Infrastructure: A Growing Real Return Asset Class

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Infrastructure assets provide excellent diversification as well as inflation and interest rate hedges, have excellent demand inelasticity, and can accommodate large amounts of leverage. Private infrastructure investing meets a need for capital investment that governments alone cannot meet. It has been used extensively in Canada, Australia, and the United Kingdom, where it has been available since the early 1990s, and it is beginning to demonstrate its value in the United States.

It is unusual that something as boring as infrastructure—pipelines, toll roads, electricity transmission lines, and airports—becomes the hot new thing, but here it is. Infrastructure has been seen as an investment for real return for quite some time in Canada, Australia, and Europe but is just now being discovered in the United States. My purpose, therefore, is to offer an introduction to the asset class by discussing the following topics:

- the definition of infrastructure (from an investor's point of view), including its attributes and uses in portfolio structure and diversification;
- the history of infrastructure as a portfolio component, including past capital requirements and investment activity;
- the characteristics of infrastructure—including its relationship to demographics, volatility of returns, and benchmarking—and its use as an inflation and interest rate hedge;
- the use of leverage when financing and investing in infrastructure; and
- the unique risks involved in infrastructure investment, including political, regulatory, liability, liquidity, and subsector risks as well as the risk of investing in a new and emerging strategy.

This presentation comes from the Real Return Strategies 2007 conference held in Chicago on 15 May 2007.

Infrastructure and Its Uses

Infrastructure can be defined as the essential facilities and services that the economic productivity of a community or organization depends on. As a real return asset class, infrastructure includes those assets that are involved in the movement of goods, people, water, and energy. So defined, infrastructure includes the following:

- transportation assets, including toll roads, bridges, tunnels, railroads, rapid transit links, seaports, and airports;
- communications assets, including radio and television broadcast towers, wireless communications towers, cable systems, and satellite networks;
- regulated assets, including electricity transmission lines, gas and oil pipelines, water distribution systems, and wastewater collection and processing systems; and
- social infrastructure assets, including schools, hospitals, prisons, and courthouses.

Investment Characteristics. Investors (primarily institutional investors) are considering infrastructure as an investment because it provides a good match for defined-benefit pension liabilities, endowment and foundation obligations, and annuity and life insurance liabilities. Infrastructure investments are long-term assets that generate growing cash flow and have a return profile similar

to real estate. A significant component of the total return is cash yield, with a modest amount of capital appreciation making up the balance. Infrastructure investments also have a low correlation with traditional asset class returns and can offer attractive inflation protection characteristics.

JPMorgan Asset Management does not promote infrastructure for absolute return but, rather, for the role it can play in risk reduction and diversification, thus providing compelling levels of risk-adjusted and inflation-adjusted return.

Infrastructure assets tend to hold monopolistic or quasi-monopolistic market positions and thus enjoy high barriers to entry and sustainable competitive advantage. Infrastructure assets offer stable, predictable current returns that are frequently linked to inflation via either a regulated return framework or a contracted rate of return. These assets bear little or no risk of redundancy or of technological obsolescence and have relatively low operating risk with a demand and price profile that tends to be relatively inelastic. Thus, tolls can be raised or the rates for electricity, water, or gas can be increased without having a material negative impact on demand.

For example, nearly 30 years of data on the use of the New Jersey Turnpike show that even after tolls were raised 100 percent for commercial vehicles and 70 percent for passenger vehicles in 1991, use of the turnpike declined less than 5 percent and eventually bounced back to even higher levels than before the increase.

Similarly, the Queens Midtown Tunnel in New York City has experienced numerous toll increases since 1976, yet its share of traffic compared with the Queensboro Bridge, which has no tolls and is located just 20 blocks north of the tunnel, has remained between 40 percent and 60 percent.

Portfolio Diversification and the Risk–Return Spectrum. Because of varying risk profiles, a portfolio of infrastructure investments should be diversified not only geographically but also across subsectors. Assets in different industry subsectors will exhibit different cash yield and growth profiles and may respond differently to economic shocks. **Table 1** presents illustrative risk–return characteristics for various types of infrastructure investments ranging from stabilized toll roads on the low side of risk, stabilized airports and seaports on the high side, and regulated assets—such as electricity, oil and gas, and water distribution systems—in the middle.[1] For example, a toll road that has been used for 20–30 years offers relatively low traffic risk because measures of historical usage under different toll rates provide a good basis for assessing future usage. Similarly, stabilized seaports and airports offer long-term data on traffic, fees, and usage of restaurants, shops, and parking. Although airports and seaports involve more operating risk, they can also generate more operating return while still providing substantial downside protection in the form of takeoff, landing, and port entry fees.

Using real estate terminology, infrastructure assets in the core, core-plus, and value-added areas of the risk–return spectrum represent approximately 75 percent of the opportunities in Organization for Economic Cooperation and Development (OECD) countries. In this sense, I would classify bridges, tunnels, toll roads, pipelines, energy transmission and distribution systems, and water and wastewater systems as core or core-plus assets and airports, seaports, railroads, contracted power generation, and rapid rail transit systems as value-added assets. Core and core-plus assets offer less risk and less return; risk and potential return increase with value-added assets. Continuing with the real estate analogy, certain other infrastructure assets can be classified as opportunistic, such as

[1]"Stabilized" in this context refers to infrastructure assets that have been in use for a considerable period of time and thus can provide a reliable long-term data trail.

