

# PRIVATE EQUITY: GROWING INVESTMENT VEHICLE IN INFRASTRUCTURE

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## Abstract

A demand for infrastructure development concurrent with federal deficits and budget shortfalls faced by the government has encouraged private participation in infrastructure projects. This has caused infrastructure funds to evolve. Infrastructure funds allow investors to gain access to the underlying characteristics of the portfolio of infrastructure assets. These funds have seen a growth in investment through unlisted and listed equity and are attracting investors because of their stable, long-term nature and relatively strong yields. Pension funds have also invested in the infrastructure sector for portfolio diversification and risk mitigation. The investors can not only reduce risk by investing in a portfolio of infrastructure entities with a negative or relatively low correlation between them, but also by investing in the equity market of other sectors. A low correlation between infrastructure and other sectors has enticed the risk-averse managers to invest in infrastructure funds. This paper discusses various cash inflow channels that support infrastructure growth and the reasons for the exponential growth in infrastructure funds. Various barriers and regulations that discourage investment in infrastructure assets are also highlighted.

Keywords: Infrastructure funds, public private partnership, equity, pension funds, risk

## Background

Infrastructure is the skeletal support of communities and regions, and involves physical structures and networks that provide the essential services for a community's economic and social needs (Rubin 2006). The Organization for Economic Co-operation and Development (OECD) defines infrastructure as those essential services that a society cannot do without (OECD 2004). The developing asset class is usually split into 1) "transport" infrastructure such as toll roads, rail tracks, bridges, sea ports and airports with user fees; 2) "regulated" infrastructure i.e. energy and utilities such as water, electricity, and gas distribution networks with a regulated service contract and availability fees; and 3) "social" infrastructure such as schools, correctional facilities and hospitals where governments pay an availability fee over a twenty-to-thirty-year term, effectively mortgaging their current payments (Inderst 2005).

Factors like rampant growth in population, resource-intensive development patterns, and new technology requirements of a rapidly changing economy have created a need for infrastructure development across the world. The condition in developing countries is exacerbated due to poor infrastructure in rural areas and this leads to urbanization which makes the existing infrastructure less efficient. Rajat Nag, the managing director of Manila-based Asian Development Bank (ADB) says that urbanization will remain a trend in the region as people seek better opportunities in the cities and hence there is a need to accept this migration and prepare for it (Feller 2007). Thus, the need for infrastructure investment is unarguable, particularly as inadequate investment in water, transportation, communications and electricity can constrain an emerging economy's prospects.

The existing infrastructure in developed countries is insufficient for the populace it is serving and hence, new infrastructure developments are essential. The failure of the I-35 Bridge in Minnesota in the United States reinforced this notion and brought renewed attention to infrastructure in developed countries (Sebelius and Stern 2008)

Apparently, infrastructure needs are substantial worldwide, but they cannot be fulfilled without adequate sources of finance. Thus, the need for substantial infrastructure investment is expected to increase over the next decades.

Throughout the history of the industrialized world, substantial funding for large-scale public works such as the building of roads and canals has come from private sources of capital. Towards the end of the 19th century, the federal, local and regional government increasingly provided infrastructure services with the infrastructure owned, financed and operated by the government. This trend continued throughout most of the 20th century until the early 1980s when government budgetary constraints caused private-sector financing to revive (Brealey et al. 1996). In recent years, such private financing has been driven through policies like the United Kingdom's Private Finance Initiative and trends toward the use of public-private partnerships. This allows the government to act as a facilitator or regulator and not the manager or owner of the underlying asset.

#### Infrastructure as a separate class

The regulated infrastructure -energy and utility- funds are well established and people have been investing in them for some time. Private investment, however, in transport and social infrastructure is a relatively new phenomenon. This is evident from the number of funds available in both these sectors. 40 companies offer infrastructure funds at USD 138 billion while 202 companies offer funds for utilities at USD 1,566 billion (Newell and Peng 2008). See Exhibit 2 for an example. Thus, these figures clearly indicate that utilities are more stabilized as compared to the infrastructure. For the balance of the paper, the term 'infrastructure' will refer to the transport and social infrastructure sector.

