International Transport Forum

# The Potential of Private Institutional Investors for Financing Transport Infrastructure

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## EXECUTIVE SUMMARY

It is widely held that large institutional investors such as pension funds and sovereign wealth funds with long term liabilities and a low risk appetite are ideally suited to invest in transportation infrastructure assets. Despite the theoretical ideal match between a large source of capital and an asset class in need of investment, the uptake of institutional investors has been slow. This has been due to bad experiences with early investments and the uncertainty associated with investing in some transportation infrastructure assets.

This paper seeks to shed light on the complex nature of institutional investment in the transportation sector. This is achieved by examining the different investment vehicles that have developed in financial markets to provide opportunities for institutional investors. Unlisted equity vehicles have provided the greatest opportunity for institutional investors and it is through these investments that the characteristics of an asset class have developed. Both listed and unlisted products have been affected by the financial crisis indicating that the assets are not quite as robust to economic climate as was previously suggested. With Basel III regulations affecting the ability of banks to provide loans for projects, infrastructure debt funds have provided the latest opportunity for institutional investors to invest in debt products backed by stable infrastructure cash flows.

Analysis of the unlisted infrastructure investor universe indicates that investors can be segmented by size, governance capability and method of investment. Smaller, inexperienced investors are greatly reliant on and influenced by financial intermediaries for their investment decisions in infrastructure, including asset allocation and type of assets invested in. Larger investors with greater in house governance capability will usually have a clearly defined investment mandate for infrastructure and deploy their capital accordingly. All investors in search of stable, predictable, low risk returns must ensure that the underlying asset invested in through the various vehicles reflects the specific definition that they have associated with the asset class.

At the asset level, there are a number of investor considerations associated with the mode of private offering set up by the government. In a Public Private Partnership (PPP) arrangement, institutional investors can invest in the higher risk, development stage of a project or lower risk operational stage. Construction and demand risk appear to be of most concern for institutional investors investing in PPP projects. The method of funding set up by the government, either through toll revenues or availability payments will affect the risk borne by a private investor and the type of investor attracted to the project. i.e. availability payments will attract debt investors while tolls will be more suited to equity investors. In fully privatised transportation infrastructure, the main consideration for institutional investors is the regulatory framework affecting cash flows that the asset operates under.

Other asset specific considerations that are inherent in transportation infrastructure in both the PPP and fully privatised form include corporate governance, reputation and political risks. The Auckland Airport and 407 toll road examples illustrate that while private investors have benefitted from investing in the respective assets (through favourable regulatory and contractual conditions), short term political influences can harm the performance and reputation of investors. The BAA case study shows the effect of a heavy regulatory clampdown but also demonstrates the importance of adopting responsible corporate governance models, taking into account the wider stakeholder interest when employing a shareholder wealth maximisation strategy. Finally, the Canada Line PPP provides an example of a DBFO project with construction risk that has been able to attract private institutional investment and successfully execute on its deliverables.

The paper concludes by suggesting that private institutional investment in transportation infrastructure is dependent as much on the development of trust in the long term relationship between investors and financial intermediaries as through the formulation of consistent government policy on procurement and regulation. Collaborations such as the UK's Pension Infrastructure Platform, the Rebuild America Partnership and Europe's 2020 Project Bond Initiative would indicate that the required consultations are taking place. Essentially a deeper appreciation of the objectives of each party is required in the respective decision making processes.

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# 1. INTRODUCTION

The emergence of private institutional investors for the financing of transport infrastructure has been in response to a number of dynamic influences that have taken place over the last half-century. Firstly, the spread of pension plans since the 1930's Great Depression signalled a shift in the social and political atmosphere where people became conscious of the pressing need to provide for their future economic security. There has been a net flow of assets into pension funds of immense proportions due to the baby boom generation moving into their peak earning years and the requirement of private plans to be fully funded. While the growth of pension plan funds has predominantly taken place in Anglo American countries, globally pension fund assets around the world have accumulated in value to over US$29 trillion (Towers Watson 2013). At the same time, the deterioration of infrastructure facilities due to consistent economic growth has left transportation services in many areas substandard and in need of repair. In wake of the financial crisis, with governments facing the dual problem of high levels of debt on their balance sheets, and the desperate need to stimulate their economies to avoid a lost decade of stagnant growth, facilitating private institutional infrastructure investment has emerged as a prominent public policy issue.

Over the last two decades, through the processes of privatisation, liberalisation and globalisation, institutional investors such as pension funds and sovereign wealth funds have started to invest in transportation infrastructure assets. Pension funds and sovereign wealth funds have been attracted by these assets because of associated favourable investment characteristics such as low competition, predictable and stable cash flows over the long-term (10, 20, 30 years and beyond) enabling liability matching and inflation hedging. Despite the favourable matching characteristics between institutional investors and transportation investments, there are still a number of barriers that prevent a steady flow of capital in transportation infrastructure assets. This is partly because of bad experiences for investors in the early stages of development of the market and a lack of clarity around the true risks associated with these types of investments. Because of the inherent complexity and heterogeneity of infrastructure assets, there are a number of specific risks associated with the assets including political, reputational, environmental and governance risks. Further uncertainty for these types of investments arises from the financing mechanisms put in place by financial intermediary product providers (as well as the funding and regulatory frameworks enforced by government institutions). Specifically, this relates to the myriad of investment vehicles on offer for investors, which have been developed through financial markets, with a wide range of risk/return characteristics. The confusion and uncertainty surrounding these factors has meant that institutional investor capital has not been channelled in transportation infrastructure assets as freely as one would expect.

This paper aims to provide clarity on some of the issues associated with this evolving field. It firstly looks at the proposition of institutional investors, how the capital in this group has grown, what specific characteristics and trends facilitate their suitability to this type of investment. An analysis of the various investment vehicles is carried out with a snapshot of the growth experienced in the market. The infrastructure investor universe is then categorised by the specific method that they will utilise for investing in infrastructure. The

second section of the paper looks at the specific privatisation structures put in place by governments, analysing the specific risks associated with public private partnerships as well as the investor considerations for fully privatised assets. Four case studies that illustrate some of the key investor considerations for investing in transportation infrastructure are then presented in the last section of the paper.

# 2. THE ROLE OF INSTITUTIONAL INVESTORS

## 2.1. Private Infrastructure Investment

The investment vehicles which make up the global institutional infrastructure market are made possible by governments that have adopted privatisation or public-private partnership policies. Most transport infrastructure had previously been run by the public sector to allow decisions to be made in line with the objectives of government infrastructure policy balancing financial, social and environmental considerations. However, discontent with this approach surfaced in recognition that government decision-making was not always competent and gave undue weight to short-term political advantage rather than long-term objectives (Estache 2001). Efficiency improvements have been a key component of the rationale for privatisation in an attempt to reduce the budgetary burden caused by state enterprise inefficiencies. Productive efficiency brought about by the requirement of private firms to achieve profits has been important in this regard (Kay and Thompson 1986). The privatisation of infrastructure assets has also provided budgetary relief for governments reducing the macroeconomic constraints on public borrowing and spending. The inherent market failures of infrastructure (natural monopoly, externalities) mean that government intervention is still necessary with private provision of infrastructure. Public-private partnerships aim to provide an arrangement where a synergy between the two sectors can be achieved.

The different forms of the privatisation process with varying degrees of private participation will influence the way investors make their investment decisions:

### Privatisation

Full Private Provision (FPP) involves the government transferring complete ownership of the asset to private players. In this case, the private investor takes on all of the risk of the investment (O'Neill 2009a, Macquarie 2009). Privatisation can involve individual asset sales, sales of interests in state owned companies, outright sales of companies via initial public offerings (IPOs) or auctions. There is also a growing secondary infrastructure market enabling private institutions to acquire assets from other private players.

### Public Private Partnerships

While there is no official international consensus on the definition of a public private partnership (PPP), the term broadly refers to an arrangement, typically medium to long term (20 to 30 years), between the public and private sectors where the services that fall under the responsibilities of the public sector are provided by the private sector. A key point is that a PPP is not simply a joint venture or the contracting out of certain services such as

construction, maintenance and operations, instead the government enters into a contractual arrangement with a single firm (Special Purpose Vehicle) that agrees to provide the service. The SPV, then typically subcontracts with construction and operating companies allowing the government to concentrate on specifying the services that should be provided, and the contractor to provide the services at minimum cost (Irwin et al 2012).

The terminology of public private partnerships has varied between countries. The Private Finance Initiative (PFI) was pioneered in the UK in 1992 and initially referred to simply increasing the scope for private financing of capital projects. P3 and public private ventures are the terms employed in Canada and the USA and various other countries around the world.

The experience of PPP's, similarly to full privatisation has been mixed with various factors contributing to the success and failure of the projects. The specific risks and considerations associated with PPP projects that institutional investors need to take into account are elaborated upon in Section 3.

### 2.2. Infrastructure Investments Defined

Infrastructure assets have been defined as the physical structures and networks that provide essential services to the public and community (Macquarie 2009). Such a broad definition has led to the inherent lack of uniformity for the infrastructure financial product. Despite this, industry experts have portrayed infrastructure to private institutional investors by categorising it into just two main components:

*Economic Infrastructure* refers to the assets that provide services for production processes and final consumption in the economy. These assets provide economic benefits to society, have a long operational life and show monopolistic characteristics. This means they have predictable cash flows and a high degree of price regulation. A key characteristic of economic infrastructure is that it is usually easy to price or value gains from these assets in economic or financial terms (Macquarie 2009).

*Social Infrastructure* comprises a system of networks and facilities often operated by the private sector that support communities such as hospitals, education, housing, recreation and leisure. Investment in social infrastructure generally involves long-term contracts between the public and private sector. The gains from social infrastructure assets are less tangible and can be more difficult to price in economic or financial terms (Macquarie 2009).

Table 1. **Infrastructure Categories.**

| Economic Infrastructure | Social Infrastructure |
|---|---|
| **Toll roads, bridges and tunnels** | Hospitals |
| **Gas – pipelines, distribution, storage, distribution facilities** | Schools |
| **Electricity – distribution, generation, transmission** | Recreation and leisure |
| **Water – pipeline, water, sewerage treatment, distribution and desalination plants** | Prisons |
| **Sea ports – container and passenger terminals** | Stadiums |
| **Communications – towers, transmission, satellites, cable networks, switching stations, broadcast** | Courts |
| **Airports** | Subsidised Housing |
| **Rail – track, stations, rolling stock** | |
| **Ferries** | |

*Source*: Torrance (2009), Macquarie (2009)

The core infrastructure assets outlined above have the following common characteristics: large, long-term assets providing essential services, limited or no competition and high barriers to entry, predictable and steady cash flows with a strong yield component, low volatility and low correlation to the performance of other asset classes. As can be seen from table 1, key transportation infrastructure such as roads, seaports, airports, rail and other public transport are contained within core economic infrastructure as defined by the investment community.

### 2.3. Institutional Investor Suitability for Infrastructure Investment

While the broader definition of institutional investors encompasses large organisations such as finance companies, insurance companies, labour union funds, mutual funds and unit trusts, this paper focuses on the role of pension funds and sovereign wealth funds who have played a significant role in the transportation infrastructure investment market.

The pension fund industry has become the single largest source of savings in the global economy with both the funds themselves and their market representatives (second-order intermediaries) playing a core role in capital markets. In the Anglo-American countries of UK, USA, Canada, Australia and New Zealand, employer-sponsored pension plans have proliferated and coverage of the private workforce greatly expanded. Similarly, state sponsored, pay as you go social security pensions have been prominent in Germany, France and Italy over much of the twentieth century.

Pension fund investment strategies have traditionally followed convention by allocating funds to a mixture of equity products, fixed-income products and property investments (Muralidhar 2001). The Financial Crisis has forced fund administrators to question traditional asset allocation decisions and consider other investment strategies.

The mixture of investments made by pension funds has also depended on the type of fund, relative maturity and membership base. Unfunded pension plans are utilised by many modern Social Security systems where the pensions of retirees are paid from the contributions of the current working population (Israkson 2008). As no money is set aside, a sufficient number of people are required to be in work in unfunded systems in order to make contributions to pay for those who have retired (Israkson 2008). There is currently a major concern with this system as the baby boomer generation is starting to retire, leading to a current generation of workers distinctly smaller than the population of retirees (Israkson 2008). Funded pension plans, on the other hand, require the employee and the organisation to set aside money each week, month or year so that contributions can be invested and a return can be earned in order to fund employee retirement.

Funded plans generally take one of two forms: defined contribution or defined benefit. Defined Contribution (DC) plans do not promise a final benefit or retirement value (Israkson 2008). Instead, they rely on the flow of contributions and the accumulated short-term performance of investments to generate an individual retirement annuity for plan beneficiaries. DC plans are therefore particularly sensitive to the relative short-term performance of investments (Clark and Evans 1998). In contrast, Defined Benefit (DB) plans require an employer to commit to a formula for determining retiree annuities. Consideration is thus given to the expected in-flow of contributions and the expected out-flow of benefits, matching them through use of investments that seek to maximise returns consistent with the time profile of expected benefits that will have to be paid out (Israkson 2008).

While the investment opportunities associated with infrastructure assets have been extremely varied in nature, there seems to be a growing acceptance amongst the investment community of what the key characteristics should be for the asset class to be an attractive proposition for pension funds. Firstly, the extended life of infrastructure facilities and long-term nature of the concession rights for associated investments make them a suitable match for the long-term liabilities of a pension fund. The accompanying cash flows of infrastructure investments are usually stable and predictable due to usually monopolistic characteristics of the assets, with high barriers to market entry and inelastic demand for use of the assets. Infrastructure investment cash flows such as user tolls, airline charges, or rail tickets are often inflation linked, providing pension funds protection against volatility and inflation. Pension funds may also use infrastructure as a diversification strategy as returns tend to have low correlations with returns on other asset classes (Beeferman 2008, Macquarie 2009, Probitas Partners 2010).

The key distinguishing characteristic between DC and DB plans is that the DC framework focuses on the value of the assets currently endowing a retirement account whereas the DB plan focuses on the future flow of benefits that the individual will receive upon retirement (Bodie et al 1988). In a final average pay DB plan, retirement benefits are implicitly indexed to inflation, at least during the employee's active years with the firm. Greater benefits accrue towards the end of the employee's working life or are 'backloaded'. If inflation increases significantly over the course of a worker's life, the backloading effect is more pronounced. In contrast, backloading or frontloading in DC plans is independent of inflation as employers can achieve any backloading pattern by simply choosing an appropriate pattern of contribution rates over the course of the employee's career (Bodie et al 1988). An investment in the infrastructure asset class with a long-term horizon and inflation linked, volatility-protected cash flows thus provides an attractive proposition for DB plan administrators looking to match liabilities. In a DC plan, a DC participant values an infrastructure investment in a similar way to a DB sponsor but without the pressing need for matching liabilities. A concern for DC plan providers, is the illiquidity of infrastructure assets. DC plan providers prefer to make more liquid investments to be able to trade out of their assets quickly and reduce the risk of losses. For these reasons, DB plan providers have invested more in infrastructure assets than DC plan managers.

### *2.3.1. Pensions Crisis and Infrastructure Investing*

While DB pension schemes still account for the majority of global pension assets, the rate of growth of DB schemes is declining compared to DC schemes (Towers Watson 2010a). The DB pension model in the private sector has entered a severe crisis where increasing instances of underfunding and the prospect of plan failures have started to dominate the DB fund landscape (Clark and Monk 2006). The crisis emerged following the post World War II period, where pension systems were built incrementally over a fifty year period. Favourable market trends enabled DB pensions to become huge financial institutions in the private sector. There was little accountability for accumulating costs and risks as additional improvements were being made to plan benefits (Clark and Monk 2006). The strength of the equities markets and relatively high interest rates (at various times) made benefit increases and 'contribution holidays' appear less harmful than they have proved to be (Clark and Monk 2006). A number of difficult-to-hedge risks have resulted in devastating costs for DB pensions. Firstly, a failure to anticipate improvements in life expectancy have proven costly as the number of retirees entitled to benefits has increased. Cost risks where plan sponsors are vulnerable to wage inflation and regulatory change have had significant effects for schemes exposed to such volatility. Ultimately, the stock market bubble burst of 2001 and the 2008 global financial crisis, which decimated asset values and caused real interest rates to drop, have exposed the true extent of the costs and risks taken on by DB plan sponsors.

As a result, a large number of final salary DB pension funds are running significant deficits, meaning reserves will be insufficient to cover the retirement benefits of the current working population.

With the extent of the DB pension crisis now apparent in many countries but particularly in the US and UK, a debate has emerged around providing strategies for the survival of badly positioned funds. A 'natural' solution to the DB pension crisis would be to carry out a contract renegotiation process with employers, employees, shareholders and taxpayers (Clark and Monk 2007). Government intervention has led to the passing of the US Pension Protection Act and UK Pension Act, which focus on improving the security of plans and protecting the rights of plan beneficiaries at the expense of employers (Hull 2007). Such legislation can be seen to have market distorting effects, increasing regulatory costs on firms and inhibiting the private sector process for reform by prioritising public institutions (Clark and Monk 2007). A large proportion of firms have now closed their DB schemes and set up DC schemes, which do not guarantee the final pension sum and are therefore less risky for companies.

While renegotiations and government intervention provide possible solutions, novel investment strategies and financial products have been utilised by pension funds and will continue to play an important role for funds moving out of the crisis (Clark and Monk 2007). Some funds will hope that interest rates and asset values will return to higher levels and send plans to a fully funded status without having to increase contributions. With regards to novel investment strategies, caution must be taken in the wake of the global financial crisis, where complex, opaque financial products were exposed leading to disastrous consequences for large institutional investors.

A combination of strategies depending on the individual characteristics of the fund at hand will be needed to help institutions recover their positions and meet their liabilities. Infrastructure as an investable financial product, with a time horizon that matches the longevity of fund liabilities and a rate of return associated with low volatility, provides a feasible investment option suited to meeting the challenges facing pension funds, whether it be a DB plan running a deficit or an emerging DC scheme.