Table 1. Risk–Return Characteristics of Various Infrastructure Assets

Item	Stabilized Toll Roads	Regulated Assets[a]	Stabilized Airports/Seaports
Risk	Low	Low–Medium	Medium
Income gain/yield (average 1–5 years)	4–8%	5–9%	5–10%
Average levered equity total return (IRR)[b]	8–12%	10–15%	15–18%
Capital appreciation potential	Limited	Limited	Yes

[a]Regulated assets include electricity transmission and distribution, oil and gas pipelines, and water and wastewater systems.

[b]Assumes debt of 50–85 percent and investment periods of 5 years for regulated assets and 15 years for unregulated assets. IRR = internal rate of return.

"greenfield" development projects, satellite communications networks, merchant power generation, and infrastructure assets in developing countries. Such opportunistic assets offer still higher risk and potential return but are at the private equity end of the risk spectrum. For investors looking to infrastructure as a lower-risk match to liabilities—including some diversification and inflation-hedging characteristics—core, core-plus, and value-added assets, with their greater predictability and lower volatility of returns, are better choices.

Based on 10 years of data we have been able to accumulate from the Australian market, returns on infrastructure have low correlations with other asset classes, such as Australian equities, international equities, Australian bonds, and listed real estate (shown in **Table 2**). Unfortunately, there are not enough data points in the time series to demonstrate statistical significance. Nevertheless, I feel comfortable with these low correlations. Recognize that infrastructure represents the last thing consumers will stop using and paying for in a recession—electricity, water, gas, driving across a bridge or through a tunnel to get to work. As a result, infrastructure assets do not behave in the same way that equities or bonds do through normal economic cycles. Therefore, using the same 10 years of data used in Table 2, we developed the risk–return analysis and Sharpe ratio analysis shown in **Figure 1**, which indicate that infrastructure can enhance both diversification and return. The Sharpe ratio analysis indicates that an unconstrained portfolio should consist of 20 percent infrastructure. I do not recommend such a high allocation, but some institutional investors in Canada and Australia have allocated as much as 15 percent of their portfolios to infrastructure.

History, Capital Requirements, and Investment Activity

Until about 100 years ago, infrastructure tended to be financed by the private sector because governments did not have the necessary administrative ability or taxing power to handle financing. After World War II, however, Europe was devastated and governments became involved in reconstruction and providing jobs for returning veterans throughout the West. So, a significant amount of government investment helped build infrastructure from the 1940s through the 1960s, but such government involvement has been declining every decade since World War II, with institutions—such as insurance companies and pension plans—providing much of the funding through fixed-income investments. The modern era of infrastructure investing began in 1979 when Margaret Thatcher became prime minister in the United Kingdom and her government promoted a tremendous wave of privatization. Continental Europe began following suit in the 1980s. By the mid-1990s, Australia's new pension system (with its forced savings) had generated superannuation funds that were looking for investment assets and certain state governments in Australia were looking for capital to build badly needed infrastructure, so the two groups collaborated (with the assistance of investment bankers) to develop and finance infrastructure investments. The concept then began working its way through the [British] Commonwealth of Nations to Canada and back to the United Kingdom, parts of Asia, and continental Europe. In the past few years, the United States has followed suit with privatizations and such projects as the Michigan Electricity Transmission Corporation, the South Bay Expressway near San Diego, the Chicago Skyway, and the Indiana Toll Road.

Current Vehicles for Infrastructure Investing. Investors can gain exposure to infrastructure assets by investing in such vehicles as the following:

- listed securities and funds investing in listed securities (which is a challenge if the investor has a large amount of capital);

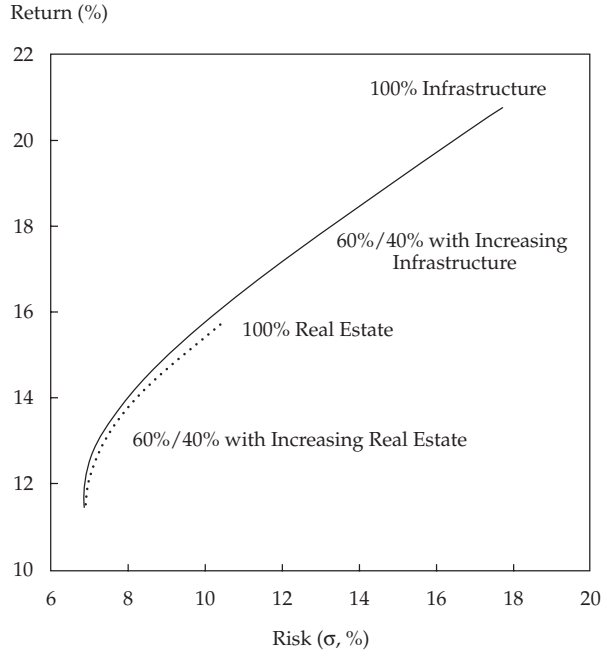
Table 2. Correlation of Infrastructure Returns with Other Asset Classes: Australian Market, 1995–December 2006

	Infrastructure	Australian Equities	Australian Bonds	Property (listed)	International Equities (A$)
Infrastructure	1.00	0.32	0.04	0.16	0.00
Australian equities		1.00	0.02	0.52	0.66
Australian bonds			1.00	0.50	0.00
Property (listed)				1.00	0.48
International equities (A$)					1.00