Until recently, infrastructure was seen as a sub-sector of real estate. The investment characteristics of infrastructure and real estate are very similar, and there is a strong relationship between the two. Predictable cash flows, high yields, strong competition for quality assets, limited liquidity and valuation based performance are some of the similarities of infrastructure and real estate. However, remarkable differences exist between real estate and infrastructure and these include different structures and investment packaging, ownership of the real estate versus the right to operate the infrastructure asset and the larger investment scale for infrastructure (Newell and Peng 2008). Moreover, infrastructure and real-estate behave differently in bringing potential diversification benefits to a mixed asset portfolio.

Hence, the question arises of whether infrastructure should be treated as a separate class or a sub-sector of real estate. The consensus industry view is that though infrastructure is related to real estate they have significant differences, so infrastructure should be treated as a separate class with separate allocation in the portfolio (Newell and Peng 2008). Moreover, the success of opportunistic private equity and real estate funds has encouraged their promoters to extend the

model to create a separate class for infrastructure (Orr 2007). Thus, infrastructure has evolved as a separate class to real estate.

#### Various cash flow channels for infrastructure

As discussed previously, budgetary constraints faced by governments was a major driver of private participation in infrastructure projects. This private sector participation has occurred through limited recourse or non-recourse financing schemes, including build-operate-transfer or build-operate-own arrangements. These arrangements typically were financed mostly by sponsors, buyers' credits, loans from export-import and commercial banks, and multilateral agencies. However, new methods of tapping financial markets are being developed.

Infrastructure funds are managed vehicles through which investors are able to gain exposure to the underlying characteristics of a portfolio of infrastructure assets. The global trend towards investing in such assets was started in Australia and Canada, and is now being followed in all parts of the world. There are three primary forms of investment- listed equity, unlisted equity and debt.

Unlisted equity means taking an ownership stake in the project which allows involvement in the ongoing management of the underlying asset. Unlisted equity holdings are generally formed by funds that are raised and managed by investment banks. Unlisted equity not only offers the investors a return premium but also diversification benefits. The returns from the infrastructure assets is relatively predictable and is inflation linked, thus, reducing the risk of the investor. Reduced risk means lesser rate of return. But, this trade off is attractive to equity groups such as pension funds and insurance companies from a risk reduction perspective (Treich 2006).

Listed equity invests in publicly listed companies that own, operate and/or provide services to an infrastructure asset. It offers returns that are influenced by the performance of the equity market, the sector in which the stock is listed, as well as company-specific factors. The prospective investor is attracted to the outlook for the equity sector and to the prospects of the underlying infrastructure asset backing the equity. Infrastructure-related sectors typically offer higher dividend yields than the broader market. This increased certainty of income may result in a lower level of expected return in comparison to the broader equity market. Increased liquidity relative to unlisted assets leads to further lowering the expected return than unlisted equity, but this is a price that a short-term investor is likely ready to accept (Treich 2006).

Investments in infrastructure projects are typically long term but do not necessarily offer an inherently high return; high leverage improves the return for an investor and hence, debt forms a major part of the infrastructure investment. Debt instruments offer bond-like characteristics, including stable capital value and inflation linked cash flows, together with an element of credit risk. Project risk, regulatory risk and illiquidity features mean that these debt instruments are expected to offer a total return above that of conventional corporate and government bond instruments (Treich 2006).

With the revival of private investment in infrastructure, a new phenomenon has been observed. A rise of institutional investors searching for infrastructure investments to match long-term

liabilities has occurred and this is due to the opportunities that the investors can foresee in this sector (Bellier and Zhou 2003). In the current economic environment of low interest rates, institutional investors have generally moved away from stocks and bonds toward alternative investment products, such as infrastructure, in search of higher returns. The stability of the demand of infrastructure has infused a level of confidence in the investors towards this sector. The investors have particularly been attracted to infrastructure equity funds. See Exhibit 1 for an example fund portfolio.

Equity in infrastructure

The infrastructure segment represents about one third of the global project finance market and as Figure 1 indicates, private investment in the infrastructure segment has increased over the past few years (Namblard 2007). It rose from 13% to 23% between 2000 and 2005 and year 2006 saw a considerable jump of 11% i.e. from 23% to 34%. This increased public interest in the infrastructure segment is partly due to the long term and stable cash flows promised by the infrastructure sector and partly due to its low correlation with the other segments, thus mitigating the risk which is an important factor especially after the instability in the market due to default of subprime mortgages.

