”) Infrastructure Example

Building a Waste Water Treatment Facility

- GP contracts with a city to build and operate a replacement facility
- Ownership transfers to city after 30 years
- Partnered with engineering company

Investment Thesis

- Cash flows are known and predictable
- Introduce new technology that improves efficiency and quality
- Seek economies of scale by replicating in other municipalities

Transaction Details

Total size	\$80 million
Equity	\$20 million
Debt	Construction loan with a 10 year maturity, LIBOR + 2%
Geography	United States
Ownership	90/10 joint venture

Replacement facility



Infrastructure can also contain a mix of brownfield and greenfield characteristics. This often occurs when a brownfield project has the potential for growth through additional development, such as the example in Exhibit 7. This is sometimes referred to as “value-added” infrastructure.

Exhibit 7: Mixed (“Value-Added”) Infrastructure Example

Purchase of Natural Gas Pipeline Utilities

- GP purchased 2 gas pipeline utilities located in the United States
- Large customer base covering multiple states

Investment Thesis

- Stable cash flow from regulated business producing a high cash yield before capital expenditures
- No commodity price risk
- Seek economies of scale through additional acquisitions and development

Transaction Details

Total size	\$1 billion
Equity	\$250 million
Debt	A combination of investment grade debt and bank loans
Geography	United States
Ownership	50/50 joint venture

Gas pipeline facility



In this example, the GP purchased an existing gas pipeline utility which had a substantial existing customer base and introduced a growth strategy by constructing new pipelines to adjacent residential communities that did not have access to natural gas.

Investment Vehicles

Investment in infrastructure assets can be accomplished through several different investment vehicles: publicly listed stocks, private limited partnerships, and direct investments.

Publicly Traded Infrastructure Stocks

There are in excess of 100 global companies traded on various stock exchanges across the globe that could be included in a portfolio of listed infrastructure companies. Some are infrastructure management/operating companies such as The Fluor Corporation, a U.S.-based major construction company; and Cintra, a Spanish based roads builder and operator. Others are direct investors in infrastructure assets such as Macquarie, which has created a publically traded company whose sole focus is the ownership and management of airports. The downside of publicly traded infrastructure securities is that their valuations are heavily influenced by market fluctuations and may not provide the desirable business characteristics provided through an un-listed or direct vehicle.

Private Infrastructure Partnerships

The un-listed limited partnership is the most prevalent structure used by institutional investors, one that mirrors the structure used by private equity investors. The investment manager is the general partner and is responsible for the purchase, management, and ultimate sale of the infrastructure assets. Investors are limited partners with liability limited to their investment. The partnerships have finite lives ranging from 10 to 20 years. Funds meeting institutional standards range in size from \$500 million to over \$5 billion. Most partnerships offer their limited partners the option to co-invest in some projects, though they require higher investments for the privilege. A few fund- of-funds are available for small investors who do not have the capital to diversify or the resources to conduct the proper selection of partnerships.

Direct Infrastructure Investments

Some larger institutional investors have established direct investments in infrastructure. Canadian and Australian pension funds have the most developed direct infrastructure programs with the necessary experienced internal staffs and large allocations to infrastructure to make them cost effective.

History of Infrastructure Investing

Investment in infrastructure assets by institutional investors began in the early 1990s. The most significant event in terms of pension investments in infrastructure occurred in Australia at that time. Australian pensions were given a significant increase in funding via government mandated contributions. In turn, many of these pension funds invested in Australian infrastructure assets to satisfy a growing need there for infrastructure spending. Macquarie Investment Bank formed the first infrastructure partnership at that time, followed by offerings by many other global investment banks. Canadian and United Kingdom pension funds began investing in infrastructure in the early 1990's as well. Some of the European, U.K., and Canadian plans with sizeable

infrastructure allocations are: Canada Pension Plan, Ontario Teachers, Ontario Municipal Employees Retirement, Universities Superannuation Scheme, British Telecom Pension Fund, and ABP.

U.S. pension plans have more recently begun to make investments in infrastructure including the Alaska Permanent Fund, CalPERS, Washington State Investment Board, Oregon State Treasury, MOSERS, New Mexico State Investment Council, Illinois State Board of Investment, and Texas Teachers.