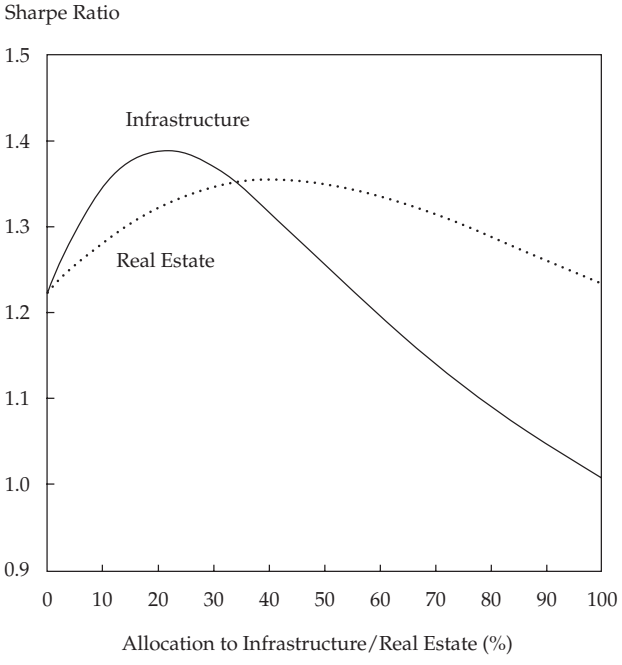
Sources: Standard & Poor's, FactSet Research Systems Inc., JPMorgan Securities Inc., Morgan Stanley Capital International, and JPMorgan Asset Management.

Figure 1. Risk–Return and Sharpe Ratio Analyses for Infrastructure Investments, 1995–December 2006

A. Risk–Return Profile



B. Sharpe Ratio



Notes: The analyses use 10 years of data and an equity/fixed-income allocation of 60/40. Infrastructure/real estate exposure is increased by decreasing the equity/fixed-income exposure on a pro rata basis.

Sources: FactSet Research Systems Inc., Bloomberg, Standard & Poor's, and JPMorgan Asset Management.

- exchange-traded funds, such as those recently launched by Barclays and State Street that are based on the Macquarie Global Infrastructure Index (MGII), which is calculated by the Financial Times Stock Exchange (FTSE);[2]
- private equity closed-end funds, which offer the largest opportunity today (Macquarie, an Australian bank, has been an early mover in this area, currently managing in excess of A$20 billion of assets;
- listed closed-end funds, such as 3i Infrastructure, which is a British private equity group listed on the London Stock Exchange (LSE), and Macquarie Infrastructure Group (MIG), which is an A$10 billion infrastructure pool listed on the Australian Stock Exchange;
- open-end private placement pooled funds, such as those that exist in the real estate world (lower-risk investment strategies do not always lend themselves to the closed-end, private equity–style vehicles that higher-risk strategies often do); and
- direct private strategies for those investors, such as the Ontario Teachers' Pension Plan or CPP (Canada Pension Plan) Investment Board, that have the organizational and governance structures in place, as well as the size, to make direct private investments and build their own infrastructure portfolios.

Australian and Canadian investors (in this case, pension funds) started their infrastructure investing by seeking assets that provide a match for pension liabilities. A sample of such pension plans currently has the allocations shown below:

- Queensland Investment Corporation (A$51.3 billion), 10 percent in infrastructure;
- Westscheme (A$2.6 billion), 32 percent in infrastructure equity;
- West Australia Local Government Superannuation Plan (A$960 million), 10 percent in infrastructure funds;
- CPP Investment Board (C$110 billion), 10 percent real return assets, which include real return bonds, real estate, infrastructure, timber, and commodities;

[2]A question to keep in mind regarding MGII is whether it should be considered an index of infrastructure investments or simply another equity subsector index. MGII includes a lot of companies that have far more volatility and operating risk than the infrastructure assets previously mentioned, which are used for increasing diversification and providing returns that exhibit low correlations with equity and fixed income.

- Ontario Teachers' Pension Plan (C$106 billion), 34 percent inflation-sensitive assets, which include real return bonds, real estate, infrastructure, timber, and commodities; and
- Ontario Municipal Retirement System (OMERS) (C$41 billion), 15 percent target exposure for infrastructure in addition to a 12.5 percent target exposure for real estate.

Need for Infrastructure Capital Investment. According to the American Society of Civil Engineers (ASCE) 2005 Report Card, U.S. airports rate a D+ and both energy systems and roads rate a D—all of which indicates a tremendous need for upgrading and capital commitment, which, in turn, implies excellent opportunities for infrastructure investment in the United States. Furthermore, the ASCE indicates that capital investment of US$9.4 billion will be needed annually for 20 years to eliminate bridge deficiencies, and it also foresees a US$11 billion annual shortfall in funds needed to replace aging water facilities so that they comply with water safety regulations.[3]

According to a panel discussion conducted by the National Press Club in 2003, an investment of US$50 billion to US$100 billion is needed for new electricity transmission and distribution.[4] And according to Booz Allen Hamilton, cities in the United States will require US$6 trillion in capital investment over the next 25 years to modernize and expand water, electricity, and transportation systems. Western European cities will require US$9 trillion over that same period.[5]

Governments do not have the money required to make such investments. They can increase taxes, they can issue more bonds and risk a reduction in their credit ratings, or they can look to new models of public–private partnerships. When one considers the costs of health care, education, military and police security, the need for increased environmental spending, and all the other responsibilities that governments must address for the sake of their citizens, the economic case for a certain element of infrastructure funding to come from the private sector is compelling.