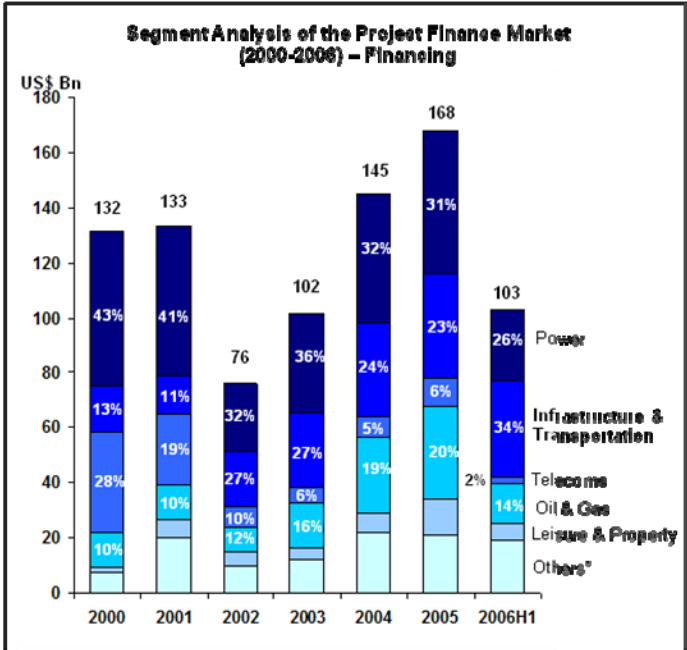


Figure 1

\*Infrastructure and Transportation includes transportation and social infrastructure sectors  
 \*\* Others include petrochemicals, waste and recycling, mining, industry, agriculture and forestry, water and sewage.

Source: Project Finance International, INDEFI analysis

To encourage public interest in this sector, the government has made policies which support private participation and they provide subsidies on private involvement in a project (Rubin 2006). This private participation is through giving them a stake in the project and raising money for them in the form of bonds or through equity. Michael Wilkins noted that the average size of

infrastructure funds is growing exponentially and has risen from £150 million in 2000 to £350 million in 2006 (Wilkins 2006). As the equity and bonds form a part of these funds, they have also increased proportionately. Financing of infrastructure projects through bonds is a longstanding situation whereas a rise in the investment through equity is a recent phenomenon. According to the research of Anayiotos (1994), equity funds have been established with the potential to raise approximately US \$5 billion for investing in a portfolio of private infrastructure entities in developing countries. This trend of increase in equity is not restricted by geographic boundaries and is a global change. Figure 2 gives a clear indication that even if the percentage GDP invested in the infrastructure segment remained constant for every country, the equity would increase every year. This increase is as a result of the domino effect, as the total GDP increases so does the investment in infrastructure projects. If equity forms 25% of the total investment in the infrastructure segment, an increase in investment leads to an increase in the total equity.

| PPP =15% of Infrastructure Asset Formation |       |            |            |            |                  |
|--|-------|------------|------------|------------|------------------|
|  | % GDP | 2007       | 2010       | 2020       | 15% PPP 20 Years |
| World                                      | 4.0%  | 411        | 456        | 643        | 7,267            |
| China                                      | 6.0%  | 86         | 98         | 152        | 1,620            |
| India                                      | 6.0%  | 40         | 45         | 70         | 748              |
| US   | 3.5%  | 71         | 77         | 104        | 1,210            |
| EU   | 3.5%  | 75         | 82         | 110        | 1,275            |
| Indonesia                                  | 6.0%  | 9          | 10         | 16         | 169              |
| Brazil                                     | 6.0%  | 16         | 18         | 28         | 303              |
|  |       | <u>295</u> | <u>330</u> | <u>479</u> | <u>5,325</u>     |
| <b>Equity 25%</b>                          |       | <b>74</b>  | <b>83</b>  | <b>120</b> | <b>1,331</b>     |
| Debt 75%                                   |       | 221.6      | 248        | 360        | 3,994            |

Figure 2  
Source: KPMG Luchetti-Insights and Contrasts

Researchers have tried to map this rise in equity in infrastructure segment and have noted an exponential growth in the private equity. Figure 3 clearly indicates that private equity as a percentage of total infrastructure investment has grown from 5% to 40% over a period of five years, from 2001 to 2006 and the non-private equity has grown from 20 to 50 Billion \$ during this term.