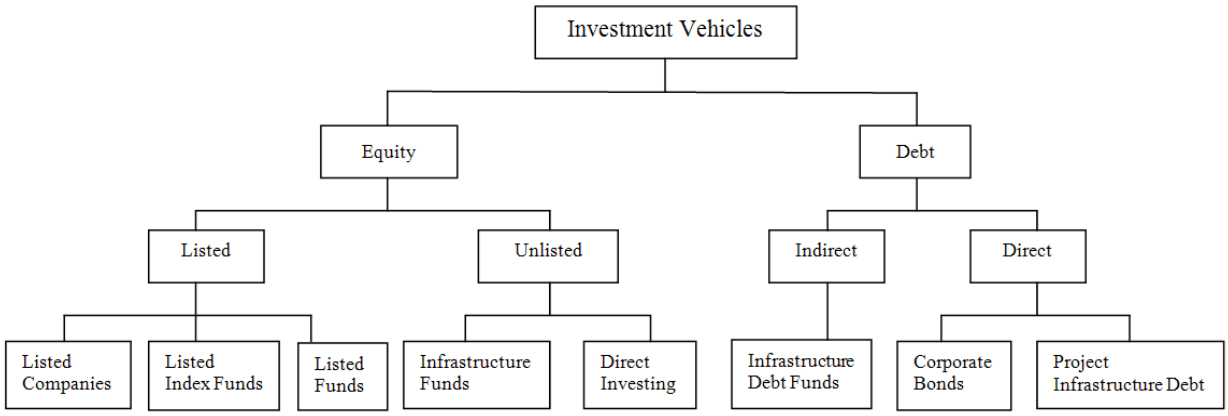
The Global Pension Assets study carried out by Towers Watson indicates that there is USD 29.754 trillion in pension assets in the thirteen major pension markets around the world, as of January 2013. In the seven largest pension markets, 55% of funds are DB and 45% are DC funds (Towers Watson 2013). On top of this, global sovereign wealth fund assets under management had grown to USD 5.2 trillion by the end of 2012 (Maslakovic 2013). There is thus great potential scope for institutional investment in transportation infrastructure assets.

This has been recognised by governments that have taken initiatives to facilitate the participation of institutional investors in infrastructure investment. In the UK, the Pension Infrastructure Platform was launched by the National Association of Pension Funds and the Pension Protection Fund in agreement with the government to stimulate UK pension funds to pool assets and invest in new UK infrastructure projects (Trudeau 2013). This has been formulated in conjunction with the UK Government's National Infrastructure Plan that highlights a pipeline of 500 infrastructure projects across roads, rail, airports, ports, electricity, gas, communications, water, waste and flood defences that will require more than £200bn of investment by 2020 (HM Treasury 2011). The recently announced Rebuild America Partnership initiative was launched by the US Administration in March 2013 to develop policies aimed at enhancing the role of private capital in U.S. infrastructure investment as a vital addition to the traditional roles of Federal, State, and local governments (White House 2013).

## 2.4. Infrastructure Investment Vehicles

As is the case for other asset classes, there are a number of different vehicles on offer for private investment in infrastructure. Both debt and equity vehicles have been used by investors to access core economic infrastructure. The infrastructure asset class is heterogeneous and not all investments satisfy the same risk/return qualities. The vehicle selected for investment will therefore depend both on the nature of the asset and on how the investor has defined and allocated infrastructure in their portfolios. The various investment vehicles for infrastructure are summarised in figure 1 below:

Figure 1. **Infrastructure Investment Vehicles**

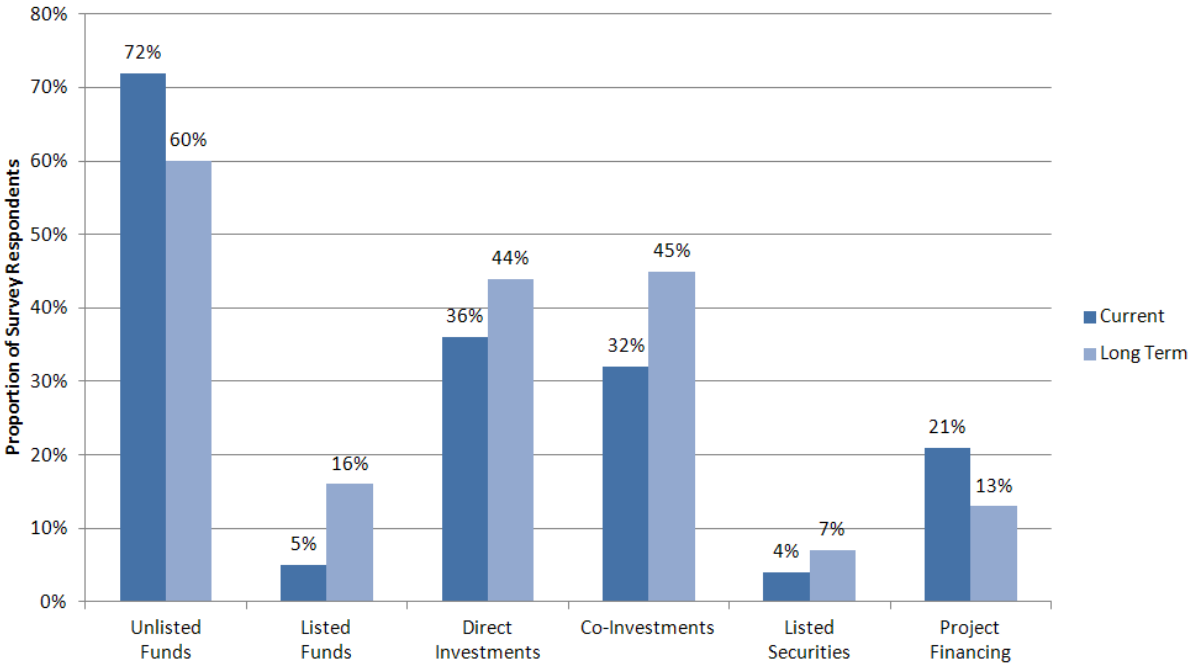



Adapted from Dela Croce (2012)

There are a large number of financial products available to invest in infrastructure and a large amount of variability within each of the infrastructure products on offer (i.e. no two airports or roads are the same). As the market continues to grow and information about the asset class becomes more readily available, the existing vehicles will become refined and new offerings will emerge. This section takes a snapshot of where the market has been and what trends might arise in the future for institutional infrastructure investment. Market analysis suggests that unlisted equity investment has been the most popular vehicle for institutional investors to access core economic infrastructure to date (Probitas Partners 2010). This is highlighted below in the graph depicting the results of a survey of 75 institutional investors conducted by data provider, Preqin[1]. The graph shows that all unlisted vehicles: unlisted funds, direct investments, co-investments are the most common for institutional investors. Co-investments are a form of direct investing where institutional investors partner up with other investors to form a consortium to invest in an asset. These vehicles are discussed in more detail in latter sections of the paper. Unlisted equity refers to equity investment in a company that is not listed on a stock exchange. The value of the company is not therefore directly affected by stock market sentiment.

1. The survey conducted by Preqin consisted mainly of Pension Funds and Sovereign Wealth Funds but also include insurance companies, banks and other smaller institutional investors. Project financing in the survey referred to investments made into debt for infrastructure projects.

Figure 2. **Infrastructure Investors by Preferred Route to Market**




Source: Preqin (2012)

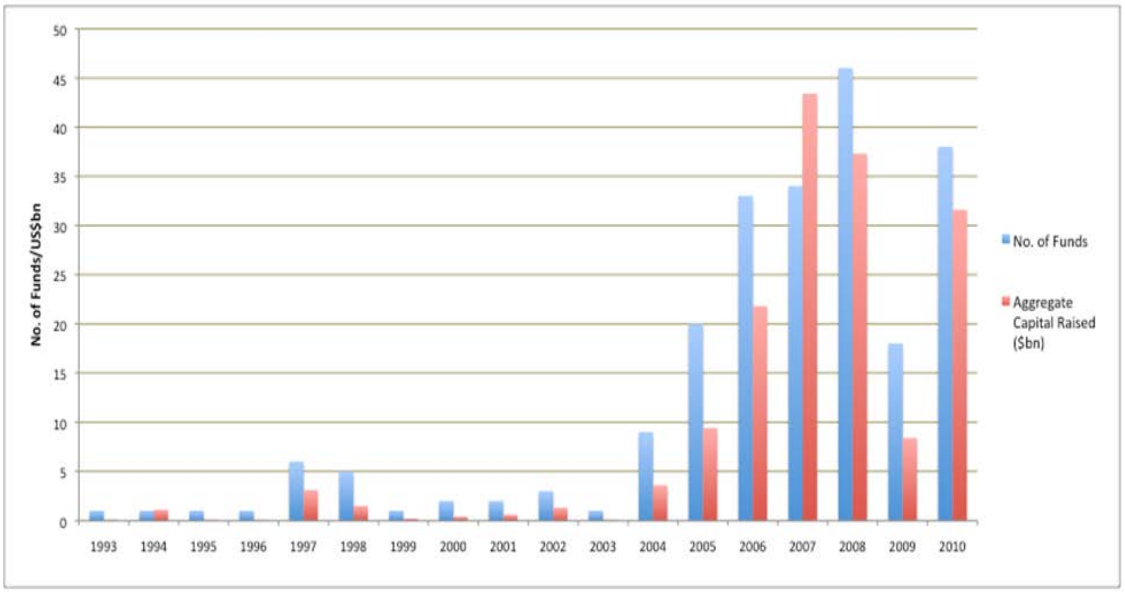
### Unlisted Fund Market

Institutional investors invest in an unlisted infrastructure fund as limited partners. The fund is managed by the general partner of the fund, often an investment bank or investment management firm. The general partner then invests contributions to the fund in various infrastructure assets on behalf of the limited partners.

Figure 3 below shows the growth in the unlisted infrastructure fund market since 1993. The annual levels of capital raised by unlisted infrastructure funds have increased significantly since 2003. The figure highlights the exponential growth experienced in the unlisted fund market during the period from 2004/05 to 2008. The greatest change in the growth of the market occurred between 2005 and 2006 when the aggregate capital raised more than doubled from $9.4bn to $21.8bn[2] and the number of funds increased from 20 to 33. It is also interesting to note that between 2006 and 2007, while the number of funds raised in the market only increased by one, the aggregate capital raised actually increased by 99% from $21.8bn to $43.4bn. The effects of the global financial crisis on infrastructure fundraising can be seen in 2009 with the number of funds raised decreasing from 46 to 18 and the aggregate capital raised reducing from $37.3bn to $8.4bn. In 2010, as the economy started to improve, investor sentiment for infrastructure seemed to rebound, with the number of funds more than doubling from the 2009 level to 38 and aggregate capital also more than doubling to $31.6bn. The 2010 figures represent a 15% decrease from the 2008 levels (Preqin 2011).

2. All figures in this section are quoted in US$ unless otherwise stated.

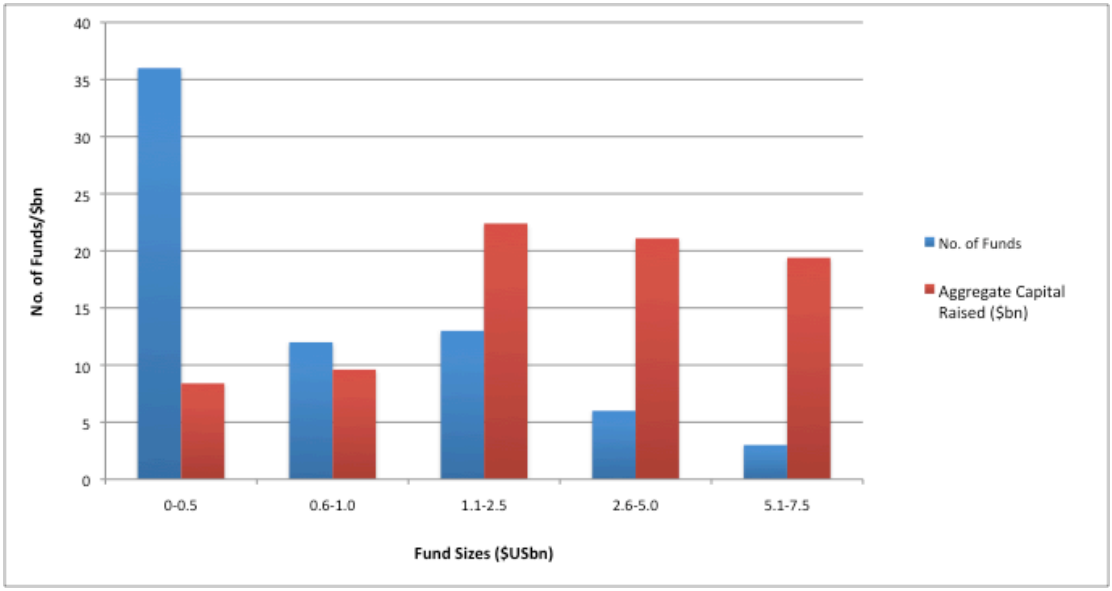
Figure 3. **Growth in Unlisted Fund Market**




*Source*: Preqin (2011)

Figure 4 shows the allocation of fund sizes in the unlisted market up until 2008. It can be seen that 51% of the funds in the market are a size of $0.5 billion or less contributing $7 billion in total. However, in terms of aggregate capital raised, it is the funds closed in the range of $1.1 – 2.5 billion that have had the greatest impact, accounting for 27.7% of the market (Preqin 2009).

Figure 4**. Allocation of Fund Sizes**




*Source*: Preqin (2009)

As of December 2010, there were 222 unlisted funds in the global infrastructure market that have closed (i.e. been fully subscribed and closed to new subscription). The total value of global infrastructure unlisted funds was $164.1 billion. On top of this, there were 122 funds being raised at the time with a target size of $85.8 billion (Preqin 2011).

With more governments privatising infrastructure assets since the early movers in the 1980's, a globalisation of the infrastructure fund market has occurred as nations try to attract private sources of capital. Historically, infrastructure funds have focused primarily on the developed world specifically in Europe and some other OECD countries. Surprisingly, the first unlisted infrastructure fund focused principally on US assets closed only in 2004. The US has not opened to private investment in infrastructure development as readily as some other countries. This has been due to many states lacking the technical capacity to implement PPPs, political and public sensitivity over foreign ownership and many states not having PPP enabling legislation. Similarly, the number of unlisted funds focusing on Asia and the rest of the world since 2004 is consistently smaller than in Europe or the US. The average fund size in Asia and the rest of the world are also a lot smaller as they are usually country specific funds as opposed to typically continent-wide European or US funds (Preqin 2008).

Between 2008 and 2011, 87% of the deals in the unlisted market were in economic infrastructure and 13% in social infrastructure. As the competition increases for the same core economic assets, it is anticipated that more funds will allocate a greater proportion of their capital to social infrastructure assets (Preqin 2011).

### Unlisted Direct Equity Investment

Direct equity investment refers to investments made directly in unlisted infrastructure assets without the need to utilise a fund manager for the investment process. Clark et al (2011) estimate there to be approximately twenty direct institutional investors in the market.

While obtaining a figure for the total amount of direct investment in infrastructure is difficult, a sample of 28 funds from the 'Large Pension Funds Survey' and 'Public Pension Reserve Funds Survey', conducted by the OECD in 2011, found that USD 30.9 billion had been directly invested in infrastructure by institutional investors (Della Croce 2012). These funds represented Australian, Canadian, Danish, Dutch, New Zealand, South African and UK pension funds. This figure however is not representative of the total amount of direct investment in infrastructure omitting the large US pension funds and a number of other direct investors. Some examples of direct investors listed by country include: Ontario Municipal Employees Retirement System, Ontario Teachers' Pension Plan, Canadian Pension Plan Investment Board, Caisse de dépôt et placement du Québec from Canada; Universities Superannuation Scheme from the UK; Government Investment Corporation from Singapore; UniSuper, Australian Super, Future Fund, from Australia; NZ Super from New Zealand; CalPERS, Dallas Police and Fire Pension System from the USA; ABP from the Netherlands. The characteristics of the direct investment method are elaborated upon in section 2.5 and 2.6 with examples provided in the case study section 3.3. As the complex nature of infrastructure investing becomes more readily understood, an increasing number of sufficiently large investors will be looking to invest directly and avoid the fees associated with the fund manager route.

## Listed Infrastructure Market

*Listed Infrastructure Funds*

The set up for listed infrastructure funds is similar to the unlisted fund structure in that an external manager invests on behalf of investors in various infrastructure assets. While the fund is publically listed, the assets invested in by the fund may or may not be listed. The listed infrastructure fund model pioneered by the Australian Macquarie Group is aimed at both retail investors and institutional investors.

The model has drawn criticism because of sometimes complex financial structures including high levels of debt and potential overpaying for assets in order to inflate fees payable by investors. Some funds paid dividends and fees greater than the total profits of the companies invested in, i.e. paying dividends out of new debt (Hall 2009, RiskMetrics 2008, O'Neill 2009b). These excesses were exposed with disastrous consequences by the 2008 global financial crisis and credit crunch, forcing reversion to the unlisted model in some cases. At least eleven infrastructure funds that were listed on the Australian Stock Exchange in 2007 are no longer listed (RiskMetrics 2008).

*Listed Infrastructure Indexed Funds*

Listed infrastructure companies contained in well-established stock market indices have provided opportunities for retail and institutional investors for a number of years. The index provider Standard & Poors (S&P) estimated the market capitalisation of listed infrastructure companies around the world to be USD 2.1 trillion in 2007 (S&P 2007). Infrastructure indices have been formed to track the performance of listed companies in this asset class. Listed infrastructure securities funds have also been set up to enable investors to invest in a portfolio of securities of listed infrastructure related companies.

The S&P Global Infrastructure Index was launched in 2006 to track the performance of the largest 75 companies in the infrastructure sector (energy, transportation, utilities). The constituents of the index include 40% from transportation and utilities and 20% from energy. At the end of 2008, the index included 75 companies from 24 countries with a combined market capitalisation of USD 733.7 billion. The effect of the 2008 global financial crisis can be seen in the fall from a market capitalisation figure at the end of 2007 of USD 1.2 trillion (S&P 2008a). The S&P Emerging Markets Infrastructure Index tracks 30 of the largest publically listed emerging market companies in the global infrastructure industry. The index is made up of companies from the transportation, energy, and utilities sectors with weights of 20%, 40%, and 40%, respectively. The combined market capitalisation at the end of 2008 was USD 51.95 billion compared with USD 103 billion at the end of 2007 (S&P 2008b).