Despite the fact that private sector investment in infrastructure has been far more prevalent in other countries, the United States has had some experience with this form of investment, including the following recent examples:

- Chicago Skyway;
- Indiana Toll Road;
- Dulles Greenway, connecting Washington, DC, to Virginia;
- Pocahontas Parkway in Virginia;
- State Highway 130 in Austin, Texas;
- State Road 91 in Orange County, California;
- Northwest Parkway in Colorado; and
- Ponciana Parkway in Florida.

Older examples of infrastructure investing in the United States also exist. Consider the story of the Ambassador Bridge, which, together with two tunnels, is one of three routes that connect Detroit with Windsor, Ontario, Canada. In 1980, Warren Buffett tried to buy the Ambassador Bridge but was outbid by a Michigan native named Manuel "Matty" Moroun. So, the Ambassador Bridge, which is one route in a three-route system through which more goods travel than between any two countries in the world, is owned and operated by a U.S. citizen. It is a long-term, relatively low-risk asset that generates steady, predictable, and growing cash flow.

Inflation and Interest Rate Hedging

When considering investments in regulated assets, investors should look for jurisdictions where the regulator has not only fair and transparent policies for decisions regarding return on equity (ROE) but also a demonstrable track record of applying such policies in a fair and transparent manner. Many such jurisdictions exist in the United States.

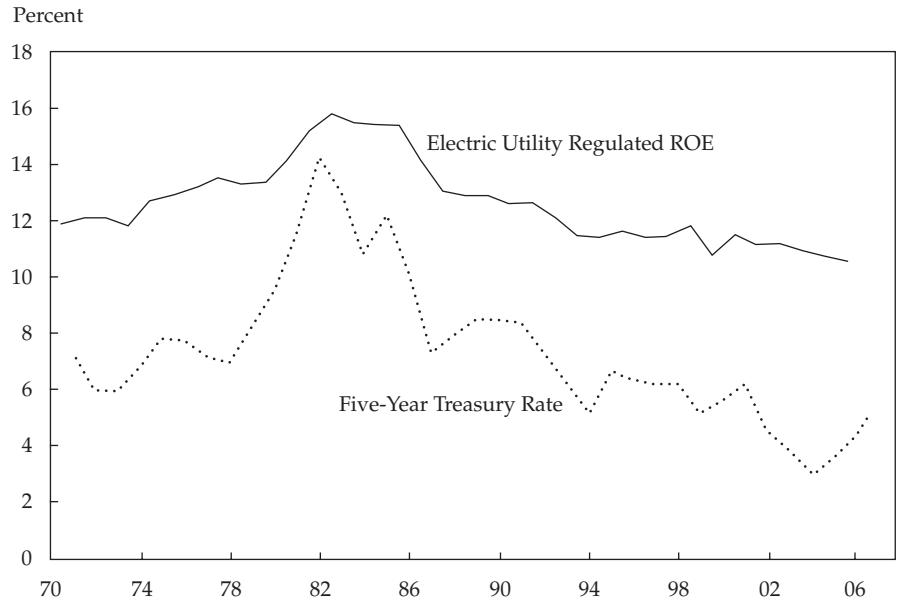
Going back to 1970, we have graphed data on regulated ROE decisions for electric utilities by state regulators and the U.S. Federal Energy Regulatory Commission (FERC), which regulates all interstate transportation of energy, electricity, and gas in the United States. We have found that the regulated ROE—with, on average, a 55 percent debt-to-equity ratio—has provided a fairly consistent spread of 500–600 bps above five-year U.S. Government Treasuries, as shown in **Figure 2**. The U.S. Energy Act of 2005, which requires the FERC to establish new rules that promote capital investment in electricity transmission, will likely increase that spread because the United States requires the building of another US$100 billion of transmission capacity in addition to the billions of dollars needed for new power generation. Note that the time period examined includes a "tail event" in the late 1970s and early 1980s when the spread narrowed dramatically. Those years encompassed a time of double-digit inflation and

[3]"Report Card for America's Infrastructure," American Society of Civil Engineers (2005): www.asce.org/reportcard/2005/page.cfm?id=203.

[4]National Press Club, *Critical Infrastructure Protection Program Panel Discussion* (19 November 2003).

[5]Booz Allen Hamilton, *Strategy + Business*, no. 46 (Spring 2007): www.strategy-business.com/search/archives/?issue=23500918&x=52&y=9.

Figure 2. Electric Utility Regulated ROE vs. Five-Year Treasury Rate, 1970–2007



Note: The electric utility regulated ROE includes FERC and state regulators.