In 2005, the American Society of Civil Engineers (ASCE) produced a “Report Card” on America’s infrastructure. The ASCE gave an overall rating of “poor” and estimated total investment needs of \$1.6 trillion for a five year period. The OECD estimates a global *annual* infrastructure investment need of \$1.8 trillion. Private investment undoubtedly will represent a partial solution to these immense infrastructure needs.

Who Should Invest?

Infrastructure assets are characterized by long term inflation-adjusted cash flows. Most pension liabilities are long term inflation-adjusted obligations. Together they provide similar characteristics and therefore make infrastructure a suitable investment for pension funds. Similarly, foundations and endowments have pre-defined spending policies. An allocation to well defined long term inflation adjusted cash flows could immunize a portion of an endowment’s spending requirements.

Creating a well diversified portfolio of infrastructure assets requires a fairly substantial allocation. Minimum investments in infrastructure funds typically range from \$10 million to \$50 million. The fund-of-funds market is developing, though as with all fund-of-funds there is an added layer of fees and a loss of control over the investments.

Performance

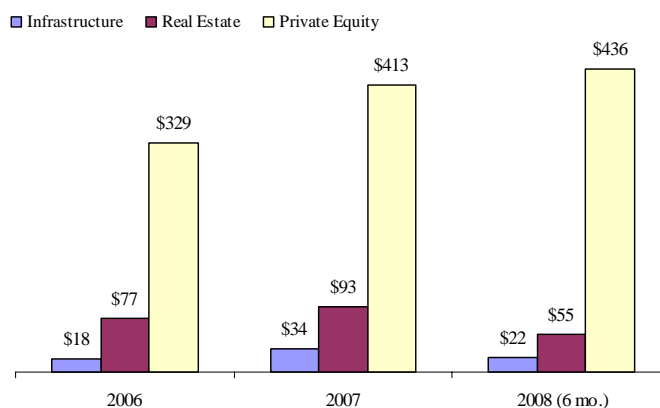
Infrastructure is a newer asset class and, as a result, performance track records on realized infrastructure transactions are few. For those funds that have been realized, past performance ranges from 8% to 20%.

Currently, investment managers are targeting mid-teen net of fee returns with inflation correlated cash yields expected to range from 5% to 10%. The long duration high yielding returns create a stable return pattern which limits the j-curve performance characteristics seen in many private equity investments.

General Partners

Infrastructure fundraising has grown but is still small by private equity standards. In 2005 there were four funds seeking less than \$2 billion in assets. In 2008, there were more than 100 funds seeking over \$100 billion in assets. Macquarie Bank created the first privately structured infrastructure fund in the 1990s. Today, the largest infrastructure managers are investment banks. Very few are independent investment managers. Fund size has also increased. The average fund size was \$159 million in 2003 and \$3.3 billion in 2008. Exhibit 8 shows how much money was raised for infrastructure funds over the last three years, with fundraising for 2008 through June.

Exhibit 8: Infrastructure Fundraising, 2006-2008



Performance Benchmarks

As with other private investments, there is a lack of mark to market performance benchmarks that can accurately measure infrastructure investments. Additionally, a universe of GP performance such as the Venture Economics database for private equity investments or an appraisal based index such as the NCREIF Property Index for private real estate investments have yet to be established for private infrastructure. Lacking these traditional measurement tools, some institutional investors use a CPI plus a return spread to benchmark infrastructure portfolios. Cliffwater compares infrastructure funds to other infrastructure funds where available as well as private equity funds focusing energy and related infrastructure assets.

Conclusion

We believe that infrastructure will be a growing asset class that will increasingly attract institutional capital in the U.S. However, movement in this direction will be slow due to a lack of asset class education and a paucity of realized infrastructure transactions. In the absence of strong historical track records, investors and advisors should focus their due diligence on understanding the actual and pro forma financial performance for a broad range of infrastructure projects. This will not only provide an increased understanding of infrastructure assets but sharpen performance expectations.

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