The Macquarie Global Infrastructure Index (MGII) was introduced by Macquarie and FTSE in 2005. The MGII comprises a broad range of infrastructure stocks in the sectors (water, transport services, pipelines, multi-utilities, gas distribution, electricity and telecommunications hardware) (FTSE 2008). As of May 2009, MGII consisted of 231 stocks with a combined market capitalisation of USD 1.13 trillion (compared to USD 1.6 trillion in 2007). This index figure has grown from USD 383 bn in 2000 (Macquarie 2009). The MGII is heavily biased towards utilities with over 80% representation. The investable Macquarie International Infrastructure Securities Fund uses the MGII as its benchmark. Macquarie, with FTSE have a total of 16 benchmarked tradeable indexed funds covering all geographic regions and infrastructure sectors (FTSE 2008).

The FTSE IDFC India Infrastructure Index was formed by IDFC (Infrastructure Development Finance Company) and FTSE to represent the performance of Indian companies that generate the majority of their revenue from infrastructure. The FTSE IDFC India Infrastructure Index is comprised of 60 companies in the sectors transportation, energy, water resources and communications infrastructure. The market capitalisation of the FTSE IDFC India Infrastructure Index in August 2009 was US$ 52.5 billion compared to US$ 50.0 billion in 2007 (FTSE 2007).

Some other indices include the Goldman Sachs INFRAX Infrastructure Index, CNX Infrastructure Index and MSCI Infrastructure Indices.

A major problem with listed infrastructure indices is the vagueness with which infrastructure is defined and whether the listed index actually reflects the true infrastructure exposure that investors are looking for. The core economic infrastructure and social infrastructure defined above are associated with steady, inflation-linked cash flows derived from appropriately-leveraged, contracted assets with low technology, market, and development risk (Orr 2009). The constituents of the indices mentioned in this section however include growth companies such as sellers of construction, electrical and engineering equipment, whose performance are much more volatile and vulnerable to new infrastructure development and business cycle risk (Orr 2009). Caution must be taken when using the indices to measure the market for infrastructure. If institutional investors are only seeking core economic and social infrastructure asset exposure it is unlikely that the indices above will generate a risk-return behaviour that is aligned with what investors want. This is highlighted by the significant drop in market capitalisation figures in the indices as a result of the 2008 global financial crisis (highlighted by Table 2. below). True economic infrastructure assets should not be as drastically affected by variations in economic climate.

One index that stands out from the vaguely defined infrastructure indices is the Dow Jones Brookfield Infrastructure Index, which was formed in July 2008 (Orr 2009, Dow Jones 2008). Here the index components are derived from companies that exhibit the following strong infrastructure characteristics: high barriers to entry, royalty stream based on economic growth/inflation, high operating margins, low capital and maintenance expenditure and growing long-term cash flows. The market capitalisation of the Dow Jones Brookfield Global Infrastructure Index as at October 2009 was USD 376 billion. The sector with the highest allocation in the index was oil, gas & transportation, with 31%, followed by transmission and distribution with 24% (Dow Jones 2009).

Table 2. below summarises the market capitalisation values for global infrastructure indices in 2007 and 2008.

Table 2. **Market Capitalisation Values ($US billion) for Global Infrastructure Indices**

| | 2007 ($US billion) | 2008/09 ($US billion) |
|---|---|---|
| S&P Global Infrastructure | 1200 | 734 |
| S&P Emerging Markets | 103 | 51.95 |
| Macquarie Global Infrastructure | 1600 | 1130 |
| FTSE IDFC India Infrastructure | 50 | 52.5 |
| Dow Jones Brookfield Global | | 376 |

The effect of the global financial crisis on public markets can be seen in Table 2. with market capitalisation figures for all major infrastructure indices severely dropping in value from the 2007 figures. The slight increase in value of the FTSE IDFC India Infrastructure

index highlights the reduced impact of the global financial crisis on emerging economies compared with the large Western markets.

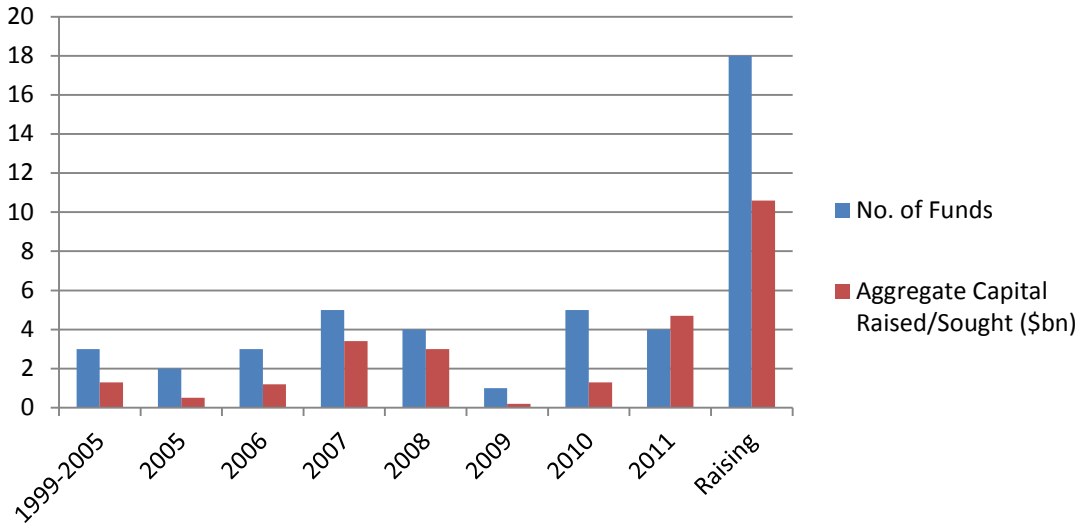
### Infrastructure Debt Funds

In the post-financial crisis era infrastructure debt funds have increased in prominence as a contraction in credit markets has made sourcing long-term funding for both new developments and asset refinancing difficult. Stricter controls on bank debt to capital ratios has cut lending by banks. The regulations on bank capitalisation, such as Basel III as well as a general deleveraging exercise in the wake of the crisis, have forced banks to increase the amount of capital they must hold, severely affecting their ability to provide loans for infrastructure projects (Preqin 2012).

Debt funds have been marketed by General Partner firms as an alternative to traditional debt from banks. An infrastructure debt fund essentially provides a vehicle for investors to invest in infrastructure company backed debt. Such funds are offered as a way of investing in assets that are relatively safe but offer a yield higher than government bonds. Given the typical debt to equity leverage ratios for infrastructure projects are in the order of 75:25 or 90:10, there is considerable opportunity for investors to invest in senior debt over equity. Senior debt holders are first in line to be repaid if an investment fails over junior debt holders, mezzanine debt holders and equity investors.

While the scope of assets invested in may vary a lot more than the assets invested in for unlisted equity funds (debt funds have invested in renewable energy projects and social assets), infrastructure debt funds provide another option for investors looking to gain long term, inflation-adjusted, stable and predictable returns. The figure below shows the number of unlisted infrastructure debt funds that were raised and were being raised as of June 2012.

Figure 5. **Annual Unlisted Infrastructure Debt Fund Fundraising**




*Source:* Preqin (2012)

Institutional investors that invest in debt funds are likely to include these investments in the fixed income allocation of their portfolio. While institutional investment in infrastructure debt has been limited thus far in comparison to equity investments, it is expected that the volume of investor funds being channelled into infrastructure debt instruments is likely to increase in the future.

### *2.4.1. Expected Performance of Infrastructure Investments*

While the market for infrastructure funds (of all types) is in its infant stages and availability of reliable data on returns to investment in infrastructure is scarce, there have been a number of industry and academic based studies that have analysed returns. These are shown in Table 3 below.

Table 3. **Summary of Infrastructure Return Figures**

| Type | Source | Institution | Publication Date | Period Studied | Geographic Region | Annualised Return Figure (%) |
|---|---|---|---|---|---|---|
| Unlisted Fund | Academic | Peng and Newell | 2007 | 1995-2006 | Australia | 14.11 |
| Unlisted Fund | Academic | Newell et al | 2011 | 1995-2009 | Australia | 14.11 |
| Unlisted Fund | Academic | Finkenzeller et al | 2010 | 1994-2009 | Australia | 8.2 |
| Unlisted Fund | Academic | Bitsch et al | 2010 | 1971-2009 | Global | 67.9 (IRR) |
| Unlisted Fund | Academic | Hartigan et al | 2011 | 1998-2008 | UK | 6.5 |
| Unlisted Fund | Private Sector | CEPRES | 2009 | 1986-2007 | Global | 48 (IRR) |
| Unlisted Fund | Private Sector/Industry | Macquarie | 2004 | 1995-2002 | Australia | 19.2 |
| Unlisted Fund | Private Sector/Industry | Mercer | 2005 | 1996-2005 | Australia | 13.3 |
| Unlisted Fund | Private Sector/Industry | Colonial First State | 2006 | 1996-2006 | Australia | 13.5 |
| Unlisted Fund | Private Sector/Industry | Colonial First State | 2010 | 2001-2010 | Australia | 11.1 |
| Listed Funds | Academic | Peng and Newell | 2007 | 1995-2006 | Australia | 22.5 |
| Listed Funds | Index Provider | ASX | 2010 | 2006-2010 | Australia | -2.79 |
| Listed Securities | Private Sector/Industry | Macquarie | 2009 | 1994-2009 | Global | 4.2 |
| Listed Index | Private Sector/Industry | Dow Jones Brookfield | 2011 | 2002-2011 | Global | 14.6 |
| Listed Index | Index Provider | S&P | 2010 | 2006-2010 | Global | 6.8 |
| Listed Index | Index Provider | S&P | 2010 | 2006-2010 | Emerging Markets | 15.6 |
| Listed Index | Private Sector/Industry | MSCI | 2010 | 2002-2011 | Global | 0.04 |
| Listed Index | Private Sector/Industry | FTSE/IDFC | 2011 | 2006-2010 | India | 32.1 |
| Listed Index | Private Sector/Industry | UBS | 2011 | 2006-2010 | Asia/Pacific | 5.7 |

The figures shown above illustrate the lack of standardisation and heterogeneity that exists in the asset class. In the early stages of this market, some investors were able to enjoy high returns (akin to returns on equity investments) with the advantage of bond-type risk.

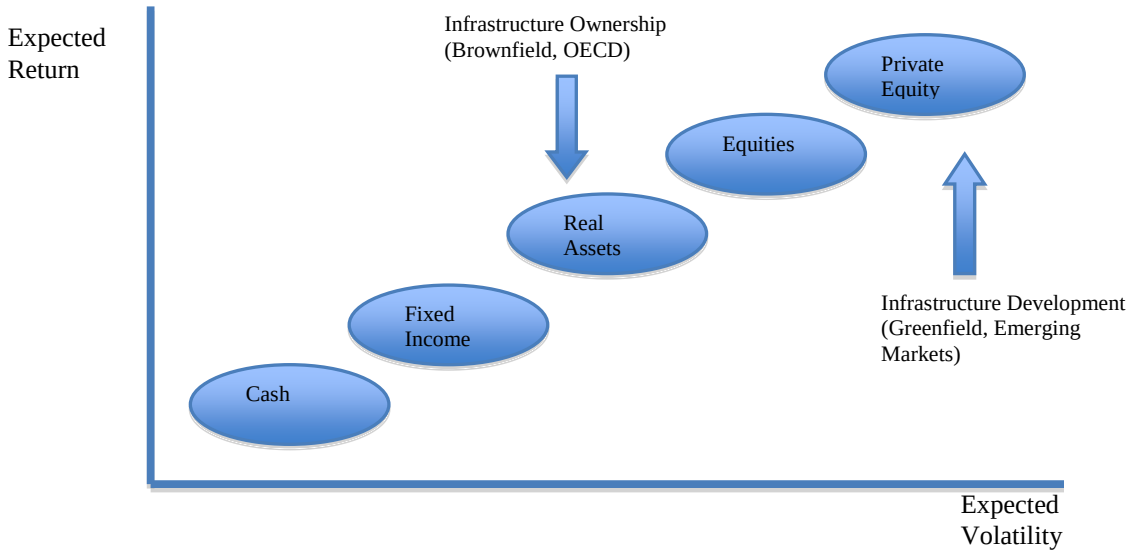
With demand and knowledge rising, it is expected that returns will stabilize towards a much lower level in the long-term. Nevertheless, the underlying variety inherent in this asset class with regards to the types of asset and financial product as well as geographic location, could result in continued variability rather than convergence to an equilibrium level of return on investment.

A number of firms have published their expected risk and return profiles to illustrate where infrastructure investments fit with other asset classes. Infrastructure has usually been described as showing both higher risk and higher returns than equities, but at times risks have been perceived as lower than with equities, with returns sometimes lower and sometimes higher than for equities. Mercer state that financial products falling into the category of diversified infrastructure funds should be striving to achieve returns of 9-12% (Mercer 2005). RREEF separates the total return expectations of mature assets (10%-14% pa) from early-stage assets (18 % pa) (RREEF 2007). Within the infrastructure sector, returns can vary depending on the type of asset. For example, JP Morgan Asset Management expects lower rates of return for toll roads (2-8%) and PPP/PFI (9-14%) compared with airports (15-18%) and broadcast networks (15-20%). An overall infrastructure average is given as 10-15% (Quadrant 2008).

From an investor's perspective, Inderst (2009) reports on a survey of European pension funds that shows return expectations for the infrastructure asset class to be 9.5% return annualised over ten years putting it below private equity (11.3%) but above stocks (9.0%), bonds (5.1%) and cash (3.7%). As an example of the large pension funds, the Dutch fund APG expects a return of 10% from infrastructure in comparison to 6% for property and 15% for private equity. CalPERS expect an annual return of inflation (CPI) plus 5-7% (Inderst 2009).

Investment management firms have separated core brownfield economic infrastructure from riskier greenfield infrastructure development on the risk/return spectrum as follows:

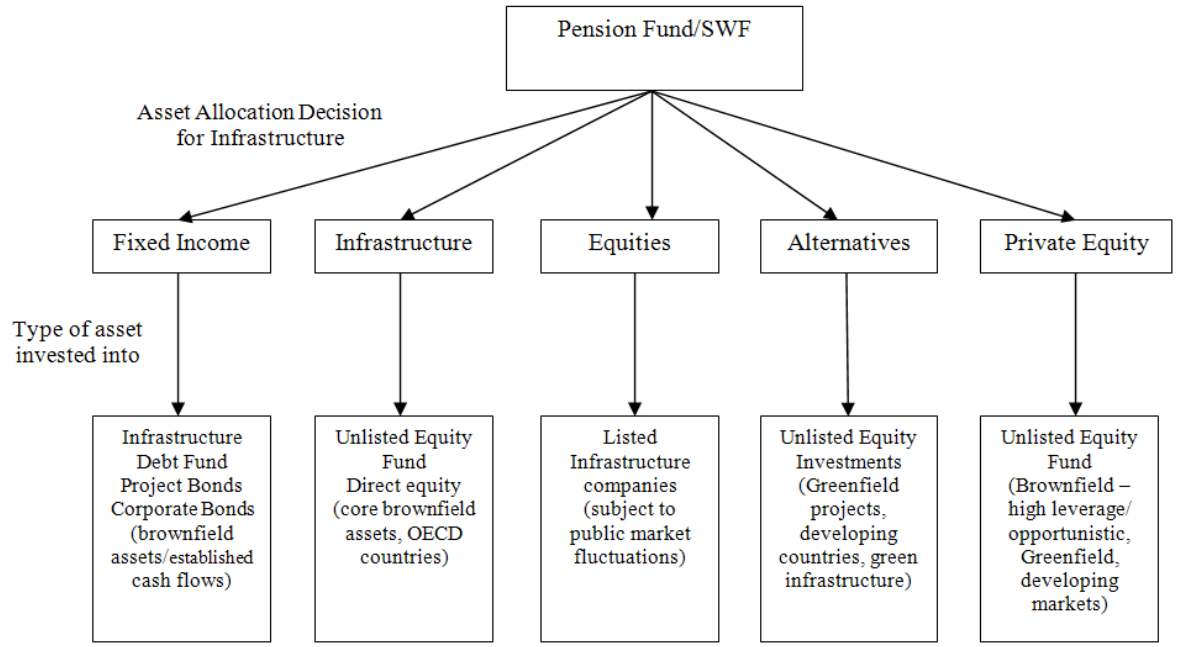
Figure 6. **Infrastructure Risk/Reward Profile**




Adapted from Lazard (2007)

The level of return expected from an infrastructure investment will depend in part on how exactly the specific asset is defined and categorised within the sector. The great variety of products available as well as the inherent heterogeneity associated with the assets, would enable investment in infrastructure along the entire risk/return spectrum above. The investment decision of investors is often related to how transport infrastructure is allocated within its investment portfolio. i.e. how investors define transportation infrastructure in their portfolio will influence the type of asset or vehicle invested in. The categories used to group the various investment vehicles for transport infrastructure have included: fixed income; infrastructure; equities; alternatives; private equity. Figure 7 below illustrates how the allocation decision of investors will determine the type of vehicle and assets invested in.

Figure 7. **Investor Asset Allocation for Infrastructure**



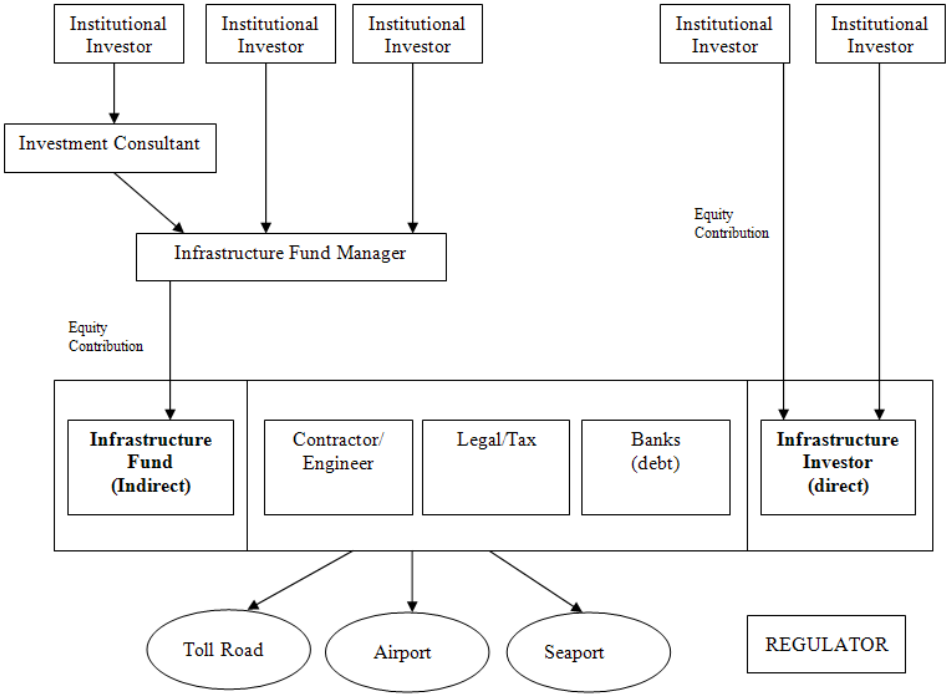

*Source*: Author

## 2.5. Methods of Investment

Despite the wide variety of financial products on offer, unlisted equity investments predominate for institutional investors and are therefore the focus of discussion in this section of the paper. Because of the heterogeneity of infrastructure assets and underlying information asymmetries, long term relations between institutions and individuals are often central to the infrastructure investment process, with reliance on financial intermediaries. Whether an investor invests directly in the asset class or utilises financial intermediaries will depend in large part on the size and internal resource capability of the investor. The governance and internal resources of a pension fund will determine the extent of reliance on investment consultants or fund managers.