Sources: Electric utility ROE: Hyman, Leonard S., Andrew S. Hyman, and Robert C. Hyman, *America's Electric Utilities: Past, Present, and Future*, 8th ed. (Vienna, VA: Public Utilities Reports, Inc.). Treasury rate: U.S. Federal Reserve Board, *Selected Interest Rates*.

double-digit interest rates—in fact, the highest interest and inflation rates the United States has experienced in 100 years. But even during that tail event, a positive spread of 200 bps was maintained. These data indicate the existence of a fair and transparent regulatory regime in which the regulator has a formula that passes on the costs of operating and maintaining assets by taking into account interest rates, inflation, and cost of equity capital. Investors can reduce risk by investing in regulated assets that are subject to fair regulatory regimes.

In contrast to regulated assets, consider a concession-based infrastructure asset—Texas State Highway 121 (SH 121), a 26-mile toll road in the Dallas–Fort Worth area.[6] The concession agreement is similar to agreements used for Toronto's Highway 407, the Chicago Skyway, and the Indiana Toll Road, whereby toll rate increases are linked to inflation. As long as the concession operators live up to the operating and capital maintenance obligations outlined in the concession agreement, the concessionaires can raise tolls every year or two in line with inflation based on the U.S. Consumer Price Index (CPI) or the Employment Cost Index (ECI).[7] SH 121 is capable of handling increased traffic volume based on the 3.5 percent average annual increase in urban U.S. traffic from 1999 to 2004.[8] Favorable demand inelasticity conditions are supported by the Dallas North region's demographics. Local population growth is double the U.S. and Texas averages, and traffic has grown 5–10 percent annually. Toll revenue (and, therefore, return) also grows in relation to traffic growth or usage. Thus, revenue should grow in step with population and traffic growth in the region and in excess of the rate of inflation. Furthermore, median income in the region is 50 percent higher than the U.S. and Texas averages, which means that the population can afford to pay tolls—an important point because 95 percent of the traffic will be cars rather than trucks. In addition, more than 85 percent of drivers will use transponders to pay tolls—one of the highest rates

[6]On 28 June 2007, the Texas Transportation Commission awarded the concession to operate SH 121 to the North Texas Tollway Authority (NTTA), another state government agency. The award was made 4 months after the Texas Department of Transportation had awarded the concession to a joint venture—including Cintra (a Spanish toll road company) and institutional investors advised by JPMorgan Asset Management—at the end of an 18-month open procurement process. Thus, SH 121 provides an example of the political risk inherent in infrastructure investing. It should be noted that the concession agreement entered into by the NTTA may differ from the agreement described above.

[7]The CPI has averaged 3.7 percent a year and the ECI, 3.0 percent a year over the past 20 years.

[8]According to the U.S. Department of Transportation.

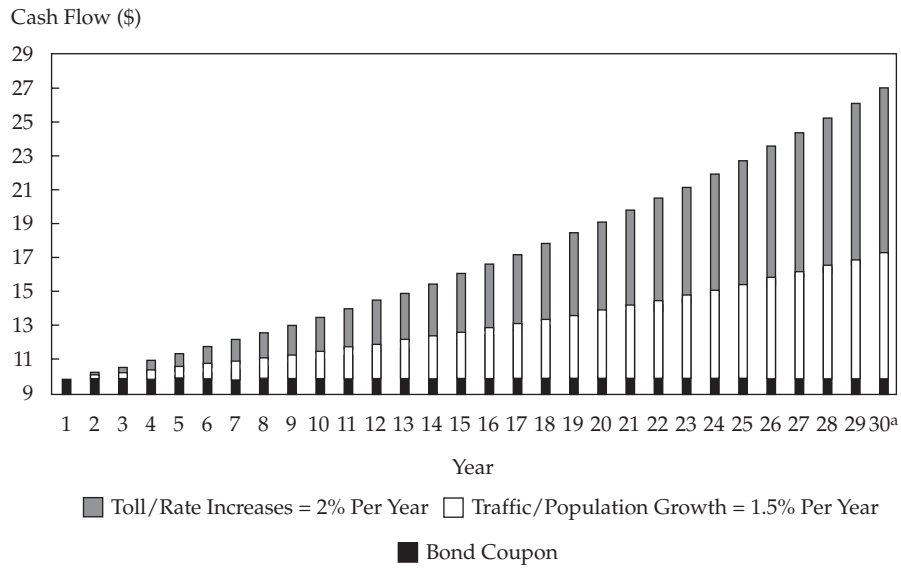
in the country. Consequently, toll booths will be unnecessary and toll collection will be free flowing. For the 15 percent of drivers who do not have transponders, video technology will photograph their license plates for billing purposes; the rate for those without transponders will be higher in order to pay for the additional administrative costs. Finally, the concessionaires can apply peak pricing—that is, increasing toll rates during rush hour and reducing them during off-peak hours—and, in effect, increase the capacity of the road by encouraging a more even distribution of traffic.

To illustrate how the cash flow from such a concession matches up with the cash flow from a fixed-income bond, consider **Figure 3**, which compares a 30-year concession for a toll road with a 30-year nominal coupon bond. The cash flow on the bond (shown in black) does not change during the 30-year period, whereas the toll road has two sources of return increase—one from traffic growth (which was assumed to grow at 1.5 percent a year, less than half the previously cited annual average urban traffic growth in the United States from 1999 to 2004 of 3.5 percent) and the other from toll rate increases (assumed to be 2 percent a year, which is materially less than the U.S. rate of inflation over the past 20 years). Thus, infrastructure provides protection against inflation where fixed income does not. Furthermore, at a total of 3.5 percent per year, the assumed rate of growth is relatively conservative for a good toll road asset. Revenue and free cash flow generated by the asset will likely exhibit some volatility not shown in the figure, but such volatility will be relatively low.