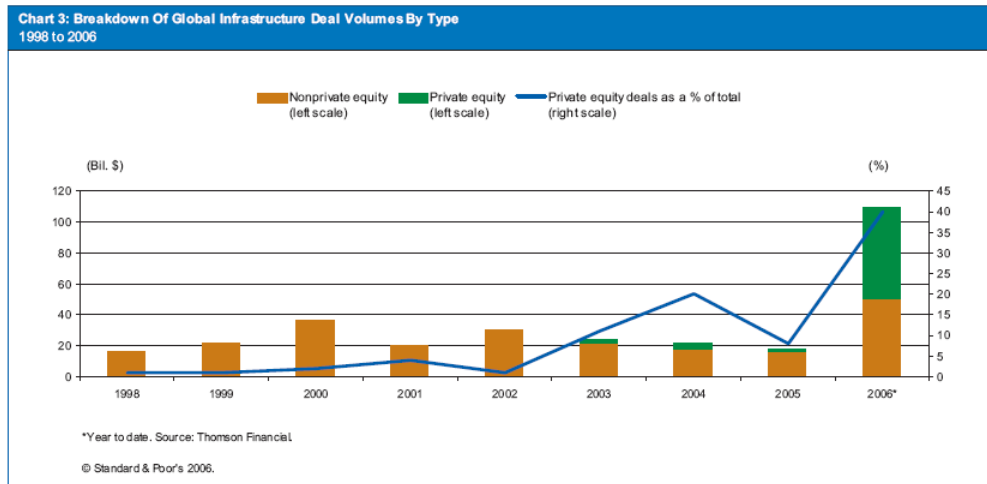


Figure 3  
Source: Standard and poor's 2006 (Global Credit Survey 2007)

The equity funds have targeted institutional investors who were getting lower rates of return on investments in the mature power and telecommunications sectors of industrial countries. These investors have been scouring the emerging markets for higher returns. To attract these institutional investors, a growing number of equity funds have given them the opportunity to mitigate risk by investing in a portfolio of infrastructure entities. Newell and Peng (2008) found that unlisted infrastructure equity is not significantly correlated with direct real estate ( $r = 0.26$ ), utilities ( $r = -0.01$ ), stocks of other segments ( $r = 0.06$ ), or bonds ( $r = 0.17$ ), with listed and unlisted infrastructure having a correlation of 0.36. This low correlation encourages the investors as they get the opportunity to mitigate their risk by portfolio diversification. A negative correlation between infrastructure and utilities clearly establishes infrastructure as a separate class from utilities and allows great diversification benefits. Thus, a proper portfolio selection and proportion of investment in these two sectors, infrastructure and utilities, could help in risk reduction.

The globalization of the investment and the infrastructure projects allow further risk diversification as the investors can invest in a portfolio of infrastructure projects in different countries and at different stages of the project lifecycle. Investment in projects across the nations would have a lower correlation among them and hence increase the diversification of the portfolio and thus they are attractive to investors. Fund managers expect the infrastructure equity funds to yield more than 20% annually from their long-term capital gains (Keehner and Erman 2008). Also the previous model which was derived from leverage and financial structuring was based on high debt to equity ratio and was created in an environment of lower rates of return (Orr 2007). It was later realized that in the long run, if the interest rates went up, the debt coverage ratio and returns would deteriorate as an increasing share of operating revenue would go to service debt. Thus, an increase in the number of equity funds would reduce the risk of lower returns due to fluctuations in the interest rate. Hence, the growing number of equity funds will channel equity, quasi-equity and in some cases debt capital from institutional investors to infrastructure projects (Anayiotos, 1994).