The relational form of infrastructure investing can take one of two main structural forms, indirect or direct, with variations illustrated in Figure 8.

Figure 8. **Methods of Institutional Infrastructure Investment**




Adapted from Torrance (2009)

The indirect investment method involves the pension fund investor deploying its capital in an infrastructure fund, passing on all responsibility to the fund manager for the investment. Investment consultants have played an increasingly important role in the indirect relational infrastructure investment process, providing advice to the smaller pension funds for investing in infrastructure. The investment consultant usually initiates the process by advising the investor of the benefits of an allocation to infrastructure. Once the investor has agreed to invest in infrastructure, the consultant then provides advice on a suitable manager through which to invest. The manager's role in the process is to source appropriate assets to invest in on behalf of institutional investors.

As shown in Figure 8, the second, direct method relates to the situation where the pension fund investor has the capability to forego the consultant and manager stages of the investment process and is able to invest directly in infrastructure assets. This means that these investors have the in-house resources to be able to source assets, finance the investments and manage/maintain them.

Direct investments can be made alongside co-investment partners in a consortium consisting of other pension fund investors and infrastructure fund managers. The equity arrangement in a consortium of direct investors varies from asset to asset. In a co-investment arrangement, it is usually the fund manager or largest pension fund investor in the consortium that leads the transaction.

A further development of the direct investing method for pension fund investors has been to form a club or partnership model consisting of like minded investors in an attempt to avoid conflicts of interest associated with the fund manager route. Such a model has consisted of a group of pension funds collaborating to align interests when approaching infrastructure

investments. The rationale for joining a club has been to spread risk, negotiate better terms by reducing competition and ensure local knowledge. The 'club' concept is newer in the market and difficult to set up unless interests are well aligned and the decision-making process is efficient.

The very large pension funds capable of directly investing in infrastructure will have a separate division of the fund's investment committee solely focused on infrastructure investments. Medium to large funds may have one member of the investment committee dedicated to infrastructure with the responsibility of carrying out due-diligence on fund managers and making recommendations to the wider committee. It is likely that this person would not be entirely focused on infrastructure and would have other asset classes to look after as well. The smallest funds would most likely have no dedicated infrastructure asset analysts and based on a collective trustee or investment committee decision employ the advice of an investment consultant for an allocation to the infrastructure asset class.

The attachment of early infrastructure funds to the investment banking industry resulted in conflicts of interest. The fees charged by managers have sometimes been excessively high, resembling private equity fees, despite private equity returns being higher. This has typically involved a base management fee of 1 to 2% and performance fees of 10-20%, with an 8 to 12%hurdle rate (Inderst 2009). Investors have also been concerned over the short time-horizon of fund managers, with most funds offering closed-end models around 10 years. Investors on the other hand are attracted to the asset class for the long duration of investments which can be held for up to 30 to 50 years. In a recent survey of investment consultants by data provider Preqin it was found that management fees and other fund terms and conditions were the greatest concern for investors in the infrastructure asset class (Preqin 2011a). While some fund managers have aligned their fund conditions more closely to investor interests, the issue of excessive fees is still widely perceived as a barrier to investment.

## 2.6. The Infrastructure Investor Universe

This section provides an overview of the infrastructure investor universe to quantify the presence of pension funds for unlisted equity infrastructure investments. The data for this section was obtained through a detailed document/database review of industry-based publications, case study interviews on seven different pension funds of varying size and characteristics, as well as surveying the pension fund clients of three of the largest global investment consultants by size of assets under advisement[3]. Details of the survey questionnaire and pension funds interviewed are provided in the Appendix to the paper.

### *2.6.1. Analysis of Pension Funds in the Market and Vehicles Utilised for Infrastructure Investing*

A comprehensive document and database review was conducted in order to examine the types of equity investors in the global infrastructure market and the types of investment vehicles employed by investors looking to invest in this field. A summary of the various industry-based publications is provided here.

Probitas Partners, an investment management and advisory firm published the Infrastructure Market Review and Institutional Investor Survey 2010 which included an online survey of 160 senior investment executives from pension funds, "fund of funds" managers, family offices, endowments, and foundations conducted during the second half of

3. This was part of a research project conducted by the author between 2009-2011

September 2009. Of the respondents that were active investors in infrastructure (the largest percentage of which were Pension Funds), 52.6% invested through closed end infrastructure funds compared with 15.7% investing via direct investments. Co-investments were made by 14% of infrastructure investors while 8% each invested through publically traded infrastructure vehicles and funds of funds (Probitas Partners 2010).

In the Preqin database of unlisted infrastructure funds, pension schemes accounted for the largest share of infrastructure investment, at 44% (Preqin 2009). The same database shows that 10% of infrastructure investors have assets under management of less than $1bn, 36% have assets under management between $1-10 bn and 32% of investors have assets under management between $11-50 bn. Less than a quarter of investors have assets of more than $50 billion (Preqin 2008).

The Global Alternatives Survey conducted by financial services company Towers Watson and the Financial Times newspaper records that over 60% of assets under management in the world's top 50 infrastructure funds at the end of 2009 were managed on behalf of pension funds, i.e. $108.6 billion out of the total $179 billion of assets in infrastructure funds. This represented the highest proportion of pension funds for the five alternative asset classes (real estate, private equity, hedge funds, and commodities) covered by the survey. The survey also shows that the largest manager of pension fund assets across all asset classes was the infrastructure fund manager Macquarie Group which manages $52 billion of assets on behalf of pensions. There is a high concentration of assets under the top five infrastructure managers who account for 80% of all infrastructure assets under management (Towers Watson 2010b)[4].

Infrastructure Investor 30, collated by PEI media, is a ranking of firms who have formed the greatest amount of direct infrastructure investment capital over a five year period starting 1 January 2005. The list includes fund managers, pension funds and infrastructure developers based on the amount of capital they have invested directly in infrastructure. Out of the top 30 firms, headed by Macquarie Group, only eight are pension funds, with the majority (19 out of 30) investment fund managers (PEI Media 2010). Table 4 below summarises the findings of these industry-based publications.

Table 4. **Summary of Infrastructure Investor Universe Statistics**

| Name | Year | Organisation Type | Study Type | Results |
|---|---|---|---|---|
| Probitas Partners | 2010 | Investment Management/ Advisory | Pension Fund Survey of method of infrastructure investment | 52.6% fund manager<br>15.7% direct<br>14% co-investment |
| Preqin | 2009 | Data Provider | Types of Investors in infrastructure funds | 44% pension funds (largest) |
| Towers Watson | 2009 | Investment Consultant | Types of Investors in infrastructure funds | >60% pension funds |
| PEI | 2010 | Media/Data Provider | Top 30 direct infrastructure investment capital providers | 19 fund managers<br>8 direct Pension fund investors |

4. These include Macquarie Group, Brookfield Asset Management, Alinda Capital Partners LLC, Industry Funds Management and Goldman Sachs.

Two key findings can be deduced from the analysis of industry-based publications. Firstly it is clear that pension funds are the largest investors in the global infrastructure investing market. The predominant structural form of investing in infrastructure is through the fund management route as the majority of pension funds in the market do not have the sufficient resources and in-house capability to make investments directly.

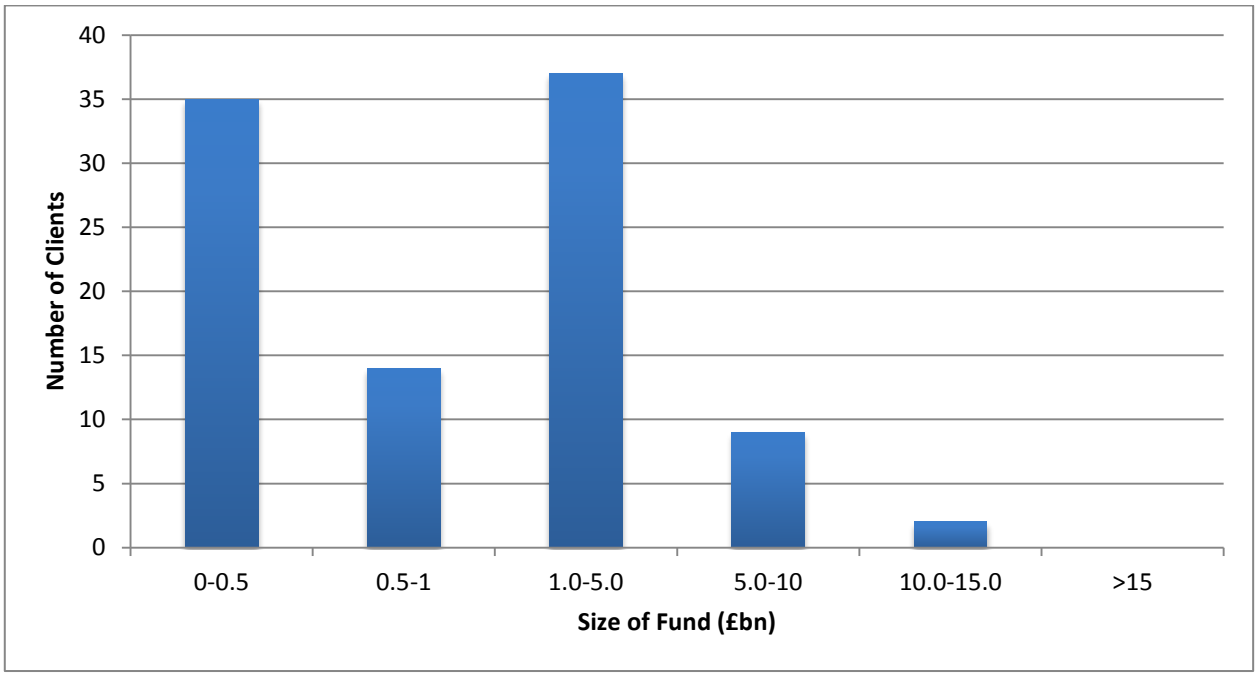
### *2.6.2. The Pension Fund Clients of Investment Consultants*

A survey was conducted on the pension fund clients of three investment consultants with combined assets under advisement of US$7 trillion (as at January 2011) in order to understand the characteristics of pension funds that utilise investment consultants for infrastructure investing.

From the survey, it was found that the average proportion of total clients that invest in infrastructure was 4.5%. The average allocation of each client to infrastructure was 5.1%. Of the funds surveyed, 82% were from pure DB schemes and 95% of funds invested in unlisted infrastructure vehicles.

Figure 9 below shows the distribution of pension fund clients that invest in infrastructure by size of assets under management. It can be seen that the majority of clients (89%) had fund sizes ranging between £0 and £5 billion with few funds greater than £5 billion.

Figure 9. **Distribution of Pension Fund Clients by Size**




From the client survey undertaken and interviews conducted, the institutional equity investor universe can be segmented by the method of infrastructure investing employed. Firstly, the 'small to medium' size range of funds that utilise investment consultants for investing would typically have assets under management between £0-5 billion.

This could be put alongside a 'medium to large' fund size range of £5-15 billion and a 'large' category consisting of pension funds with size greater than £15 billion. The majority of 'medium to large' and 'large' pension funds would have sufficient in-house capability that

they would not require the services of an investment consultant to invest in infrastructure assets[5].

The governance characteristics of the funds in each of the three different categories based on the interviews and survey are detailed below.

### *2.6.3. Investor Profiles*

*Small to Medium Funds*

The funds interviewed at the lower end of this size category started their operations very much as 'amateur' like organisations where the Board of Trustees and investment committee were made up of industry personnel without any real financial expertise. Such funds then progressed towards more 'professional' institutions as the importance of retirement planning and a fiduciary responsibility became apparent for its members. This has meant recruiting people within the fund's industry who also have a certain degree of experience dealing with investment issues. More frequent meetings are held and the setting up of an investment committee and general purpose committee has occurred where they did not previously exist.

With such humble beginnings, these small funds had to employ the services of external consultants from the start for actuarial services and subsequently for investment consulting advice. The general sentiment amongst board members has been to keep the same advisors through the development of the funds and for advice on investing in new areas such as infrastructure. The reliance is so great on external advisors that trustees find it hard to voice their own opinions. As one trustee member stated 'Members feel uncomfortable making investment decisions for the fund without consultant advice'. In this way, investment consultants have been instrumental in introducing small funds to the infrastructure asset class and acted as thought leaders for smaller funds to access infrastructure investments. The main reason that consultants have advised clients to invest in infrastructure has been for diversification and in order to match the long-term liabilities of the funds.

A number of small funds had initially thought of gaining access to the infrastructure asset class through publically listed infrastructure/utilities companies, however the advice of consultants has been not to make infrastructure investments by themselves, and to use the unlisted fund market instead. Once the investment consultants have narrowed down the range of fund managers according to the most suitable products for their client, each manager will go through a 'beauty parade' process before the investment committee and board make their final selection. The final selection of fund manager can be made quite arbitrarily as 'all the managers seem pretty similar to each other'. The final decision could be made due to an affinity with a particular asset in the portfolio of a certain fund manager as infrastructure assets tend to strike a loyal, sentimental chord with the general public. A well regarded name and reputation is also an important criterion in selecting a fund manager.

5. The size ranges of the three pension fund categories identified are not intended to be strict categories for all pension funds to fit into, instead the three measures provide a useful gauge for which to classify funds in the investor universe, and thus determine the likely method of infrastructure investing utilised. The sample of pension funds used is not representative of the entire infrastructure investor universe and therefore the categorisation method does not cover all possibilities of classifying funds. This is one of the limitations of the data set. The three categories however help to conceptualise the responses of pension funds used in this case study and provide a framework to further understand the decision-making process of pension funds when investing into infrastructure. The size ranges are based on figures for assets under management for funds surveyed as at September 2010.

Most of the funds in the small to medium category had a structure provided by statute with responsibilities of the Board and various sub-committees defined so that actions are carried out for the benefit of plan members. These funds, however, lacked a clear investment objective or mission statement apart from recognising the need to match the long-term liabilities of the fund through their investments. A key distinguishing factor of the organisational coherence of the small funds was the limited ability to provide an appropriate resources budget for the investment functions of the fund.

The 'people' governance aspect could also be seen as a factor contributing to the indirect procedure of infrastructure investing being preferred by small to medium funds. The smaller funds were restricted by their requirement to appoint Board members and committee members from within their organisation. The level of financial expertise and skill set available to fill these positions was thus limited. Board members and investment committee members took up their positions on a part time basis further restricting their ability to carry out their roles as effectively as might be possible. Little or no compensation was given to the board and committee members of most of the small to medium funds for their role in making decisions on infrastructure investment. Perhaps the most significant effect on institutional performance is leadership at the board level and particularly by the chairperson. In the small to medium fund environment, where expertise is often lacking amongst committee members, the importance of showing strong leadership and being accountable for making tough decisions was made apparent during the interviews. It was perceived by one fund that the external advisors 'hunt in packs', influencing the perceptions of committee members and so it is very hard to go against their advice. It was recalled by one chairman that he did not agree with the advice of a consultant on a particular decision. A lack of expertise amongst the committee members forced them into the mindset that they must take the advice of the consultant leaving the Chairman helpless in his position to voice his concerns. It is very easy for a chairman of a small to medium fund to be forced into the mentality that it is safer to take the advice of consultants, especially in the current pensions 'crisis' climate.

The infrastructure investment 'process' of small to medium funds, as outlined above, is mainly initiated by the investment consultant. The decision to invest and the selection of a fund manager can be quite arbitrary particularly in the case of a new type of financial product such as infrastructure. Such a selection process by external managers falls short of the best practice investment process which calls for 'selection by rigorous application of fit-for purpose criteria as well as a clearly defined mandate, aligned to specific goals' (Clark and Urwin 2008a:12). The arbitrary nature of the investment process for small to medium funds in many ways reflects the lack of a clear mission statement and ability to attract relevant expertise or skilled personnel. The final decision-making responsibility of investment issues falls to the Board members who may be contacted informally in order to quickly approve a decision reached by the investment committee. Thus arrangements can be made to ensure that investment decisions are not restricted by pre-arranged quarterly or less frequent meeting times.

*Medium to Large Funds*

In between the small to medium and large direct investor funds are a group of mid size funds. These medium-large funds are large enough in size that they have the institutional resources to make investment decisions without the need of investment consultants, however, they do not have the in house resources to make direct investments in infrastructure assets. These funds usually have one or two people looking after the infrastructure mandate (although infrastructure will not be their sole focus) and who will carry out the due-diligence and selection process of fund managers. The size of these funds

enables them to attract interest from fund managers themselves, which facilitates their own process of sourcing appropriate vehicles to invest through. Quite often, fund managers will approach medium to large pension funds to provide information on their product and service offerings. Once a fund manager has been selected, which usually requires general investment committee and Board approval, the fund divests all responsibility for investing its capital to the fund manager.

The medium to large funds are of a size large enough to have special significance for a provincial or even national community and a mission statement and investment objective is usually clearly defined. It was perceived from the interviews that the obligation to these funds' members was very important to the investment executives and the underlying mission of the fund was engrained in the investment operations of the institution.