Similarly, by comparing the effect of changes in interest rates on the value of infrastructure assets with the effect on the value of fixed-rate bonds, one can see that infrastructure provides a valuable interest rate hedge. For example, a 30-year bond shows a duration of approximately 15—that is, a 1 percent change in yield will result in a 15 percent change in price. A 30-year concession project, in contrast, with cash flows that increase with inflation, demographic growth, and usage, has a duration approaching zero, which allows the asset to maintain value or even increase in value regardless of declining interest rates.

No robust benchmarks exist for infrastructure, although I suspect that within the next 5–10 years, someone will develop a good infrastructure benchmark. Current data, however, indicate a long-term 10–12 percent nominal IRR (internal rate of return) available in core-plus infrastructure. With historical real rates of return at 5–6 percent, a forward-looking real rate of return benchmark might be set realistically at 4–5 percent and a short-term return

Figure 3. Cash Flows: Infrastructure Concession vs. 30-Year Nominal Coupon Bond



[a]Assumes principal of $100. This illustration is meant to show nominal cash flow during a 30-year period and does not take into account the principal repayment of the bond in Year 30. The figure also does not take into account the assumed zero residual value of the infrastructure concession.

Source: JPMorgan Asset Management.

benchmark might be set at Treasury Inflation-Protected Securities (TIPS) plus 300 bps. Based on an analysis we performed on 39 assets (23 airports, 10 U.K. water assets, and 6 U.S. toll roads), volatility of revenues is less than 2 percent for water and toll roads and less than 3 percent for airports. According to these data, volatility is relatively low.

Leverage

High levels of debt are common when financing or investing in infrastructure assets. **Table 3** offers an insightful comparison of average leverage and credit ratings for various types of infrastructure versus office and hotel real estate. According to these data, leverage for infrastructure assets averages about 70 percent, whereas it averages about 50 percent for real estate. Because of their stable cash flow and low variability of revenue, infrastructure assets can support more debt, while maintaining a higher credit rating, than real estate can. In fact, the variability that does exist in infrastructure assets tends to be asymmetrical. Water bills, electric bills, and gas bills—all tend to increase rather than decrease throughout most normal economic cycles, whereas the same normal cycles will see real estate vacancies rise and fall and rental revenues increase and decline.

Table 3. Average Leverage and Credit Ratings: Infrastructure vs. Real Estate

Sector	With Average Leverage	Credit Rating Average or Range
Infrastructure		
U.S. electric distribution	58.5%	A
EU electric distribution	75.0	A to AA–
U.K. water	67.8	A–
Australian gas	77.1	BBB
EU toll roads	72.7	A
Real estate		
Office	45.1%	BBB
Hotel	56.4	B– to BBB

Sources: JPMorgan Asset Management; issuer reports by Standard & Poor's.

Unique Risks and Mitigating Factors

Certain unique risks and mitigating factors are associated with investing in infrastructure assets. Six of the most prominent are regulatory, political, liability, liquidity, and subsector risks as well as the risk of investing in a new and emerging strategy.

- *Regulatory risks*. When considering infrastructure assets, investors must conduct due diligence on the jurisdiction involved. They must determine whether the regulatory regime is fair and transparent, offers an appropriate rate of ROE, and has a demonstrable track record of making good decisions that consistently deliver predictable returns.
- *Political risks*. Investors should look for countries where commercial law is strong, where labor supports infrastructure investments, where the courts will uphold contracts between the private sector and government, and where eminent domain or expropriation rights do not supersede the provisions of a concession agreement. Most U.S. states, most Canadian provinces, and many European countries exhibit these characteristics, but not all do, so investors must research legislation and jurisprudence and should investigate current conditions and attitudes in each jurisdiction.
- *Liability risks*. Investors must insure against liabilities and determine that risks are allocated appropriately among all stakeholders, including local governments and concessionaires. Governments frequently retain some of the risks and may act as reinsurer of last resort, particularly for risks like terrorism or natural disasters.
- *Liquidity risks*. Infrastructure, as an asset class, is not as liquid as real estate, and the secondary market is still developing. Because infrastructure assets tend to be large, they typically represent a scalable investment strategy, unlike hedge fund strategies, for larger pools of capital with long-term investment horizons. Nevertheless, investor liquidity is available in the form of cash distributions and opportunities to recapitalize assets every 5–10 years as cash distributions grow. Investors do not necessarily have to sell the asset to realize attractive returns.
- *Subsector risks*. As mentioned earlier, investors should diversify their portfolio of infrastructure investments across geographies and different subsectors, such as regulated energy and water transmission and distribution as well as concession-based transportation assets.
- *Emerging investment strategy risks*. Infrastructure is an emerging investment strategy. Private markets are still relatively inefficient and lacking in robust data. Inefficiencies, of course, present opportunities for those with the appropriate level of risk tolerance; however, investors must be prepared for the risks associated with a new strategy.