### Concerns with Infrastructure equity

Many concerns pertaining to infrastructure funds and investment through equity subsist. The equity funds face the liquidity risk which can be reduced by listing the shares on developed capital markets and by assisting project entities in listing their securities on emerging capital markets once they have established an operating track record (Anayiotos, 1994). The policies framed by the government also discourage investors from investing in infrastructure funds. Thus some developing countries have undertaken several policy reforms which could encourage private participation in infrastructure projects. However, none of the Newly Industrialized Countries (India, China) have been able to fully develop and implement the various models for private participation, and more than 90 percent of these investments have come from government (Bellier and Zhou 2003). A great challenge lies ahead with the huge infrastructure investments still needed by these countries. Weaknesses in the legal and regulatory framework are obstacles to broader private participation in infrastructure, and a series of issues deserve separate attention in the transport, water and power generation sectors. Modified policies and reforms shall not only confirm private participation through bonds and equity but would also encourage money flow from compatible sources like insurance companies and pension funds. Strong, predictable and inflation linked cash flows show a close compatibility with the pension funds as they require high quality, long term and income oriented investments to match their long term nature. But, to promote this symbiotic relationship certain changes have to be made in both the private infrastructure and pension fund regulatory framework. One of the major hindrances offered by the regulations imposed on the pension funds is the minimum performance criteria, which restricts the pension fund managers from investing in infrastructure projects to avoid volatility inherent in this sector (Vives 1999).

These funds have targeted the institutional investors who have been on the look-out for high rates of return. But, this primary goal of the private equity funds- maximizing returns- can also potentially add risk to infrastructure investment. Private equity funds rely on high leverage to gain good internal rates of return- typically 10% to 20%- but infrastructure projects already tend to be very highly leveraged. Competition for good projects tends to force up prices, which could mean even higher leverage is needed to achieve target returns (Feller 2007).

Policies have not only restricted private participation in developing countries but also some very developed countries like USA and Spain. It is evident from figure 4 that United Kingdom has strengthened its infrastructure and has concentrated on all sectors of its social infrastructure. The United States needs to make some reforms in its policies to allow more private sector participation. Infrastructure is the linchpin of any country's development; hence, investment in such assets is essential. The government thus needs to modify its policies pertaining to private sector participation in order to encourage the inflow of private funds.