The investment management team of the medium to large funds could be seen to exhibit a similar skill set to the managers of large funds, although the investment manager in the medium to large funds, generally had a much more varied role, primarily due to there being only one person, with responsibilities involving researching the industry, carrying out due-diligence on managers, as well as cross-checking the investment analysis carried out by the selected managers. The leadership function in the medium to large funds is slightly different to that of the small funds in that greater expertise can be called upon around the Board table when making decisions. The medium to large funds are not as reliant on external consultancy advice reducing the principal-agent problem when deciding how to invest in infrastructure. The due-diligence process and selection of fund managers is more thorough than that employed by small to medium funds. Quite often an RFI (request for information) process is carried out by the funds to identify potential managers. This is followed by an RFP (request for proposal) to narrow down the selection to around four or five candidates who are subjected to an elaborate survey consisting of over 100 questions around the investment philosophies, strategies and business practice of the manager. The process is concluded by an on-site visit to the fund manager before the final selection is made with Board approval.

Such a process is in line with best practice measures for funds that recognise their restrictive resource capability and have effectively utilised external agents to emphasise diversity and limit risk. Medium to large type funds, while not being able to lead direct investments on their own, have started to join consortiums in the co-investment or club models as minor partners.

*Large Funds*

At the far end of the spectrum lie the large pension funds who have developed specialist management companies or dedicated teams for different investment asset classes including infrastructure. These pension funds have the in-house resources and capability to source deals, carry out due-diligence on investments, provide finance and manage the assets they invest in. In contrast to the smaller funds, strong leadership was required not only to start investing in a new sector like infrastructure, but to start up a new management division within the fund to solely focus on infrastructure assets (Clark and Urwin 2008b). In these funds, global teams of up to forty have been set up to manage the infrastructure mandate of the fund, commanding a portfolio allocation of up to 20% of the total assets under management. All aspects of the investment process are controlled within the fund although external contractors may be used prior to making investments in order to gain construction, legal or tax/accounting advice.

The expertise and level of resources contained within these institutions is comparable to the fund managers that smaller pension funds invest through.

Board members of these large funds are chosen by the parent company or in some cases the finance ministry via a rigorous selection process designed so that only those with specialist expertise in investment, business and finance are appointed. In certain circumstances, it was observed that large direct investors would sometimes utilise the services of a fund manager or investment consultant when working on a specific investment where the external advisor could bring specific expertise to the investment analysis process.

While inheriting a structure provided by statute, the large funds often have a clear mission statement with specifically defined goals for their infrastructure investments. This was made apparent in the interviews and is usually explicitly stated on the company's website. Risk analysis forms a crucial part of the investment analysis process for direct investments in infrastructure. The infrastructure investment team is not able to make commitments over a certain size without Board approval. With sufficiently experienced personnel on the Board, a cross-check of the risks and other issues pertaining to infrastructure investments is obtained before a final commitment is made. Because a significant amount of analysis is done in-house by the large funds, a greater amount of information must be digested in the investment analysis process. This means that the decision-making process is likely to take longer, especially before gaining the final Board approval and in some cases, compromising its ability to cope with the real-time demands of financial markets. In summary, however, the substantial size of the large funds in the infrastructure market have enabled them to sufficiently resource each element in the investment process and governance chain with an appropriate time and resources budget. However, as can be seen from the market analysis above, such resource capability is restricted to only a few pension fund investors in the market.

Clark et al (2011), in their analysis of the new era of infrastructure investing, provide a detailed account of the governance practicalities associated with direct infrastructure investing. Using a similar best practice governance framework, the paper highlights the need for an institutional investor to define the aim, strategy and resourcing requirements before pursuing the direct investing route.

In terms of the *people* aspect for the governance of direct infrastructure investors, the paper notes that the skill set required for infrastructure investment is different to what an institutional investor may be used to. An understanding that infrastructure investments are transaction oriented as opposed to market oriented is essential (requiring origination, structuring, execution and risk analysis skills), are long-term and place an emphasis on asset management (overseeing management and improving efficiency). It was also noted that remuneration must be able to attract appropriately skilled people from competing employers (Clark et al 2011).

The *process* for direct investing requires risk control functions to work within tight timeframes and relevant committee members having the experience to appraise analyst reports and asset allocation investment targets while also being able to facilitate the in-house team's long-term performance (Clark et al 2011).

The large funds are often the leading members of a co-investing or club/partnership consortium.

### *2.6.4. Summary*

The segmentation of the investor universe for infrastructure equity into the three categories described provides an understanding of how institutional capital is channelled into infrastructure assets. The larger funds appear to have a clearly defined policy on the

allocation of funds to infrastructure and will be looking to invest in core economic assets that suit the profile that they have defined for the asset class. Their investment decisions are based on sufficient in house expertise and investment knowledge amongst the Board of Trustees. The smaller funds are hugely reliant on the advice of financial intermediaries, not only for asset allocation but also for the choice of infrastructure fund manager. Both pieces of advice will affect the vehicle and type of asset invested in.

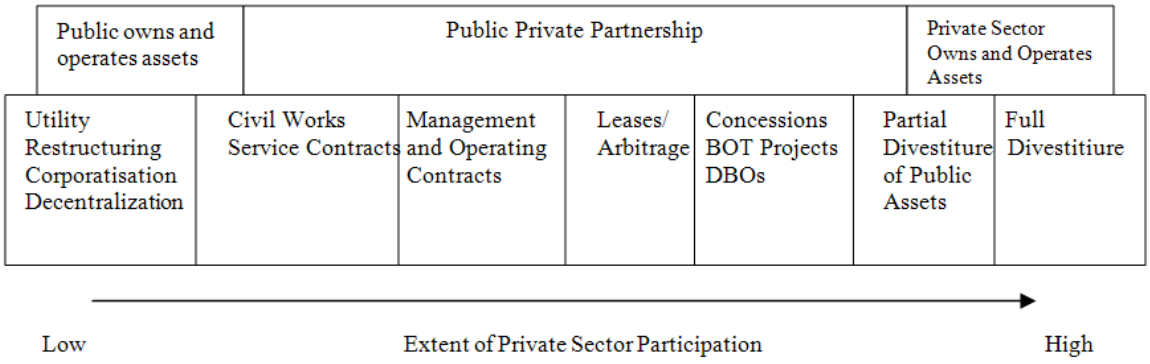
Core economic infrastructure including transportation assets will be most likely accessed by institutional investors via unlisted equity. The analysis here illustrates how the investment decisions of institutional investors are carried out when investing in unlisted infrastructure equity. Infrastructure debt has also emerged as a viable investment opportunity for institutional investors. More work will be required to track the details of these instruments and how their performance compares along the infrastructure investment spectrum.

The next section illustrates how the assets are being offered through the PPP and privatisation frameworks established by governments and the key investor considerations that need to be taken into account.

## 3. ASSET RISKS AND INVESTOR CONSIDERATIONS

There are various forms of the privatisation process and subsequent financial product/vehicle offerings that have enabled investors to gain access to transportation infrastructure assets. Figure 10 below illustrates the spectrum for private involvement in infrastructure assets. While there are a number of common inherent qualities in infrastructure assets, there are also a number of specific risks attached to the structural form of private involvement for transport infrastructure assets. The following section outlines in more detail some of the specific considerations that the different forms of privatisation entail for investors.

Figure 10. **Private Infrastructure Provision Spectrum**




*Source:* World Bank (2011)

## 3.1. Public Private Partnerships

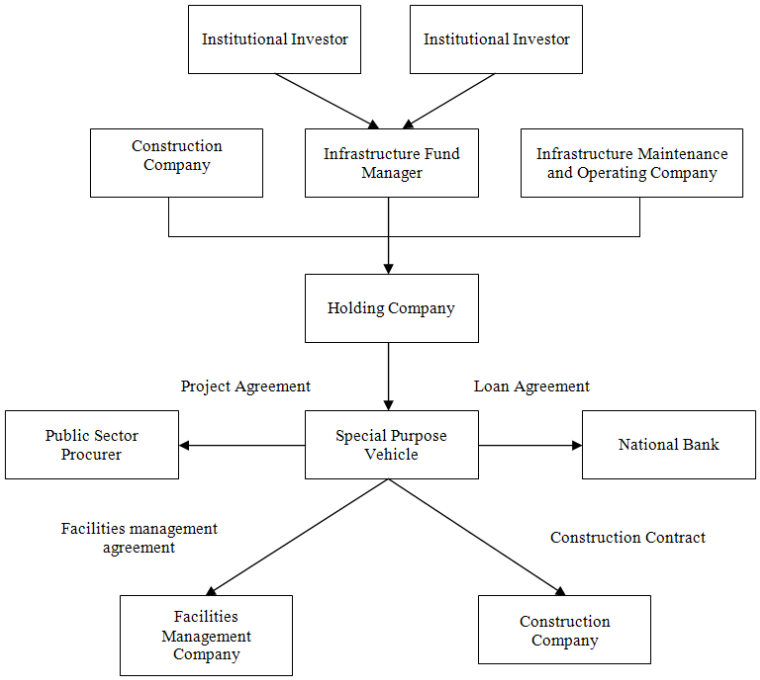
### *3.1.1. The PPP Structure*

The private companies in a PPP carrying out the design, construction, maintenance and operations come together to form the SPV and bid for the PPP project offered by the government. In addition to design/construction/operations/maintenance, the SPV must also organise the financing for completing the project and providing the service. When the SPV starts to deliver the required services it will receive payments from the government procuring agency or directly from users to repay its debt and equity providers, as well as its suppliers and subcontractors. The payment method to the SPV will be either from user fees (tolls) or from government arranged payments (availability payments or shadow tolls). The choice of payment method will influence the way demand risk is allocated between the government and private partners, i.e. the risks related to the number of users of the infrastructure (Demirag et al 2010).

The positive aspects of PPPs are potential cost savings from bundling construction contracts and combining responsibilities for design, construction, maintenance and operation. Conversely there are higher interest payments to finance in comparison to a publicly funded project plus returns on equity, costs of hedging risk and the legal and consultancy fees associated with setting up SPV's and tendering for the PPP.

The basic structure of the PPP arrangement is illustrated below in Figure 11.

Figure 11. **Basic PPP Structure**




Adapted from Demirag et al (2010)

Infrastructure investments offered through the PPP vehicle encompass a number of different risks that institutional investors need to consider. As mentioned in the previous section, the complex nature of infrastructure investments requires a great reliance on financial

intermediaries and/or significant in house resource capability. The risk appetite of the specific investor will determine what stage of a PPP an institutional investor will invest in.

### *3.1.2. Investor Considerations for PPPs*

For PPP's, it has been argued that risk should be held by the party that is best able to manage it (Demirag et al 2010). The private sector focuses on the risks that they have been allocated by contract and need to transfer, whereas the public sector controls the risks that they retain. The risk of co-ordinating the different operations will be transferred to the SPV in a PPP arrangement. An appreciation of the governance and management arrangements of the various parties needs to be taken into account by private investors in the project. Risk is passed from the SPV through legally binding contracts to subcontractors, who carry out the construction and operations tasks. When risks are allocated to parties who cannot control them or do not wish to hold them, hedges and swaps are used, dispersing the risks beyond the immediate PPP network. Such dispersion of risk increases costs, compromising the value of money proposition for the procurer (Engel et al 2010). Some of the general risks associated with transportation PPP projects are illustrated in Table 5 below.

Table 5. **General PPP Risks**

| Risk | Description |
|---|---|
| Construction risk | The risk that the construction of physical assets is not completed on time, to budget and to specification. |
| Demand risk | The risk that demand for a service does not match the levels planned, projected or assumed. As the demand for a service may be partially controllable by the public body concerned, the risk to the public sector may be less than that perceived by the private sector. |
| Design risk | The risk that design cannot deliver the services at the required performance or quality standards. |
| Economic risk | Where the project outcomes are sensitive to economic influences. For example, where actual inflation differs from assumed inflation rates. |
| Environment risk | Where the nature of the project has a major impact on its adjacent area and there is a strong likelihood of objection from the general public. |
| Funding risk | Where project delays or changes in scope occur as a result of the availability of funding. |
| Legislative risk | The risk that changes in legislation increase costs. This can be sub-divided into general risks such as changes in corporate tax rates and specific ones which may affect a particular project. |
| Maintenance risk | The risk that the costs of keeping the assets in good condition vary from budget. |
| Operational risk | The risk that operating costs vary from budget, that performance standards slip or that service cannot be provided. |
| Planning risk | The risk that the implementation of a project fails to adhere to the terms of planning permission or that detailed planning cannot be obtained, or if obtained, can only be implemented at costs greater than in the original budget. |
| Policy risk | The risk of changes of policy direction not involving legislation. |
| Procurement risk | Where a contractor is engaged, risk can arise from the contract between the two parties, the capabilities of the contractor, and when a dispute occurs. |
| Reputational Risk. | The risk that there will be an undermining of customer/ media perception of the organisations ability to fulfil its business requirements, e.g. adverse publicity concerning an operational problem. |

Source: HM Treasury (2003)

Demand risk appears to be the hardest risk to manage under PPP contracts where over-estimating revenue flows has frequently proved to be a problem. Overbidding for projects

can arise because of inadequate data and forecasting models, incentive structures that drive optimism bias and strategic misrepresentation.

Contracts have sometimes been awarded on the basis of a bidding process which rewards the party that most overestimates the intrinsic value of the contract.

A number of PPP projects have failed because of systematic overestimation of patronage for infrastructure facilities. Optimism bias contributing to overestimation has been common because the analysis carried out has focused on optimistic rather than pessimistic outcomes and has ignored uncertainties beyond the most identifiable tasks involved. Strategic misrepresentation has also led to overestimates where those responsible for traffic forecasts or cost estimates have a financial stake in the authorisation of the project (Ridolfi 2004, Perkins 2013).

Some facilities are exposed to greater demand risk than others. The factors that need to be considered include: competition with alternative routes, inter-modal competition, fuel prices and taxation, development of housing, commercial and industry property in the vicinity of the infrastructure, overall economic activity. There is evidence to show that over estimation exists for both toll and un-tolled projects (Perkins 2013).

The type of funding method for PPP projects (tolled or untolled) will be determined ultimately by the government's objectives. The government's decision on funding method will affect the type of investor attracted to the project. When toll-financed, greater equity based investors would be attracted with the demand risk completely transferred to the private partners, who may or may not have the freedom to adjust tolls. When governments use availability payments this would enable private investors in PPPs to have better access to debt finance, reducing the financing risks involved.

Also, because of the long term nature of the contracts, renegotiations and refinancing need to be allowed for under PPPs. Macro-economic conditions which affect revenue flows cannot be forecast with certainty ten years into the future. Inflexibility with PPP contracts is one of the drawbacks of these projects for investors. In order to overcome this, conditions that can be renegotiated and an ex-ante framework for holding such negotiations should be included in PPP contracts. From the government's perspective, care needs to be taken to avoid effectively underwriting the SPV's income while still providing the assurance that a reasonable return can be made by the private operator. In this way, the procuring agency will usually monitor the performance of PPPs and a reporting system established (Burger and Hawkesworth 2013, Perkins 2013, USDOT 2007).

### *3.1.3. PPP Financial Arrangements*

There are two main characteristics for the financing of PPP's. Firstly, the SPV is managed by a consortium of sponsors who act as equity investors to the firm. Secondly, the sources of finance for a PPP evolve over the course of the project's life cycle. A typical transportation PPP project requires a very large upfront investment that is sunk followed by operations and maintenance costs that represent a small fraction of total costs and are paid over the life of the project. After the initial capital expenditure, the main objective of the PPP is to collect revenues to pay off outstanding debt and provide dividends to equity holders (Engel et al 2010).

During the construction phase, expenses are primarily financed with equity from the sponsor and bank loans. The substantial uncertainty associated with the construction stage provides scope for moral hazard risk. In order to overcome this, banks perform a monitoring role that

is well suited to mitigate moral hazard by exercising tight control over changes to the project's contract and the behaviour of the SPV/contractors. Accordingly, banks only release funds gradually as the project stages are completed. Once construction has been completed and the PPP project becomes operational, long-term bonds replace the bank loans, and the sponsor's equity may be bought out by a facilities operator or by third party institutional investors such as a pension fund. While the operational phase is less complex, revenue flows depend on the fulfilment of the contracted service and quality standards carried out by the operations and management contractor. Debt holders at this stage of the project are wary about the risk-sharing agreements between the SPV and contractors. Financiers prefer predictable cash flows thus availability payments and flexible-term contracts tend to receive higher ratings than contracts where the concession holds demand risk (Engel et al 2010).

Credit rating agencies and credit insurance companies (such as monoline insurers[6]) play an important role in the issuance of bonds. Initially, a shadow rating is placed on the SPV by a credit agency which can then be increased by the SPV by purchasing insurance. As risk perceptions and circumstances change, the bond covenants require the SPV to pay premiums to preserve the initial risk rating of the bond. Credit rating companies are most concerned about the impact of risks on the company's ability to meet debt repayments.