Based on our research, we have found no correlation between a preference for or against public–private partnerships (PPPs) and political parties in the United States. Jurisdictions led by Democrats or Republicans are equally likely to pass PPP legislation. Similarly, even though a government's financial constraints are often the catalyst for privatization or PPPs, we have found no correlation between those states that have significant fiscal deficits or pension deficits and those states that have introduced enabling legislation. Fiscally prudent states governed by either party are considering PPPs and privatization as a way to meet their infrastructure requirements while keeping their fiscal houses in order. Municipalities are looking for entities that can deliver and operate their assets most cost effectively. Such entities are not always in the private sector, but frequently they are.

Similarly, regulators and legislators of all political stripes must be convinced that private sector ownership and/or operation is in the best interests of their citizens prior to granting approvals for transfers in ownership and concession contracts. For example, Kohlberg Kravis Roberts & Co. (KKR) and Texas Pacific Group were each turned down in their separate bids to buy regulated utilities in Arizona and Oregon, respectively.

In 2005, the Oregon Public Utility Commission rejected the acquisition of Portland General Electric by Texas Pacific Group because of the expectation that such a deal would result in a heavily leveraged consolidated balance sheet for Portland General Electric and thus create more risks than benefits for its customers.

In 2004, Arizona Corporation Commission rejected KKR's $3 billion leveraged buyout offer for UniSource Energy Corporation because state regulators feared that short-lived private equity time horizons would make KKR less than an ideal investor in regulated utilities.

Reasons for rejection appear to revolve around the following concerns:

- Increased leverage could result in lower credit ratings for the utility.
- The acquirer's short-term investment strategy could dissuade it from investing capital in operations, maintenance, or discretionary investments that would benefit customers.
- The acquirer's ownership will be transitory.

To allay such concerns and increase the likelihood of succeeding in their bids, private entities must clarify that they intend to follow a business strategy and an investment time horizon that match the regulator's model of a long-dated asset that generates reasonable returns to providers of fixed-income and equity financing and results in benefits to the customers and citizens in their service area.

Currently, KKR and Texas Pacific Group are attempting the largest leveraged buyout in U.S. history by making an offer for TXU Energy, the largest electric utility in Texas. About two-thirds of the asset is what I would call a private equity investment. It represents merchant power generation and is unregulated, which is probably why KKR and Texas Pacific Group have made the offer. About one-third of the company is represented by electricity transmission and distribution. It will be interesting to see if and when they close the deal.

Conclusion

The need for infrastructure and the capital to properly maintain it is growing, yet the ability of governments themselves to pay for the development and proper maintenance of infrastructure, through increased taxation or bond issuance, is declining. Furthermore, pension plans, endowments, foundations, and insurance companies are looking for assets that provide a good match to their liabilities and deliver an appropriate risk-adjusted, inflation-adjusted return. Among the U.S. investors that have added an infrastructure allocation to their portfolios or increased an existing allocation are the Illinois State Board of Investment, North Dakota State Investment Board, the Alaska Permanent Fund Corporation, and the Washington State Investment Board. Based on such growing interest and continuing needs, investment in infrastructure assets appears to have a bright and useful future, of mutual benefit to communities that require capital and institutional investors seeking alternative investments.

This article qualifies for 0.5 PD credits.

Question and Answer Session

Mark A. Weisdorf, CFA

Question: Should investors buy publicly traded infrastructure securities or stick to private transactions?

Weisdorf: Investors should invest in an asset when they believe the price they pay for that asset will generate the appropriate risk-adjusted return. From time to time, valuations in the public markets are so attractive that REITs, publicly traded companies, and infrastructure assets are taken private. Publicly traded assets have a different risk profile, including the market volatility associated with publicly traded securities. They also involve different costs from the costs associated with direct ownership interest in a private asset. For investors with a long enough time horizon who do not require liquidity in the short term, we prefer private ownership of assets for direct access to the cash flows, lower costs, and avoidance of market volatility.

Question: How much of the 6 percentage point spread between the five-year Treasury rate and electric utility returns shown in Figure 2 is attributable to credit risk?

Weisdorf: About 150 bps, or one-quarter of the spread, is credit risk. Over a long period of time, however, one-half to two-thirds of the realized return is the result of leverage. Given the highly stable cash flows associated with infrastructure investments, adding additional debt to infrastructure investments does not add the same degree of additional risk that it does in other investment strategies. So when considering infrastructure, investors have to think about leverage and debt in a slightly different way.

Question: What are the refinancing risks associated with levered investing in global infrastructure assets?

Weisdorf: It really depends on the asset and the country and whether the asset is regulated or unregulated. When dealing with a regulated asset, investors should match the term of the debt to the term of the regulatory period. Regulators can reset the allowable rate of return on assets at 1-, 3-, 5-, and 10-year intervals. So, investors should have a bond maturation schedule that matches the regulatory rate resetting periods (although perhaps with some lag).

In most regulatory regimes, the cost of debt is passed on, so even if interest rates rise between regulatory resetting periods, the investor can refinance at interest rates prevailing at the time of the next rate setting period knowing that those interest rates will be taken into account in setting the allowed ROE.

For unregulated, concession-based assets, investors should seek to fix interest rates for as long as possible. Assets such as airports and toll roads can be financed with low-cost, 30-year, fixed-rate debt. I do not recommend taking interest rate risk in this investment strategy. There is enough risk in selecting and managing the right assets.

Question: Does a private investor accept major maintenance risk? If so, what happens at the end of an asset's useful life?