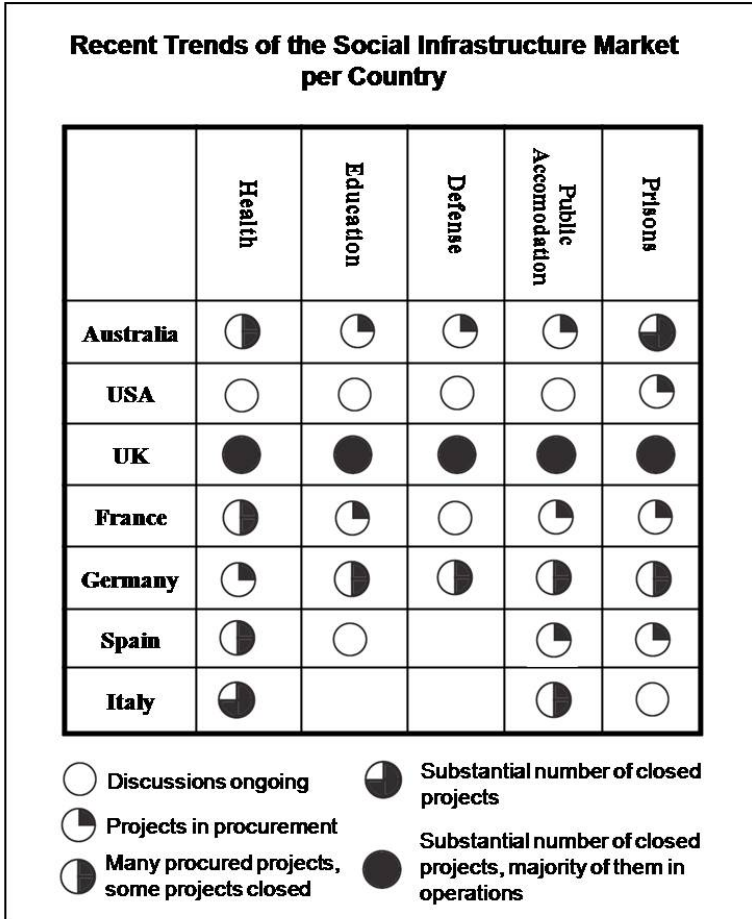


Figure 4  
 Source: PriceWaterhouse Coopers, Dealogic, INDEFI analysis

With so many infrastructure funds in the market, the biggest concern is that as these investors are looking to invest in these projects, a huge demand for these funds exists and this demand has driven up prices. An increase in price means lower yields, especially in a market with a limited number of existing assets for sale or new assets under development, which was a primary incentive for investors. Thus, this vicious cycle could drive away the risk-averse investors and thus reduce the investment in these funds.

Conclusion

Factors like rising population, strong demand even in times of sluggish economic growth; attractive risk adjusted yields; strong, predictable, inflation linked cash flows; close compatibility with pension funds and insurance companies; and low correlation to other market segments, have brought about a boom in infrastructure investment. The infrastructure funds have witnessed an increase in equity as the investors are reducing their risk to fluctuations in interest rates. However, there are various hindrances to this growth like government policies. The government would thus have to refine and modify its policies in order to encourage the participation of such investors.

MIG has acquired a global portfolio of high quality toll road assets which are shown below (bracketed figures indicate MIG's economic interest):

**Exhibit 1**  
**Profile of MIG Infrastructure**  
**Series: August 2007**

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**United States:** South Bay Expressway (50%), Skyway (22.5%), Dulles Greenway (50%), Indiana Toll Road (25%)

**Canada:** 407 ETR (30%)

**Australia:** Westlink M7 (47.5%)

**United Kingdom:** M6 Toll (100%)

**France:** APRR (20.4%)

**Portugal:** Vasco da Gama Bridge and 25th April Bridge (30.6%)

**Germany:** Warnow Tunnel (70%)

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Source: Macquarie Investment group

([http://www.macquarie.com.au/au/mig/acrobat/mig\\_factsheet.pdf](http://www.macquarie.com.au/au/mig/acrobat/mig_factsheet.pdf))

**Exhibit 2**  
**Profile of UBS Infrastructure and Utilities**  
**Series: January 2006**

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**United States Profile:** 99 listed companies/ funds @ \$ 547 billion

- **Infrastructure:** 5 @ \$ 12 billion; communications (4), diversified (1); index starts July 1998; no sub-indices
- **Utilities:** 94 @ \$ 535 billion; index starts January 1990; 6 sub-indices
- **Percentage of United States:** Infrastructure (2%), utilities (98%)
- **Percentage of Global:** Infrastructure (14%), utilities (43%)

**Global Infrastructure Profile:** 39 companies/ funds @ \$ 88 billion

- **Regions:** Europe (23@ \$55b; 62%), Asia Pacific (10@ \$20b; 23%), N. America (6@ \$13b; 15%)
- **Sectors:** Toll roads (14@ \$44b; 50%), Airports (11@ \$20b; 23%), Communications (6@ \$ 13b, 15%), Ports (4@ \$4b; 5%), Diversified (4@ \$3b; 3%)

**Global Utilities Profile:** 203 companies/ funds @ \$ 1,233 billion

- **Regions:** Europe (56@ \$480b; 39%), Asia Pacific (33@ \$171b; 14%), N. America (114@ \$583b; 47%)
- **Sectors:** Integrated (47@ \$652b; 53%), Generation (21@ \$58b; 5%), Integrated Regulated (69@ \$361b; 29%), Water (12@ \$26b; 2%), Transmission & distribution (50@ \$ 130b, 11%), Diversified (4@ \$5b; <1%)

**Global Infrastructure & Utilities Profile:** 242 companies/ funds @ \$ 1,321 billion  
Infrastructure: 6.7% ; Utilities: 93.3%

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Source: UBS (2006a)

The exhibit 2 presents a profile of the various UBS Global Infrastructure and Utilities indices at January 2006, comprising of 242 companies/ funds with a total market cap of \$ 1,321 billion. It also clearly establishes that the energy and utilities are well established as compared to the transport and social infrastructure both in United States and at the global level.

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