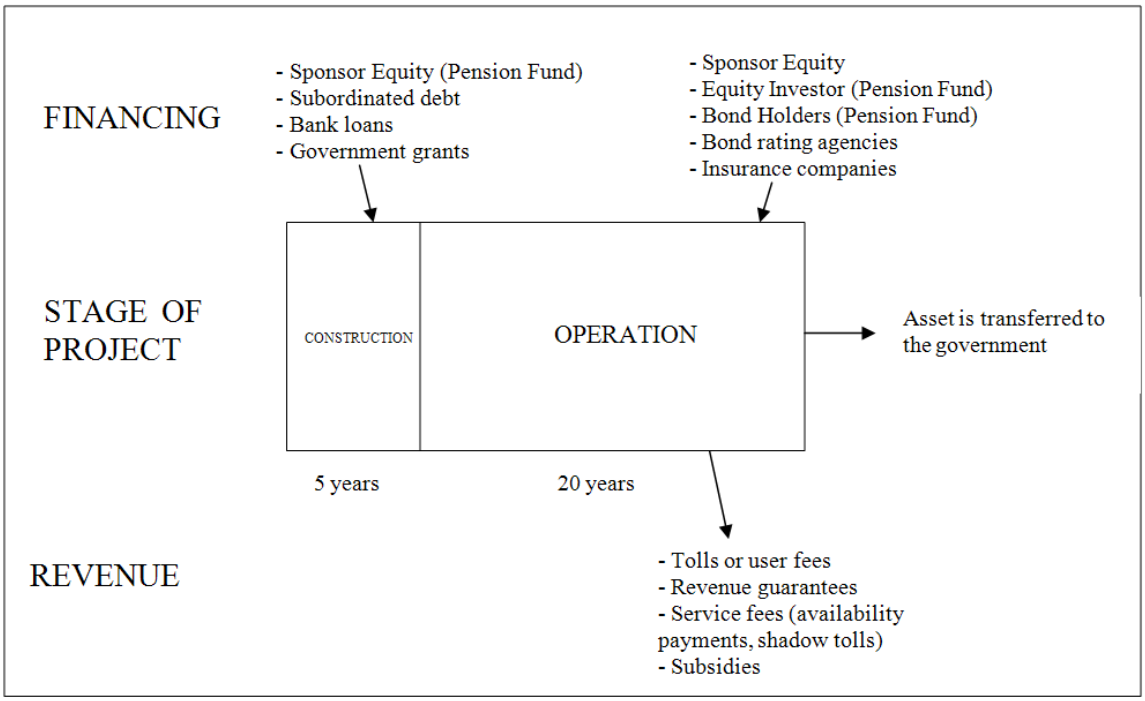
Poor information, ambiguities and discretion in the contract all contribute to lower ratings (Engel et al 2010). The credit crunch and financial crisis brought about the demise of monoline insurers as many had moved away from stable bonds and into risky subprime mortgage assets. This has affected the ability of infrastructure investors to access project finance although the credit worthiness of insurers is starting to recover (Plimmer and Wigglesworth 2012). The Europe 2020 bond initiative has been set up to help investors raise finance for infrastructure projects. The initiative is intended to provide an alternative to the monoline guarantees for infrastructure bonds. The Europe 2020 project bond facility would either provide guarantees directly to senior debt holders or introduce a junior debt layer underwritten by the EIB between the equity and the senior debt (Eurofi 2011).

Because of the large size of PPP projects, a substantial amount of leverage is required in the financing arrangement. The more volatile revenues appear to be, the less likely they will be backed by banks. Governments can play a role in determining revenue risks by providing revenue guarantees and in the way they structure availability payments in order to improve the bankability of a project and accommodate high leverage levels.

The changing risk profile of a PPP project through construction into operation strongly affects the investment decisions of institutional investors looking to invest in a transportation PPP infrastructure asset. An institutional investor that has a 20-30 year time horizon and is able to accommodate the risks associated with the development of a PPP project, will invest in a fund that contributes to the sponsor's equity of the SPV. Other, more risk averse institutional investors will buy out the sponsor's equity at the operational stage of the project or invest in long term bonds that replace the initial bank loans and are backed by the asset's cash flows. Figure 12 below summarises the changing sources of finance through the duration of a PPP project.

6. Monoline insurers are specialised insurance companies that guarantee the repayment of bonds

Figure 12. **Financing Arrangement along duration of PPP project**




*Source*: Engel et al (2010)

### 3.2. Privatisation

At the far end of the spectrum, governments have also undertaken outright privatisations whereby complete ownership of transport assets has been transferred to the private sector. The characteristics of the asset involved and the specific objectives for the process will dictate the approach that is utilised by the government. One option has been to sell public assets to the private sector through public offerings of shares or private 'trade' sales of assets (Jenkinson and Mayer 1998). A simple privatisation that involves selling the organisation without changes to its structure or environment may be carried out when monopoly power in the market served by the asset is not seen as a problem. These types of privatisations have occurred for infrastructure companies such as small regional airports, but do not appeal to institutional investors as much because of the potential for competition and dynamic market risks. Where a natural monopoly is sold outright and no or limited competition is expected, the privatisation process is usually accompanied with regulation (Nash 2005). A further approach relates to the situation where deregulation takes place in order to provide new competitors in the market, such as airline or bus services where the monopoly is thought to be largely the result of regulatory control of entry rather than cost characteristics (Nash 2005).

Where natural monopoly infrastructure industries have been privatised, governments instil regulatory frameworks that protect consumers against abuses of monopoly power while still assuring investors that they will be fairly treated. In effect, economic regulators try to ensure consumers pay a fair price while ensuring operators are able to achieve a reasonable return on investment. The success of the privatisation exercise depends largely on the development of a regulatory system that is independent, accountable, and resistant to capture by the private provider or the state (Kikeri and Nellis 2004). There is a need for coherent policies, transparency and public disclosure, predictability over rulings, a proper

balance between autonomy and accountability, and adequate institutional capacity (Estache et al 2000).

It has also been noted that countries that devised regulatory frameworks up front and developed reasonable capacity to implement and enforce regulations had better success with privatisation (Alexander and Estache 1999). Ensuring that regulations and regulatory agencies are well defined in their function will mean that subsequent renegotiations of contracts will be minimised. Modifications to regulation can be time-consuming, disruptive, and signal wavering commitment (Kikeri and Nellis 2004).

Governments may use a number of strategies to control an infrastructure provider that possesses a natural monopoly. In cases where introducing competition is not possible, regulatory tools have predominantly focused on controlling the prices charged to consumers. A government may also use regulation to achieve wider social objectives such as setting environmental standards. Governments will try and choose the regulatory methods or system that provides the most cost-effective way of achieving its objectives.

On top of the regulation issue for privatised transportation infrastructure, there are also a number of considerations that investor/owners need to take into account that are inherent for these types of assets. Firstly, the shift in ownership to the private sector has meant that robust, transparent corporate governance structures must be put in place when managing infrastructure assets. Corporate governance literature suggests that different ownership arrangements with distinct patterns of authority, responsibility and economic incentives affect the managerial performance and thus overall performance of a firm (Charkham 1996). The corporate governance challenge for transport infrastructure assets has entailed balancing public service and commercial development goals. In line with corporate finance theory, private owners of infrastructure assets will make decisions in order to maximise the return for shareholders. Such a strategy must be implemented alongside an appreciation that the wider stakeholder interest in these assets must be considered as neglecting this may have material consequences for the financial performance of their investments. This is particularly apparent for politically sensitive and economically significant transport infrastructure assets as illustrated in the BAA acquisition case discussed below.

The financial aspect of corporate governance must also be approached in a responsible way by private owners of infrastructure assets. While the grand scale of infrastructure investments naturally lend themselves to requiring significant amounts of leverage, caution must be exercised in ensuring an appropriate amount of leverage that is commensurate with the long term nature of the investment is upheld. For infrastructure companies where regulators calculate the allowed rates of return based on the weighted average cost of capital (WACC), a marginal cost of debt below the WACC would enable an arbitrage opportunity to be exploited (Helm and Tindall 2009). By extracting a return from the difference between the WACC and the marginal cost of debt, the resulting gain represents a transfer of wealth from customers to shareholders. In this way, equity in infrastructure companies has been replaced with debt by opportunistic investors. This short-term financial engineering strategy employed by private equity investors was badly exposed during the global financial crisis because of debt repayment demands severely compromising the ability to make capital investments in the assets. Such investors had little or no regard for the long-term quality and robustness of the infrastructure networks and have come under heavy scrutiny from stakeholders as an inappropriate way of financing infrastructure companies (Helm and Tindall 2009).

With many jurisdictions employing neo-liberal infrastructure policies, it is common practice for global equity investors to govern their investments around the world from a distance by adhering to contractual obligations set out by local governments and local infrastructure regulating bodies. Institutional investors must have a deeper understanding of the local element associated with their investments and be prepared that foreign ownership may not be received in the most co-operative way.

Finally, when entering into an infrastructure investment transaction, an investor must realise that there is significant reputation risk if anything goes wrong. This is especially important for infrastructure investments because of the wide reaching political, social, economic and environmental implications. Certain institutional investors may be deterred from infrastructure investments because of the threat to reputation that could be at risk as a result of investing in sensitive assets. Because of this, many investors may prefer to discretely deploy their capital in unlisted funds where the reputation risk if anything goes wrong is borne mainly by the fund manager.

### *3.2.1. Regulation of Privatised Infrastructure*

Central to a regulator's task is to ensure that the regulated monopolist infrastructure operator is able to achieve financial equilibrium whereby the total allowed revenue must equal its total costs as represented by the following equation:

$$\text{Price x quantity} = \text{operational costs} + (\text{asset value x the cost of capital}) \qquad (1.1)$$

As can be seen from equation 1.1, the cost structure for the operator is made up of two main components, operational costs and capital costs (Estache and de Rus 2000). Operational costs include the standard inputs, common costs and variable costs, the accounting for which needs to be guided by regulators. Capital costs require an assessment of the value of assets which poses problems because of the various methodologies, each with their own biases, that could be used, i.e. historical value, market value, replacement value (Estache and de Rus 2000). The regulator must also oversee the controversial calculation of the cost of capital, which essentially is the minimum rate of return that makes it worthwhile for the firm to stay in business (Estache and de Rus 2000). Essentially, the regulator must balance a double long-term objective, firstly to ensure that the operator gets a reasonable rate of return on investment (to ensure that investment actually takes place) and secondly that the return is not excessive (so that the operator does not abuse its monopoly power).

The two main methods employed by regulators to achieve these objectives have been through rate of return and price cap regulation, with a number of hybrid variations that combine elements of the two.

Rate of return regulation controls the maximum rate of return allowed from investment as an indirect way of controlling prices. The allowed rate of return determines the allowed profits of the firm, as illustrated by:

$$\text{Allowed rate of return x assets value} = \text{prices x quantities} - \text{operational costs} \qquad (1.2)$$

The regulator here requires detailed information on costs including an assessment of operational costs, assessing the value of assets as well as the cost of capital that would enable minimum profit compatible with private investment. Equation 1.2 implies that there is an incentive to overinvest or to overstate the value of the assets when the correct value is difficult to assess precisely as this would have the effect of increasing the value of allowed

benefits although prices would also increase. Other drawbacks include a lack of incentive to cut costs as well as excessive monitoring costs for the regulator who would regularly need to collate detailed information on costs, assets, and investments to assess the required price adjustment (Estache and de Rus 2000).

Price cap regulation was introduced in the UK as a regulatory tool in the early 1980s as an alternative to rate of return regulation. In essence, the price cap enables an operator to increase its prices with inflation, while subtracting potential cost savings by the firm due to either increased efficiency or technological progress i.e. in the UK (an RPI-X cap) or Australia (a CPI-X) cap. When X is zero, prices are set in accordance with inflation. A positive X relates to the situation where efficiency gains might be expected in the regulated industry and real prices are reduced, encouraging firms to cut costs and achieve efficiency gains higher than the industry average. In cases where there is little capital, a negative X increases real prices in order to stimulate new investments or to improve the quality of service offered (Estache and de Rus 2000, King 1998).

Price cap regulation is becoming more common worldwide over rate of return regulation because of the incentives to cut costs and invest appropriately. When setting the value of X, the regulator often has to rely on historic information about performance of the regulated firm or of other firms in similar industries. Once the regulator has fixed X, it is usually kept constant for a period (usually five years), reducing the compliance monitoring costs for the regulator (Estache and de Rus 2000).

Infrastructure investors have indicated that having an understandable asset based regulatory model provides clarity for investors when approaching infrastructure investments (Stanley 2011). For governments to facilitate institutional investment in infrastructure, a strong emphasis needs to be placed on getting the right regulatory system in place for the particular situation, and then avoiding the temptation to make frequent short-term changes to the regulatory framework. The regulated asset base pricing regulation method, outlined above has been applied to airports and rail infrastructure in many countries around the world. The UK government is currently considering the possibility of utilising this form of regulation for the strategic highway network. Such implementation would only be feasible if a sufficiently large part of the network was included in the asset base to achieve the economies of scale required to establish a regulator.

### 3.3. Case Studies

In fully privatised brownfield transport assets where there are established cash flows, the risks for private institutional investors are considerably reduced. The key difference and concern for investors is the regulatory framework, which affects the income stream for the asset owners. For PPP's, both the construction risk at the development stage of the project and the demand risk at the operational stage provide the most uncertainty for investors. Common to both modes of investment for infrastructure assets are reputation, political, financing and governance risks. These factors inherent in transport infrastructure assets are considered in the case studies that follow. Auckland International Airport is an example of a successfully performing privatised airport that exhibits some unique political and economic issues around the regulation of the asset. The 407 toll road in Ontario, Canada has also performed well financially since it was privatised although a dispute between the private owners and local government over toll increases illustrates the importance of the concession contract. The acquisition of UK airport operating company BAA in 2006 by a consortium of institutional investors and a construction firm highlights the difficulties in governance of acquiring a complex strategic infrastructure asset.

Finally, the Canada Line light rail case illustrates how a greenfield PPP, despite the extra risk, can be set up to attract institutional investment, and achieve successful outcomes for both private and public stakeholders.

### *3.3.1. Auckland International Airport*

Auckland International Airport Limited (AIAL) is an example of a public asset that was opened up to the private sector for ownership and management responsibilities. The Airport was corporatized in 1989 leading to significant efficiency improvements from the joint venture arrangement between the central and local governments that had been previously employed. The government subsequently sold its majority shareholding in the company through an IPO process in 1998 enabling both retail and institutional investors to buy shares in the company.

#### Light-Handed Regulation

Since becoming a privatised company, private investors in AIAL enjoyed favourable investment returns above that of the market. The company is subject to a 'light-handed' regulatory pricing framework. It has been argued that the 'light handed' regulatory framework has contributed to the favourable financial performance of the company. This illustrates the importance of regulatory frameworks of privatised infrastructure assets for institutional investor decisions. The case also highlights some of the strong political influences that can affect regulatory and subsequently investor decisions.

The distinct aspect of NZ airport regulation is the lack of explicit regulatory control for the setting of airline charges. Section 4 of the Airport Authorities Act states that 'airports must consult with major airline customers when setting aeronautical charges or undertaking major capital expenditure'. The legislation calls for consultation, as opposed to negotiation after which airports are able to implement charges as they see fit. In addition, AIAL is required to consult with its substantial airline customers before embarking on any capital expenditure where the amount of the expenditure is equal to, at least the value of 20 per cent of the assets (AIAL Annual Report).

AIAL is also subject to the Commerce Act, which is the key legislation governing competition law in NZ. The Commerce Act prohibits a number of restrictive trade practises and provides for the imposition of price control in a market in which competition is limited (AIAL Annual Report).

The Commerce Commission conducted an inquiry in 1998 to determine whether regulatory price control was required at the three major airports in New Zealand: Auckland, Wellington and Christchurch. Following the inquiry it was recommended that price controls should be introduced at AIAL in 2002. The recommendation was made on a split decision: three commissioners believed that AIAL's assets should be valued at historical cost and airline prices controlled; two commissioners believed that assets should be periodically revalued and no price control should be enforced. Despite the recommendation for price control, the Minister of Commerce declined to introduce it, stating that 'the current regulatory mechanisms were sufficient to facilitate the industry relationships between the airport and its significant customers'. The light-handed regulatory environment was maintained and the consultation process for setting airline charges continued with the airports ultimately able to price as they saw fit. The Commerce Commission inquiry has since been criticised by economists who believe the review was economically flawed and that the wrong section of legislation was referred to by the review, which effectively would have prevented regulatory control being enforced (Forsyth 2006, Mackenzie-Williams 2004).

The light-handed regulatory environment governing NZ airports has enabled AIAL to earn substantial revenues from its aeronautical activities and thus contribute to its successful financial performance (Mackenzie-Williams 2004). Aeronautical activities have contributed a significant proportion of the total revenue growth for the company over the last two decades enabling the airport to be consistently ranked at the top end of major airport performance comparative studies.

Since privatisation, AIAL has set airline charges four times, in 2000, 2002, 2006 and 2009. The consultation process undertaken by the airport before setting its airline charges usually takes around a year with the airport publicising three or four proposals for its charges. Each time a proposal is put out the airlines and representative bodies conduct their own analysis with expert advisers before responding. Through this process, airlines have had an effect in reducing the initial pricing proposals set out by the airports but have not achieved the desired result that they believe is fair or in line with the findings of the initial Commerce Commission inquiry in 2002. The airlines express their frustration at the consultation process by comparing it to the inquisition of price control that the Commerce Commission undertakes. The main difference between the two processes is that the final outcome in the consultation process for airline charges is determined by the airport instead of the Commission. It appears that the consultation process for aeronautical charges favours the airport, with limited threat of regulatory control. Although the airport is wary of the threat of a Commerce Commission pricing inquiry, the fact that the Commerce Commission's recommendation following an inquiry requires the support of the Minister to be implemented, means that an inquiry is unlikely to take place if it is believed that there is a small political will for pricing control. Unless AIAL acted in a radical way, the threat of pricing control under the current regulatory environment is quite small.

The current regulatory arrangement enables AIAL to set its aeronautical charges based on recovering the costs associated with its aeronautical activities. The total allowable revenue that the Airport can recover through its aeronautical charges consists of three elements: a return on capital through depreciation of its physical asset base; a WACC (weighted average cost of capital) return on its total asset base; the aeronautical share of total operating expenses for the company. Land revaluations have been a contentious issue in the setting of aeronautical charges as they have the effect of increasing the regulated asset base from which the return of capital recovered by airports is calculated. AIAL has a freehold ownership interest in approximately 1500 hectares of land, which enables the company, to revalue its land for calculating its asset base. The company benefitted significantly from the increase in Auckland property prices in the mid 2000's and has been accused of over valuing its land during this time. The airport argues that prior to the 2002 consultation round for airline charges, it was agreed with airlines that the airport, as part of the risk sharing, would take values of land with the market if they went up or down. As it turned out, the land values increased significantly up until the 2007/2008 global financial crisis but have since been corrected and readjusted for the overvaluations that had occurred previously.

The argument for valuing airport land at opportunity cost or market value over historical cost has been to provide the company with an incentive to make the most productive decisions about how to allocate the land for different purposes, such as for aeronautical uses over commercial activities (Corcoran 2005). It is claimed that regulation must enable it to do this in order for the land to be put to the best use for the community at large (Corcoran 2005). In this way, AIAL has argued that the current dual-till, light-handed regulation in NZ enables the company to make optimal economic decisions for pricing but also for timing of investment in aeronautical as well as commercial assets benefitting all stakeholders: passengers, airlines, freight companies and government agencies.

While benchmarking aeronautical charges with airports around the world is difficult due to the unique set of characteristics relating to capital expenditure, aircraft and passenger mix, operating costs and exchange rates, AIAL's charges are comparable with other similar airports in the Australasian region and globally (Forsyth 2006, Mackenzie-Williams 2004). However, AIAL's costs are one of the lowest in the world, which means that the ratio of revenue to costs has consistently been one of the highest. Airline bodies have argued that the favourable profitability performance of the company has been a direct result of its aeronautical charge revenue-generating ability.