Weisdorf: The equity investor does indeed accept maintenance risk. Concession agreements tend to be long—anywhere from 600–1,500 pages—with most of those pages detailing operating and maintenance standards that are often higher than those existing when the government owned and operated the assets.

Investors must undertake due diligence with operating and engineering consultants when investigating an infrastructure investment opportunity and assuming such obligations. Often, engineering and/or operating companies are partners in the consortium acquiring the assets. In building financial models, investors project not just toll revenue but also the cost of maintaining an asset according to the standards set in the concession agreement. At the end of the concession agreement, the asset is frequently handed back to the government in a condition required by the agreed-upon standards. Therefore, as an example, the Chicago Skyway, which is a 50-year-old elevated roadway with a 99-year concession, is likely to be, in effect, rebuilt at least once and perhaps twice before being returned to the city of Chicago.

Not all assets have to be returned to the government. For example, the concessions to operate U.K. water and wastewater systems, which were privatized by the U.K. government, are perpetual assets. The rate of return is regulated—reset every five years—but the investors own the assets until they sell them. Airports and seaports, although being managed under certain regulatory regimes, are also typically investor owned forever, unless they are on leased land.

Therefore, investors, with their operating and engineering partners, must anticipate and build into the price they pay for a concession the capital expenditures for maintenance and expansion as well as operating costs for long periods into the future.

Question: What are the public and private alternative vehicles for investing in infrastructure?

Weisdorf: Public alternatives are limited. Australia has about a A$35 billion market capitalization of what I would call "listed infrastructure funds." Macquarie manages three or four such funds, including a toll road fund and an airport fund. In the United States, there are some master limited partnerships for pipelines, which are pass-through vehicles (i.e., they do not pay taxes at the entity level), that list their units for public trading on stock exchanges. In Canada, there are some listed infrastructure assets held by publicly traded limited partnerships and income trusts. But those are likely to disappear soon because income tax changes in Canada have eliminated the ability of such vehicles to avoid tax at the entity level. Some toll roads, airports, and port companies in Europe are listed on the LSE and on certain other European exchanges.

There are listed individual assets and listed companies that have a portfolio of assets. There are relatively small listed funds as well as exchange-traded index-type funds, such as those started by State Street and Barclays, which are based on the MGII, a US$1.4 trillion to US$1.5 trillion market-cap index. I consider the MGII more of a subsector index with a lot of operating risk and the market volatility inherent in the capital investment cycle. The MGII has performed well, but it does not play the diversification role that infrastructure can play.

If you are going to be a direct investor, the logical step is to invest in private funds. About 20 such funds have been launched in the past two or three years. A number of Wall Street firms have private funds that invest in infrastructure. Most are closed-end, private equity–style funds, although some open-end perpetual funds are available in the marketplace.

Question: What impact do growth and infrastructure investing have on the municipal bond market?

Weisdorf: It is too early to say with certainty, although some municipal bond trading desks are growing concerned. I think it will have little impact on the municipal bond market.

Private sector investors considering infrastructure still need as much as 85–90 percent leverage on some of these assets. So, debt issuance will continue. Such debt may not be in the form of a municipal or general revenue bond. The bonds may be issued by a special-purpose company created by a consortium to hold and operate an asset, a concession, or a portfolio of infrastructure investments, but I think the effect will be the same.

And the fact remains that governments will continue to invest in, own, and operate some infrastructure. So, they will continue to issue municipal bonds while a new source of equity capital is being used to fill a void that has developed and grown over the past 25 years. The good news is that the availability of this new source of equity capital will continue to grow over the next 25 years.

Question: What organizations are willing to take the development risk to build all the infrastructure that you say is needed?

Weisdorf: Thousands of capable engineering, construction, and development companies are available to build, operate, and maintain infrastructure. The shortage is in the equity capital required to keep the infrastructure in good repair and to build the additional infrastructure needed to respond to demographic shifts.

Governments should take the equity risk associated with new development because they make the decision as to the timing of such development and the communities and citizens that they govern enjoy the benefits.

Question: What are the various fees involved with infrastructure investment, such as asset management fees, bond placement fees, and origination fees?

Weisdorf: The brief answer is, buyer beware. Any potential investor has to investigate the fees charged, as well as the risks assumed, to earn the expected returns. Private equity strategies typically charge at least 400 bps and upwards of 700 bps, based on the "2 and 20 model." Some investors minimize or avoid such fees by becoming direct investors in private equity, real estate, and infrastructure.

Opportunistic real estate and infrastructure strategies in which investors are taking development risk may in some cases involve acquisition fees, disposition fees, recap fees, and so forth. These are similar to the fees seen in private equity funds. Faced with such a choice, investors have to ask themselves whether the manager is taking on risk that is similar to that expected for a first-quartile private equity manager and whether the manager can deliver sufficient return for that risk and those fees.

In an open-end perpetual fund, however, the investors (not the manager) decide how long they want to have exposure to the assets and the fees are usually more appropriate to the risk and the investment strategy. The fees for such funds tend to be less than half the fees charged by the closed-end, private equity–style funds; these funds are taking more of a fiduciary investment management approach. There are usually few fees other than the investment management fees (no acquisition fees, disposition fees, etc.). Investors have to examine such issues whenever they consider an investment strategy or meet with a manager.