The light-handed regulatory system used for NZ airports has also been employed in Australia following the privatisation of its airports in the late 1990's and early 2000's. Previously, Australian airports had been subjected to a CPI-X form of price cap regulation. The system adopted following privatisation, was one in which the Australian Competition and Consumer Commission (ACCC) was required to monitor prices, costs, profits and quality over a period of five years. The difference between the NZ and Australian light-handed regulatory system was that a periodic review would be undertaken by the Productivity Commission every five years to determine whether explicit price regulation should be re-introduced in order to discourage airports from using their market power excessively (Forsyth et al 2004). There have been a number of interesting observations from the Australian light-handed regulatory experience. The Productivity Commission's review in 2006 concluded that the light-handed regime had delivered a better environment for investment, productivity was higher than the international average and regulatory compliance costs were reduced (Schuster 2009). It did not find evidence of misuse of market power by airports in setting aeronautical charges. A key finding from the review was that successful commercial outcomes relied on the parties involved recognising the need for a certain amount of compromise which can translate into a range of reasonable price outcomes rather than a single price solution based on a regulatory precedent (Schuster 2009). The light-handed regulatory framework facilitated the development of strong commercial relationships between airports and their airline customers leading to enhanced investment, increased responsiveness and value for money for airport users (Schuster 2009). If all parties to the regulatory contract approached the negotiation purely to maximise their own respective utilities, it would be very hard for an outcome that promotes both market and social efficiencies to be achieved. The light-handed regulatory environment can be seen as an implied relational contract between the airport and its relevant customer stakeholders, placing an emphasis on the relationship between the parties and the need for a deeper understanding of each party's requirements in order to achieve a mutually beneficial outcome. The Australian example has not been without its own disputes as was shown when the airline company Virgin Blue filed a formal complaint against Sydney Airport over the calculation of landing charges. By resolving the dispute in a mutually effective way, without the need for official arbitration, a landmark resolution was achieved by the aviation industry in Australia, with Virgin Blue chief executive Brett Godfrey proclaiming 'This is the first time since the removal of price capping at major airports by the Productivity Commission that an airline/airport dispute has been resolved constructively to the mutual satisfaction of both parties' (Fiddian 2007).

The light-handed price monitoring framework of Australia and NZ are very similar in relying on the parties involved to resolve disputes through maintaining close relationships. The main difference between the two systems is the process for triggering a sanction for unsatisfactory performance by the airports. In Australia, despite the successful outcomes of light-handed regulation deduced by the Productivity Commission, there have been complaints over service standards and excessive profits, particularly at Sydney Airport (O'Donnell et al 2011). Similar complaints over excessive pricing have been voiced by major airlines at AIAL. Pressure for explicit regulation to replace the light-handed frameworks in

both countries has encouraged airport owners to develop a co-operative approach to the commercial relationships with their customers.

Despite the favourable light-handed regulatory environment that the company has operated under since privatisation, it is not certain the framework will endure over the long term. It has been argued that the lack of formal price control at AIAL was due in part to the Government's political incentive to maximise revenue from the privatisation sale process. The latest Commerce amendment bill (2011) inquiry has shown that the political standpoint is slowly shifting, with politicians begrudgingly accepting that there has been a slightly skewed representation, attempting to make amends without disenfranchising the large voting shareholder population of the company. The question remains as to what level of financial return may be deemed sufficient for the regulating body to actually act upon the airport and enforce a stricter form of price control. The lack of certainty around the regulatory process in the future may deter investors looking to invest in the company. While investors over the last ten years have enjoyed significant financial returns from investing in the asset, institutional investors such as pension funds may be more cautious over the asset's long-term prospects.

### Takeover Bids

This second part of the case study looks at the influence of government on the ownership of infrastructure assets through two takeover bids that AIAL was subject to. With its successful financial performance, it was inevitable that institutional investors (Dubai Aerospace Enterprise (DAE) and Canada Pension Plan Investment Board (CPPIB)) were drawn to make a partial takeover bid for AIAL. Following the IPO privatisation process, AIAL had an open share register at the time of the two bids, and with share markets around the world increasing in value in 2006/07, airports within the infrastructure asset class were becoming attractive investment opportunities. Out of all the publically listed airport stocks in the world, AIAL had always featured as one of the strongest performers.

Although both bids represented significant premiums for shareholders in the company, neither was successful. DAE placed the first bid in September 2007 followed by CPPIB, who placed two bids, having failed in their first attempt.

Looking back on the two bids, it can be seen that the CPPIB was able to get further in the process than DAE, eventually finding support from shareholders but being denied at the final hurdle by central government. This can be put down to a number of reasons. The CPPIB made sure they consulted with the councils and major shareholders through their bid process to ensure they explained their intentions and the implications of their takeover deal. In their first offer, CPPIB may have overdone their intention to side with the councils and major shareholders, emphasising that these parties would be better served than the other shareholders under the bid. The Board did not allow this and rejected the first proposal put forward. The second CPPIB bid, while not quite as high as the DAE offer price, represented a premium above the current share price and prevailing share price before the start of takeover speculation for AIAL. However, CPPIB's bid for 40% was only partial, thus affecting the number of shares that could be sold at the offer price. The final hurdle for the bid was approval by the Overseas Investment Office and relevant ministers under the Overseas Investment Act 2005, which stipulates the criteria for consent for overseas investment in sensitive New Zealand assets. NZ's Land Information Minister and Associate Finance Minister jointly declined the takeover bid by promulgating an amendment to the Overseas Investment Act 2005 adding an additional factor for determining whether to grant an application with respect to sensitive land. Under the Act, ministers are required to decline consent if they are not satisfied that the proposed investment will benefit NZ.

However, the ministers' decision was contrary to the conclusion made by the referring regulatory body, the Overseas Investment Office (OIO), which concluded that the 'benefit to NZ' criterion was met (NZ Herald 2008).

While both institutional investors represented patient, responsible, long dated capital for the Airport, the strong public opinion and political sentiment over a single foreign party becoming influential over the company's strategy and future direction eventually was the downfall for both parties. With DAE being a sovereign fund, the negative public feedback seemed to affect their plans in a larger way than CPPIB who had the resolve to come back with a second offer having been denied in their first attempt. It was the way in which the second CPPIB offer failed that has sparked a debate amongst the NZ investment community about the influence of government and politics on investment activity. The concern is that the Government's decision to veto the partial takeover was politically motivated and that similar decisions could be made in the future. The Labour Government in power at the time had been performing poorly in the polls in the lead up to the 2008 general election. Strategic assets like AIAL are an ideal political issue because of their strong emotional and nationalistic appeal with little cost from a fiscal point of view. When the privatisation of AIAL occurred in 1998, there was no indication that the company would be classified as a strategic asset. The same minister who signed the prospectus for the IPO, now at the time of the bids a leader of a political party just prior to an election, took a completely different stance on investment in the company. If the restrictions for companies and investors were clearly defined there might not be such an issue. However, when policy decisions are inconsistent, retrospective and driven by short-term political considerations, as has been evidenced by the AIAL takeover bids, there is considerable concern amongst the investment community (NZ Herald 2008).

The government's handling of the partial takeover bids of AIAL can be seen as an intrusion into shareholders' private property rights and a dent to investor confidence. As a result of the failed takeover bids a number of other international investors withdrew their share ownership in the company and further detrimental implications for foreign investment in the country have transpired. The failed takeover bids for AIAL have highlighted the economic significance and political sensitivity of infrastructure assets. Investors must be aware of the strong emotional attachment and the nationalistic sentiment that the general voting public of a country can have in relation to its infrastructure assets.

### *3.3.2. ADI consortium acquisition of BAA*

While a 'Perfect Storm' of unfavourable events seemed to materialise following the ADI acquisition of BAA in 2006, this example illustrates some of the wide-ranging factors influencing infrastructure assets and the detrimental consequences of not controlling the issues effectively[7].

In synthesising the events of the BAA takeover, a useful starting point is to understand why BAA was perceived to be an attractive takeover target. Having always had a dominant position in the running of major airports in the UK, fitting the core economic infrastructure definition perfectly, and then extending its operations overseas to become the leading airport management company globally, the only question for potential acquirers was whether the size of the transaction would be too large for investors. The conservative capital structure and opportunities to improve the company's cost-effectiveness provided further financial incentives for a well-resourced takeover consortium.

7. Please see the Appendix for a timeline summary of the events that transpired following the acquisition of BAA.

The form of infrastructure investing illustrated by this case was a hostile takeover with ownership transferring between two private owners as opposed to a direct sale or auction by the government. The ADI consortium consisted of lead member, Ferrovial, a Spanish construction firm and pension funds Caisse de Dépôt et Placement du Québec (CDPQ) and Singapore based, Government Investment Corporation (GIC). It can be seen that through the bid process here, the ADI consortium paid a significant premium in their acquisition of BAA. The first offer by ADI in their takeover bid started at 810p per share before being forced to rise to 955.25p per share to close the deal, representing a 50% premium to the average price in the 30 days prior to when speculation of a possible bid for BAA began. The price paid by ADI for BAA was considered to be high given that the average premium paid in corporate takeovers over the last two decades has varied between 20 and 60% (Bloomberg 2011).

Despite the financial attractiveness and quality of economic assets involved, there were some question marks over BAA's capital assets, as reflected by the poor quality of customer facilities at its airports. This combined with the vastness of BAA as a complex business to operate has further added to the subsequent sentiment that the price paid was too high.

Prior to the acquisition, it was evident that the buildings and services at BAA's airports were in need of a significant repair and maintenance upgrade. Furthermore, both the Competition Commission (CC) and Civil Aviation Authority (CAA) had indicated their intention of investigating the market dynamics and pricing structures of airports in the UK. The ADI consortium seemed to plan poorly for their ownership of BAA and failed to install a robust governance strategy to deal with the ensuing problems, many of which, it would be disingenuous for the new owners to think might not have happened.

Firstly, the idea of using the incumbent management to continue running BAA seemed to backfire when a large number of experienced and talented senior management left the firm because of the disjointed Board structure and inefficient decision-making process of a majority Spanish-led Board of Directors. Despite the make up of the Board reflecting the new ownership of the company, the installation of a majority of Spanish-based Ferrovial members, seemed to create a certain anxiety amongst senior managers at the firm, due to the cultural and ownership differences between Ferrovial and BAA. Prior to the acquisition, there had been little opposition by the UK government to the foreign ownership of BAA, however once it appeared that the company was going to face a number of difficulties, the tension surrounding foreign ownership of a strategic UK company seemed to come to the fore. From a governance and managerial perspective, the challenges associated with moving from a UK public limited company to becoming unlisted under foreign ownership, the largest shareholder of which being a family owned business, took its toll, leading to a raft of crucial managerial exits. It appears that ADI failed to understand the true ramifications of installing a majority foreign-based board in one of the largest strategic UK infrastructure companies on both the employees in the firm and the wider marketplace, leading to detrimental effects on financial and operating performance.

The loss of key personnel with specific experience of dealing with stakeholders and the lack of any contingency plan to invest in the firm's relationships with its key stakeholders was reflected in the escalating public indignation towards the company and subsequent ruling of the CC to break up BAA's monopoly position over UK airports around London and in Scotland. Prior to the acquisition, BAA had invested a large amount of intellectual capital and monetary resources to manage the relationships with regulators. The ADI consortium on the other hand perhaps failed to recognise the size of the task to gain a favourable regulatory outcome and did not invest the necessary resources. The ensuing effects on ADI were severe.

The consortium was ordered to sell Gatwick, Stansted and Edinburgh airports by the CC with significant financial losses incurred as a result of the forced divestiture. Shortly after the acquisition, the CAA conducted a separate inquiry into the five year price-cap regime for airline charges at BAA airports for the April 2008 pricing round, leading to a decrease in the allowable cost of capital for the firm from 7.75% to 6.2%. This had the effect of reducing annual cash flows by £150 million and severely impacted the ability of the new owners to refinance their £8.5bn of debt.

Both Gatwick Airport and Edinburgh Airport were sold to unlisted infrastructure fund, Global Infrastructure Partners. Stansted Airport was sold to Manchester Airports Group, the majority shareholder of which, Industry Funds Management is an investment management company owned by thirty Australian pension funds.

It could be argued that not all of the regulatory outcomes that BAA were subsequently subjected to could have been prevented by the ADI consortium. Shareholders of regulated assets in the UK had been treated very favourably up until the acquisition of BAA and there seemed to be a regulatory pendulum shift swinging away from the owners towards consumers and end users of the assets, including in the water industry. From an investor's perspective, a key lesson learned is that the regulatory risk for infrastructure assets in the UK is greater than previously perceived, leading to a higher risk premium and discount rate when financially appraising assets. The events between 2005-2010, would indicate that the risk associated with the airport sector in general have increased because people now realise that the drivers of value for airports are volatile.

The ADI/BAA takeover case has highlighted the importance of establishing strong local relationships with the key stakeholders of infrastructure assets, because of the material impact and influence that these stakeholders have on financial performance. There are additional challenges associated with globally governed infrastructure assets where cross-cultural tensions must be overcome by global owners to maintain local relationships with stakeholders. As can be seen, the Ferrovial-led ADI consortium failed to understand the dynamics of the local element associated with a globally governed infrastructure asset.

This case has identified some of the factors that contributed to the company's equity investment valuation being significantly eroded in the five years following the acquisition. While the ADI consortium was forced into major restructuring due to regulatory intervention, a number of poor governance practices for infrastructure investing were evidenced in this case study. Despite this, recent governance changes, capital expenditure projects, financial and operating service indicators of the company have shown that BAA has started to make improvements and is on the road to recovery.

### *3.3.3. 407 Toll Road Ontario, Canada*

Construction of highway 407 was commissioned by the Ontario provincial government using private contractors in 1992. The highway was built as a freeway to bypass the Toronto segment of Highway 401, one of the busiest highways in North America. A special purpose Crown corporation was set up in 1994 for the government to develop the toll road with financing guaranteed by the toll revenue stream. In September 1998 all 69km of the highway was opened with the government bearing the capital, technological and market risks for the project.

Following a change of government and a push for neo-liberal policies, the 407 toll road was selected as a target to be privatised through a long lease, effectively simulating a sale aimed to bring in the most revenue possible. Bidders were asked to propose the price they would

pay for the 69km of highway. Four consortia consisting primarily of pension funds, infrastructure funds and engineering firms put together bids. The final winning bid team, 407 International paid C$3.107 billion for a 99 year lease. The consortium was made up of Cintra from Spain (toll road operating company and project developer), Canadian engineering firm SNC-Lavalin and Canadian Capital d'Amérique (private equity arm of pension fund Caisse de Depot de Quebec). The winning bid was considered a success by the local government generating a substantial profit over the construction cost of C$1.5 billion (Torrance 2008).

The 407 toll road has been refinanced several times with higher levels of debt and has also been expanded in both the east and west directions under the contract. In September 2001 the Macquarie Infrastructure Group (MIG) purchased a 40% stake in Cintra and directly acquired a 16% stake in the 407 by purchasing shares from CDPQ. The CPPIB subsequently purchased 10% of Cintra's shares in the 407 in 2010 and also took over 30% of MIG's shares in the 407 through an acquisition of toll road operating company Intoll group. The current shareholder make up is Cintra 43%, SNC Lavelin 17%, CPPIB 10%, Intoll (controlled by CPPIB) 30%. The value of the road has increased from the sale price of C$ 3.1 billion at privatisation to around C$9 billion in 2010 (CPPIB 2013).

The region surrounding the 407 road has a growing population with new housing and commercial centres being developed adjacent to the road. The road has become a necessity for many people to commute to work. The forecast traffic volumes for year 7 of operation were reached after just 3.5 years with the road transforming traffic flows away from downtown and the 401.

In awarding the concession contract to the highest bidder the government's aim was to create an uncongested travel route with tolling restrictions and conditions for lane expansions being stipulated in the contract, ensuring motorists use the 407 and that the traffic flows freely. Toll increases have been regulated under a formula outlined in the concession agreement. The formula required the establishment of yearly benchmark traffic flow measurements based on measurements taken in a base year, adjusted by a growth index. The initial toll rate was that set by the government prior to the privatisation, each year's toll threshold is then determined by multiplying the previous year's threshold rate by the consumer price index (CPI) plus 2%. If the benchmark traffic volumes are not met, tolls cannot be increased beyond the toll threshold. In this way, toll increases are controlled by market forces and are essentially determined by what drivers are willing to pay. The government also stipulated the requirements of the concessionaire to expand highway capacity when traffic volumes within a section exceed certain levels (Torrance 2008).

Following the privatisation of the 407 toll road, controversy arose as five toll increases occurred against government and consumer wishes but in full compliance with the concession contract. With a new Liberal government elected, a sixth toll increase proposed in 2004 was opposed by the public authorities who utilised various legal means to stop the increases. This also involved proposals to change the base year for calculating toll increases

As a result of apparent disregard for the provincial Ontario government's contractual obligations, the European Union presented complaints before the Canadian authorities on behalf of the Spanish consortium owners of the 407, which threatened to derail an ongoing EU-Canadian Trade and Investment agreement. Litigation continued for two years before a settlement was reached between the two parties in March 2006 under which the government agreed to drop its opposition to the toll increase and change in baseline year toll calculation. The parties eventually reached an agreement to work together to improve the service provided for users of the asset (Torrance 2008).

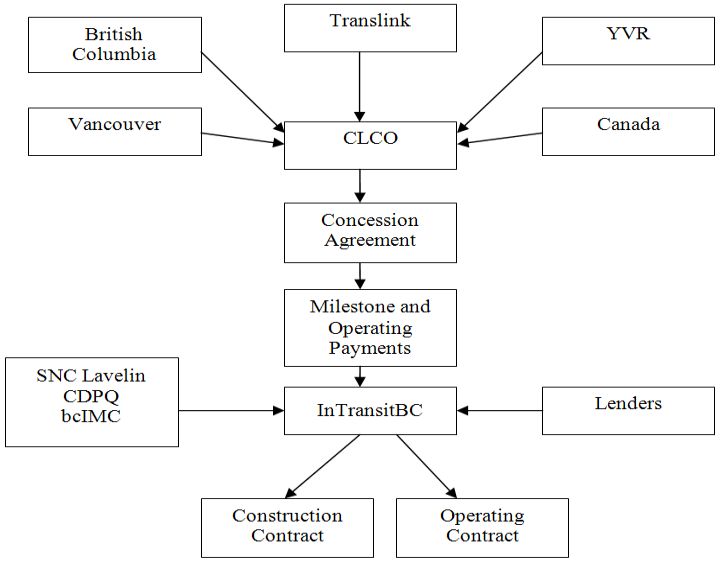
The 407 case showed how the governance mechanism put in place by one government did not have the long term flexibility required to meet changing demands from users and subsequent governments. It has been argued that the sale of the 407 toll road was motivated by the short term objective of raising money before an election to fix the budget, with politicians' time horizons inherently aligned with their electoral mandates. Private institutional investors have benefitted from the contractual provisions established for the toll road. However, the favourable outcomes have come at a cost, in legal fees as well as in reputation amongst users (Torrance 2008).

### *3.3.4. Canada Line PPP*

The Canada Line is an urban rail line between central Vancouver, Vancouver airport and the suburb of Richmond. The railway was planned to improve the rail system in the Vancouver area in preparation for the 2010 Winter Olympics. A PPP procurement was launched in 2003 with ten consortiums competing for the project. A DBFO contract for 35 years was signed with the private sector consortium InTransitBC in 2004 to design, build, partially finance and operate the line over the concession period. During the procurement process, the terms of the contract were renegotiated as cost estimates increased from C$ 1.6 billion to C$ 1.9 billion. The renegotiation also involved reducing the scope of the project with fewer stations to be built and fewer trains to run per day.

The InTransitBC consortium consisted of construction firm SNC-Lavalin, pension fund Caisse de Depot et Placement du Quebec (CDPQ) and British Columbia Investment Management Corporation (BCIMC), an institutional investor acting on behalf of British Columbia based pension funds. The three parties held equal shares in the PPP consortium. The financing structure was split between a number of sources: Government of Canada C$450 million; Province of British Columbia C$252 million; City of Vancouver C$30 million; InTransitBC C$720 million; Greater Vancouver Transportation Authority (TransLink) C$333 million; Vancouver Airport Authority (YVR) C$259 million; Sale of Bridgeport Parkade (parking capacity) C$5 million; Net Interest C$2 million (Cummings 2010). The public sector sources came together to form the project sponsor authority, Canada Line Rapid Transit (CLCO). The agreement framework is shown below.

Figure 13. **Canada Line PPP Agreement Framework**




*Source:* Cummings (2010)

InTransitBC was obligated to complete the construction for a fixed price and was responsible for any budget overrun. The consortium received payments based on defined milestones through the construction phase from Translink and the Province of British Columbia. These payments helped the consortium to cover their costs and provide a return for their financial commitment.

The main source of risk for the private consortium was the performance payments through the operating phase of the project as these were to be used to make debt repayments. Fare revenues are collected and retained by Translink who then make payments to InTransitBC. Payments are based on arrival times, ridership, and quality of operations. Availability payments made by Translink contributed 70%, with the private consortium required to operate an average of approximately 40 trains per hour; 20% is based on quality of service delivered (trains and stations must be accessible, comfortable, convenient and adhere to set repair, cleanliness and safety standards); 10% of the payment is based on achievement of ridership forecasts. Forecasts are established every five years with an allowable change once per year. At the time of project preparation, forecasts showed that the net new revenues generated by the line would cover the availability payments and performance payments during the operating period (Nicholls 2011).

The implementation of the Canada Line PPP is considered a success with the construction phase, carried out by SNC-Lavelin delivered four months ahead of schedule and within budget (after the negotiated restructuring). The Line was officially opened to the public on August 17, 2009 and the original ridership goal of 100,000 passengers per day by 2013 was reached in May 2010. During the 2010 Winter Olympics in February 2010, an average of 228,190 people used the train line each day exceeding forecasts by 118%. The first year performance of Canada Line provided high customer satisfaction, high public acceptance, achieved 99.99% system availability, 99.99% vehicle quality standards and 99.68% station quality standards (ACB 2012).

The Canada Line was the largest PPP implemented in Canada at the time and the first rapid rail transit PPP in North America. According to the British Columbia Ministry of Transportation and Infrastructure, the ridership capacity of the Canada Line was estimated to be equivalent to 10 major road lanes (Nicholls 2011).

During the competitive bidding process of the PPP, Translink was required to complete a value for money assessment, comparing the cost of building the system by the bidder to what it would have cost the public sector, using a Public Sector Comparator (PSC) model. The evaluation considered the differing amounts of incremental ridership revenues generated by the bid compared with the PSC model. This was done by using the net cost of the proposals over the 35-year term i.e. gross cost less their forecast incremental ridership revenue). This means that a system that cost C$1,600 million and generated C$300 million of incremental ridership revenue would have a net cost of C$1,300 million. This can be compared to a system that cost less to build and operate at C$1,550 million but only generated C$200 million of incremental ridership revenue, resulting in a net cost of C$1,350 million, C$50 million more than the first system (Nicholls 2011). The analysis carried out showed that InTransitBC was able to build the Canada Line for C$92 million less than what it would have cost the public sector to build. The expected ridership revenue from InTransitBC was C$148 million greater than with the PSC (Siemiatycki 2007). The higher forecast ridership revenue for the project was due to more accessible station designs, train design, and more frequent train service

Despite the on-budget delivery of the Canada Line PPP by the private consortium, a main concern, which is apparent with most privatised forms of assets, is the financial burden that the project will impose on the public authorities over the long term. In the case of Canada Line, the government will have to subsidize the project until at least 2025 in order to pay off the C$720 million put in by the private consortium (Freemark 2009). Opponents to the deal have argued that the increased efficiency and risk transfer to the private consortium are not sufficient to justify the increased expenditures by the government. The cost of PPPs to governments through foregone revenue is an area of ongoing debate in the wider literature and a key issue that must be considered when financing transportation infrastructure investments.

The Canada Line case study provides an illustrative example of a PPP transportation project that has been attractive for private institutional investors to invest in. The Greenfield development nature of the project with design and build functions places the Canada Line PPP towards the riskier end of the infrastructure investment spectrum. The stable political and legal framework of an OECD country reduced the risk of the project and contributed to attracting institutional investment. Construction risk for the pension fund investors was reduced by partnering with a proven, experienced construction firm who also provided equity into the project ensuring interests amongst the members of the consortium were aligned. The investment was attractive to private investors because of the guarantees on revenue that the government was able to provide through availability payments, thus reducing demand risk. Both CDPQ and British Columbia Investment Management Corporation represent the growing number of institutional investors looking for long term infrastructure investments generating inflation-linked reliable cash flows. The Canada Line shows how the structuring of a greenfield PPP project can be set up and implemented to attract large institutional capital into infrastructure assets without compromising wider social objectives and the service provided to users.

## 4. CONCLUSIONS

It has been suggested by governments, academics and industry proponents, that institutional investors will play a significant role in helping to close the investment gap for transportation infrastructure assets. The long term investment horizon and appetite for inflation-protected cash flows of institutional investors theoretically make for an ideal investment pairing with the long term, low risk nature of transport infrastructure assets. The source of capital within the institutional investor universe is vast and there is a need to upgrade, maintain and develop transportation assets in many countries around the world. Despite this, the uptake for institutional investment in transportation infrastructure has been slow. This paper has illustrated the complex nature of infrastructure investing and provides some clarity around the uncertainty associated with investing in these assets.

In providing a snapshot of the investor universe and asset characteristics, a roadmap for institutional investing in infrastructure can be deduced.

The range of infrastructure investment vehicles on offer is wide and diverse. Investors are able to invest in transport infrastructure across the broad risk and return spectrum, from operational stage backed debt to greenfield equity investment in the development stage of a

project. But it has been through unlisted equity investments that institutional investors have made the most impact in the infrastructure asset class over the last two decades.

Investors have also been able to gain exposure to privatised listed infrastructure companies and indexed funds for many years. There are two problems with listed financial products. Many listed infrastructure companies may not fit with the true underlying characteristics of the asset class and it may be debatable as to whether an investor is actually investing in what it would define as an infrastructure asset. Being listed also means that an infrastructure company will be subject to the volatility of public markets even though the business itself is not very volatile giving a false sense of value variance.

Infrastructure debt has emerged as the latest infrastructure investment opportunity in the wake of the global financial crisis, as traditional sources of lending from banks have shrunk in response to the need to recapitalise, spurred by credit regulations such as Basel III. Debt funds have been created for institutional investors to invest in infrastructure backed debt. The amount of capital raised has increased significantly over the last three years and it is expected that funds being channelled into debt instruments is likely to increase in the future.

For unlisted equity, it can be seen that the method of investment depends on the size and governance capability of the institutional investor. In this way, the infrastructure investor universe can be segmented. Medium to large institutional investors are more likely to have a clear mandate or objective for investing in infrastructure which is reflected in their asset allocation decision. Smaller investors in contrast, may not have an investment objective for infrastructure, lack general investment knowledge among Board members and rely heavily on the advice of financial intermediaries for deploying their capital. Smaller investors who have trusted their capital to infrastructure funds may not know exactly what type of assets across the spectrum that they are investing in. Fund managers have the ability to manipulate the infrastructure exposure of ill-informed investors. Certain investors have sustained significant losses from their infrastructure investments and the market has suffered from the lack of discipline of early short term opportunistic infrastructure funds that were attached to the investment banking industry and exposed by the financial crisis. A number of lessons have been learned from the early stages in the market and a realignment of interests between investors and product providers appears to be occurring. However, investors in search of stable, predictable, low risk returns should be cautious and ensure that the underlying assets invested in through the various vehicles respect the specific definition they associate with the asset class.

There are a number of structural and asset specific risks related to the mode of private offering set up by the government. In a PPP arrangement, institutional investors can invest in the higher risk, development stage of a project or lower risk operational stage. Construction and demand risk appear to be of most concern to institutional investors investing in PPP projects. The method of funding established by the government, either through toll revenues or availability payments will affect the risk borne by a private investor and the type of investor attracted to the project. I.e. availability payments will attract debt investors while tolls will be more suited to equity investors. In fully privatised transport infrastructure, the main consideration for institutional investors is the regulatory framework that the asset operates under. The regulatory asset base model has been implemented alongside the privatisation process in order to protect consumers against abuses of monopoly power while still assuring investors that they will be fairly treated. There are various forms of the RAB model that have been employed for privatised airport assets such as rate of return, RPI–X and light handed regulation. Infrastructure investors seek a clear and understandable asset based regulatory model when approaching infrastructure

investments, ideally one that appears to offer robust contractual guarantees in the short term and flexibility to accommodate political change in the medium term.

Other asset specific risks that are inherent for transportation infrastructure in both the PPP and fully privatised form include corporate governance, reputation, financial and political risks. The Auckland Airport and 407 toll road examples illustrate that while private investors have benefitted from investing in the respective assets (through favourable regulatory and contractual conditions), short term political influences can adversely harm the performance and reputation of investors. The BAA case study demonstrated the importance of adopting responsible corporate governance methods, taking into account the wider stakeholder interest when employing a shareholder wealth maximisation strategy. The successful implementation of the Canada Line DBFO project showed how a Greenfield PPP can be structured to attract long-term institutional investors and provide an efficient service to the user public.

In summary, it would appear that the facilitation of private institutional infrastructure investment depends as much on the development of long term relationships of trust between financial intermediaries and institutional investors as on robust contractual agreements with the government procuring authorities. Confidence in the alignment of government policies with investors' interest in long term stable returns is also critical. Because of the complexity of the field, all parties need to work closely together to ensure that the respective objectives of each are considered in their own decision-making process. Governments seek a source of long-term patient capital with the expertise to efficiently invest in transportation infrastructure. Investors require a commitment from governments to provide a clear program of projects, accompanied by a transparent procurement and regulatory process that is stable and consistent. Ideally, governments should have a master plan, whereby the financing requirements for transportation infrastructure are estimated for a period of time. This would include how much is going to be financed by traditional sources, subsidies and end user tolls and what the gap might be. If the government is aware of this, the process of providing a clear pipeline and appropriate regulatory framework for the required amount of private institutional equity and debt finance will become easier. The UK has the longest history and most well-recognised framework for private investment in transport infrastructure. Investors see it as the benchmark despite mixed experiences in terms of regulatory change and achieving projected revenues.

The development of best-practice frameworks for private involvement in transport infrastructure through open dialogue between the public and private actors will assist in achieving the desired objectives for all stakeholders. Initiatives such as the UK's National Infrastructure Plan and Pension Infrastructure platform, the Rebuild America Partnership and Europe's 2020 Project Bond Initiative would indicate that the required consultations are occurring.

# 5. APPENDIX

## Pension Fund Interviewee Characteristics[8]

Pension Fund 1
Assets Under Management: £250 million
Industry: Tertiary Institution Staff Pension Scheme
Location of Offices: Oxford

Pension Fund 2
Assets Under Management: £6 billion
Industry: Government Superannuation
Location of Offices: Wellington, Auckland

Pension Fund 3
Assets Under Management: £31 billion
Industry: Municipal Employees Retirement Fund
Location of Offices: Toronto (Head Office), London

Pension Fund 4
Assets Under Management: £16 billion
Industry: Tertiary Education Sector Employees
Location of Offices: Melbourne

Pension Fund 5
Assets Under Management: £94 billion
Industry: Government Pension Plan
Location of Offices: Toronto (Head Office), London, Hong Kong

Pension Fund 6
Assets Under Management: £17 billion
Industry: Railways
Location of Offices: London

8. Assets Under Management approximated as at September 2010

Pension Fund 7

Assets Under Management: £31 billion

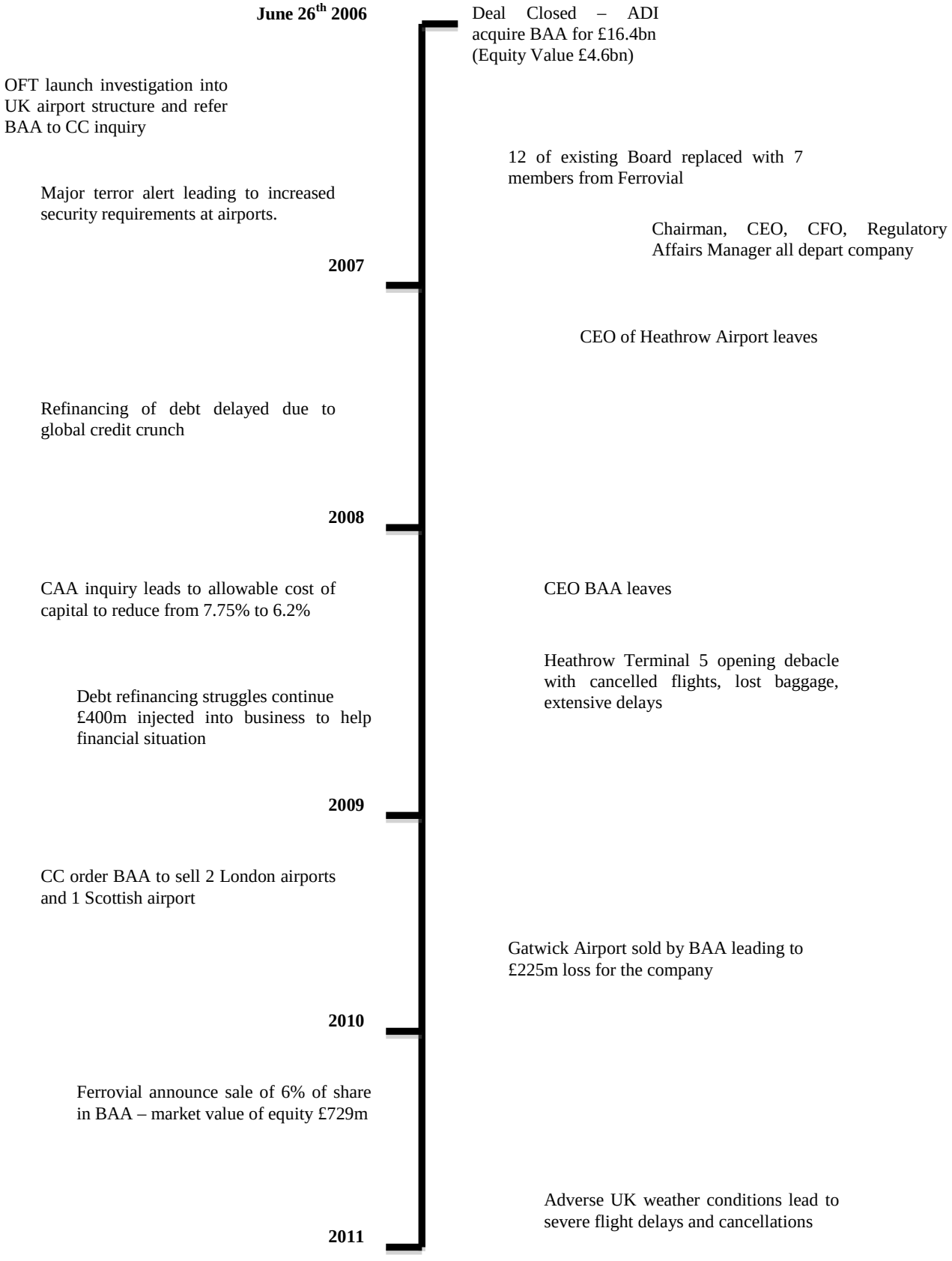
Industry: Tertiary Education Sector Employees

Location of Offices: London

**Investment Consultant Client Questionnaire**

1. What is the size of your fund – assets under management? Is the scheme DB or DC?
2. What is the structural form of the investment process for your fund? Does the investment committee act independently of the trustees/employer organisation?
3. Do you have any full time staff dedicated to the investment process of the fund? Are
4. Did you consider investing in infrastructure on your own accord or were you advised by an investment consultant?
5. Did you use an investment consultant for investing in other asset classes prior to investing in infrastructure?
6. What is your percentage allocation to infrastructure? How did you come up with the allocation?
7. Do you invest in an unlisted infrastructure fund through a specialist infrastructure fund manager? Why did you select your current infrastructure fund manager over others?
8. Have you considered other vehicles for investing in infrastructure (listed, debt)?
9. In your opinion, how important is the role of an investment consultant for pension funds making an investment in the infrastructure asset class?
10. Have you encountered any conflicts of interest or had any concerns when dealing with consultants for infrastructure investments?

## Timeline of Events for the Five Years Post ADI Acquisition of BAA



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